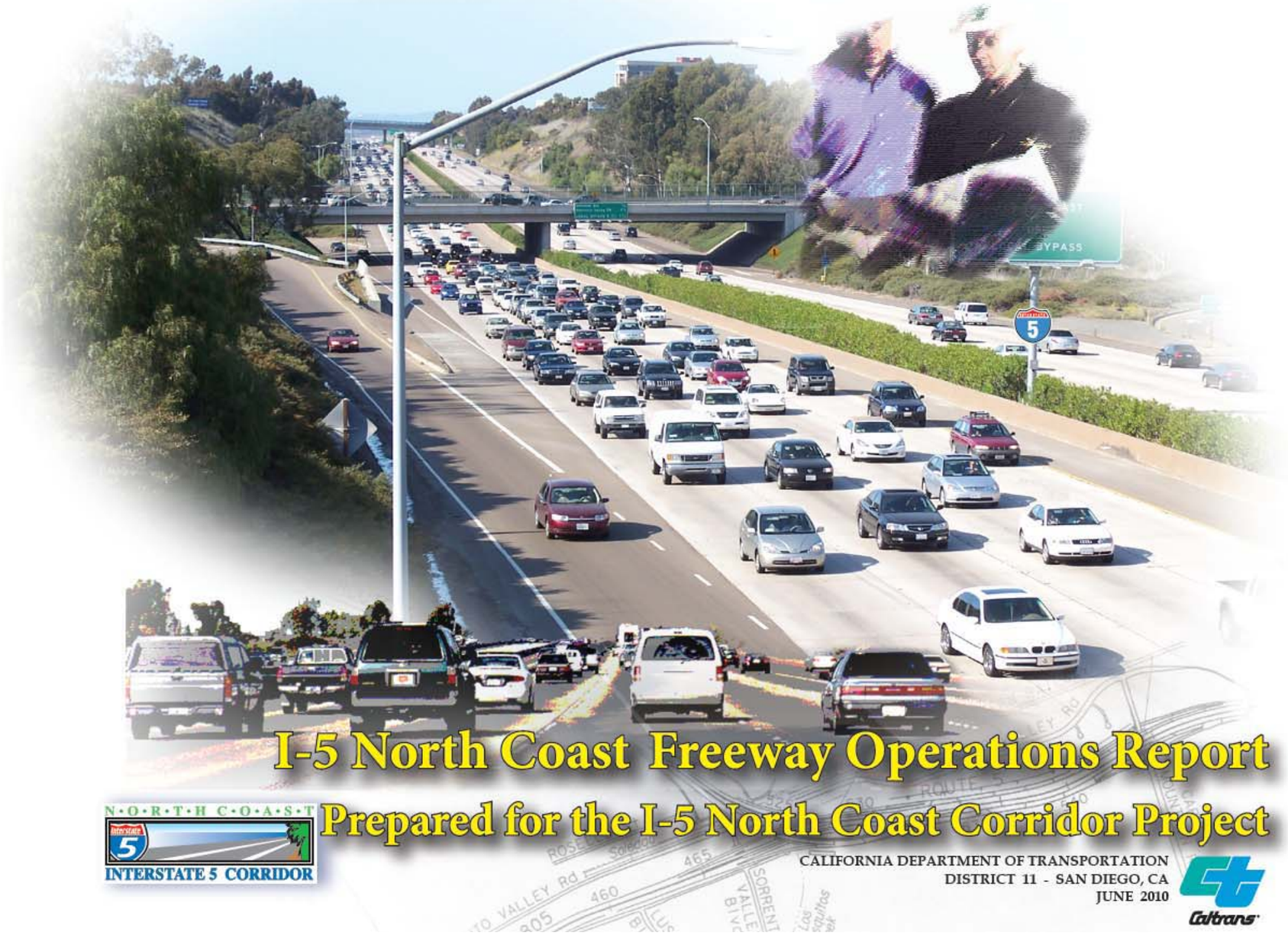

I-5 North Coast Freeway Operations Report

Prepared for the I-5 North Coast Corridor Project

N•O•R•T•H C•O•A•S•T
INTERSTATE 5 CORRIDOR

CALIFORNIA DEPARTMENT OF TRANSPORTATION
DISTRICT 11 - SAN DIEGO, CA
JUNE 2010

Caltrans

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1.0 Introduction

The Freeway Operations Report was prepared in support of the proposed I-5 North Coast Corridor Project (Project). The Project would increase capacity of the existing I-5 freeway by adding up to four High Occupancy Vehicle (HOV) lanes/Managed lanes and up to two general purpose lanes to the existing facility, depending on the Project alternative. Also proposed by the Project are Direct Access Ramps at four different locations, providing the HOV/Managed lanes with access to interchange arterials. The Project begins at La Jolla Village Drive in San Diego and extends northward approximately 27 miles to Harbor Drive in Oceanside (see Figure 1.1). The Freeway Operations Report provides information regarding current freeway operations of the I-5 within the Project limits and estimates future freeway operations for the various proposed Project alternatives.

1.1 Purpose

The purpose of the Freeway Operations Report is to present the existing traffic conditions within the Project limits and the future traffic conditions for the proposed alternatives of the Project. The Freeway Operations Report contains an assessment of freeway operations for the existing conditions and the proposed alternatives, and a comparison of the operations of the proposed Project alternatives.

1.2 Scope

Specific freeway operations were analyzed using year 2030 traffic forecasts for each alternative to determine how well the proposed designs address capacity and operations along the Project corridor. The following freeway operations were analyzed in detail for the existing conditions and proposed alternatives for the AM and PM time peaks: travel times for freeway segments and the corridor, Level of Service at various freeway segments, and weaving conditions between ramp junctures along the Project corridor. In addition to the AM and PM time peak analyses; daily vehicle-hours of delay, Average Daily Traffic, Vehicle Miles Traveled and weekend traffic are presented for the main lanes. HOV/Managed Lanes utilization is also presented.

Freeway operations were analyzed utilizing the methodologies described in the Highway Capacity Manual (HCM) and the Highway Design Manual (HDM). A Freeway Corridor Simulation Model, FREQ12, was utilized to estimate travel times and delay for the "No Build", "8+4", and "10+4" conditions in various future years. FREQ12 is a traffic modeling computer program that contains a method for predicting and illustrating the location, extent and duration of traffic congestion in freeway systems. FREQ12 was also used to predict potential future year bottleneck locations and associated queuing for the alternatives. The Freeway Performance Measurement System (PeMS), a software tool developed and maintained at the University of California, Berkeley, that gathers, stores, and analyzes real time traffic, was used to determine existing weekday bottleneck areas within the Project limits of the I-5 freeway and obtain traffic trends from 2003 through 2006 for comparison purposes. PeMS was also used to evaluate historical and existing weekday and weekend traffic travel times.

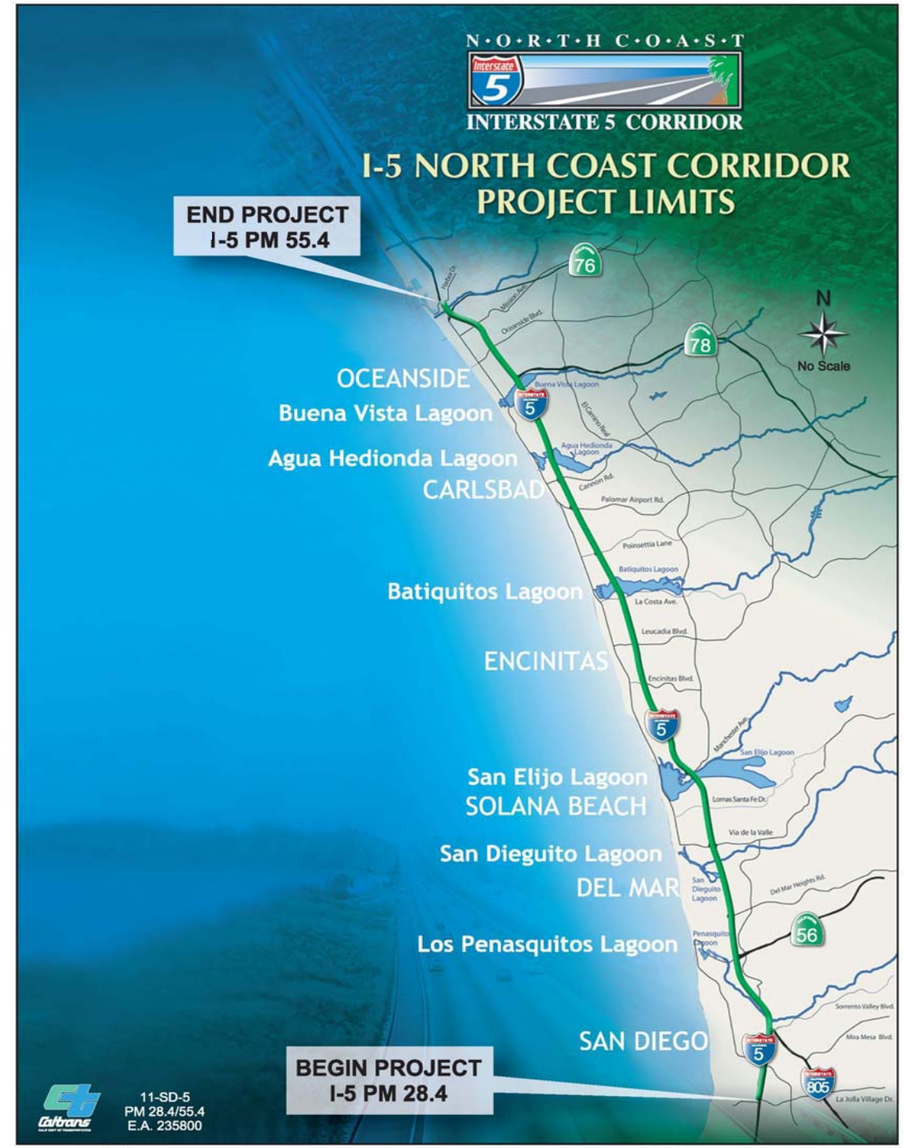


Figure 1.1 Project Location Map

1.3 Organization

The Freeway Operations Report is divided into 9 chapters. The Report purpose, scope and organization, are presented in Chapter 1. The Project description and alternatives are presented in Chapter 2 (see the Project Report for a detailed description of the Project alternatives). The existing freeway traffic conditions are presented in Chapter 3. Annual Average Daily Traffic (AADT) and Vehicle-Miles Traveled (VMT) are presented in Chapter 4. In Chapter 5, the existing and forecasted travel time and main lane delay generated by the traffic modeling computer program FREQ12 are discussed. Chapter 6 contains Level of Service results for the Project corridor. Results of the traffic weaving analysis and potential ramp metering effects are presented in Chapter 7. Current and historical weekend traffic data is presented in Chapter 8. Chapter 9 presents historical High Occupancy Vehicle (HOV) data and discusses future HOV/Managed Lanes usage.

2.0 Project Description

The Project limits of the I-5 North Coast Corridor span approximately 27 miles between La Jolla Village Drive and Harbor Drive. The Project limits are delineated in Figure 1.1. Within the Project limits, the existing I-5 freeway consists of eight general purpose lanes with 27 separate interchanges. The existing I-5 has two 6-mile long HOV lanes (one lane in each direction) between the I-5/I-805 junction and the Via de la Valle undercrossing. Auxiliary lanes exist between interchanges at various locations along the freeway. The existing conditions represent the year 2006. Currently an HOV extension project is under construction to extend the existing northbound and southbound HOV lanes along I-5 from the north end of the San Dieguito River Bridge to the south end of the San Elijo Lagoon Bridge. This project is scheduled for a completion in 2009.

The following alternatives for the Project are presented and considered in the Draft Environmental Impact Statement (EIS):

10+4 with Buffer Alternative
10+4 with Barrier Alternative
8+4 with Buffer Alternative
8+4 with Barrier Alternative
No-Build Alternative

The four "Build" alternatives propose to construct up to four High Occupancy Vehicle (HOV)/Managed lanes and up to two additional main lanes, depending on the alternative. Auxiliary lanes located between freeway on and off ramps would be constructed to facilitate weaving movements in various sections of the Project limits. The project also includes four Direct Access Ramps (DARs) that would allow local traffic to enter and exit the median HOV/managed lanes from and to new overcrossings without having to access the main traffic lanes. The DARs are proposed to be located near Voigt Drive (City of San Diego), Manchester Avenue (City of Encinitas), Cannon Road (City of Carlsbad), and Oceanside Boulevard (City of Oceanside). A new park and ride facility is also proposed for the Manchester Avenue DAR area.

Traffic volumes and lane configurations for the existing conditions (Year 2006) are presented in Exhibit A. The predicted traffic volumes in the year 2030 and proposed lane configurations for the 8+4 and 10+4 Build Alternatives are presented in Exhibits B and C, respectively. The traffic volumes presented in the Exhibits B and C are based on Wilson & Company's *Traffic Demand Forecasting Report*.

2.1 Proposed 10+4 Alternatives

Both versions of the proposed 10+4 alternative (with buffer and with barrier) add two HOV/ Managed lanes in the existing I-5 freeway median between La Jolla Village Drive and the I-5/I-805 junction. Ten main lanes are proposed between La Jolla Village Drive and Genesee Avenue. The main lanes undergo a series of lane transitions (reductions or additions) depending on direction (i.e., northbound or southbound) between Genesee Avenue and the I-5/I-805 junction. Between the I-5/I-805 junction and State Route 78, the alternative proposes up to four median HOV/Managed lanes

and outside widening resulting in up to ten main lanes. Between State Route 78 and Harbor Drive, the alternative proposes four median HOV/Managed lanes and eight main lanes. The additional number of main and auxiliary lanes included in both 10+4 alternatives varies at specific locations to accommodate traffic volume projections.

2.2 Proposed 8+4 Alternatives

Both versions of the proposed 8+4 alternative (with buffer and with barrier) add two HOV/Managed lanes (one northbound and one southbound) in the existing I-5 freeway median between La Jolla Village Drive and the I-5/I-805 junction. Four HOV/Managed lanes (two northbound and two southbound) would continue north in the I-5 median from the I-5/I-805 junction to the extent of the Project limits at Harbor Drive in the City of Oceanside. Neither version of the 8+4 alternative proposes the construction of additional main lanes on I-5, thus maintaining the current configuration of 8 total main lanes throughout the Project corridor. The additional number of auxiliary lanes included in both 8+4 alternatives varies at specific locations to accommodate traffic volume projections. The 8+4 alternative includes the construction of DAR facilities.

2.3 No Build Alternative

Corridor widening would not occur under the No Build alternative. The existing freeway conditions would only be modified according to projects currently programmed and/or under construction.

3.0 Existing Conditions

Traffic volumes contained in Exhibit A were used to determine existing conditions of the I-5 corridor within the Project limits. Current freeway operations were assessed by examining historical recurrent bottlenecks (Chapter 3), weekday travel times for the historical and existing conditions (Chapters 3 and 5), historical and future annual average daily traffic (Chapter 4), delay (Chapter 5), main lane Level of Service (Chapter 6), interchange to interchange weaving (Chapter 7), weekend travel times for the historical and existing conditions (Chapter 8), and existing HOV traffic volumes (Chapter 9).

3.1 Existing Facility

Within the Project limits, the existing I-5 freeway consists of eight (8) general purpose lanes with 27 separate interchanges. Auxiliary lanes exist at various locations along the freeway between interchanges. The existing I-5 has two HOV lanes (one lane in each direction) between the I-5/I-805 junction and the Via de la Valle undercrossing. The existing conditions represent the year 2006. Auxiliary lanes exist at various locations along the freeway between interchanges. The I-5 freeway intersects four separate freeways within the Project limits: I-805, State Route 56, State Route 78, and State Route 76. A separate 4-lane bypass facility runs parallel alongside the I-5 freeway between its junctions with the I-805 freeway and State Route 56.

The existing I-5 corridor's lane configurations, ramp locations, and traffic volumes within the Project limits are illustrated in Exhibit A. The existing volumes are a compilation of volumes collected by several sources (Caltrans and local agencies) from 2004 through 2006. The result is a hybrid traffic census representing existing conditions in the year 2006.

3.2 Freeway Performance Measurement System

The Freeway Performance Measurement System (PeMS), a software tool developed at the University of California, Berkeley, is a traffic collection, processing, and analysis program used to evaluate the performance of freeway systems. The PeMS database logs data from the California freeway traffic detectors as well as incident related data from the California Highway Patrol and weather data. PeMS obtains 30-second loop detector data in real time from each California Department of Transportation (Caltrans) district Transportation Management Center. Each 30-second data set consists of counts (number of vehicles crossing the loop). UC Berkeley hosts the PeMS server and stores all the data it receives allowing for the extraction of real time and historical data. PeMS is a joint effort by Caltrans, UC Berkeley, and the Partnership for Advanced Technology on Highways (PATH).

3.2.1 Travel Time

Recent (2003-2005) and existing (2006) data extracted from the PeMS database provided a comparison of average weekday freeway travel times along specific segments of the I-5. The results are the average weekday travel times for the northbound and southbound directions as shown in Figures 3.1 and 3.2 below. These two figures represent the average time to travel the entire project

area. For example, in Figure 3.1, if in the year 2005 a trip that started at 3:30 pm from La Jolla Village Drive and ended northward at Harbor Drive would take an average of 34 minutes.

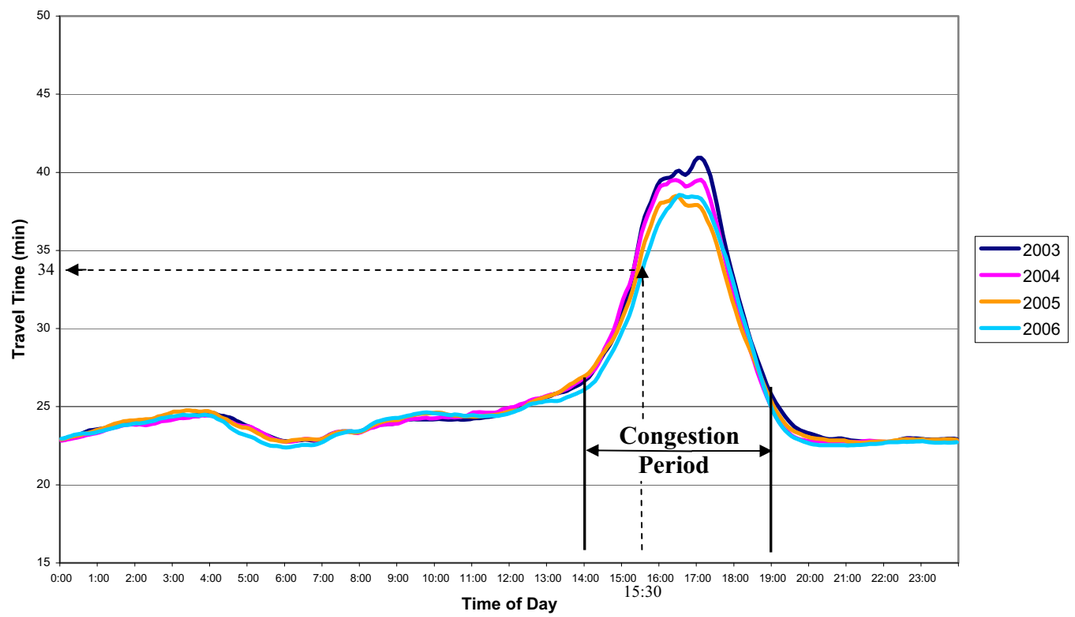


Figure 3.1 I-5 Northbound Weekday Traffic Average Travel Time: La Jolla Village Drive to Harbor Drive

For all years studied and in the northbound direction, there is an increase in travel time between 2 pm and 7 pm, for a total peak period of congestion of 5 hours. The trends for average travel time in respect to time of day from 2003 to 2005 have remained consistent. Figure 3.1 also shows a slight decrease in average travel time from about 40 minutes to 38 minutes between the years 2003 to 2006. The slight decrease in average PM peak travel time shown in Figure 3.1 may be due to influences of past construction activities in the corridor.

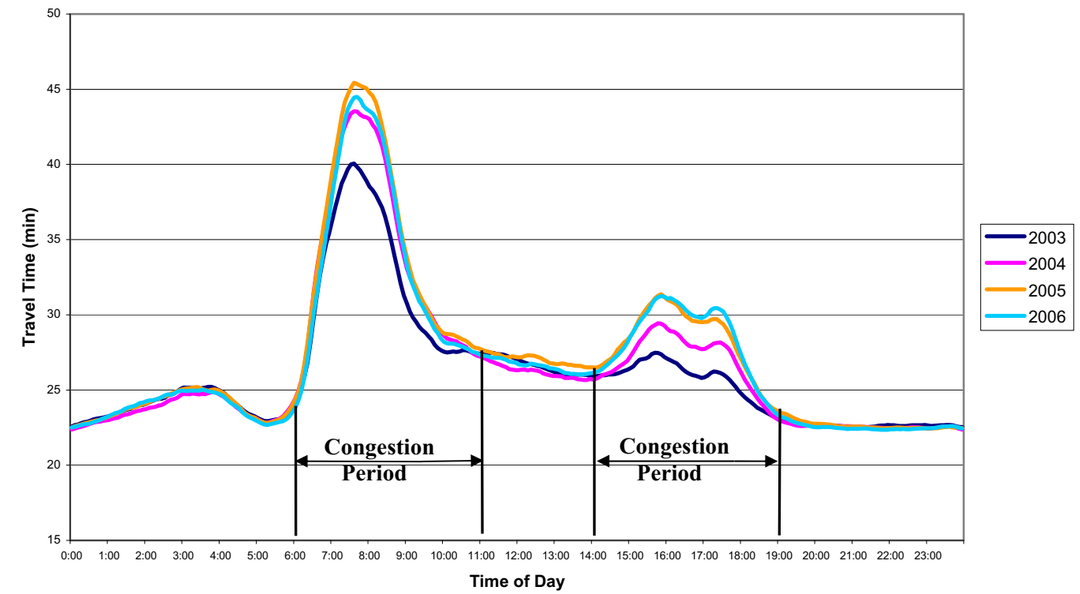


Figure 3.2 I-5 Southbound Weekday Traffic Average Travel Time: Harbor Drive to La Jolla Village Drive

The overall basic southbound trends illustrated by Figure 3.2 are similar from 2003 through 2006 with increasing AM and PM peak hour average travel times in each successive year. The average travel time during the southbound AM peak at 8:00 am has increased 5 minutes from 40 minutes in 2003 to 45 minutes in 2006. The average travel time during southbound PM peak has increased about 5 minutes from 26 minutes in 2003 to 31 minutes in 2006. The peak period of congestion has spread by about 30 minutes for both the AM and PM peaks.

Figure 3.2 illustrates that the AM peak is the primary directional peak with an average travel time in 2006 of 45 minutes. The PM peak has a much smaller travel time of about 32 minutes in 2006. Figure 3.2 is depicting a pattern of continuous congestion between 6:00 am and 7:00 pm.

3.2.2 Bottlenecks

A bottleneck is a persistent drop in speed between two locations on a freeway. A bottleneck can have a number of causes, including a change in capacity (like a reduction of the number of lanes), a visual distraction, an incident, a weaving section, etc. Bottlenecks can cause increased average travel time and congestion along the I-5 corridor. There are two classifications of bottlenecks: non-recurrent and recurrent. A non-recurrent bottleneck is due to an unforeseen event, such as an accident. A recurrent bottleneck is due to daily and predictable traffic patterns like those occurring during traffic rush-hour.

PeMS was utilized to detect weekday peak hour bottlenecks on the I-5 freeway within the Project limits for the year 2005. Summaries of the most recurrent weekday northbound and southbound bottlenecks are in Tables 3.1 and 3.2, respectively. Excluding weekends and holidays, there are a total of 247 weekdays in a calendar year. Bottlenecks in Tables 3.1 and 3.2 were identified by PeMS as occurring 20% of the time or more for the 2005 calendar year. The analysis performed was for main lanes only and excludes HOV lanes. PeMS uses 35 miles per hour as the reference speed for the delay associated with bottlenecks.

Bottlenecks with the same bottleneck number listed in the tables below are in close proximity to one another and thus overlap each other. Note that there are not any northbound bottlenecks within the Project limits in the AM peak hour

Table 3.1 2005 Northbound I-5 Bottlenecks

Bottleneck Number	Location	Peak Hour	Average Queue Length (mi)	Average Delay (veh-hrs)	Average Duration (hrs)
1	Carmel Valley Road	PM	5.0	723	2.6
1	Via de la Valle	PM	4.7	2900	3.3
1	Lomas Santa Fe	PM	6.7	1486	1.0
2	Leucadia Blvd	PM	2.9	369	0.9
3	Cannon Road	PM	3.7	986	2.0

Table 3.2 2005 Southbound I-5 Bottlenecks

Bottleneck Number	Location	Peak Hour	Average Queue Length (mi)	Average Delay (veh-hrs)	Average Duration (hrs)
4	Via de la Valle	AM	7.3	1037	0.8
4	Manchester Ave	AM	6.0	1671	1.8
4	Birmingham Dr	AM	4.5	441	0.6
5	Oceanside Blvd	PM	2.9	518	1.3
6	Manchester Ave	PM	5.3	1274	1.4
6	Birmingham Dr	PM	4.1	204	0.4

PeMS was also used to identify bottlenecks as aggregated speed plots, which are presented below for the bottlenecks listed in Tables 3.1 and 3.2. For example, the bottlenecks associated with bottleneck number 4 are illustrated in Figure 3.6. The data in Tables 3.1 and 3.2 represent averages for the year 2005 whereas the data in Figures 3.3 through 3.8 are for a single day occurrence, which basically represents the averages in graphic form.

The period of congestion is determined by the duration of the bottleneck, as seen in Figures 3.3 through 3.8, using the white "x" marks denoting the bottleneck location in conjunction with the Time of Day axis. The more "x" marks, the longer period of congestion at that particular location. For example, the first bottleneck identified in Figure 3.3 at Via de la Valle (postmile 36) has a duration of approximately 1 hour (3 pm to 4 pm). Yet when this bottleneck reappears at approximately 4:20 pm, it lasts until about 6:20 pm for a total period of congestion of 2 hours. The period of congestion for the bottlenecks in Figures 3.3 through 3.8 should be similar in most cases to their corresponding average duration in Tables 3.1 and 3.2.

The length of congestion, or length of queue, is determined using the Postmile axis in Figures 3.3 through 3.8. For example, the Via de la Valle bottleneck in Figure 3.3 at 5 pm has a queue length of approximately 3 miles.

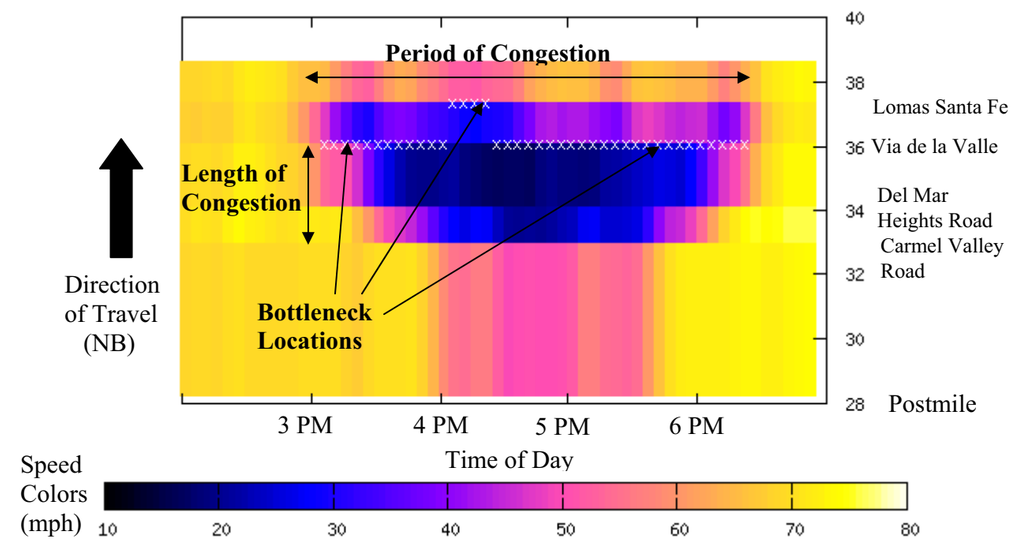


Figure 3.3 Aggregated Speed Plot for Bottleneck 1: NB from Carmel Valley Road to Lomas Santa Fe

The bottlenecks depicted in Figure 3.3 occurred on a typical weekday (May 17, 2005) at various afternoon times on a ten-mile stretch of freeway along the northbound I-5. Bottlenecks are identified at the Via de la Valle and Lomas Santa Fe undercrossings. The colors in the figure indicate the speed of the vehicles at different times and locations, which correspond to the color chart directly

beneath the figure. The darker colors indicate a slower travel speed, which is prevalent at the bottleneck locations and subsequent queues during the PM peak hour. The bottleneck at Lomas Santa Fe overlaps the bottleneck at Via de la Valle between 4 pm to 4:20 pm and thereby the "x" marks in the figure move to Lomas Santa Fe from Via de la Valle. In the northbound PM peak hour, the bottleneck at Via de la Valle occurred 247 times in 2005, which is the number of days examined by this analysis. The bottleneck at Lomas Santa Fe occurred 89 times during the 2005 calendar year.

The northbound PM bottleneck at the Via de la Valle undercrossing may be attributed to freeway geometry changes at this location. The HOV lane striping ends, converting the HOV lane into a general-purpose lane. Lane number five, an auxiliary lane, exits at Via de la Valle and shortly thereafter lane number 4 merges with lane number 3. In a distance of less than one thousand meters, the facility, which is comprised of five general-purpose lanes and one HOV lane, is transitions to a four general-purpose lane facility at this undercrossing.

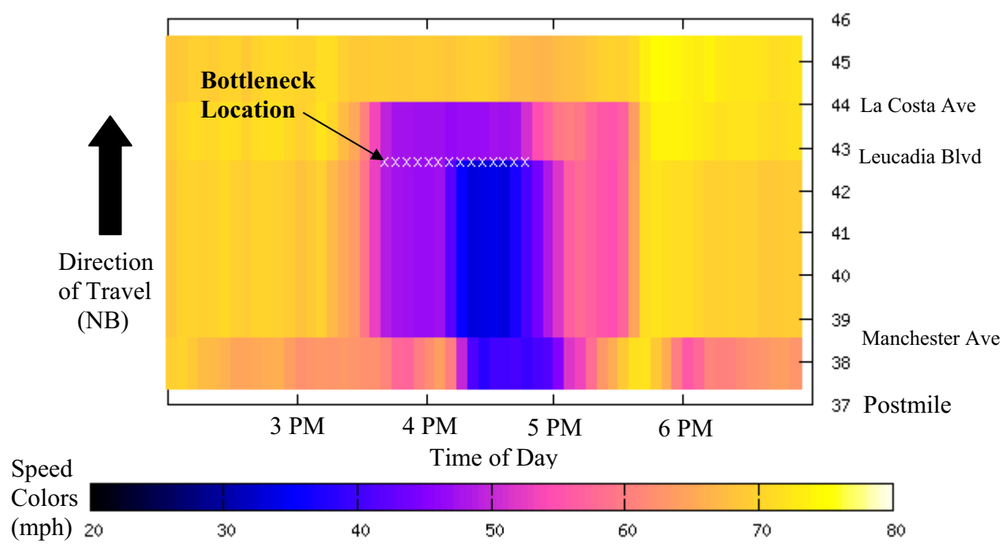


Figure 3.4 Aggregated Speed Plot for Bottleneck 2: NB at Leucadia Blvd

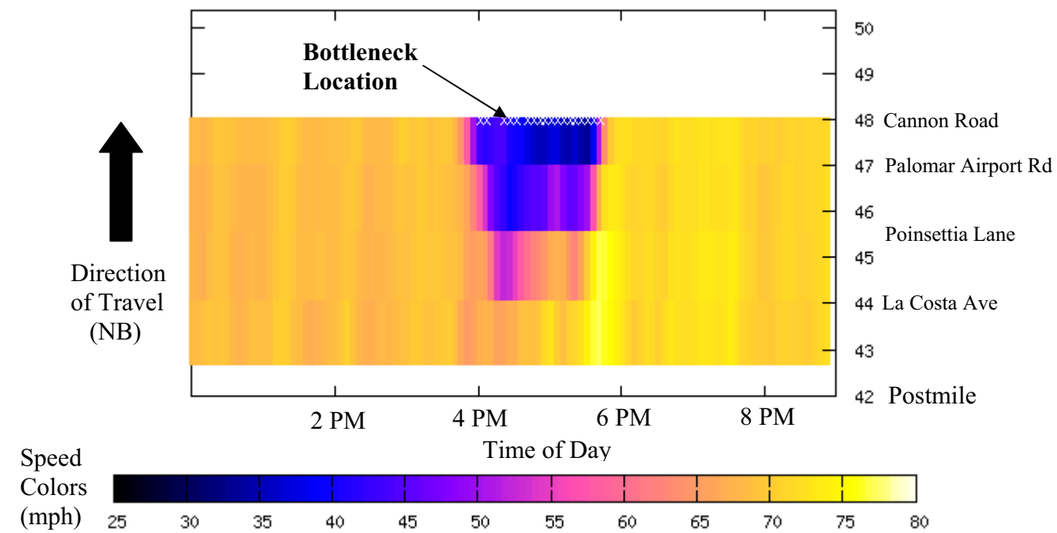


Figure 3.5 Aggregated Speed Plot for Bottleneck 3: NB at Cannon Road

The bottleneck depicted in Figure 3.4 is at Leucadia Boulevard for a typical weekday (May 25, 2005). The bottleneck occurred 79 times in the northbound PM peak hour in the year 2005. The queue shown in the figure is approximately 4 miles long and lasts about one hour.

The bottleneck depicted in Figure 3.5 is at Cannon Road for a typical weekday (April 21, 2005). The bottleneck shown has a congestion for approximately 2 hours with a queue length of 2.5 miles. The average speed at the Cannon Road bottleneck does not appear to go below 30 miles per hour on this particular day. At this location, I-5 appears to be at its most congested condition between 5:00 pm and 5:30 pm. The bottleneck at Cannon Road occurred 198 of the possible 247 weekdays in the year 2005.

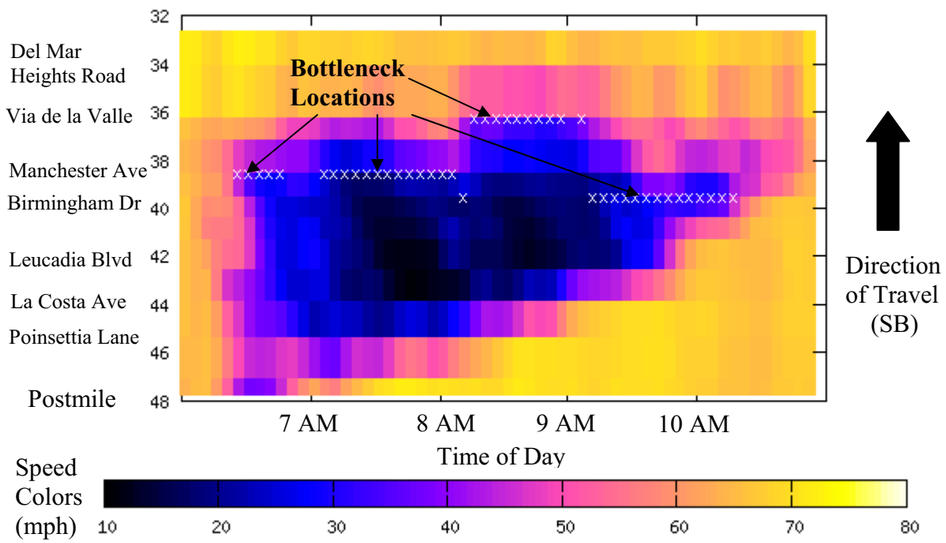


Figure 3.6 Aggregated Speed Plot for Bottleneck 4: SB from Birmingham Dr. to Via de la Valle

The bottlenecks depicted in Figure 3.6 occurred on a typical weekday (May 5, 2005). The Manchester Avenue and Birmingham Drive bottlenecks are about one mile apart. Although Figure 3.6 shows the initial primary bottleneck to be at Manchester Avenue, there is another bottleneck not identified in the figure occurring simultaneously at Birmingham Drive and overlap each other. The bottleneck at Birmingham Drive appears after 9 am when the bottleneck at Manchester Avenue has dissipated. In 2005, weekday bottlenecks at Manchester Avenue and Birmingham Drive in the southbound AM peak hour occurred 227 and 180 times, respectively. The aggregated speed plot indicates that vehicle speeds in the queue caused by the bottlenecks can be 10 miles per hour or less for a significant amount of time. The figure also illustrates how a third bottleneck at Via de la Valle occurs during the prime AM peak hour from 8 am to 9 am, although not as intensive as the bottlenecks at Manchester Avenue and Birmingham Drive. The bottlenecks at Manchester Avenue and Birmingham Drive are occurring during the same time period, yet overlap by the Via de la Valle bottleneck. The AM peak hour bottleneck at Via de la Valle recurred 56 times in 2005. The period of congestion on this particular day lasted for over 3 hours, with queues approaching La Costa Avenue and Poinsettia Lane, which is almost 8 miles away from Manchester Avenue.

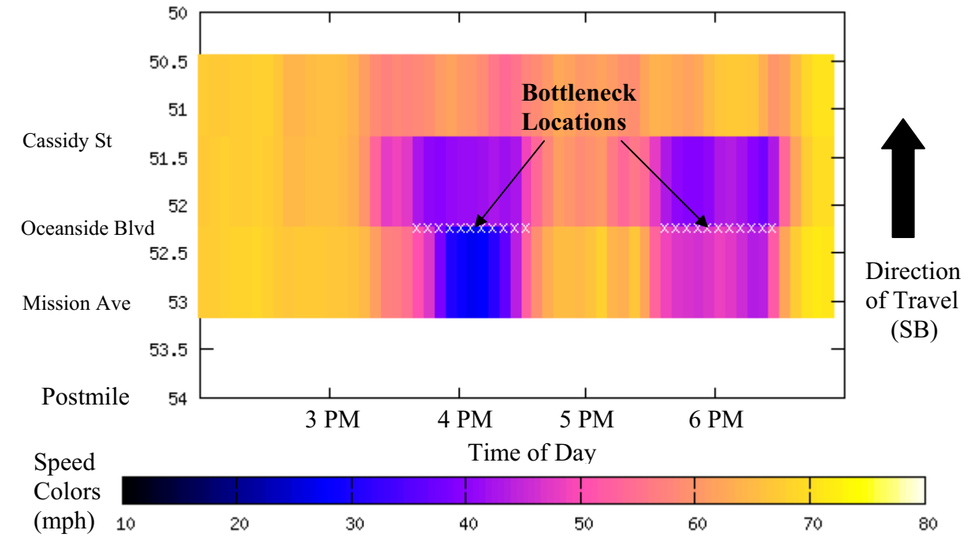


Figure 3.7 Aggregated Speed Plot for Bottleneck 5: SB at Oceanside Blvd

The bottleneck depicted in Figure 3.7 is at Oceanside Boulevard for a typical weekday (May 12, 2005). The southbound PM peak hour bottleneck at Oceanside Boulevard occurred 50 times in the year 2005. The queue shown in Figure 3.7 extends about one mile to Mission Avenue and possibly further since data in Table 3.2 indicates the average queue length to be about 3 miles. This queue cannot be verified or determined since PeMS has not been collected data further north on the southbound side of the I-5 freeway. Figure 3.7 shows that traffic undergoes relatively slower speeds after the bottleneck at Oceanside Boulevard from congestion due to weaving between Cassidy Street and State Route 78. This weaving occurs over a short distance of 350 meters.

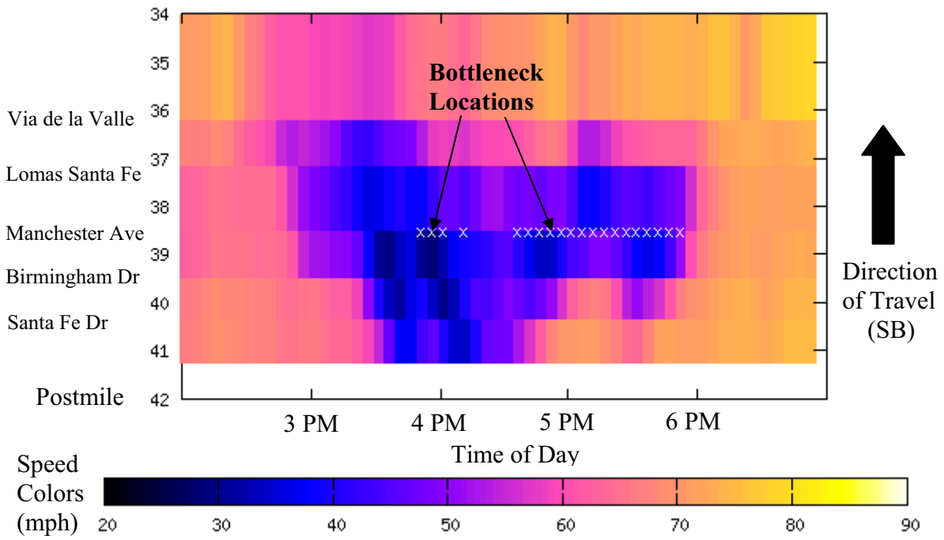


Figure 3.8 Aggregated Speed Plot for Bottleneck 6: SB Birmingham Dr to Manchester Ave

The bottlenecks depicted in Figure 3.8 occurred on a typical weekday (April 14, 2005). The figure indicates that traffic after the Manchester Avenue bottleneck travels at speeds of 30-40 miles per hour until the Lomas Santa Fe undercrossing. A bottleneck develops around 4 pm at Manchester Avenue and overlaps a bottleneck occurring simultaneously at Birmingham Drive. The queues from the bottleneck at Birmingham Drive extend north to the Santa Fe Drive interchange. The 3-mile segment of the I-5 from Lomas Santa Fe to Santa Fe Drive is consistently congested for approximately 3 hours in the afternoon from 3 pm to 6 pm. In the year 2005, the southbound PM peak hour bottlenecks at Manchester Avenue and Birmingham Drive occurred 117 and 57 times, respectively.

4 Annual Average Daily Traffic (AADT) and Vehicle-Miles Traveled (VMT)

4.1 Historical Traffic Trends

Historical traffic trends along the I-5 corridor are presented in terms of Annual Average Daily Traffic (AADT). Caltrans-Office of Traffic Operations provided historical AADT for the I-5 corridor. Table 3.1 summarizes AADT traffic trends at seven freeway segments along the I-5 corridor for the Years 1970, 1975, 1980, 1985, 1990, 1995 and 2000. The listed freeway segments were selected to represent the entire I-5 corridor with at least one segment in each affected city traversed by the Project. Table 4.1 shows that I-5 freeway (within the project area) had an increase in AADT during the years identified.

Table 4.1 I-5 Annual Average Daily Traffic (AADT)

Location		1970	1975	1980	1985	1990	1995	2000
From	To	ADT	ADT	ADT	ADT	ADT	ADT	ADT
La Jolla Village Drive	Genesee Ave	53,000	49,000	59,000	89,000	122,000	129,000	145,000
I-5 / I-805 Junction	Carmel Valley Road	48,000	75,000	103,000	155,000	219,000	213,000	254,000
Via de la Valle	Lomas Santa Fe	48,000	69,000	96,000	140,000	189,000	189,000	215,000
Encinitas Blvd	Leucadia Blvd	43,000	62,000	81,000	116,000	162,000	168,000	198,000
Palomar Airport Road	Cannon Road	44,500	61,000	79,000	109,000	156,000	159,000	190,000
SR-78	Oceanside Blvd	56,000	71,000	90,000	119,000	159,000	156,000	197,000
Mission Ave	SR-76	49,000	59,000	72,000	101,000	137,000	126,000	156,000

4.2 Future Traffic Conditions

Wilson & Company's *Traffic Demand Forecasting Report* (Technical Report No. 5) provides information on future year traffic forecasts within the project limits. Five different traffic scenarios were modeled using the SANDAG Series 10 Transportation Model to produce future year traffic forecasts, as follows:

1. *No-Build (Year 2030).*
2. *10+4 without Direct Access Ramps (Year 2030).*
3. *10+4 with Direct Access Ramps (Year 2030).*
4. *8+4 with Direct Access Ramps (Year 2030).*
5. *10+4 with Direct Access Ramps (Year 2015).*

SANDAG's Series 10 Transportation Model does not differentiate the design details for buffer or barrier alternatives to generate the forecasted traffic volumes. For example, the 2030-year 10+4 alternative with DAR traffic forecast is used for both buffer and barrier versions. Both barrier and buffer alternatives propose the same HOV/managed lane ingress and egress points and DAR locations.

The 2030-year traffic forecasts for the proposed alternatives (No Build, 8+4, and 10+4) have an average corridor demand range of 54% to 74% greater than the existing volumes. A list of forecasted 2030-year I-5 ADT at select locations along the Project corridor compared to the existing conditions is presented below.

Table 4.2 I-5 Annual Average Daily Traffic (AADT)

Location		Existing/2006 ADT	2030 No Build ADT	2030 8+4 ADT	2030 10+4 ADT
From	To				
La Jolla Village Drive	Genesee Ave	169,900	249,590	255,250	262,150
I-5 / I-805 Junction	Carmel Valley Road	281,400	412,640	425,750	434,250
Via de la Valle	Lomas Santa Fe	203,600	326,940	342,950	354,250
Encinitas Blvd	Leucadia Blvd	190,500	294,300	315,150	326,850
Palomar Airport Road	Cannon Road	188,500	290,100	309,850	320,350
SR-78	Oceanside Blvd	192,900	303,800	319,150	323,300
Mission Ave	SR-76	156,800	246,500	258,000	259,200

The No Build alternative demand on the I-5 freeway is 4% to 11% less than the 10+4 alternative and 1% to 8% less than the 8+4 alternative. The No Build scenario shows less demand than the 2030-year Build alternatives as a result of trip diversion to roadways that parallel the I-5 corridor.

The 2030-year traffic scenario for the 8+4 alternative with DAR has a 16% greater average ADT in the HOV lanes than the 2030-year traffic scenario for the 10+4 alternative with DAR. The result is attributed to having a more congested mainline on I-5, thereby causing more use of the HOV/managed lanes. The total corridor ADT (main line, HOV/managed lanes, and bypass) for the 8+4 alternative is about 3% less than the 10+4 alternative

4.3 Vehicle-Miles Traveled (VMT)

Vehicle-miles traveled (VMT) is the average traffic in a freeway segment multiplied by the total distance of that freeway segment. Existing VMT values from PeMS were compared with forecasted VMT values for the year 2030 within the project limits from La Jolla Village Drive to Harbor Drive for a total distance of 27 miles. VMT values for the year 2030 were estimated using the Regional Travel Demand Model.

Figure 4.1 compares the VMT values from PeMS in the northbound and southbound directions for existing conditions and the forecasted 2030 conditions for the no-build, 8+4, and 10+4 alternatives. In the northbound direction, the VMT for existing conditions, no-build, 8+4, and 10+4 alternatives are approximately 2,700,000, 3,459,000, 3,600,000, and 3,770,000, respectively. In the southbound direction, the VMT for existing conditions, no-build, 8+4, and 10+4 alternatives are approximately 2,740,000, 3,590,000, 3,722,000, and 3,864,000, respectively. The total existing VMT in the northbound and southbound directions for existing conditions, no-build, 8+4, and 10+4 alternatives are approximately 5,440,000, 7,049,000, 7,322,000, and 7,634,000, respectively.

The forecasted VMT for the year 2030 will increase for the no-build and build alternatives when compared to the existing VMT. The VMT increases incrementally between these alternatives due to the additional forecasted traffic that more lanes can provide.

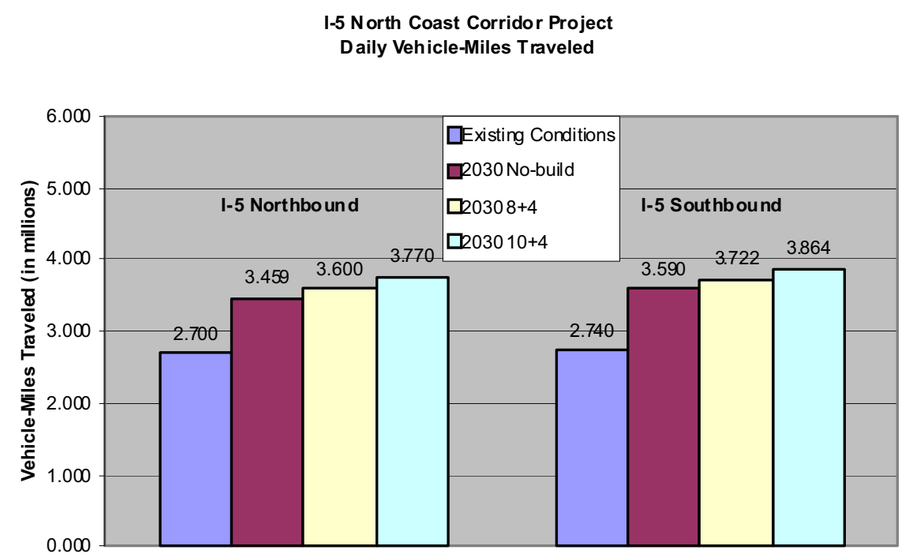


Figure 4.1 I-5 Northbound and Southbound Vehicle-Miles Traveled (VMT).

5 Existing and Forecasted Main Lanes Travel Times and Delay

FREQ12 is a macroscopic and deterministic traffic modeling computer program developed by Dr. Adolf May, Professor Emeritus of Civil Engineering, through the Institute of Transportation Studies at the University of California, Berkeley. FREQ12 version 3.01 was applied to generate hypothetical performance measures for the I-5 within the Project limits for the "No Build", "8+4", and "10+4" conditions in various future years. The program contains a method for estimating and illustrating the location, extent, and duration of traffic bottlenecks in freeway systems based on forecasted traffic volumes and hypothetical geometric configurations in similar fashion to PeMS illustration of aggregated speed plots for existing or historical traffic conditions. The program also creates graphical illustrations and numerical outputs of predicted performance measures, bottleneck locations, and queuing patterns. The program allows for future growth scenarios and geometric improvement designs, and permits analysis of HOV facilities and multiple bottleneck over-saturated flow conditions. FREQ12 utilizes the speed-flow relations found in the 2000 HCM. FREQ12 does not create a dynamic micro-simulation or animation of traffic flow, nor does account for accidents or special events. The types of performance measures that can be generated by FREQ12 include:

- Future Travel Time (average, per time period, etc)
- Future Delay (total, per vehicle average, per time period, etc)
- Future Queuing (lengths, locations, durations)

PeMS is used to assess freeway performance for the existing and historical traffic conditions. PeMS does not assess freeway performance in future years. FREQ12 is used to assess the freeway performance within the Project limits for the "No Build", "8+4", and "10+4" traffic conditions in various future years.

NOTE: It is expected that under actual conditions of increasing corridor delay, there would be some redistribution of traffic flow and vehicle delay to adjacent city street networks that is not quantified by the FREQ model. Under conditions of very high corridor delay (>25,000 veh-hrs) the FREQ model will at the least provide a qualitative comparison between the different alternatives being modeled.

For the purposes of this modeling project, equivalent traffic demand volumes were applied to each respective alternative for each future year being modeled. This was done to evaluate hypothetical performance measures for each alternative configuration under identical traffic demand conditions during that year.

It was assumed that some degree of mode shift will occur due to the differing geometric and delay conditions of each alternative. For the purposes of the FREQ model, different baseline HOV occupancy percentages for weekday peak hours were utilized for each alternative per the following schedule:

Alternative	2+ HOV %
Existing Conditions (2006):	12%
10+4 Alternative (2030):	14%
8+4 Alternative (2030):	17%
No Build Alternative (2030):	20%

PeMS existing traffic data was used to calibrate FREQ12 models. Figures 5.1 and 5.8 illustrate existing traffic data extracted from PeMS, which is then used to calibrate FREQ12 models. Traffic data such as weekday delay, travel time, traffic queuing, and duration of congestion generated by FREQ12 for the existing traffic conditions and proposed design alternatives at various future years are presented in Figures 5.2 through 5.7 and 5.9 through 5.15.

Figures 5.1 to 5.15 illustrate the following information:

Northbound I-5:

Existing conditions (Year 2006): For the purpose of calibration, FREQ12 calculated the average travel time, the average weekday delay, and the duration of congestion for the existing conditions. The FREQ12 results in figure 5.2 are consistent with PeMS data depicted in Figure 5.1.

The average travel time to travel the project area in the northbound direction is 25 minutes in the AM peak period and 38 minutes in the PM peak period, with average speeds of 65 and 43 mph, respectively.

The average weekday delay for the northbound direction is about 3,500 vehicle hours. The duration of congestion is about 5 hours in the PM peak period (no congestion in the AM peak period) with a queue length of about 4.5 miles.

No Build Alternative (Year 2015): The predicted average travel time to travel the project area in the northbound direction would be 29 minutes in the AM peak period and 61 minutes in the PM peak period with average speeds of 56 and 26 mph, respectively.

The average weekday delay for the northbound direction would be about 12,200 vehicle hours. The duration of congestion would be about 4 hours in the AM peak period and 6 hours in the PM peak period with queue lengths of 2 and 16 miles, respectively.

No Build Alternative (Year 2030): The predicted average travel time to travel the project area in the northbound direction would be 35 minutes in the AM peak period and 120 minutes in the PM peak period with average speeds of 46 and 13 mph, respectively.

The average weekday delay for the northbound direction would be about 35,000 vehicle hours. The duration of congestion would be about 4.5 hours in the AM peak period and 9 hours in the PM peak period with queue lengths of 2 and 23 miles, respectively.

8+4 Alternative (Year 2015): The predicted average travel time to travel the project area in the northbound direction would be 25 minutes in the AM peak period and 30 minutes in the PM peak period with average speeds of 65 and 54 mph, respectively.

The average weekday delay for the northbound direction would be about 250 vehicle hours. The duration of congestion would be about 3 hours in the PM peak period (no congestion in the PM peak period) with a queue length of 1 mile.

8+4 Alternative (Year 2030): The predicted average travel time to travel the project area in the northbound direction would be 26 minutes in the AM peak period and 65 minutes in the PM peak period with average speeds of 62 and 25 mph, respectively.

The average weekday delay for the northbound direction would be about 14,500 vehicle hours. The duration of congestion would be about 7 hours in the PM peak period (no congestion in the AM peak period) with a queue length of about 7 miles.

10+4 Alternative (Year 2015): The predicted average travel time to travel the project area in the northbound direction would be 24 minutes in the AM and PM peak periods with an average speed of 67 mph. There is no predicted congestion in the northbound direction (there is no Time-Space-Speed plot for 10+4 Alternative in the Year 2015).

10+4 Alternative (Year 2030): The predicted average travel time to travel the project area in the northbound direction would be 25 minutes in the AM peak period and 30 minutes in the PM peak period with average speeds of 65 and 54 mph, respectively.
The average weekday delay for the northbound direction would be about 200 vehicle hours. The duration of congestion would be about 3 hours in the PM peak period (no congestion in the AM peak period) with a queue length of about 1 mile.

Southbound I-5:

Existing conditions (Year 2006): For the purpose of calibration, FREQ12 calculated the average travel time, the average weekday delay, and the duration of congestion for the existing conditions. The FREQ12 results in figure 5.9 are consistent with PeMS data depicted in figure 5.8.

The average travel time to travel the project area in the southbound direction is 41 minutes in the AM peak period and 30 minutes in the PM peak period, with average speeds of 40 and 54 mph, respectively.

The average weekday delay for the southbound direction is 5,700 vehicle hours. The duration of congestion is about 5 hours in the AM peak period and 5 hours in the PM peak period with a queue length of about 5.5 miles.

No Build Alternative (Year 2015): The predicted average travel time to travel the project area in the southbound direction would be 53 minutes in the AM peak period and 88 minutes in the PM peak period with average speeds of 31 and 18 mph, respectively
The average weekday delay for the southbound direction would be about 36,000 vehicle hours. The duration of congestion would be about 5.5 hours in the AM peak period and 9 hours in the PM peak period with queue lengths of about 12 and 16.5 miles, respectively.

No Build Alternative (Year 2030): The predicted average travel time to travel the project area in the southbound direction would be 90 minutes in the AM peak period and 120 minutes in the PM peak period with average speeds of 18 and 13 mph, respectively.

The average weekday delay for the southbound direction would be about 80,000 vehicle hours. The duration of congestion would be about 5.5 hours in the AM peak period and 10 hours in the PM peak period with a queue length of about 19 and 25 miles, respectively.

8+4 Alternative (Year 2015): The predicted average travel time to travel the project area in the southbound direction would be 28 minutes in the AM peak period and 25 minutes in the PM peak period with average speeds of 58 and 65 mph, respectively.

The average weekday delay for the southbound direction would be about 450 vehicle hours. The duration of congestion would be about 3 hours in the AM peak period (no congestion in the PM peak period) with a queue length of about 2 miles.

8+4 Alternative (Year 2030): The predicted average travel time to travel the project area in the southbound direction would be 63 minutes in the AM peak period and 37 minutes in the PM peak period with average speeds of 26 and 44 mph, respectively.
The average weekday delay for the southbound direction would be about 20,200 vehicle hours. The duration of congestion would be about 5.5 hours in the AM peak period and 7 hours in the PM peak period with a queue length of about 21 miles.

10+4 Alternative (Year 2015): The predicted average travel time to travel the project area in the southbound direction would be 25 minutes in the AM peak period and 24 minutes in the PM peak period with average speeds of 65 and 67 mph, respectively.

The average weekday delay for the southbound direction would be about 50 vehicle hours. The duration of congestion would be about 1.5 hours in the AM peak period (no congestion in the PM peak period) with a queue length of about 0.5 mile.

10+4 Alternative (Year 2030): The predicted average travel time to travel the corridor in the southbound direction would be 35 minutes in the AM peak period and 30 minutes in the PM peak period with average speeds of 46 and 54 mph, respectively.

The average weekday delay for the southbound direction would be about 3,700 vehicle hours. The duration of congestion would be about 4 hours in the AM peak period and 4 hours in the PM peak period with queue lengths of about 4 and 6.5 miles, respectively.

Figure 5.1 I-5 NB In Project Area – PeMS Aggregated Speed Plot PM 28.0 – 55.0 November 16, 2006

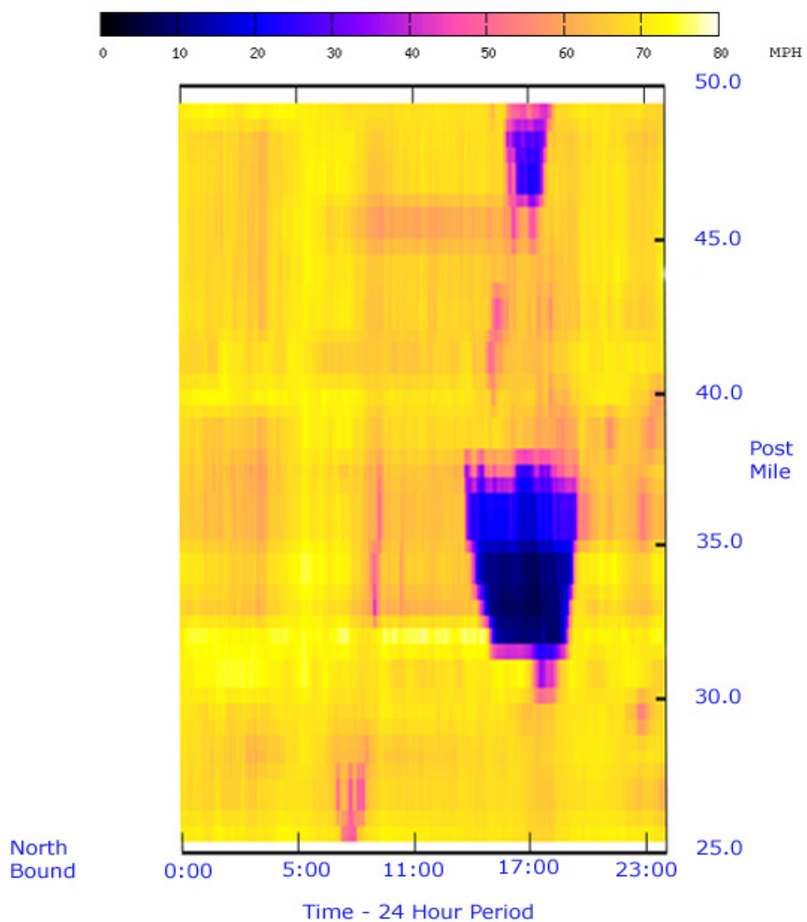


Figure 5.2 I-5 Northbound Year 2007 "Existing Conditions" FREQ12 Time-Space-Speed Diagram

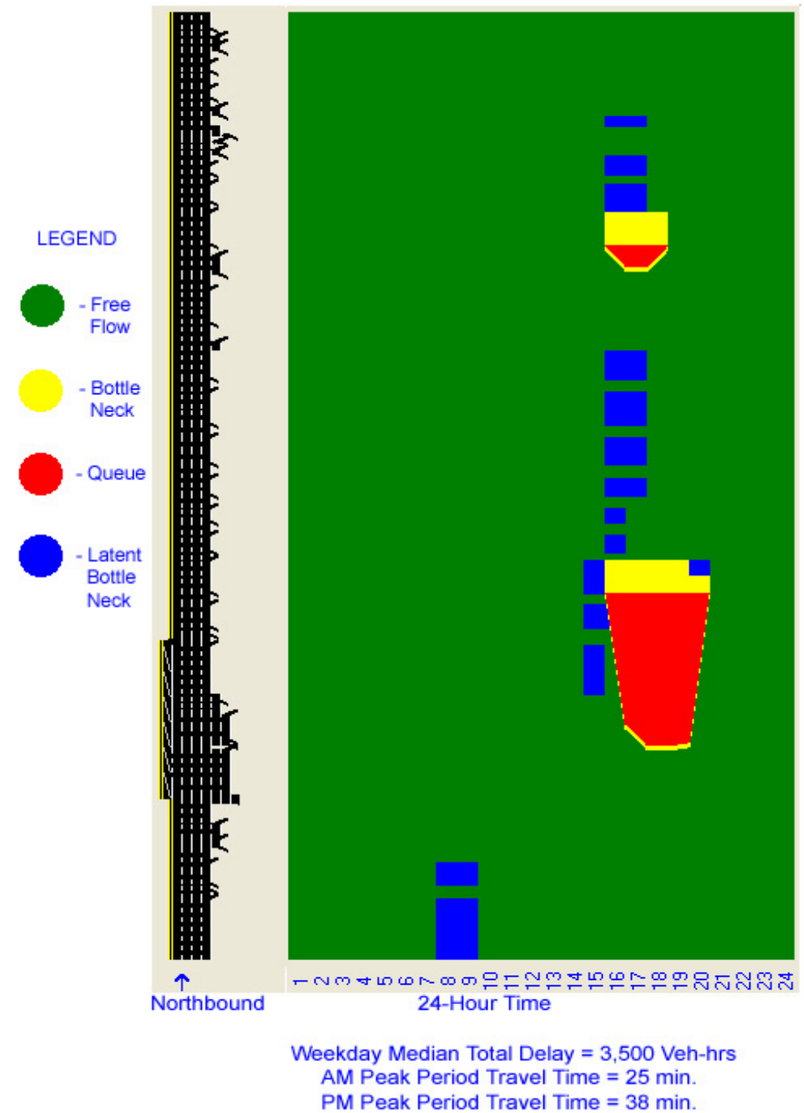
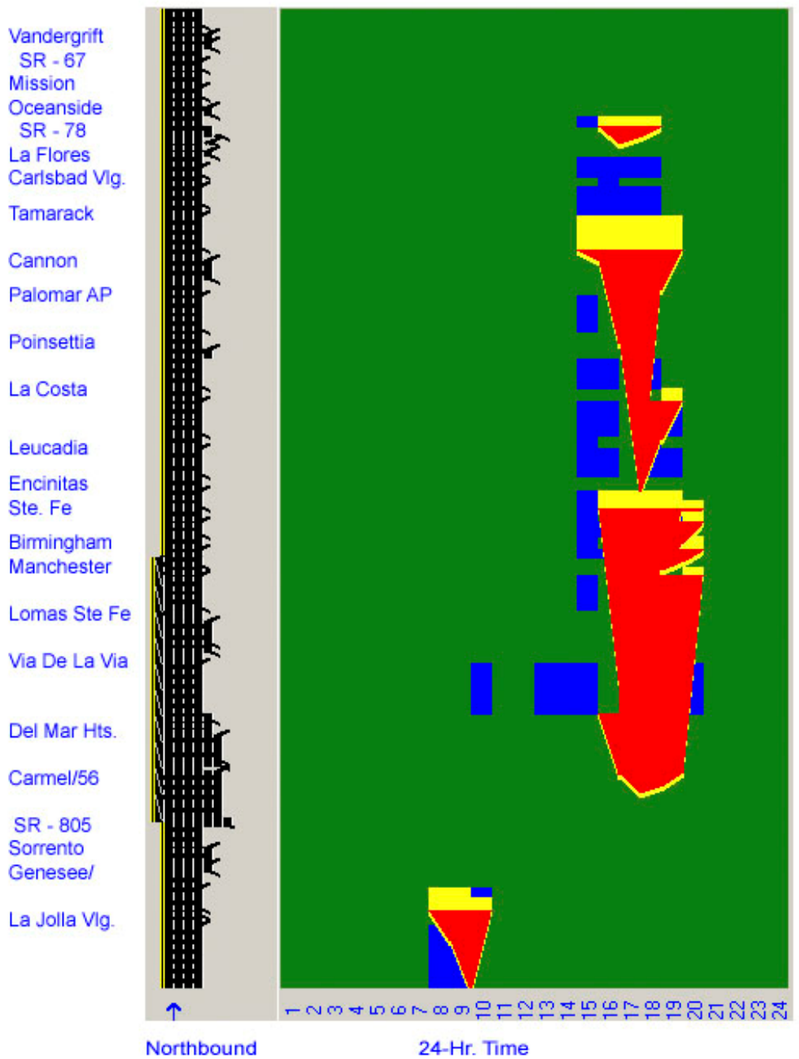
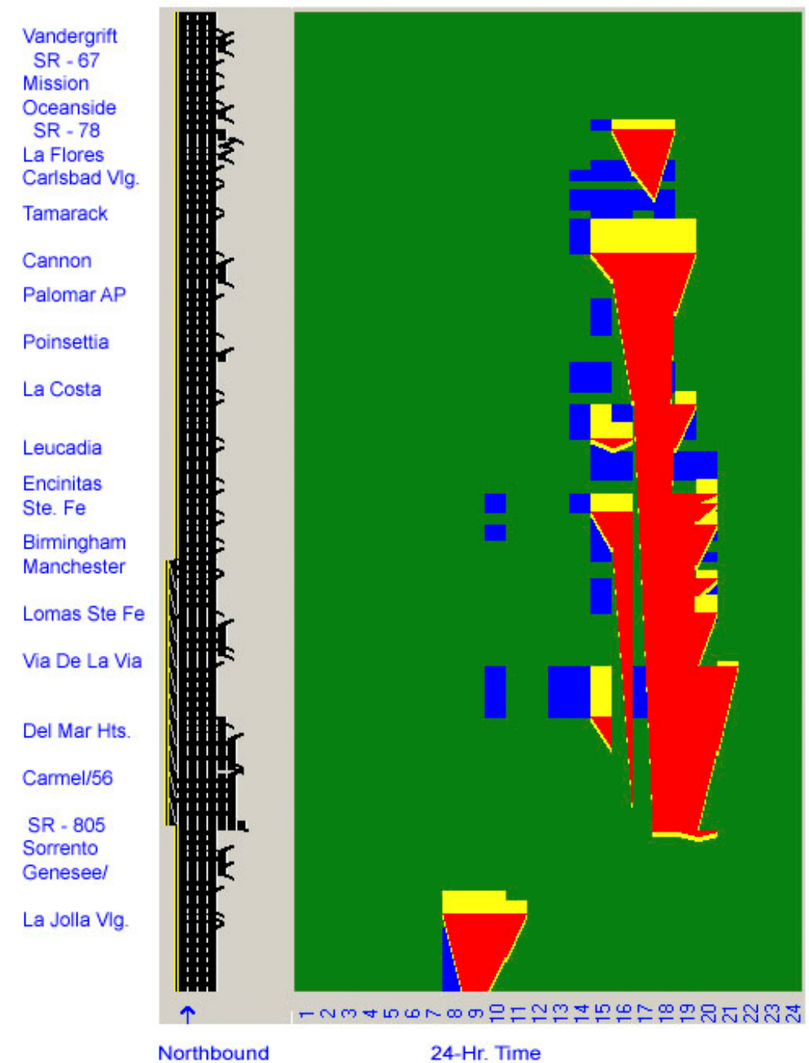


Figure 5.3 I-5 Northbound Year 2015 "No Build Alternative"
FREQ12 Time-Space-Speed Diagram



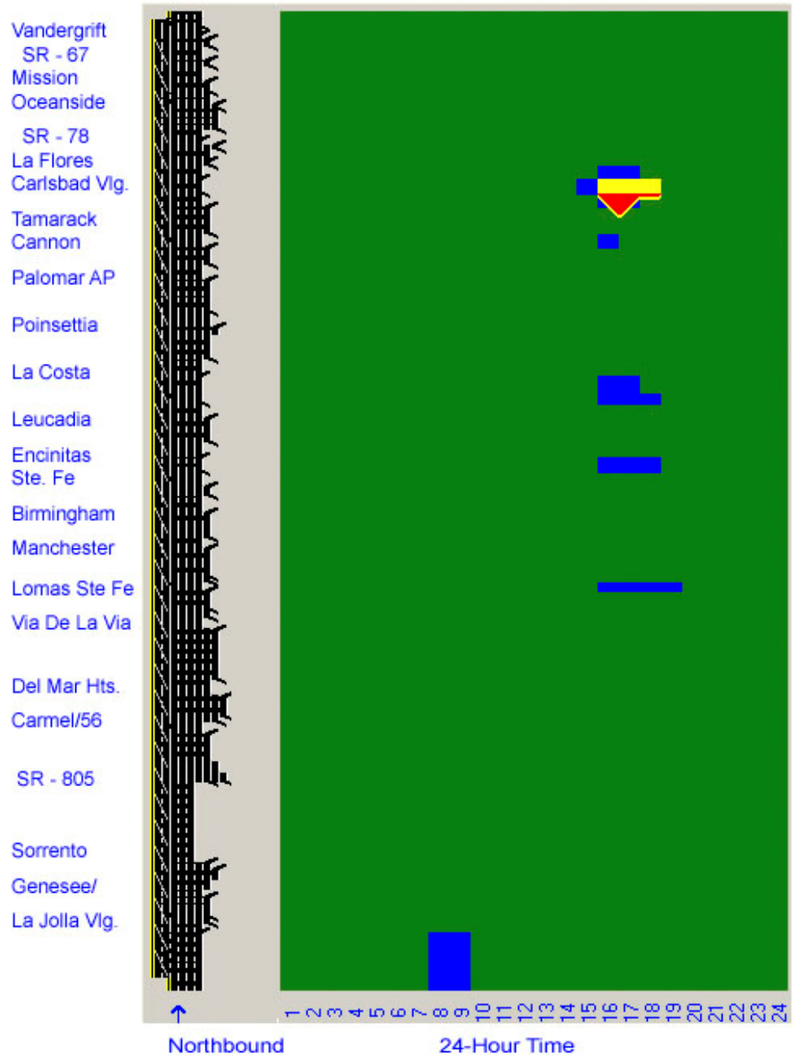
Weekday Median Delay = 7,000 Veh-hrs
AM Peak Period Travel Time = 28 min.
PM Peak Period Travel Time = 52 min.

Figure 5.4 I-5 Northbound Year 2030 "No Build Alternative"
FREQ12 Time-Space-Speed Diagram



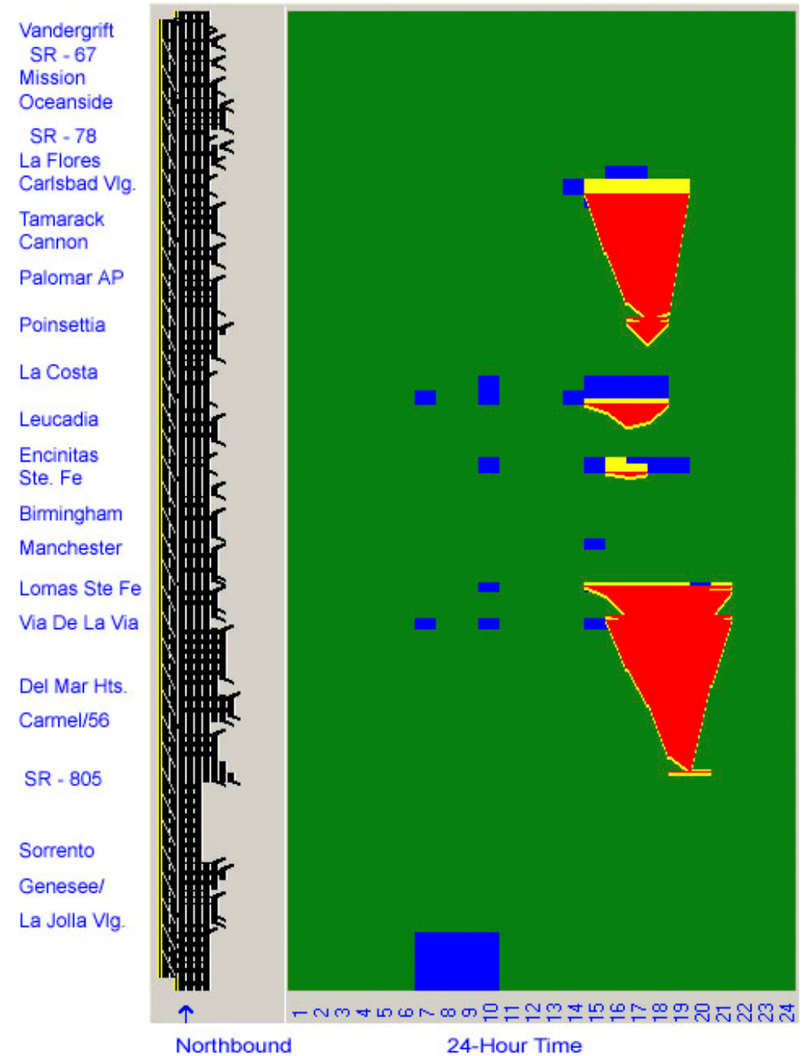
Weekday Median Delay = 13,700 Veh-hrs
AM Peak Period Travel Time = 29 min.
PM Peak Period Travel Time = 67 min.

Figure 5.5 I-5 Northbound Year 2015 "8+4 Alternative"
FREQ12 Time-Space-Speed Diagram



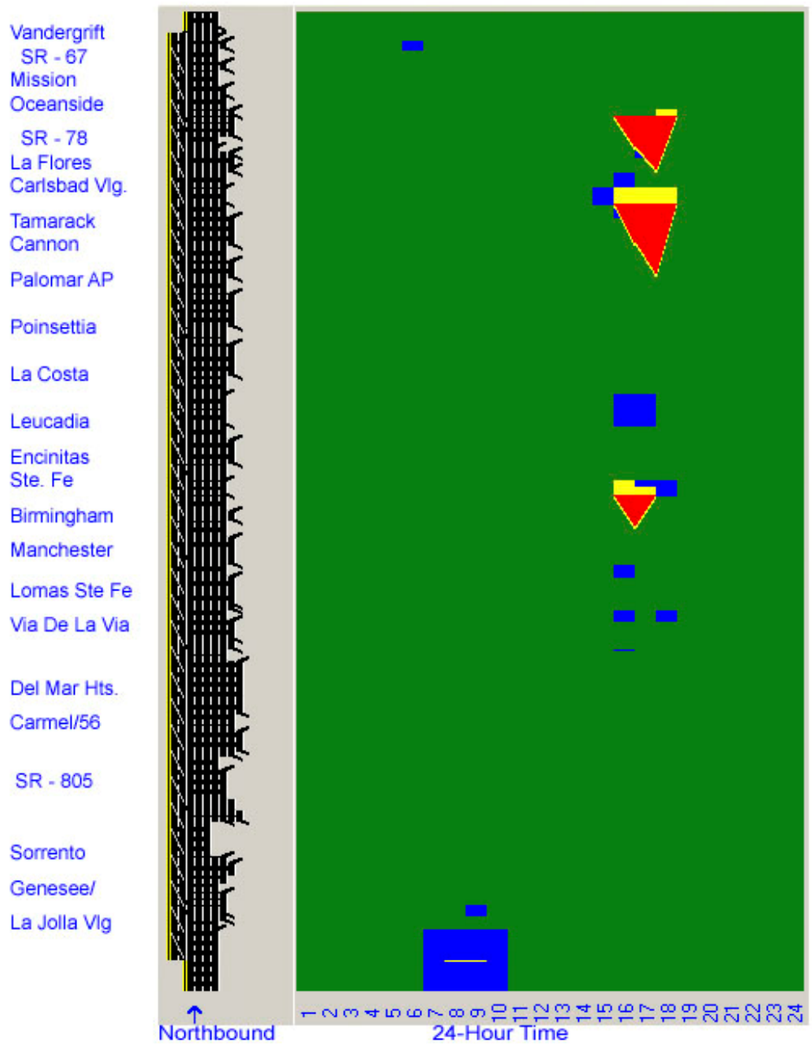
Weekday Median Delay = 50 Veh-Hrs
AM Peak Period Travel Time = 28 min.
PM Peak Period Travel Time = 29 min.

Figure 5.6 I-5 Northbound Year 2030 "8+4 Alternative"
FREQ12 Time-Space-Speed Diagram



Weekday Median Delay = 9,600 Veh-Hrs
AM Peak Period Travel Time = 29 min.
PM Peak Period Travel Time = 50 min.

Figure 5.7 I-5 Northbound Year 2030 "10+4 Alternative"
FREQ12 Time-Space-Speed Diagram



Weekday Median Delay = 600 Veh-Hrs
AM Peak Period Travel Time = 26 min.
PM Peak Period Travel Time = 30 min.

Figure 5.8 I-5 SB In Project Area – PeMS Aggregated Speed Plot
2nd Quarter of 2007

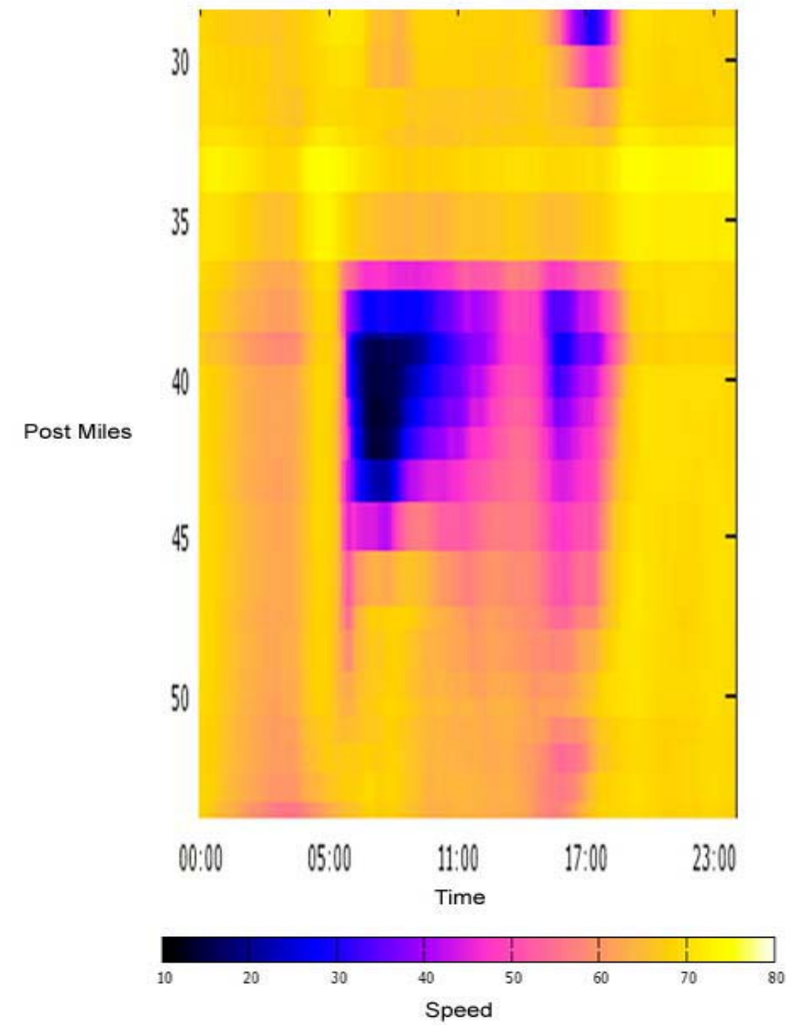
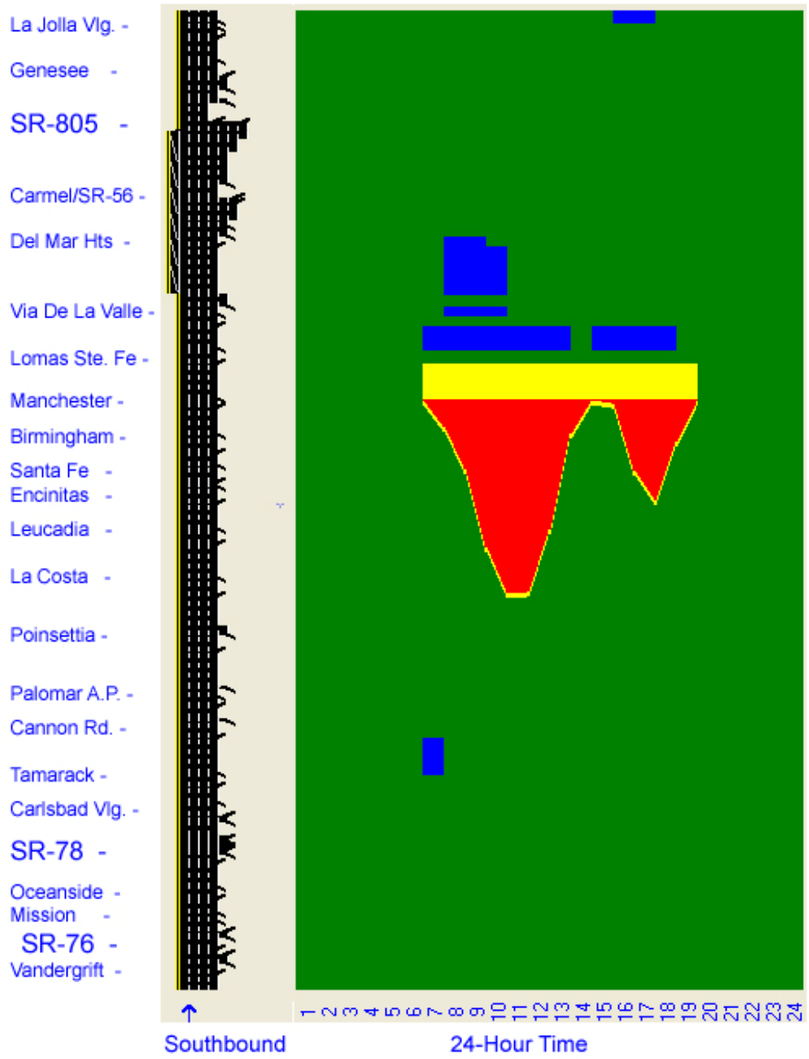
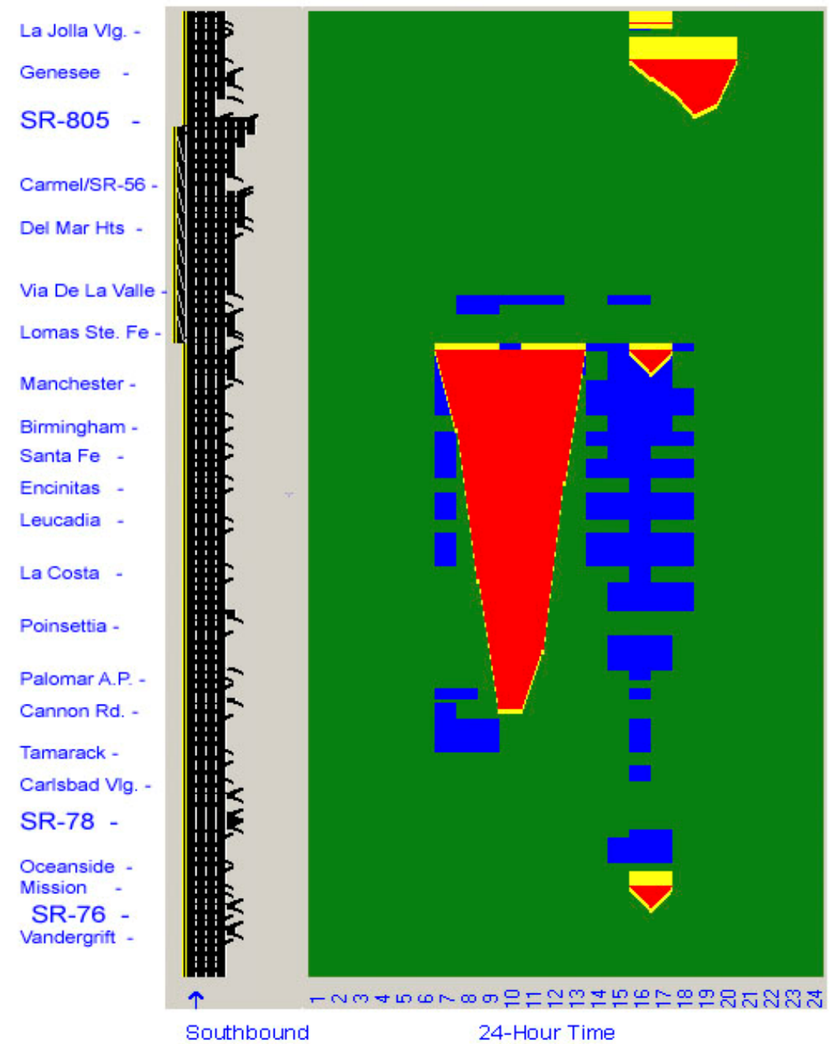


Figure 5.9 I-5 Southbound Year 2007 "Existing Conditions" FREQ12 Time–Space-Speed Diagram



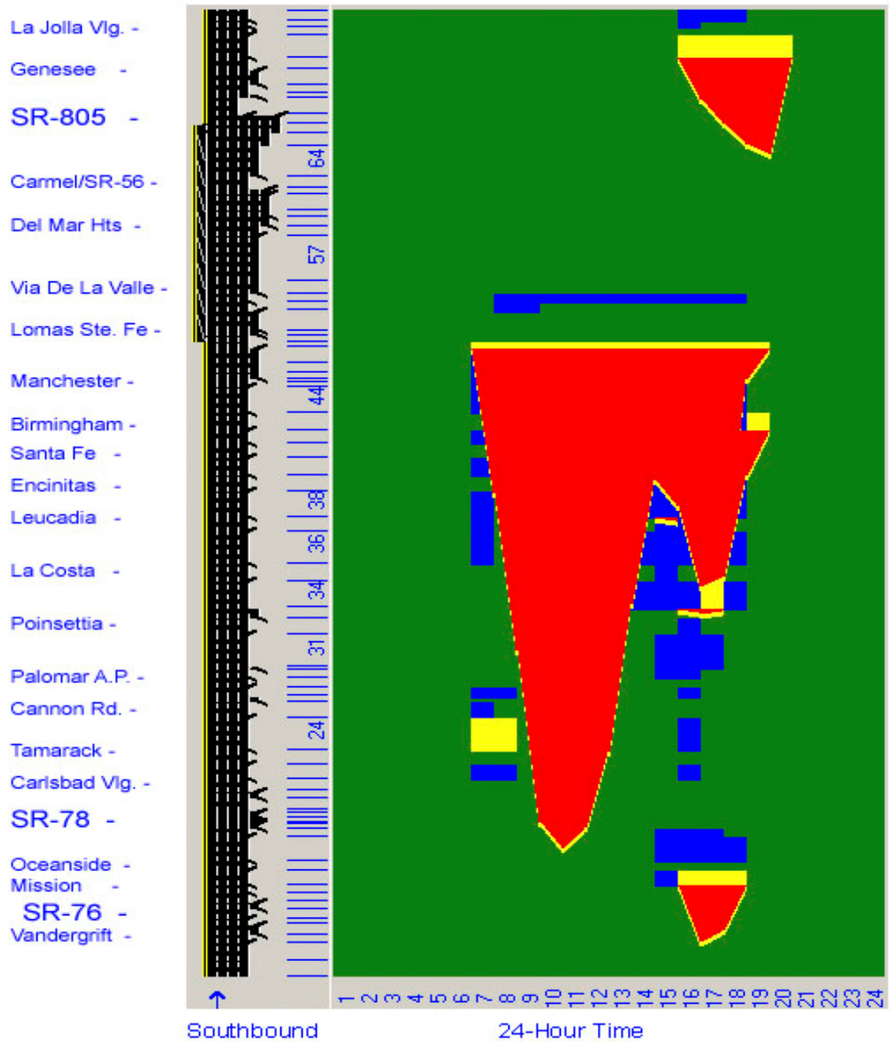
Weekday Median Delay = 4,700 Veh-hrs
AM Peak Period Travel Time = 41 min.
PM Peak Period Travel Time = 30 min.

Figure 5.10 I-5 Southbound Year 2015 "No Build Alternative" FREQ12 Time-Space Speed Diagram



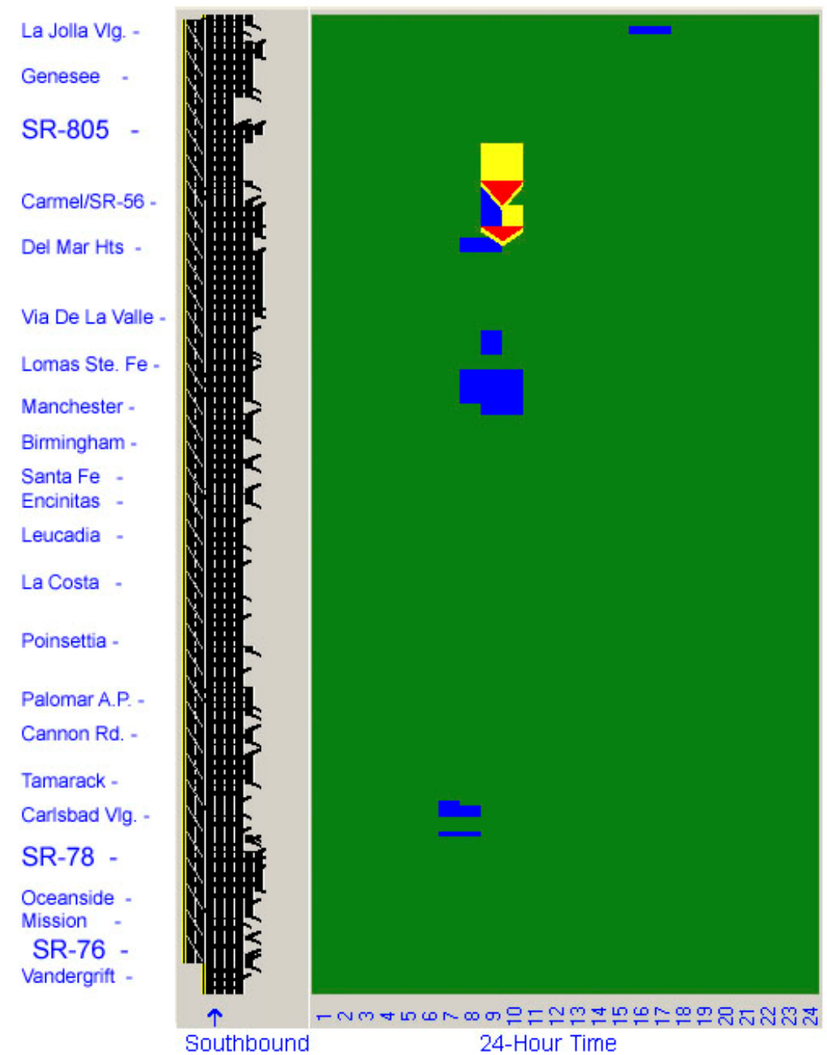
Weekday Median Delay = 5,200 Veh-hrs
AM Peak Period Travel Time = 43 min.
PM Peak Period Travel Time = 31 min.

Figure 5.11 I-5 Southbound Year 2030 "No Build Alternative"
FREQ12 Time-Space Speed Diagram



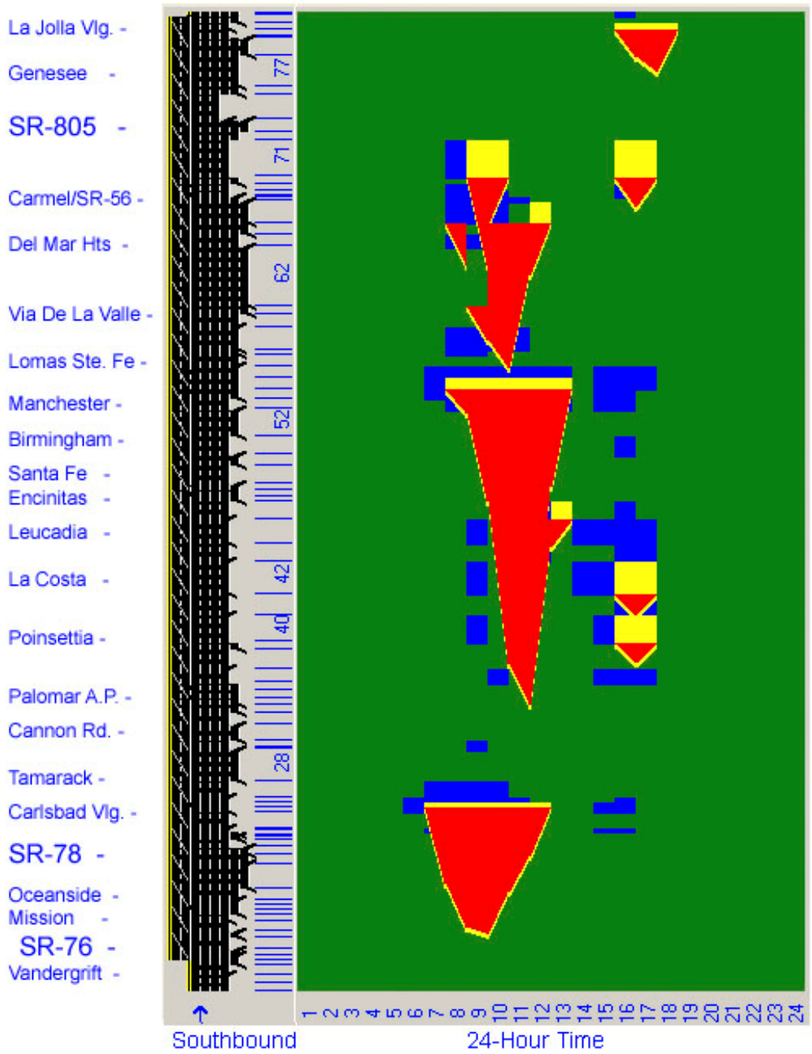
Weekday Median Delay = 14,000 Veh-hrs
AM Peak Period Travel Time = 53 min.
PM Peak Period Travel Time = 48 min.

Figure 5.12 I-5 Southbound Year 2015 "8+4 Alternative"
FREQ12 Time-Space Speed Diagram



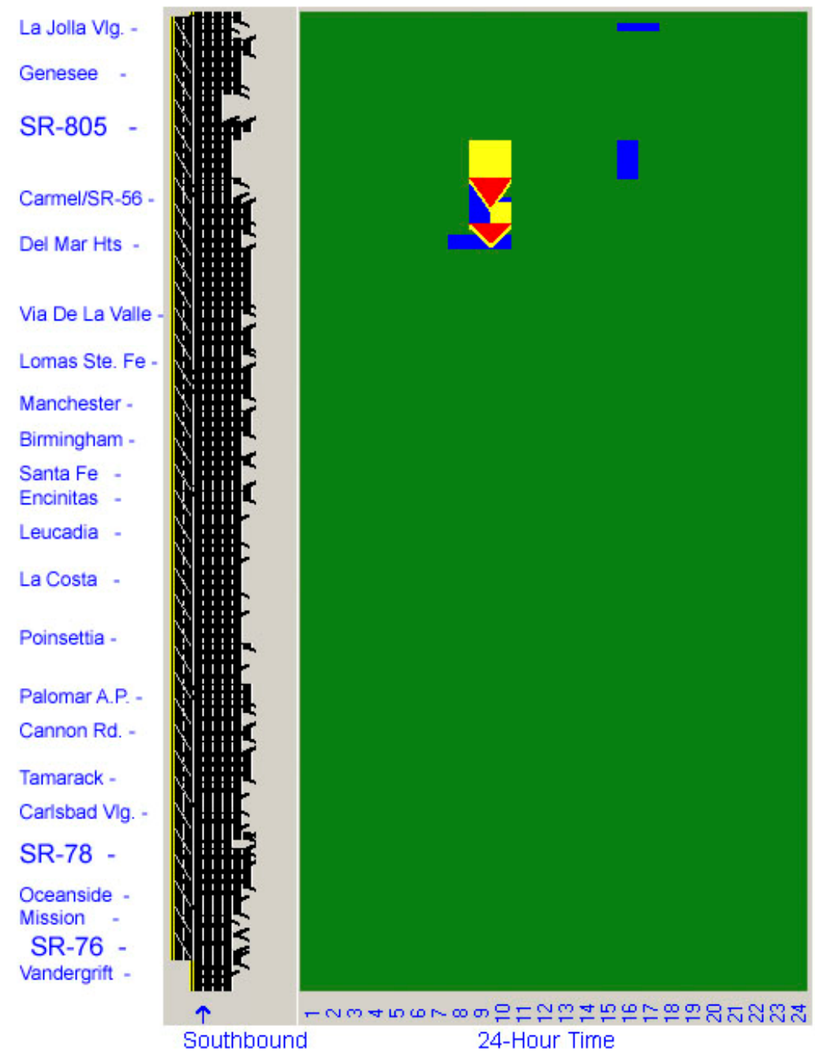
Weekday Median Delay = 100 Veh-hrs
AM Peak Period Travel Time = 26 min.
PM Peak Period Travel Time = 25 min.

Figure 5.13 I-5 Southbound Year 2030 "8+4 Alternative"
FREQ12 Time-Space Speed Diagram



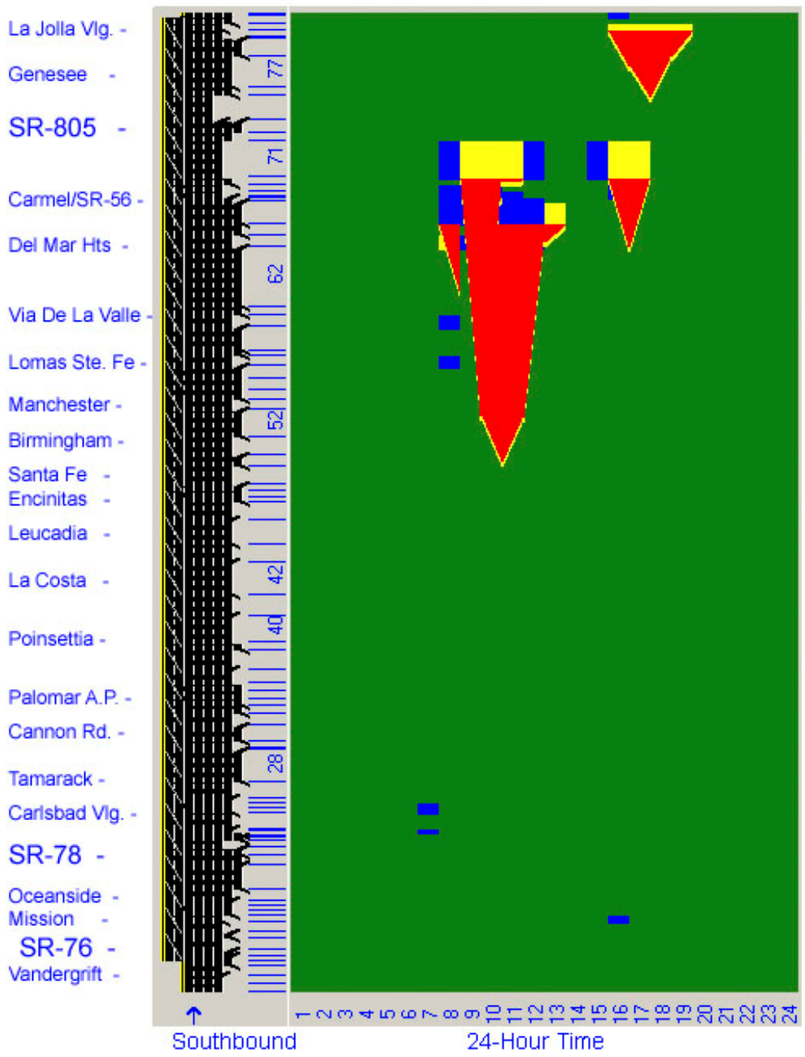
Weekday Median Delay = 8,000 Veh-hrs
AM Peak Period Travel Time = 47 min.
PM Peak Period Travel Time = 29 min.

Figure 5.14 I-5 Southbound Year 2015 "10+4 Alternative"
FREQ12 Time-Space Speed Diagram



Weekday Median Delay = 100 Veh-hrs
AM Peak Period Travel Time = 26 min.
PM Peak Period Travel Time = 26 min.

Figure 5.15 I-5 Southbound Year 2030 "10+4 Alternative"
FREQ12 Time-Space Speed Diagram



5.1 Travel Time

Travel times on the general purpose lanes for each Project alternative were estimated using the traffic computer model FREQ12 version 3.01. FREQ12 version 3.01 was applied to generate hypothetical performance measures for the I-5 within the Project limits for the "No Build", "8+4", and "10+4" conditions in various future years.

Figures 5.16 through 5.19 illustrate the predicted AM and PM peak hour travel times for the corridor in the northbound and southbound directions for existing conditions and each project alternative in various years.

5.1.2 Existing Travel Time

- ***Off-Peak Periods:***

The average existing travel time to travel the project area in the northbound or southbound direction during off-peak hours and in free flow conditions is about 23 to 25 minutes, with an average speed of 65 to 70 mph.

- ***Peak Periods:***

The existing average travel time to travel the project area in the southbound direction is 44 minutes in the AM peak period and 32 minutes in the PM peak period. The existing average travel time to travel the project area in the northbound direction is 24 minutes in the AM peak period and 39 minutes in the PM peak period.

5.1.3 Future Travel Time

- ***No Build Alternative:***

In the Year 2030- No Build Alternative, the average travel time to travel the project area in the southbound direction would be 53 minutes in the AM peak period and 48 minutes in the PM peak period. The average travel time to travel the project area in the northbound direction would be 29 minutes in the AM peak period and 67 minutes in the PM peak period.

- ***8+4 Alternative:***

In the Year 2030- 8+4 Alternative, the average travel time to travel the project area in the southbound direction would be 47 minutes in the AM peak period and 29 minutes in the PM peak period. The average travel time to travel the project area in the northbound direction would be 29 minutes in the AM peak period and 50 minutes in the PM peak period.

- ***10+4 Alternative:***

In the Year 2030- 10+4 Alternative, the average travel time to travel the corridor in the southbound direction would be 35 minutes in the AM peak period and 30 minutes in the PM peak period. The average travel time to travel the project area in the northbound direction would be 27 minutes in the AM peak period and 30 minutes in the PM peak period. In the Year 2030 with the 10+4 Alternative, the average travel time to travel the project area in the northbound and southbound directions in the AM and PM peak hours would be the same as existing conditions or less, suggesting that the current conditions would possibly be maintained, and possibly improved.

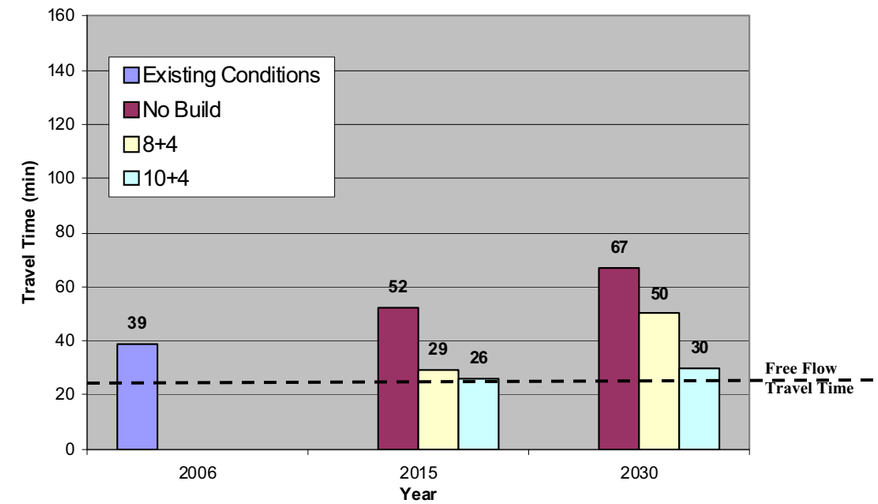


Figure 5.16 I-5 Northbound– FREQ12 General Purpose Lanes PM Peak Hour Travel Times (minutes)

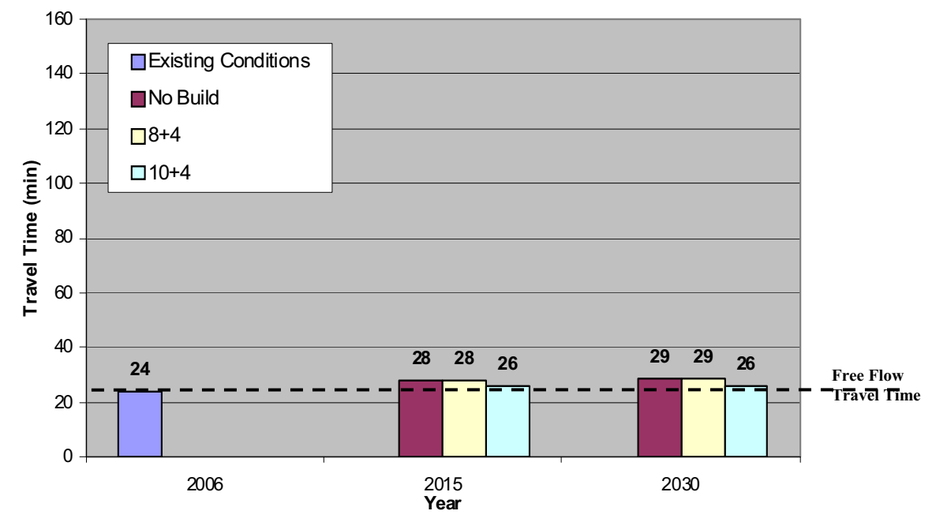


Figure 5.17 I-5 Northbound– FREQ12 General Purpose Lanes AM Peak Hour Travel Times (minutes)

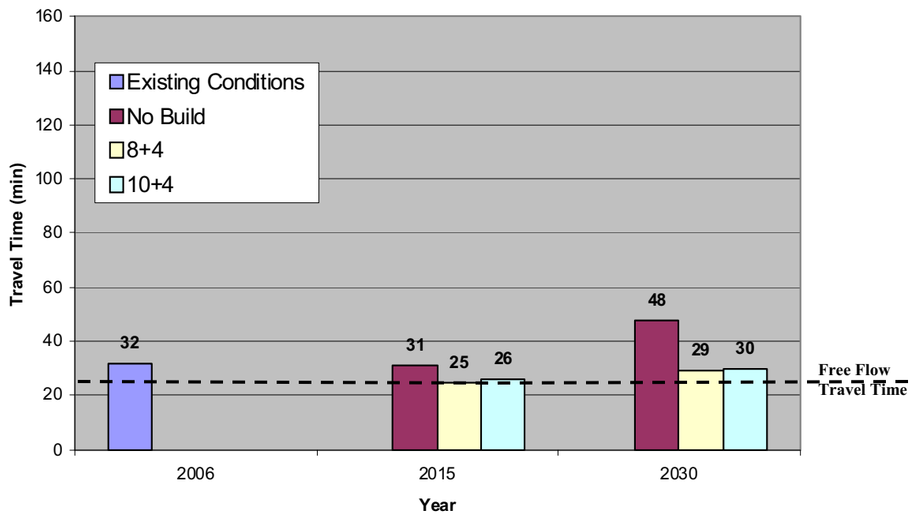


Figure 5.18 I-5 Southbound – FREQ12 General Purpose Lanes PM Peak Hour Travel Times (minutes)

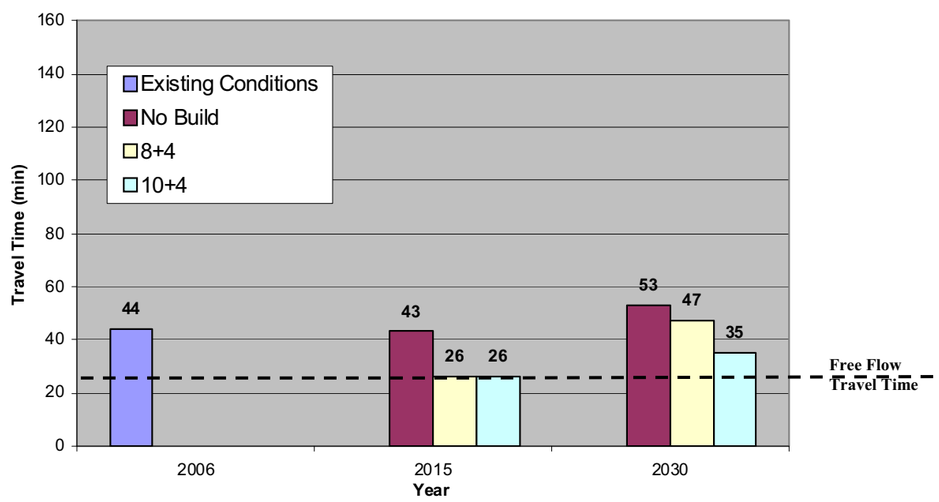


Figure 5.19 I-5 Southbound – FREQ12 General Purpose Lanes AM Peak Hour Travel Times (minutes)

5.2 Delay

Two common terms used in traffic characterization are *travel time* and *delay*. Travel time, as used in the context of this report, is the time it takes a vehicle to travel between two locations. Delay, in technical precepts, is an estimate, measured in vehicle-hours, of the difference between the actual speed (i.e. under congestion conditions) and the free-flow speed (i.e. under non-congestion conditions) of vehicles traveling the same roadway and distance. Delay under this definition is not a direct measure of time.

Total weekday delays (vehicle hours) for the existing conditions in the Year 2006 and each Project alternative in the Years 2015 and 2030 were estimated using the traffic computer model FREQ12 version 3.01.

The total weekday delay for existing conditions in the northbound and southbound directions are 3500 and 4200 vehicle hours, respectively. In the year 2030-No Build Alternative the predicted total weekday delay in the northbound would be 13,700 and the total weekday delay for the southbound direction would be 14,000 vehicle hours. In the year 2030-8+4 Alternative the predicted total weekday delay in the northbound and southbound directions would be 9,600 and 8,000 vehicle hours, respectively. In the year 2030 10+4 the predicted total weekday delay in the northbound and southbound directions would be 600 and 3,700 vehicle hours, respectively. Figures 14 and 15 indicate that with the implementation of 10+4 Alternative, in the Year 2030 the existing conditions would be maintained and possibly improved.

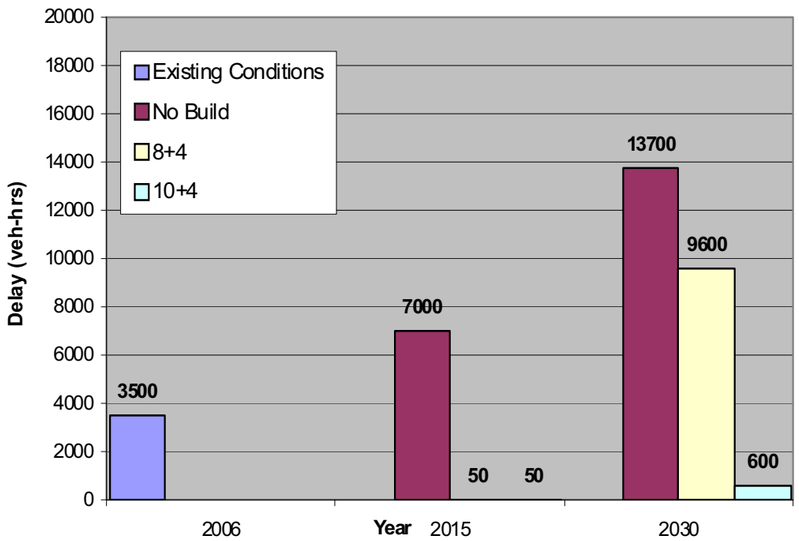


Figure 5.20 I-5 Northbound Weekday Daily Vehicle-Hours of Delay

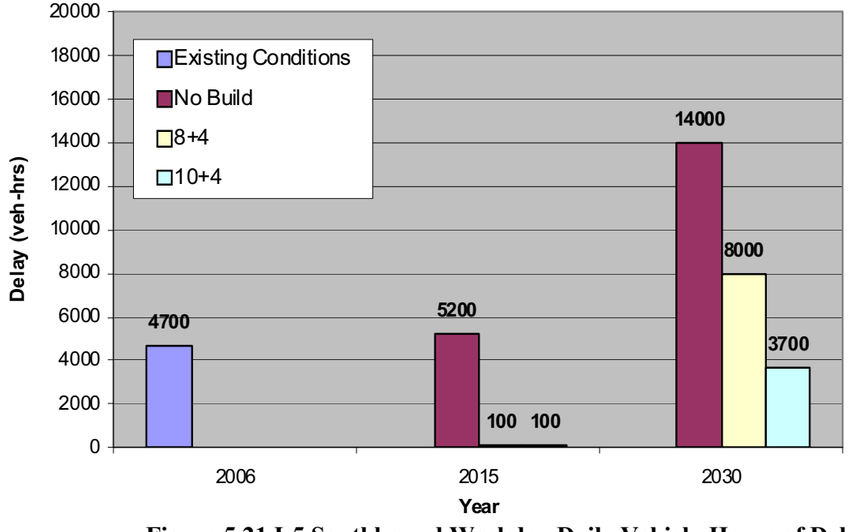


Figure 5.21 I-5 Southbound Weekday Daily Vehicle-Hours of Delay

5.2.1 Duration of Congestion

The duration of congestion for the existing conditions and each Project alternative in the Years 2015 and 2030 were estimated using the traffic computer model FREQ12 version 3.01.

Tables 5.1 and 5.2 list the predicted duration of congestion for the corridor in the northbound and southbound directions for the existing conditions and each project alternative in various years. The duration of congestion for the existing conditions in the northbound direction is about 5 hours in the PM peak hours (no congestions in the AM peak hours). In the southbound direction the duration of congestion is about 5 hours in the AM peak hours and no congestions in the PM peak hours. In the Year 2030 with No Build Alternative, the duration of congestion in the northbound direction would be about 3.5 hours in the AM peak hours and 6 hours in the PM peak hours. The duration of congestion in the southbound direction would be about 6 hours in the AM peak hours and 7 hours in the PM peak hours. In the Year 2030 with the 10+4 Alternative, the duration of congestion in the northbound direction would be about 2.5 hours in the PM peak hours (no predicted congestion in the AM peak hours). The duration of congestion in the southbound direction would be about 5 hours in the AM peak hours and 2 hours in the PM peak hours, which indicates that with the implementation of the 10+4 Alternative the existing conditions would be maintained and possibly improved in the Year 2030.

Table 5.1 I-5 Northbound AM and PM Peak Hour Congestion

Alternative	Year	AM PEAK HOUR			PM PEAK HOUR		
		Congestion		Duration (hrs)	Congestion		Duration (hrs)
		Begin	End		Begin	End	
Existing Conditions	2006	--	--	0	14:00	19:00	5
No Build	2015	7:30	10:00	2.5	14:00	19:00	5
	2030	7:30	11:00	3.5	14:00	20:00	6
8+4	2015	--	--	0	16:00	17:00	1
	2030	--	--	0	14:00	20:00	6
10+4	2015	--	--	0	--	--	0
	2030	--	--	0	16:00	18:30	2.5

Table 5.2 I-5 Southbound AM and PM Peak Hour Congestion

Alternative	Year	AM PEAK HOUR			PM PEAK HOUR		
		Congestion		Duration (hrs)	Congestion		Duration (hrs)
		Begin	End		Begin	End	
Existing Conditions	2006	6:30	11:30	5	--	--	0
No Build	2015	6:30	12:00	6.0	15:00	19:30	4.5
	2030	6:30	12:00	6.0*	12:00	19:00	7
8+4	2015	8:00	9:00	1	--	--	0
	2030	6:30	12:00	5.5	16:00	18:00	2
10+4	2015	8:30	10:00	1	--	--	0
	2030	7:00	12:00	5	16:00	18:00	2

- Congestion would continue through the AM and PM peak hours

6 Level of Service Analysis

Level of Service (LOS) is a qualitative measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. Six LOS are defined, with letters designating each level, from A to F, with LOS A representing the best operating conditions and LOS F the worst. Each LOS represents a range of operating conditions and the driver's perception of those conditions. Safety is not included in the measures that establish service levels. Figure 6.1 provides a general description of each LOS.

Main lane LOS was calculated for the existing conditions and each project alternative in the future using the HCS2000 version 4.1d software program, developed by McTrans. The program utilizes the methodology contained in the Highway Capacity Manual (HCM) for a Basic Freeway Segment to calculate results. The northbound and southbound directional LOS for both the AM and PM peak hours for the Project (existing conditions and all proposed alternatives) are summarized in Tables 6.1 and 6.2, respectively.

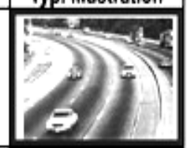
	Definition	Typ. Illustration
A	Represents a free-flow operation. Vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream.	
B	Represents reasonably free-flow operation. The ability to maneuver within the traffic stream is slightly restricted.	
C	Represents a traffic flow with speeds near or at free-flow speed of the freeway. Ability to maneuver within the traffic stream is noticeably restricted.	
D	Represents speeds that begin to decline with increased density. Ability to maneuver within the traffic stream is noticeably limited.	
E	Represents operation at its capacity. Vehicles are closely spaced within the traffic stream and there are virtually no useable gaps to maneuver.	
F	Represents a breakdown of vehicle flow. This condition exists within queues forming behind the breakdown points.	

Figure 6.1 Level of Service (LOS) Description

Table 6.1 Northbound I-5 Estimated General Purpose Lane LOS Summary

Freeway Segment		Existing LOS		2030 No Build LOS		2030 8+4 LOS		2030 10+4 LOS		2015 10+4 LOS	
From	To	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
La Jolla Village Drive	Genesee Avenue	E	C	E	D	E	D	F	E	E	D
Genesee Avenue	Sorrento Valley Road	D	D	D	C	C	D	D	D	C	D
Sorrento Valley Road	I-5 / I-805 Junction	B	B	B	B	B	C	B	C	B	C
I-5 / I-805 Junction	Carmel Valley Road	C	C	C	C	C	C	C	D	C	C
Carmel Valley Road	Del Mar Heights Road	C	D	C	D	D	F	D	E	C	C
Del Mar Heights Road	Via de la Valle	C	D	F	F	D	F	E	F	D	F
Via de la Valle	Lomas Santa Fe	D	F	E	F	E	F	D	F	D	E
Lomas Santa Fe	Manchester Avenue	D	F	E	F	D	F	D	F	C	E
Manchester Avenue	Birmingham Drive	D	E	E	F	D	F	D	E	C	D
Birmingham Drive	Santa Fe Drive	D	E	E	E	D	F	D	E	C	D
Santa Fe Drive	Encinitas Blvd	D	E	E	E	D	F	D	E	C	D
Encinitas Blvd	Leucadia Blvd	D	F	E	F	D	F	D	E	C	D
Leucadia Blvd	La Costa Avenue	D	F	F	F	D	F	D	E	C	D
La Costa Avenue	Poinsettia Lane	D	F	F	F	D	F	D	E	C	D
Poinsettia Lane	Palomar Airport Road	D	E	F	E	D	F	D	E	C	D
Palomar Airport Road	Cannon Road	D	E	E	E	D	F	D	D	C	D
Cannon Road	Tamarack Avenue	D	F	E	F	D	F	C	E	C	D
Tamarack Avenue	Carlsbad Village Drive	D	F	D	F	D	F	C	E	C	D
Carlsbad Village Drive	Las Flores Drive	D	F	D	F	C	F	C	E	C	D
Las Flores Drive	SR-78	D	F	E	F	D	F	E	F	C	F
SR-78	California Street	C	C	D	D	D	D	E	F	D	D
California Street	Oceanside Blvd	C	C	E	E	D	E	E	F	D	D
Oceanside Blvd	Mission Avenue	D	D	E	D	D	D	E	E	D	D
Mission Avenue	SR-76	C	C	D	C	D	C	D	D	C	C
SR-76	Harbor Drive	D	C	E	C	D	C	E	C	D	C

Table 6.2 Southbound I-5 Estimated General Purpose Lane LOS Summary

Freeway Segment		Existing LOS		2030 No Build LOS		2030 8+4 LOS		2030 10+4 LOS		2015 10+4 LOS	
From	To	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
Harbor Drive	SR-76	B	C	C	D	C	D	C	D	C	C
SR-76	Mission Avenue	C	B	D	D	C	D	D	D	C	C
Mission Avenue	Oceanside Blvd	C	C	E	E	D	D	D	E	D	D
Oceanside Blvd	Cassidy Street	D	C	F	F	C	C	D	D	C	C
Cassidy Street	SR-78	D	C	F	F	E	D	F	E	D	D
SR-78	Las Flores Drive	D	C	F	F	E	D	D	D	D	C
Las Flores Drive	Carlsbad Village Drive	D	C	F	E	E	D	D	D	D	C
Carlsbad Village Drive	Tamarack Avenue	D	C	F	E	E	D	E	D	D	C
Tamarack Avenue	Cannon Road	E	D	F	F	F	F	F	D	D	C
Cannon Road	Palomar Airport Road	D	C	F	E	E	D	D	D	D	C
Palomar Airport Road	Poinsettia Lane	E	D	F	F	E	E	D	D	D	C
Poinsettia Lane	La Costa Avenue	E	D	F	F	E	E	D	D	D	D
La Costa Avenue	Leucadia Blvd	E	D	F	F	F	E	E	D	D	D
Leucadia Blvd	Encinitas Blvd	F	D	F	F	F	E	E	D	D	C
Encinitas Blvd	Santa Fe Drive	E	D	E	F	E	E	D	D	D	C
Santa Fe Drive	Birmingham Drive	E	D	E	F	E	E	D	D	D	C
Birmingham Drive	Manchester Avenue	F	D	F	F	F	E	E	D	D	C
Manchester Avenue	Lomas Santa Fe	F	E	F	F	F	F	F	E	D	D
Lomas Santa Fe	Via de la Valle	F	E	F	F	F	F	F	E	E	D
Via de la Valle	Del Mar Heights Road	E	D	E	E	F	D	F	E	F	D
Del Mar Heights Road	Carmel Valley Road	D	D	F	E	F	D	F	E	C	B
Carmel Valley Road	I-5 / I-805 Junction	D	D	F	E	E	D	F	D	C	C
I-5 / I-805 Junction	Roselle Street	C	C	D	B	B	B	D	B	D	D
Roselle Street	Genesee Avenue	D	D	E	D	D	D	E	D	D	D
Genesee Avenue	La Jolla Village Drive	C	D	C	F	D	F	F	F	D	F

According to the LOS data summarized in Table 6.1, the existing northbound traffic conditions in the AM and PM peak hours generally exhibit a LOS rating of D or better, with the exception of a few LOS ratings of F in the PM peak hour. According to the LOS data summarized in Table 6.2, the existing southbound traffic conditions exhibit generally exhibit a LOS rating of D in both the AM and PM peak hours, with the exception of a few LOS ratings of F in the AM peak hour.

In the Year 2030-No Build Alternative, the northbound traffic conditions in the AM peak hour generally exhibit LOS ratings of D and E with the exception of a few LOS ratings of F. The majority of the northbound traffic conditions in the PM peak hour exhibit a LOS rating of F. The majority of the southbound traffic conditions exhibit LOS ratings of F in the AM and PM peak hours. The year 2030 No Build scenario has a lower overall LOS in the AM and PM peak hours, when compared to the existing conditions.

In the Year 2030-8+4 Alternative, the northbound traffic conditions in the AM peak hour generally exhibit a LOS rating of D while majority of the PM peak hour exhibit a LOS rating of F (Del Mar Heights Rd to SR 78). The southbound AM and PM peak hours will be similar to the LOS ratings of the existing conditions with the exception of a few segments where the LOS ratings degrade to F. With the 8+4 Alternative, the corridor will degrade in the AM and PM peak hours when compared to the existing conditions; however the AM and PM peak hour conditions will have a better level of service when compared to the year 2030 No Build scenario.

In the Year 2030-10+4 Alternative, the LOS ratings in the AM and PM peak hours for both the northbound and southbound directions will be very similar to the LOS ratings for the existing conditions, suggesting that the current LOS would possibly be maintained, and possibly improved in a few locations.

The data in Tables 6.1 and 6.2 indicate that in the year 2030, the I-5 southbound and northbound traffic conditions and freeway operations will deteriorate in both the AM and PM peak hours if no improvements are made.

7 Interchange to Interchange Weaving Analysis

Weaving sections exist on freeways between closely spaced ramps or interchanges. They are very common on urban freeways. Weaving can be a source of lane and facility breakdown when weaving adversely affects traffic operations. A traffic weave analysis provides a theoretical assessment of potential traffic impacts and lane breakdowns between ramp junctures as vehicles enter and exit the freeway. The LOS D method (Chapter 500 of the HDM) was used to analyze interchange to interchange weaving operations for the existing conditions and the proposed alternatives for both the northbound and southbound directions during the AM and PM peak hours using the forecasted traffic volumes contained in the Traffic Demand Forecasting Report prepared by Wilson & Company and as shown in exhibits A, B, and C.

7.1 LOS D Method Analysis

The Project was analyzed for weaving between interchanges in both the AM and PM peak hours. A summary of the weaving conditions in the northbound and southbound directions for the existing conditions and the future year traffic scenarios examined by the Project are contained in Tables 7.1 and 7.2, respectively. Freeway segments with the word “over” denote a segment that failed, exceeding the LOS D weaving limits for the weaving lane(s) (1,800 vphpl) and/or the non-weaving main thru lanes (2,000 vphpl). Segments marked “under” are operating at or better than LOS D according to the LOS D method. The segment from Genesee Avenue to Del Mar Heights Road was analyzed by the LOS D method as discussed in Section 7.4 (Bypass Weaving) of this Report.

The analysis results in Tables 7.1 and 7.2 were generated using unconstrained volumes (i.e. no ramp metering is used in the analysis). Subsequent sections of this report consider constrained volumes due to ramp metering. The methodology of the procedure does not take into account traffic weaving between general-purpose lanes and HOV/Managed lanes, or traffic influences from adjacent segments, HOV/Managed lanes, or DARs. Due to application limits of the LOS D method with the Project (i.e. number of lanes and large thru volume rates), the main lane thru traffic volumes that were not participating in the weaving process were uniformly distributed amongst the remaining lanes.

For the analysis conducted, the maximum length used for weaving was 900 meters. If a segment of freeway was 900 meters or less, the entire segment was analyzed as a weave section using the LOS D method. Any distance greater than 900 meters was considered outside the realm of weaving, which is consistent with standards contained in the HDM. For these long segments weaving was analyzed as merge and diverge sections at on-ramps and off-ramps, respectively.

7.1.1 Existing Conditions LOS D Analysis Results

For the northbound direction, the following existing freeway segments have traffic that exceeded the main lane threshold of 2,000 vphpl in the PM peak hour: Via de la Valle to Lomas Santa Fe, Lomas Santa Fe to Manchester Avenue, Manchester Avenue to Birmingham Drive, Birmingham Drive to Santa Fe Drive, Santa Fe Drive to Encinitas Blvd, Encinitas Blvd to Leucadia Blvd, Leucadia Blvd to La Costa Avenue, La Costa Avenue to Poinsettia Lane, Poinsettia Lane to Palomar Airport Road, Palomar Airport Road to Cannon Road, Cannon Road to Tamarack Avenue, Tamarack Avenue to Carlsbad Village Drive, Carlsbad Village Drive to Las Flores Drive, and Las Flores Drive to SR-78. The 2,000 vphpl main lane threshold was only exceeded in the northbound AM peak hour at Las Flores Drive to SR-78.

The following northbound existing I-5 freeway segments have traffic that exceed the weaving lane threshold of 1,800 vphpl in the AM peak hour: La Jolla Village Drive to Genesee Avenue, Via de la Valle to Lomas Santa Fe, La Costa Avenue to Poinsettia Lane, Poinsettia Lane to Palomar Airport Road, and SR-76 to Harbor Drive. The PM peak hour exceeded the weaving lane threshold at these locations: Del Mar Heights Road to Via de la Valle, Via de la Valle to Lomas Santa Fe, Lomas Santa

Fe to Manchester Avenue, Manchester Avenue to Birmingham Drive, Encinitas Blvd to Leucadia Blvd, Leucadia Blvd to La Costa Avenue, La Costa Avenue to Poinsettia Lane, Poinsettia Lane to Palomar Airport Road, Cannon Road to Tamarack Avenue, Las Flores Drive to SR-78, Oceanside Blvd to Mission Avenue, and Mission Avenue to SR-76.

The northbound segments between Via de la Valle and Las Flores Drive in the PM peak hour all have main thru traffic lanes operating well over the 2,000 vphpl threshold with values ranging

Table 7.1 Northbound LOS D Weaving Conditions (Unconstrained Ramp Demand Volumes)

Freeway Segment		Existing		2030 No Build		2030 8+4		2030 10+4		2015 10+4	
From	To	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
La Jolla Village Drive	Genesee Avenue	Over	Under	Over	Under	Over	Under	Over	Under	Over	Under
Del Mar Heights Road	Via de la Valle	Under	Over	Under	Over	Under	Over	Under	Over	Under	Under
Via de la Valle	Lomas Santa Fe	Over	Over	Under	Over	Under	Over	Under	Over	Under	Over
Lomas Santa Fe	Manchester Avenue	Under	Over	Under	Over	Under	Over	Under	Over	Under	Under
Manchester Avenue	Birmingham Drive	Under	Over	Over	Over	Under	Over	Under	Over	Under	Under
Birmingham Drive	Santa Fe Drive	Under	Over	Over	Over	Under	Over	Under	Under	Under	Under
Santa Fe Drive	Encinitas Blvd	Under	Over	Over	Over	Under	Over	Under	Over	Under	Under
Encinitas Blvd	Leucadia Blvd	Under	Over	Over	Over	Under	Over	Under	Over	Under	Under
Leucadia Blvd	La Costa Avenue	Under	Over	Over	Over	Under	Over	Under	Over	Under	Over
La Costa Avenue	Poinsettia Lane	Over	Over	Over	Over	Under	Under	Under	Under	Under	Under
Poinsettia Lane	Palomar Airport Road	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
Palomar Airport Road	Cannon Road	Under	Over	Under	Over	Under	Over	Under	Over	Under	Over
Cannon Road	Tamarack Avenue	Under	Over	Over	Over	Under	Over	Under	Over	Under	Under
Tamarack Avenue	Carlsbad Village Drive	Under	Over	Under	Over	Under	Over	Under	Over	Under	Under
Carlsbad Village Drive	Las Flores Drive	Under	Over	Over	Over	Under	Over	Under	Under	Under	Under
Las Flores Drive	SR-78	Over	Over	Over	Over	Under	Over	Under	Over	Under	Over
SR-78	California Street	Under	Under	Under	Under	Under	Under	Under	Under	Under	Under
California Street	Oceanside Blvd	Under	Under	Over	Under	Under	Over	Under	Under	Under	Under
Oceanside Blvd	Mission Avenue	Under	Over	Over	Over	Over	Over	Over	Over	Under	Over
Mission Avenue	SR-76	Under	Over	Over	Over	Under	Over	Under	Over	Under	Over
SR-76	Harbor Drive	Over	Under	Over	Under	Over	Under	Over	Under	Over	Under

Table 7.2 Southbound LOS D Weaving Conditions (Unconstrained Ramp Demand Volumes)

Freeway Segment		Existing		2030 No Build		2030 8+4		2030 10+4		2015 10+4	
From	To	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
Harbor Drive	SR-76	Under	Under	Under	Over	Under	Over	Under	Over	Under	Over
SR-76	Mission Avenue	Under	Under	Over	Over	Over	Under	Over	Over	Over	Under
Mission Avenue	Oceanside Blvd	Under	Under	Over	Over	Under	Under	Under	Under	Under	Under
Oceanside Blvd	Cassidy Street	Under	Under	Over	Over	Under	Under	Under	Under	Under	Under
Cassidy Street	SR-78	Over	Over	Over	Over	Under	Under	Under	Under	Under	Under
SR-78	Las Flores Drive	Over	Over	Over	Over	Under	Under	Over	Under	Under	Under
Las Flores Drive	Carlsbad Village Drive	Under	Under	Over	Over	Over	Under	Under	Under	Under	Under
Carlsbad Village Drive	Tamarack Avenue	Over	Under	Over	Over	Over	Over	Over	Under	Under	Under
Tamarack Avenue	Cannon Road	Over	Under	Over	Over	Over	Under	Under	Under	Under	Under
Cannon Road	Palomar Airport Road	Over	Under	Over	Under	Over	Over	Over	Over	Over	Under
Palomar Airport Road	Poinsettia Lane	Over	Under	Over	Over	Over	Over	Over	Over	Over	Over
Poinsettia Lane	La Costa Avenue	Over	Under	Over	Over	Over	Over	Under	Over	Under	Under
La Costa Avenue	Leucadia Blvd	Over	Under	Over	Over	Over	Over	Over	Over	Under	Under
Leucadia Blvd	Encinitas Blvd	Over	Under	Over	Over	Over	Over	Over	Under	Under	Under
Encinitas Blvd	Santa Fe Drive	Over	Under	Over	Over	Over	Over	Under	Under	Under	Under
Santa Fe Drive	Birmingham Drive	Over	Over	Over	Over	Over	Over	Under	Under	Under	Under
Birmingham Drive	Manchester Avenue	Over	Over	Over	Over	Over	Under	Under	Under	Under	Under
Manchester Avenue	Lomas Santa Fe	Over	Over	Over	Over	Over	Over	Under	Under	Under	Under

Lomas Santa Fe	Via de la Valle	**Over**	**Over**	**Over**	**Over**	**Over**	**Over**	**Over**	Under	Under	Under
Via de la Valle	Del Mar Heights Road	**Over**	**Over**	**Over**	**Over**	Under	Under	**Over**	Under	Under	Under
Genesee Avenue	La Jolla Village Drive	**Over**	**Over**	**Over**	**Over**	Under	**Over**	Under	**Over**	Under	**Over**

between 2,000 and 2,400 vphpl. These main lane demand volumes indicate that the I-5 northbound is currently operating above capacity in the PM peak hour.

The following existing southbound segments have traffic that exceeded the threshold of 1,800 vphpl in the AM peak hour: Cassidy Street to SR-78, SR-78 to Las Flores Drive, Tamarack Avenue to Cannon Road, Cannon Road to Palomar Airport Road, Palomar Airport Road to Poinsettia Lane, Poinsettia Lane to La Costa Avenue, La Costa Avenue to Leucadia Blvd, Leucadia Blvd to Encinitas Blvd, Birmingham Drive to Manchester Avenue, Manchester Avenue to Lomas Santa Fe, Lomas Santa Fe to Via de la Valle, Via de la Valle to Del Mar Heights Road, and Genesee Avenue to La Jolla Village Drive.

The existing southbound freeway segments have traffic that exceeded 1,800 vphpl in the PM peak hour are as follows: Cassidy Street to SR-78; SR-78 to Las Flores Drive, Birmingham Drive to Manchester Avenue, Manchester Avenue to Lomas Santa Fe, Lomas Santa Fe to Via de la Valle, Via de la Valle to Del Mar Heights Road, and Genesee Avenue to La Jolla Village Drive.

The following existing freeway segments have traffic that exceeded the main lane threshold of 2,000 vphpl in the AM peak hour in the southbound direction: Carlsbad Village Drive to Tamarack Avenue, Tamarack Avenue to Cannon Road, Palomar Airport Road to Poinsettia Lane, Poinsettia Lane to La Costa Avenue, La Costa Avenue to Leucadia Blvd, Leucadia Blvd to Encinitas Blvd, Encinitas Blvd to Santa Fe Drive, Santa Fe Drive to Birmingham Drive, Birmingham Drive to Manchester Avenue, Manchester Avenue to Lomas Santa Fe, Lomas Santa Fe to Via de la Valle, and Via de la Valle to Del Mar Heights Road.

In the PM peak hour, the following existing southbound segments have traffic that exceeded the main lane 2,000 vphpl threshold: Santa Fe Drive to Birmingham Drive, Birmingham Drive to Manchester Avenue, Manchester Avenue to Lomas Santa Fe, Lomas Santa Fe to Via de la Valle, Via de la Valle to Del Mar Heights Road, and Genesee Avenue to La Jolla Village Drive.

Most of the southbound segments between Las Flores Drive to Del Mar Heights Road in the AM peak hour have main thru traffic lanes operating over the 2,000 vphpl threshold with values between 1,800 and 2,400 vphpl. The southbound segments between Palomar Airport Road and Del Mar Heights Road in the PM peak hour have main thru traffic lanes operating near the 2,000 vphpl threshold with values ranging between 1,700 and 2,300 vphpl.

In the Oceanside area, the southbound direction has weaving issues between Cassidy Street and SR-78, and SR-78 and Las Flores Drive, in both the AM and PM peak hours due to weaving over a short distance (250-350 meters). In these areas, the weaving lane exceeds the threshold of 1,800 vphpl.

7.1.2 2030-Year No Build LOS D Analysis Results

The No Build scenario retains the basic geometry of the existing conditions with only minor improvements from projects currently programmed and/or under construction. The LOS D weaving analysis for the No Build was conducted using forecasted traffic volumes contained in Wilson & Company's Technical Report No. 5 for the year 2030. Most traffic in roadway segments in both the northbound and southbound directions exceeds the weaving lane threshold of 1,800 vphpl and/or the main lane threshold of 2,000 vphpl. In the No Build scenario, the number of congested weaving areas greatly increased when compared to the existing conditions (see Tables 7.1 and 7.2). Without improving the freeway and increasing its capacity to accommodate the forecasted traffic demand more sections of the freeway would become congested.

7.1.3 2030-Year 8+4 Alternative LOS D Analysis Results

According to Table 7.1, future traffic in the following I-5 freeway northbound segments of the 8+4 Alternative exceeds the main lane threshold of 2,000 vphpl and/or the weaving lane threshold of 1,800 vphpl in the AM and/or PM peak hour: La Jolla Village Drive to Genesee Avenue; Del Mar Heights Road to Via de la Valle; Via de la Valle to Lomas Santa Fe; Lomas Santa Fe to Manchester Avenue; Manchester Avenue to Birmingham Drive; Birmingham Drive to Santa Fe Drive; Santa Fe Drive to Encinitas Blvd; Encinitas Blvd to Leucadia Blvd; Leucadia Blvd to La Costa Avenue; Poinsettia Lane to Palomar Airport Road; Palomar Airport Road to Cannon Road; Cannon Road to Tamarack Avenue; Tamarack Avenue to Carlsbad Village Drive; Carlsbad Village Drive to Las Flores Drive; California Street to Oceanside Blvd; Oceanside Blvd to Mission Avenue; Mission Avenue to SR-76 and SR-76 to Harbor Drive.

In four cases, the weaving threshold of 1,800 vph was exceeded due to high off ramp volumes in the AM and/or PM peak hour. Those cases are: Genesee Avenue, Palomar Airport Road, Mission Avenue, and SR-76.

In addition, future traffic in the following I-5 freeway northbound segments exceeds the main lane threshold of 2,000 vphpl within the right lane in the AM and/or PM peak hour: Del Mar Heights Road to Via de la Valle, Via de la Valle to Lomas Santa Fe, Lomas Santa Fe to Manchester Avenue, Manchester Avenue to Birmingham Drive, Birmingham Drive to Santa Fe Drive, Santa Fe Drive to Encinitas Blvd, Encinitas Blvd to Leucadia Blvd, Leucadia Blvd to La Costa Avenue, Palomar Airport Road to Cannon Road, Cannon Road to Tamarack Avenue, Tamarack Avenue to Carlsbad Village Drive, Carlsbad Village Drive to Las Flores Drive, Oceanside Blvd to Mission Avenue, and SR-76 to Harbor Drive.

Future traffic in the following I-5 northbound freeway segments exceeds the weaving lane threshold of 1,800 vph at the on ramps and/or 1,800 vphpl along some locations within the auxiliary lane during the AM and/or PM peak hour: La Jolla Village Drive to Genesee Avenue, Palomar Airport Road to Cannon Road (along the auxiliary lane and at the on ramp), SR-78 to Oceanside Blvd (along the auxiliary lane), Mission Avenue to SR-76 (along the auxiliary lane) and SR-76 to Harbor Drive (along the auxiliary lane and at the on ramp).
For the southbound direction, the main lane threshold of 2,000 vphpl and/or the weaving lane threshold of 1,800 vphpl were exceeded during the AM and/or PM peak hour at the following freeway segments: Harbor Drive to SR-76, SR-76 to Mission Avenue, Las Flores Drive to Carlsbad Village Drive, Carlsbad Village Drive to Tamarack Avenue, Tamarack Avenue to Cannon Road, Cannon Road to Palomar Airport Road, Palomar Airport Road to Poinsettia Lane, Poinsettia Lane to La Costa Avenue, La Costa Avenue to Leucadia Blvd, Leucadia Blvd to Encinitas Blvd, Encinitas Blvd to Santa Fe Drive, Santa Fe Drive to Birmingham Drive, Birmingham Drive to Manchester Avenue, Manchester Avenue to Lomas Santa Fe, Lomas Santa Fe to Via de la Valle, and Genesee Avenue to La Jolla Village Drive.

Continuing southbound along the I-5 freeway, future traffic in the following on ramps exceeds the weaving lane threshold of 1,800 vphpl during the AM and/or PM peak hours: Harbor Drive, SR-76, Palomar Airport Road, and Genesee Avenue.

Along the southbound direction, the main lane threshold of 2,000 vphpl and/or the weaving lane threshold of 1,800 vphpl were exceeded within the auxiliary lane or along the right most lane of the following segments during the AM and/or PM peak hour: Harbor Drive to SR-76, Carlsbad Village Drive to Tamarack Avenue, Cannon Road to Palomar Airport Road, and Poinsettia Lane to La Costa Avenue. The use of acceleration lanes at some of these locations did not reduce the weaving volumes to acceptable levels. The segments from Manchester Avenue to Lomas Santa Fe and Lomas Santa Fe to Via de la Valle also exceeded the main lane threshold of 2,000 vphpl in the AM and the PM peak hours, and these two segments both have distances greater than 900 meters.

7.1.4 2030-Year 10+4 Alternative LOS D Analysis Results

For the northbound direction, future traffic in the following I-5 freeway segments exceeds the weaving lane threshold of 1,800 vphpl in the AM peak hour: La Jolla Village Drive to Genesee Avenue, Poinsettia Lane to Palomar Airport Road, Mission Avenue to SR-76, and SR-76 to Harbor Drive.

Future traffic in the following I-5 northbound segments exceeds the weaving lane threshold of 1,800 vphpl in the PM peak hour: Del Mar Heights Road to Via de la Valle, Via de la Valle to Lomas Santa Fe, Santa Fe Drive to Encinitas Blvd, Encinitas Blvd to Leucadia Blvd, Leucadia Blvd to La Costa Avenue, Poinsettia Lane to Palomar Airport Road, Palomar Airport Road to Cannon Road, Cannon Road to Tamarack Avenue, Tamarack Avenue to Carlsbad Village Drive, Las Flores Drive to SR-78, Oceanside Blvd to Mission Avenue, and Mission Avenue to SR-76.

None of the traffic in the I-5 northbound segments examined for this alternative exceeded the main lane threshold of 2,000 vphpl in the AM peak hour. In the PM peak hour, future traffic in the following segments exceeds the threshold of 2,000 vphpl: Del Mar Heights Road to Via de la Valle, Via de la Valle to Lomas Santa Fe, Lomas Santa Fe to Manchester Avenue, and Manchester Avenue to Birmingham Drive.

Future traffic in the following southbound I-5 segments exceeds the main lane threshold of 2,000 vphpl in the AM peak hour: Lomas Santa Fe to Via de la Valle and Via de la Valle to Del Mar Heights Road. The 2,000 vphpl main lane threshold was not exceeded by any segment in the PM peak hour.

Future traffic in the following southbound I-5 freeway segments exceeds the weaving lane threshold of 1,800 vphpl in the AM peak hour: SR-76 to Mission Avenue, SR-78 to Las Flores Drive, Carlsbad Village Drive to Tamarack Avenue, Cannon Road to Palomar Airport Road, Palomar Airport Road to Poinsettia Lane, La Costa Avenue to Leucadia Blvd, Leucadia Blvd to Encinitas Blvd, Lomas Santa Fe to Via de la Valle, and Via de la Valle to Del Mar Heights Road.

Future traffic in the following southbound I-5 freeway segments exceeds the weaving lane threshold of 1,800 vphpl in the PM peak hour: Harbor Drive to SR-76, SR-76 to Mission Avenue, Cannon Road to Palomar Airport Road, Palomar Airport Road to Poinsettia Lane, Poinsettia Lane to La Costa Avenue, La Costa Avenue to Leucadia Blvd, and Genesee Avenue to La Jolla Village Drive.

The northbound on and off ramps at Palomar Airport Road is forecasted to have large volumes in both the AM and PM peak hours (on ramp: 1,750 and 2,200; off ramp: 2,300 and 2,400). The freeway in the proposed 10+4 alternative design to the north and south of this overcrossing consists of five main lanes with an 800-meter long deceleration lane at the northbound off ramp and a 950-meter auxiliary lane between the northbound on ramp and Cannon Road.

The 2030-year traffic forecast for the southbound on and off ramps at Palomar Airport Road predicts large volumes in both the AM and PM peak hours (on ramp: 2,600 and 2,800; off ramp: 2,500 and 1,900). These elevated ramp volumes caused this segment of the I-5 to exceed the LOS D weaving threshold of 1,800 vphpl at the ramps. The LOS D analysis results suggest that even with the proposed improvements of the 10+4 alternative, in the year 2030 ramp volumes at Palomar Airport Road continue to exceed the weaving capacity of the segment.

State Routes 78 and 76 are forecasted to have relatively large on and off ramp volumes in both northbound and southbound directions during the peak hours in the year 2030. Las Flores Drive, Mission Avenue, Harbor Drive, and Cassidy Street have on/off ramps that are closely spaced to the major interchanges at SR-78 and SR-76. Although the LOS D weaving analysis indicates that these areas are not necessarily problematic according to the constraints of the analysis in the year 2030, these areas remain of interest.

The northbound on ramp traffic from Las Flores Drive must weave across two lanes to exit to the eastbound SR-78. The weave distance remains relatively short in the proposed 10+4 alternative

(approximately 350 meters). This section of freeway can be expected to undergo recurrent congestion due to traffic weaving since the total exiting SR-78 traffic volumes are estimated for the year 2030 to be near 2,200 vehicles in the AM peak and 3,600 vehicles PM peak. Options to consider outside the scope of the Project to improve weaving conditions in this area could include braiding the ramps, moving the ramps, lengthening the weaving section, or closing local ramps. These options for this particular area would be studied as part of the separate I-5/SR 78 Interchange Project.

Similar weaving conditions as described in the previous paragraph may be present in the year 2030 in the southbound direction at the SR-78 interchange. Vehicles entering southbound I-5 at Cassidy Street would weave across two lanes within 300 meters to continue traveling southbound on I-5. Southbound I-5 traffic exiting at Las Flores Drive just south of SR-78 would weave across two lanes of traffic. The weaving at this location would be approximately 250 meters. Options to consider outside the scope of this project to improve weaving conditions would also be studied as part of the separate I-5/SR-78 Project.

The northbound SR-76 off ramp has an estimated 1,600 vehicles in the AM peak hour and 2,300 vehicles in the PM peak hour. The exiting traffic must weave into an auxiliary lane of approximately 450 meters in length containing on ramp traffic from Mission Avenue. The short weave distance and the large exiting volumes create friction in the right hand lanes, and this friction could influence adjacent lanes causing congestion and delay during the peak hours.

The northbound SR-76 on ramp has heavy volumes (AM: 2,200; PM: 1,650). The northbound off ramp at Harbor Drive is the primary exit ramp to the Camp Pendleton Marine Base with an AM peak hour volume of 2,100 and a PM peak hour volume of 1,250. The large weaving volumes between the SR-76 on ramp and the northbound Harbor Drive off ramp would create friction and congestion at this segment of the freeway.

The traffic conditions at the southbound SR-76 interchange ramps are similar to the northbound interchange ramps. The southbound SR-76 interchange ramps have large off ramp volumes (AM: 1,510; PM: 2,000) and on ramp volumes (AM: 2,500; PM: 1,900). The interchange is located 700 meters south of Harbor Drive and 400 meters north of Mission Avenue. Its close proximity to these ramps, combined with having large volumes, would create similar traffic conditions as described earlier.

7.1.5 2015-Year 10+4 Alternative LOS D Analysis Results

When compared to the other alternatives, the 2015-year 10+4 alternative indicates how increased capacity reduces main lane congestion. This alternative also contains problems at certain segments and ramps. There are similarities between the 2015- year 10+4 alternative and the 2030-year 8+4 and 10+4 alternatives as to which ramps exceed demand capacity and are perpetually problematic, regardless of freeway improvements. Freeway segments listed in Tables 7.1 and 7.2 for the year 2015 10+4 alternative that exceeded the weaving lane threshold also exceeded the weaving lane threshold in all the other scenarios examined.

Future traffic in the following I-5 northbound freeway segments exceeds the weaving lane threshold of 1,800 vphpl in the AM peak hour: La Jolla Village Drive to Genesee Avenue, Poinsettia Lane to Palomar Airport Road, and SR-76 to Harbor Drive.

Future traffic in the I-5 northbound segments that exceeds the weaving lane threshold of 1,800 vphpl in the PM peak hour are listed as follows: Via de la Valle to Lomas Santa Fe; Leucadia Blvd to La Costa Avenue; Poinsettia Lane to Palomar Airport Road; Palomar Airport Road to Cannon Road; Las Flores Drive to SR-78; Oceanside Blvd to Mission Avenue; Mission Avenue to SR-76.

Future traffic in the southbound I-5 freeway segments that exceeds the weaving lane threshold of 1,800 vphpl in the AM peak hour are SR-76 to Mission Avenue, Cannon Road to Palomar Airport Road, and Palomar Airport Road to Poinsettia Lane.

Future traffic in the following southbound I-5 freeway segments exceeds the weaving lane threshold of 1,800 vphpl in the PM peak hour: Harbor Drive to SR-76, Palomar Airport Road to Poinsettia Lane, and Genesee Avenue to La Jolla Village Drive.

Future traffic for the 10+4 alternative in the year 2015 in both the northbound and southbound directions would not exceed the main lane threshold of 2,000 vphpl in either the AM or PM peak hours.

All the locations noted above, for both the northbound and southbound directions, are also noted as "over" segments in Tables 6.1 and 6.2 for the 2030-year 10+4 alternative. Traffic in these segments exceeds the weaving lane threshold of 1,800 vphpl in the years 2015 and 2030 for the 10+4 alternative. The weaving lane threshold is exceeded by on and off ramp traffic in these segments in both time frames. The on ramp volumes cannot be reduced to levels below the 1,800 vphpl threshold and retain proper queue lengths and functional operations on the adjacent local roads. Since off ramp traffic is not ramp metered, demand at a particular off ramp can be decreased by drivers changing their own routes to avoid heavily impacted off ramps.

7.2 Project Corridor Weaving Improvements

The proposed 8+4 and 10+4 alternatives preserve most of the existing auxiliary lanes, acceleration lanes, and deceleration lanes within project limits. In certain locations, acceleration lanes and deceleration lanes are extended to create auxiliary lanes between interchanges. Table 7.3 contains a summary of the I-5 northbound and southbound roadway improvements (i.e. auxiliary, acceleration, and deceleration lanes) included in the proposed 8+4 and 10+4 alternatives to facilitate traffic weaving. The weaving improvements listed in Table 7.3 are also shown in Exhibits B and C for the proposed 2030-year 8+4 and 10+4 alternatives, respectively.

Table 7.3 Proposed Project Corridor Weaving Improvements

Freeway Segment		Proposed 8+4 Alternative		Proposed 10+4 Alternative	
From	To	Northbound	Southbound	Northbound	Southbound
La Jolla Village Drive	Genesee Avenue	Auxiliary Lane	Auxiliary Lane	Auxiliary Lane	Auxiliary Lane
Genesee Avenue	Roselle Street / Sorrento Valley Road	Braided Ramps	Braided Ramps	Braided Ramps	Braided Ramps
Roselle Street / Sorrento Valley Road	Carmel Valley Road	Maintain Existing Facility & Bypass	Maintain Existing Facility & Bypass	Maintain Existing Facility & Bypass	Maintain Existing Facility & Bypass
Carmel Valley Road	Del Mar Heights Road	Extend Bypass Facility	Extend Bypass Facility	Extend Bypass Facility	Extend Bypass Facility
Del Mar Heights Road	Via de la Valle	700 m Merge Lane & Decrease Main Lanes from 6 to 4	Auxiliary Lane	700 m Merge Lane & Decrease Main Lanes from 6 to 5	Auxiliary Lane
Via de la Valle	Lomas Santa Fe	No Improvement (Maintain Existing Auxiliary Lane)	No Improvement (Maintain Existing Auxiliary Lane)	No Improvement (Maintain Existing Auxiliary Lane)	No Improvement (Maintain Existing Auxiliary Lane)
Lomas Santa Fe	Manchester Avenue	Auxiliary Lane	Auxiliary Lane	Auxiliary Lane	Auxiliary Lane
Manchester Avenue	Birmingham Drive	Auxiliary Lane	Auxiliary Lane	Auxiliary Lane	Auxiliary Lane
Birmingham Drive	Santa Fe Drive	Auxiliary Lane	Auxiliary Lane	Auxiliary Lane	Auxiliary Lane
Santa Fe Drive	Encinitas Blvd	No Improvement (No Aux Lane)	Auxiliary Lane	No Improvement (No Aux Lane)	Auxiliary Lane
Encinitas Blvd	Leucadia Blvd	Auxiliary Lane	No Improvement (No Aux Lane)	Auxiliary Lane	No Improvement (No Aux Lane)
Leucadia Blvd	La Costa Avenue	No Improvement (No Aux Lane)	No Improvement (No Aux Lane)	No Improvement (No Aux Lane)	No Improvement (No Aux Lane)
La Costa Avenue	Poinsettia Lane	No Improvement (Additional Main Lane (5) & Maintain 450 m Diverge Lane)	No Improvement (Additional Main Lane (5) & Decrease Merge Lane to 300 m)	No Improvement (Maintain 450 m Diverge Lane)	Decrease Merge Lane to 300 m
Poinsettia Lane	Palomar Airport Road	No Improvement (Decrease Main Lanes: 5 to 4)	No Improvement (Additional Main Lane)	800 m Diverge Lane	Extend Merge Lane to 900 m
Palomar Airport Road	Cannon Road	No Improvement (Maintain Existing Auxiliary Lane)	No Improvement (Maintain Existing Auxiliary Lane)	No Improvement (Maintain Existing Auxiliary Lane)	No Improvement (Maintain Existing Auxiliary Lane)
Cannon Road	Tamarack Avenue	Auxiliary Lane	Auxiliary Lane	Auxiliary Lane	Auxiliary Lane
Tamarack Avenue	Carlsbad Village Drive	No Improvement (No Aux Lane)	No Improvement (No Aux Lane)	No Improvement (No Aux Lane)	No Improvement (No Aux Lane)
Carlsbad Village Drive	Las Flores Drive	No Improvement (Increase Main Lanes: 4 to 5)	No Improvement (Decrease Main Lanes: 5 to 4)	No Improvement (Increase Main Lanes: 5 to 6)	No Improvement (Decrease Main Lanes: 6 to 5)

Table 7.3 Proposed Project Corridor Weaving Improvements (continued)

Freeway Segment		Proposed 8+4 Alternative		Proposed 10+4 Alternative	
From	To	Northbound	Southbound	Northbound	Southbound
Las Flores Drive	SR-78	No Improvement (Main lanes: 5-6-4)	No Improvement (Main lanes: 4-6-5)	No Improvement (Decrease Main Lane: 6 to 4)	No Improvement (Increase Main Lane: 4 to 6)
SR-78	California St / Cassidy St	No Improvement (Increase Main Lanes: 4 to 6)	No Improvement (Decrease Main Lanes: 6 to 4)	No Improvement (Increase Main Lanes: 4 to 6)	No Improvement (Decrease Main Lanes: 6 to 4)
California St / Cassidy St	Oceanside Blvd	No Improvement (Decrease Main Lanes: 6 to 5)	No Improvement (Increase Main Lanes: 5 to 6)	No Improvement (Decrease Main Lanes: 6 to 5)	No Improvement (Increase Main Lanes: 5 to 6)
Oceanside Blvd	Mission Avenue	No Improvement (Decrease Main Lanes: 5 to 4)	No Improvement (Increase Main Lanes: 4 to 5)	No Improvement (Decrease Main Lanes: 5 to 4)	No Improvement (Increase Main Lanes: 4 to 5)
Mission Avenue	SR-76	Auxiliary Lane	No Improvement (Maintain Existing Auxiliary Lane)	Auxiliary Lane	No Improvement (Maintain Existing Auxiliary Lane)
SR-76	Harbor Drive	No Improvement (Maintain Existing Auxiliary Lane)	Extend Existing Auxiliary Lane	No Improvement (Maintain Existing Auxiliary Lane)	Extend Existing Auxiliary Lane

7.3 Ramp Meter Rates

It is anticipated that, under future year conditions, all freeway on ramp locations within the Project limits will be metered. The following two tables, Tables 7.4 and 7.5, summarize the northbound and southbound existing freeway ramp meter rates for the interchanges within the Project limits. The tables also contain recommended 2030-year meter rates for these on ramps in conjunction with the 8+4 and 10+4 design alternatives. The future ramp meter rates listed for the two design alternatives in each table were developed from the previously described LOS D weaving results. It is anticipated that these meter rates may improve projected freeway operations while simultaneously not overloading surface streets with excessive queue lengths. The 2030-year meter rates in Tables 7.4 and 7.5 are recommended meter rates for the proposed 8+4 and 10+4 design alternatives. Actual future meter rates would be based on actual freeway operations and field measurements.

Table 7.4 Northbound Ramp Meter Rates

Interchange	AM Peak			PM Peak		
	Existing On Ramp Volumes	2030 8+4 On Ramp Volumes	2030 10+4 On Ramp Volumes	Existing On Ramp Volumes	2030 8+4 On Ramp Volumes	2030 10+4 On Ramp Volumes
La Jolla Village Dr WB to I-5	460	640 (640)	640 (640)	370	500 (500)	500 (500)
La Jolla Village Dr EB to I-5	740	660 (660)	670 (670)	950	1050 (1000)	1050 (1000)
Genesee Avenue	1120	230 (230)	230 (230)	1840	1600 (1400)	1650 (1450)
Carmel Mountain Road	350	720 (670)	720 (670)	400	960 (910)	960 (910)
Carmel Valley Road	1160	360 (310)	390 (340)	1080	500 (450)	520 (470)
SR-56 WB to I-5 NB Bypass	DNE*	1730 (1530)	1730 (1530)	DNE*	1150 (1000)	1150 (1000)
Del Mar Heights Road	1040	1050 (975)	1300 (1225)	1640	1350 (1250)	1390 (1290)
Via de la Valle WB to I-5	470	400 (400)	460 (460)	400	520 (470)	530 (480)
Via de la Valle EB to I-5	320	410 (410)	430 (430)	600	690 (640)	720 (670)
Lomas Santa Fe WB to I-5	700	460 (460)	470 (470)	950	460 (410)	470 (420)
Lomas Santa Fe EB to I-5		480 (480)	490 (490)		530 (480)	550 (500)
Manchester Avenue	160	220 (220)	240 (240)	170	190 (190)	200 (200)
Birmingham Drive	580	500 (500)	530 (530)	450	430 (380)	430 (380)
Santa Fe Drive	480	560 (560)	590 (590)	590	670 (620)	700 (650)
Encinitas Blvd	640	770 (770)	800 (800)	880	960 (910)	1000 (950)
Leucadia Blvd	560	780 (780)	850 (850)	650	870 (820)	900 (850)
La Costa Avenue	660	820 (820)	850 (850)	660	870 (820)	900 (850)
Poinsettia Lane	480	820 (820)	900 (900)	420	750 (700)	820 (770)
Palomar Airport Road	1100	1720 (1620)	1750 (1650)	1800	2170 (1970)	2200 (2000)
Cannon Road	700	870 (870)	880 (880)	1050	1300 (1250)	1320 (1270)
Tamarack Avenue	520	530 (530)	540 (540)	410	640 (590)	650 (600)
Carlsbad Village Drive	480	590 (590)	600 (600)	550	660 (610)	670 (620)
Las Flores Drive	370	490 (390)	500 (400)	610	750 (600)	780 (630)
SR-78	1820	2490	2480	1850	2550	2620
California Street	200	250 (250)	250 (250)	180	280 (280)	300 (300)
Oceanside Blvd	450	490 (440)	500 (450)	440	580 (480)	600 (500)
Mission Avenue	400	790 (750)	800 (750)	300	450 (400)	450 (400)
SR-76	1600	2150 (1950)	2200 (2000)	950	1650 (1550)	1650 (1550)

volumes are in vehicles per hour
xxx (xxx) = on ramp peak hour volume (on ramp meter rate)
xxx = on ramp peak hour volume only

* DNE (Does Not Exist) - westbound SR-56 connector to I-5 northbound does not exist under existing conditions
**No ramp meter, on ramp traffic is free flow

Table 7.5 Southbound Ramp Meter Rates

Interchange	AM Peak			PM Peak		
	Existing On Ramp Volumes	2030 8+4 On Ramp Volumes	2030 10+4 On Ramp Volumes	Existing On Ramp Volumes	2030 8+4 On Ramp Volumes	2030 10+4 On Ramp Volumes
Harbor Drive	930	1200 (1100)	1200 (1100)	1600	2000 (1850)	2000 (1850)
SR-76	1560	2400 (2100)	2500 (2200)	910	1780 (1680)	1900 (1800)
Mission Avenue WB to I-5	850	1400 (1350)	1450 (1400)	710	1560 (1510)	1600 (1550)
Mission Avenue EB to I-5	370			450		
Oceanside Blvd	1150	1220 (1170)	1300 (1250)	830	950 (900)	1000 (950)
Cassidy Street	370	430 (380)	450 (400)	290	390 (340)	420 (370)
SR-78	2110	3120	3600	2360	2040	2500
Las Flores Drive	230	310 (260)	330 (280)	180	230 (180)	250 (200)
Carlsbad Village Drive	570	660 (585)	730 (655)	620	740 (690)	750 (700)
Tamarack Avenue	850	870 (795)	900 (825)	560	830 (780)	850 (800)
Cannon Road	320	540 (465)	600 (525)	600	860 (810)	950 (900)
Palomar Airport Road WB to I-5	750	2150 (1950)	2200 (2000)	1000	2250 (1950)	2300 (2000)
Palomar Airport Road EB to I-5	280	390 (340)	400 (350)	340	490 (440)	500 (450)
Poinsettia Lane	620	750 (700)	800 (750)	690	1030 (955)	1100 (1025)
La Costa Avenue	890	1050 (975)	1150 (1075)	720	830 (780)	900 (850)
Leucadia Blvd	580	780 (730)	900 (850)	520	780 (730)	900 (850)
Encinitas Blvd	680	760 (710)	800 (750)	720	850 (800)	900 (850)
Santa Fe Drive	460	580 (530)	600 (550)	420	490 (490)	500 (500)
Birmingham Drive	1000	860 (810)	900 (850)	440	440 (440)	450 (450)
Manchester Avenue	1200	1300 (1200)	1350 (1250)	1050	1130 (1080)	1170 (1120)
Lomas Santa Fe WB to I-5	700	370 (320)	390 (340)	690	370 (320)	390 (340)
Lomas Santa Fe EB to I-5		430 (380)	430 (380)		410 (360)	410 (360)
Via de la Valle WB to I-5	670	790 (740)	800 (750)	520	740 (690)	750 (700)
Via de la Valle EB to I-5	910	980 (930)	980 (930)	760	810 (760)	820 (770)
Del Mar Heights Road WB to I-5	900	790 (740)	790 (740)	600	580 (530)	600 (550)
Del Mar Heights Road EB to I-5	630	1190 (1115)	1250 (1175)	540	770 (720)	800 (750)
Carmel Valley Road	1320	1400 (1300)	1400 (1300)	1000	1050 (1000)	1050 (1000)

Table 7.5 Southbound Ramp Meter Rates (continued)						
Interchange	AM Peak			PM Peak		
	Existing On Ramp Volumes	2030 8+4 On Ramp Volumes	2030 10+4 On Ramp Volumes	Existing On Ramp Volumes	2030 8+4 On Ramp Volumes	2030 10+4 On Ramp Volumes
SR-56 WB to I-5 SB Bypass	2000	4000 (3500)	4000 (3500)	1400	2000 (1800)	2000 (1800)
Carmel Mountain Road	DNE*	1120 (1045)	1120 (1045)	DNE*	880 (830)	880 (830)
Roselle Street	1150	1330 (1280)	1330 (1280)	1780	1800 (1700)	1800 (1700)
Genesee Avenue	600	480 (430)	540 (490)	1700	2100 (2000)	2100 (2000)

volumes are in vehicles per hour
xxx (xxx) = on ramp peak hour volume (on ramp meter rate)
xxx = on ramp peak hour volume only
*DNE (Does Not Exist) – southbound Carmel Mountain Road on ramp does not exist under existing conditions
**No ramp meter, on ramp traffic is free flow

7.3.1 Weaving with Ramp Metering

LOS D weaving was reassessed using recommended future ramp meter rates as presented in Tables 7.6 and 7.7 for the northbound and southbound directions, respectively. Freeway segments with the word "over" denote a segment that failed, exceeding the LOS D weaving limits for the weaving lane(s) (1,800 vphpl) and/or the non-weaving main thru lanes (2,000 vphpl). Segments marked "under" are operating at a LOS of D or possibly better according to the LOS D method.

Table 7.6 Northbound LOS D Weaving Conditions with Ramp Metering

Freeway Segment		2030 8+4		2030 10+4	
From	To	AM Peak	PM Peak	AM Peak	PM Peak
La Jolla Village Drive	Genesee Avenue	**Over**	Under	**Over**	Under
Del Mar Heights Road	Via de la Valle	**Under**	**Over**	Under	**Over**
Via de la Valle	Lomas Santa Fe	Under	**Over**	Under	**Over**
Lomas Santa Fe	Manchester Avenue	Under	**Over**	Under	**Over**
Manchester Avenue	Birmingham Drive	Under	**Over**	Under	**Under**
Birmingham Drive	Santa Fe Drive	Under	**Over**	Under	Under
Santa Fe Drive	Encinitas Blvd	Under	**Under**	Under	**Over**
Encinitas Blvd	Leucadia Blvd	Under	**Under**	Under	**Under**
Leucadia Blvd	La Costa Avenue	Under	**Over**	Under	**Over**
La Costa Avenue	Poinsettia Lane	Under	Under	Under	Under
Poinsettia Lane	Palomar Airport Road	**Over**	**Over**	**Over**	**Over**
Palomar Airport Road	Cannon Road	Under	**Over**	Under	**Over**
Cannon Road	Tamarack Avenue	Under	**Under**	Under	**Under**
Tamarack Avenue	Carlsbad Village Drive	Under	**Over**	Under	**Under**
Carlsbad Village Drive	Las Flores Drive	Under	**Under**	Under	Under
Las Flores Drive	SR-78	Under	**Over**	Under	**Over**
SR-78	California Street	Under	Under	Under	Under
California Street	Oceanside Blvd	Under	**Over**	Under	Under
Oceanside Blvd	Mission Avenue	**Under**	**Over**	**Over**	**Over**
Mission Avenue	SR-76	Under	**Over**	Under	**Over**
SR-76	Harbor Drive	**Over**	Under	**Over**	Under

*Segments that improved from "over" to "under" are designated in bold green text

The ramp metering recommended in Table 7.4 improved the 2030-year 8+4 alternative northbound weaving operations along the following freeway segments in the AM peak hour (see Table 7.6) when compared to

the unconstrained volumes listed in Table 7.1: Del Mar Heights Road to Via de la Valle and Oceanside Blvd to Mission Avenue. In the PM peak hour, ramp metering improved the following segments: Santa Fe Drive to Encinitas Blvd, Encinitas Blvd to Leucadia Blvd, Cannon Road to Tamarack Avenue, and Carlsbad Village Drive to Las Flores Drive.

A comparison between the weaving conditions in Tables 7.1 and 7.6 show that ramp metering improved weaving operations in the northbound PM peak hour 2030-year 10+4 alternative for the segments from Manchester Avenue to Birmingham Drive, Encinitas Blvd to Leucadia Blvd, Cannon Road to Tamarack Avenue, and from Tamarack Avenue to Carlsbad Village Drive. Ramp metering did not affect weaving conditions in the northbound AM peak hour of the 2030-year 10+4 alternative.

The ramp metering recommended in Table 7.5 improved the 2030-year 8+4 alternative southbound weaving conditions along various freeway segments (see Table 7.7) when compared to the unconstrained volumes in Table 7.2. The improved weaving sections in the AM peak hour are Las Flores Drive to Carlsbad Village Drive, Tamarack Avenue to Cannon Road, Poinsettia Lane to La Costa Avenue, La Costa Avenue to Leucadia Blvd, Leucadia Blvd to Encinitas Blvd, Encinitas Blvd to Santa Fe Drive, Santa Fe Drive to Birmingham Drive, Birmingham Drive to Manchester Avenue, Manchester Avenue to Lomas Santa Fe, and Lomas Santa Fe to Via de la Valle. In the PM peak hour, the following segments improved with ramp metering: Poinsettia Lane to La Costa Avenue, La Costa Avenue to Leucadia Blvd, Leucadia Blvd to Encinitas Blvd, Encinitas Blvd to Santa Fe Drive, Santa Fe Drive to Birmingham Drive, Manchester Avenue to Lomas Santa Fe, and Lomas Santa Fe to Via de la Valle.

Ramp metering also improved weaving operations in the following southbound segments for the 2030-year 10+4 alternative: SR-78 to Las Flores Drive, Carlsbad Village Drive to Tamarack Avenue, La Costa Avenue to Leucadia Blvd, Leucadia Blvd to Encinitas Blvd, Manchester Avenue to Lomas Santa Fe, and Lomas Santa Fe to Via de la Valle in the AM peak hour, and La Costa Avenue to Leucadia Blvd in the PM peak hour.

Table 7.7 Southbound LOS D Weaving Conditions with Ramp Metering

Freeway Segment		2030 8+4		2030 10+4	
From	**To**	**AM Peak**	**PM Peak**	**AM Peak**	**PM Peak**
Harbor Drive	SR-76	Under	**Over**	Under	**Over**
SR-76	Mission Avenue	**Over**	Under	**Over**	**Over**
Mission Avenue	Oceanside Blvd	Under	Under	Under	Under
Oceanside Blvd	Cassidy Street	Under	Under	Under	Under
Cassidy Street	SR-78	Under	Under	Under	Under
SR-78	Las Flores Drive	Under	Under	**Under**	Under
Las Flores Drive	Carlsbad Village Drive	**Under**	Under	Under	Under
Carlsbad Village Drive	Tamarack Avenue	**Over**	**Over**	**Under**	Under
Tamarack Avenue	Cannon Road	**Under**	Under	Under	Under
Cannon Road	Palomar Airport Road	**Over**	**Over**	**Over**	**Over**
Palomar Airport Road	Poinsettia Lane	**Over**	**Over**	**Over**	**Over**
Poinsettia Lane	La Costa Avenue	**Under**	**Under**	Under	**Over**
La Costa Avenue	Leucadia Blvd	**Under**	**Under**	**Under**	**Under**
Leucadia Blvd	Encinitas Blvd	**Under**	**Under**	**Under**	Under
Encinitas Blvd	Santa Fe Drive	**Under**	**Under**	Under	Under
Santa Fe Drive	Birmingham Drive	**Under**	**Under**	Under	Under
Birmingham Drive	Manchester Avenue	**Under**	Under	Under	Under
Manchester Avenue	Lomas Santa Fe	**Under**	**Under**	**Under**	Under
Lomas Santa Fe	Via de la Valle	**Under**	**Under**	**Under**	Under
Via de la Valle	Del Mar Heights Road	Under	Under	Under	Under
Genesee Avenue	La Jolla Village Drive	Under	**Over**	Under	**Over**

*Segments that improved from "over" to "under" are designated in bold green text

7.4 Bypass Weaving

The geometry of the I-5 freeway changes with the inclusion or exclusion of the non-existent I-5/SR-56 connectors. Changes in freeway geometry influence traffic operations; hence both scenarios were examined. In the northbound direction, the future I-5/SR-56 connector, in concept, joins the SR-56 westbound traffic with the I-5 northbound traffic. For the southbound direction, the future I-5/SR-56 connector, in concept, joins the I-5 southbound traffic with the SR-56 eastbound traffic. Presently, these two connectors are proposed in a separate I-5/SR-56 interchange project. Tables 7.8 and 7.9 present the traffic weaving operations using the LOS D method in the bypass area of the I-5 from La Jolla Village Drive to Del Mar Heights Road in both the northbound and southbound directions, respectively, for the 2030-year 8+4 and 10+4 alternatives.

Table 7.8 Northbound Bypass Area Weaving

Freeway Segment		2030 8+4 Alternative				2030 10+4 Alternative			
		Without SR-56 Connector		With SR-56 Connector		Without SR-56 Connector		With SR-56 Connector	
From	To	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
La Jolla Village Drive	Genesee Avenue	Over	Under	Over	Under	Over	Under	Over	Under
Genesee Avenue	I-5 / I-805 Junction	Over	Under	Over	Under	Under	Under	Under	Under
Genesee Avenue	I-5 / I-805 Junction	Under	Over	Under	Over	Under	Over	Under	Over
Bypass	Carmel Mountain Rd	Under	Under	Under	Under	Under	Under	Under	Under
Carmel Mountain Rd	Bypass	Under	Under	Under	Under	Under	Under	Under	Under
I-5	Carmel Valley Rd	Under	Under	Under	Under	Under	Under	Under	Under
Carmel Valley Rd	Del Mar Heights Rd	X	X	Under	Under	X	X	Under	Under
Carmel Valley Rd	Del Mar Heights Rd	Over	Under	X	X	Under	Under	X	X
Bypass	I-5	X	X	Under	Over	X	X	Under	Over
Del Mar Heights Rd	I-5	Under	Over	X	X	Over	Over	X	X

All segments utilize ramp metering at on ramps
Highlighted freeway segment headings denote weaving areas in the Bypass
Non-highlighted freeway segment headings denote weaving areas in the main lanes of the I-5
Segments marked with an "X" were not analyzed (weaving does not occur at this location)

In the northbound direction with the conceptual I-5/SR-56 WB to NB connector, traffic on this connector enters the bypass just north of the Carmel Valley Road. The bypass reconnects to the I-5 freeway near the Del Mar Heights Road overcrossing. Without the I-5/SR-56 WB to NB connector, the northbound bypass merges with the I-5 immediately after the Carmel Valley Road undercrossing, which is the same configuration as existing conditions. The SR-56 traffic enters the I-5 northbound at the Carmel Valley Road on ramp. The primary segments of concern for this analysis are between Carmel Valley Road and the Del Mar Heights Road on ramp.

According to the results presented in Table 7.8, both the 8+4 and 10+4 alternatives have slightly improved weaving operations with the SR-56 connectors in. The construction of the SR-56 connector increases the northbound I-5 total capacity along the segment from Carmel Valley Road to Del Mar Heights Road because weaving is reduced. Also, the total traffic volume along this segment in the I-5 northbound main lanes is decreased since on ramp traffic from both Carmel Valley Road and the SR-56 is redirected to the northbound bypass. Weaving would occur more manageably as on and off ramp traffic is distributed in the northbound bypass across three lanes over a distance of approximately 1,100 meters.

Table 7.9 Southbound Bypass Area Weaving

Freeway Segment		2030 8+4 Alternative				2030 10+4 Alternative			
		Without SR-56 Connector		With SR-56 Connector		Without SR-56 Connector		With SR-56 Connector	
From	To	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
I-5	Del Mar Heights Rd	Under	Under	Over	Over	Under	Under	Under	Under
Del Mar Heights Rd	Carmel Valley Rd	Over	Over	X	X	Over	Over	X	X
Del Mar Heights Rd	Carmel Valley Rd	X	X	Over	Under	X	X	Over	Under
Carmel Valley Rd	I-5	Over	Under	Over	Under	Over	Over	Over	Under
Bypass	Carmel Mountain Rd	Over	Under	Over	Under	Over	Under	Over	Under
Carmel Mountain Rd	I-5 / I-805 Junction	Over	Under	Over	Under	Over	Under	Over	Under
Genesee Avenue	La Jolla Village Drive	Under	Over	Under	Over	Under	Over	Under	Over

All segments utilize ramp metering at on ramps
Highlighted freeway segment headings denote weaving areas in the Bypass
Non-highlighted freeway segment headings denote weaving areas in the main lanes of the I-5
Segments marked with an "X" were not analyzed (weaving does not occur at this location)

With the SR-56 connector constructed in the southbound direction, this traffic no longer exits at Carmel Valley Road and use the local road to eastbound SR-56. Instead traffic can continue directly to eastbound SR-56 via the connector.

Without the conceptual SB to EB SR-56 connector, there would not be any changes to the southbound I-5 between Del Mar Heights Road and Carmel Valley Road. All on ramps and off ramps would be from the main lanes. The southbound bypass begins prior to the Carmel Valley Road undercrossing. SB to EB SR-56 traffic exits at Carmel Valley Road.

The segment of primary interest in the southbound direction is between Del Mar Heights Road and Carmel Valley Road, and to a lesser extent, the on ramp at Carmel Valley Road to the southbound I-5. According to the results presented in Table 7.9, both the 8+4 and 10+4 alternatives have improved weaving operations with the conceptual SB to EB SR-56 connector. With the SB to EB SR-56 connector, the southbound I-5 total capacity would be increased along the segment from Del Mar Heights Road to Carmel Valley Road, allowing for improved weaving. Also, the total traffic volume in the I-5 southbound main lanes would be decreased since on ramp traffic from Del Mar Heights Road would be redistributed to the bypass. Table 7.9 indicates that the increases volume in the southbound bypass does not appear to affect weaving operations.

8 Weekend Traffic

8.1 Weekend Travel Time

During the year, a significant number of visitors to and from San Diego County use the I-5 corridor as their primary route of travel for both work and leisure, resulting in an influx of mid-day traffic on weekends. PeMS was used to examine average travel times on Saturday and Sunday using recent 2003-2006 average travel times on the I-5 within the Project limits. Travel on Saturday differs significantly than travel on Sunday. The most notable travel occurs on Saturday in the southbound direction, and secondly, on Sunday in the northbound direction. On Saturday in the southbound direction, the average travel time trend indicates an increased travel time period from 9:00 AM to 8:00 PM. On Sunday, work-related travel appears to be reduced, likely due to Sunday closure of the industrial/commercial sector, and the average travel time trend indicates an increased travel time period from 1:00 PM to 8:00 PM.

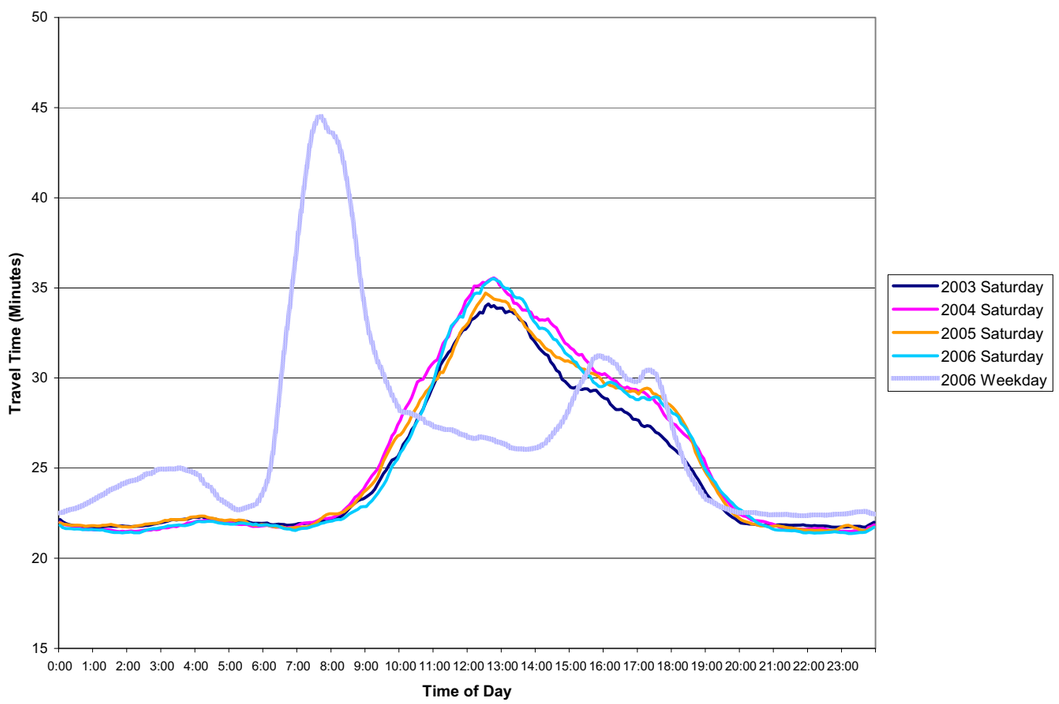


Figure 8.1 I-5 Southbound Saturday Traffic Average Travel Time: Harbor Drive to La Jolla Village Drive

Figures 8.1 – 8.4 represent the average travel time for the entire project area at any time of the day on Saturday and Sunday. The longest weekend average travel times exhibit a directional trend in the southbound direction on Saturday and in the northbound direction on Sunday. The figures are presented to depict this directional trend.

Figure 8.1 depicts the average travel time for the southbound direction along the corridor on a Saturday. The increase in average travel time occurs all day long beginning in the morning at 9 AM and ending at 8 PM. The peak average travel time occurs between 12 PM to 1 PM. The graph also shows that the peak average travel time has increased from years 2003 to 2006 along the corridor from 33 minutes to 35 minutes. Figure 8.1 also shows the 2006 weekday average travel time. The weekday average travel time shows two distinct peak travel times, one in the early morning (44 minutes) and the second in the evening (31 minutes), corresponding to the AM and PM weekday "rush hours."

Comparing the 2006 weekday and Saturday average travel times for the I-5 southbound, Saturday does not contain an AM time peak, which occurs on weekdays. The southbound Saturday average travel time exceeds the weekday average travel time between the 10:30 AM and 3:30 PM mid-day time period.

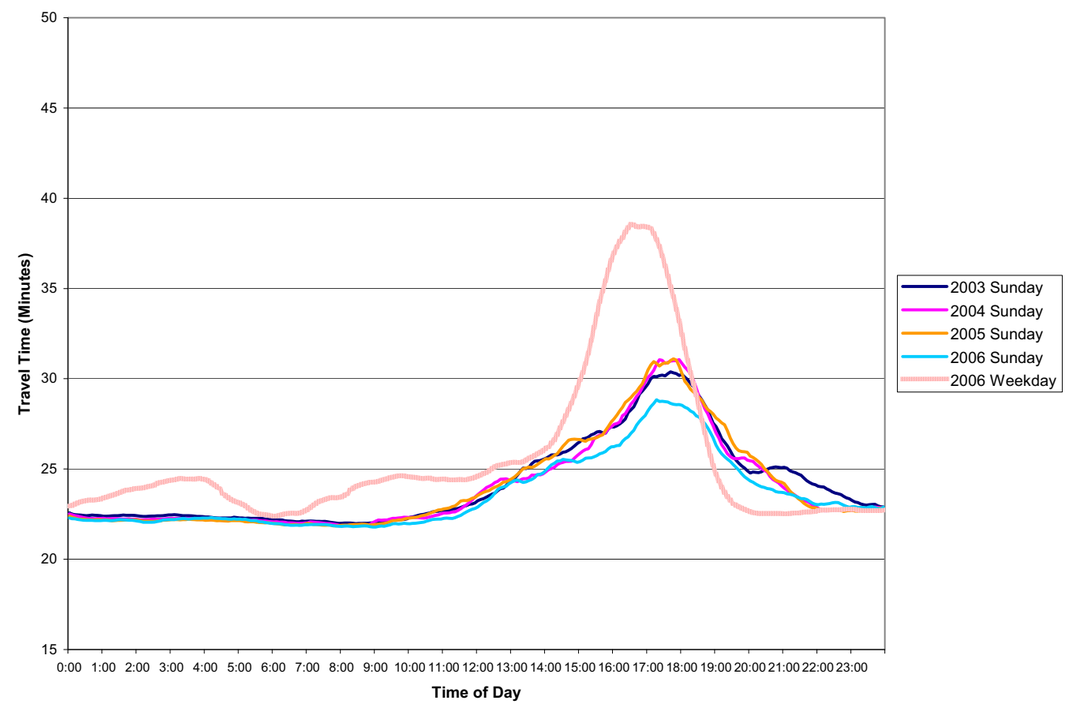


Figure 8.2 I-5 Northbound Sunday Traffic Average Travel Time: La Jolla Village Drive to Harbor Drive

Figure 8.2 shows the northbound Sunday average travel time versus time of day. The increase in average travel time occurs between the hours of 1 PM to 8 PM. The peak average travel time occurs between 5 PM to 6 PM. The graph also indicated that there is a downward trend for the average travel time in the corridor between the years of 2003 to 2006. The peak average travel time was reduced from 32 minutes to 28 minutes, which may be attributed to past construction activities. For the year 2006, the difference between the northbound weekday peak average travel time and the northbound Sunday peak average travel time is about 10 minutes.

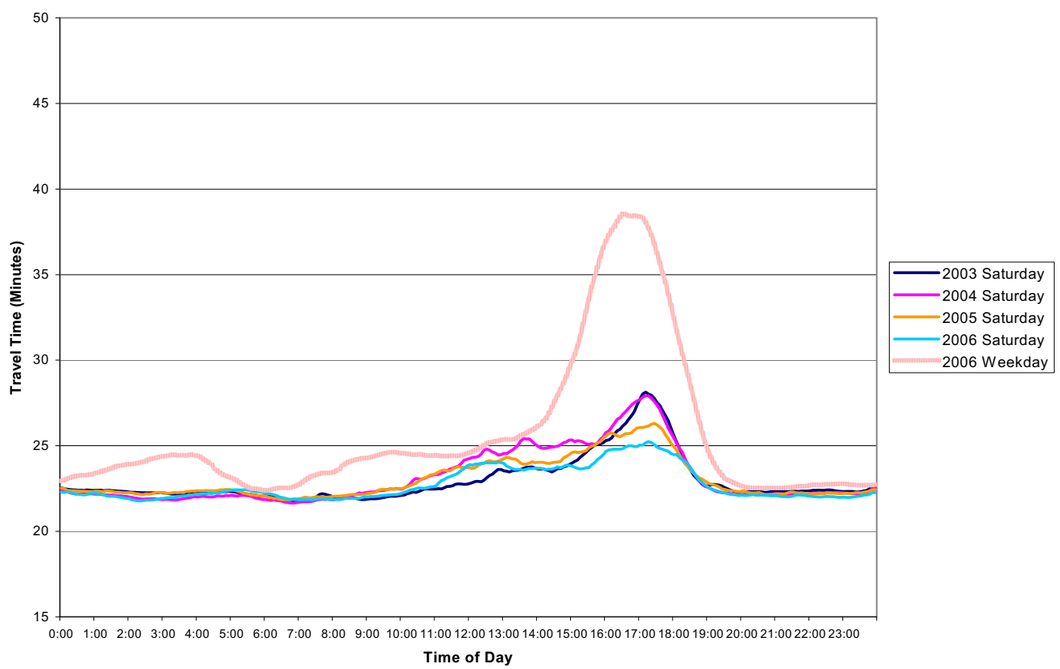


Figure 8.3 I-5 Northbound Saturday Traffic Average Travel Time: La Jolla Village Drive to Harbor Drive

Figure 8.3 illustrates the northbound Saturday average travel time versus the time of day. The graph indicates that on Saturdays, an increase in average travel time occurs between the hours of 11 AM to 7 PM and that the peak average travel time occurs between 5 PM to 6 PM. The Figure also shows that the peak average travel time between the years 2003 to 2006 was reduced from 28 minutes to 25 minutes, which may be attributed to past construction activities.

Comparing figure 8.2 and 8.3, the northbound Sunday average travel time has a higher peak than northbound Saturday average travel time, an indication of more commuters using the I-5 northbound on Sundays than northbound on Saturdays.

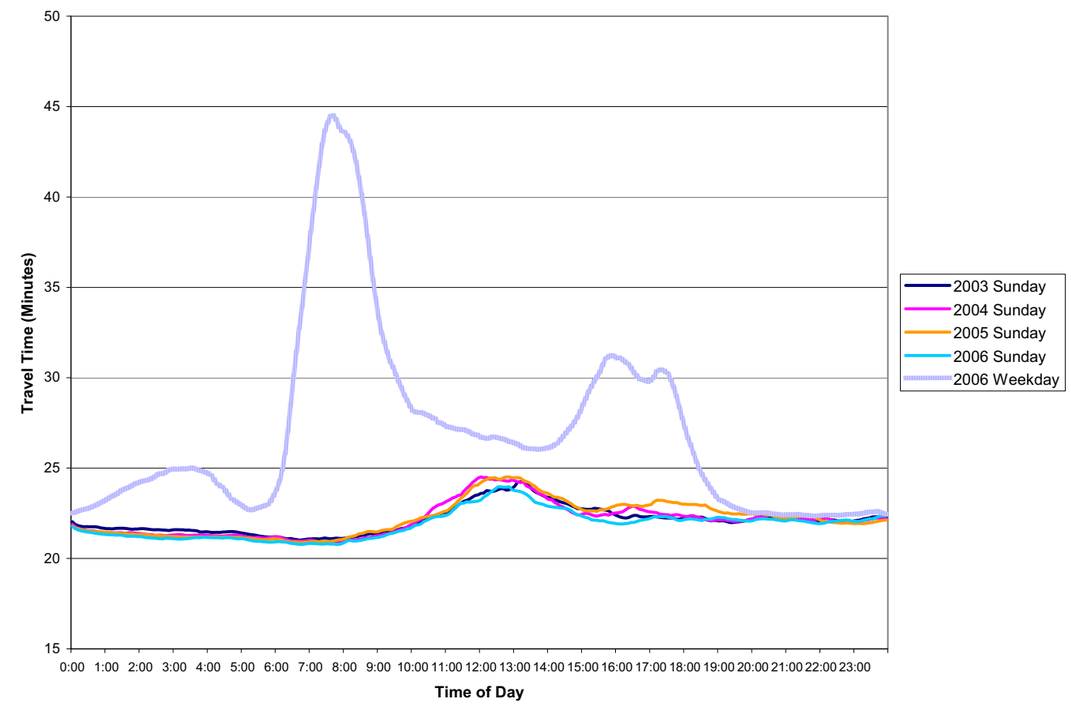


Figure 8.4 I-5 Southbound Sunday Traffic Average Travel Time: Harbor Drive to La Jolla Village Drive

In figure 8.4, the southbound Sunday average travel time is mostly free-flow traffic. There is a slight increase in average travel time between the hours of 11 AM to 3 PM, which can be attributed to inter-regional traffic. The peak occurs between 12 PM and 1 PM. The trend for the southbound Sunday average travel time in the corridor has remained almost the same for the years 2003 to 2006. There is only a slight decrease in travel time of about 1 minute for these years.

Unlike figure 8.1 the graph in figure 8.4 shows at any time the 2006 Sunday average travel time does not exceed the 2006 weekday average travel time. The traffic trend for the weekday and Sunday for the southbound direction is different. The weekday has distinct AM and PM peak, while Sunday has a slight peak in the afternoon.

8.2 Weekend High Occupancy Vehicle (HOV) Traffic

Wilson & Company performed a vehicle occupancy study for the I-5 corridor within the project limits. The study was performed to determine the proportion of high occupancy (2 or more passengers) vehicles in the I-5 weekend traffic stream. The field data was collected for a typical weekend (May 10 & 11, 2008).

Field data was collected using digital video cameras to capture traffic in each lane of each direction. The cameras were set up at three (3) overcrossings on I-5 with one camera per lane.

The following three study locations were selected to represent the entire I-5 traffic within the project limits:

1. Neptune Way, just south of SR 76, in Oceanside, with four (4) lanes of travel in each direction.
2. Leucadia Boulevard, in Encinitas, with four (4) lanes of travel in each direction.
3. Del Mar Heights Road, in Del Mar, with four (5) lanes of travel in each direction.

The HOV data was post-processed using a high-resolution large screen. Three 30-minute peak periods were selected for the study as follows: Morning peak from 10:00 to 10:30 AM, Mid-day peak from 1:00 to 1:30 PM and afternoon peak from 4:00 to 4:30 PM. The video data was viewed during these peak periods for southbound traffic using Saturday data and for northbound traffic using Sunday data. In a number of instances, due to poor or limited vision of the recorded videos, it was not possible to determine vehicle occupancy. The total number of vehicles viewed and post-processed was over 50,000 for both directions (approximately 25,000 vehicles for each direction). The overall proportion of "able-to-determine" to "unable-to-determine" data was approximately 50:50. Vehicle occupancy information in this study was classified as either single-occupancy vehicles (SOV), high-occupancy vehicles with 2 or more passengers (HOV-2), or "unable-to-determine" (UTD).

Table 8.1 lists the results for the Sunday, May 11, 2008 vehicle occupancy study in the northbound direction and Table 8.2 lists the results for the Saturday, May 10, 2008 vehicle occupancy study in the southbound direction. The tables present the SOV and HOV volumes for each of the peak periods at the three study locations and the number of vehicles for which the study was unable to assess occupancy.

The proportion of HOV to SOV in the northbound direction for the 10:00-10:30 AM period was 63:37, for 1:00-1:30 PM period was 54:46, and for 4:00-4:30 PM period was 64:36. The overall proportion for the northbound direction was 61:39. The proportion of HOV to SOV in the southbound direction for the 10:00-10:30 AM period was 57:43, for 1:00-1:30 PM period was 55:45, and for 4:00-4:30 PM period was 65:35. The overall proportion for the southbound direction was 59:41. The overall proportion of HOV to SOV for both northbound and southbound directions was approximately 60:40.

Table 8.1 I-5 NB Weekend HOV Summary- Sunday, May 11, 2008

TIME	ALL LANES				
	SOV	HOV-2	UTD*	TOTAL	HOV:SOV
10:00-10:30 AM	1,049	1,796	4,848	7,693	63:37
1:00-1:30 PM	1,425	1,663	5,800	8,888	54:46
4:00-4:30 PM	1,727	3,109	3,853	8,689	64:36
TOTAL	4,201	6,568	14,501	25,270	61:39

* UTD = UNABLE-TO-DETERMINE

Table 8.2 I-5 SB Weekend HOV Summary- Saturday, May 10, 2008

TIME	ALL LANES				
	SOV	HOV-2	UTD*	TOTAL	HOV:SOV
10:00-10:30 AM	2,233	2,955	2,987	8,175	57:43
1:00-1:30 PM	1,968	2,372	3,889	8,229	55:45
4:00-4:30 PM	1,488	2,810	4,242	8,540	65:35
TOTAL	5,689	8,137	11,118	24,944	59:41

* UTD = UNABLE-TO-DETERMINE

9 HOV/Managed Lanes

9.1 Description of Existing High Occupancy Vehicle (HOV) Lanes

HOV lanes are separate freeway lanes designated for multiple high occupancy vehicles, transit, low emission vehicles, motorcycles, and other permitted vehicles only. The purpose of HOV lanes is to reduce congestion on the main lanes, increase the person-moving capacity of the facility, decrease travel time, and to help reduce air pollution.

I-5 currently has two 6-mile long HOV lanes that operate in the northbound and southbound directions. The HOV lanes operate between the I-5/I-805 junction and the Via de la Valle undercrossing. The existing conditions represent the year 2006. Currently an HOV extension project is under construction to extend the existing northbound and southbound HOV lanes along I-5 from the north end of the San Dieguito River Bridge to the south end of the San Elijo Lagoon Bridge. This project is scheduled for a completion date of January 2009.

9.1.1 Existing HOV Traffic Volumes

The existing average weekday AM and PM peak hour HOV volumes on the segment of I-5 between I-5/I-805 Junction and Lomas Santa Fe Drive indicated that the average weekday peak hour morning and afternoon HOV lane traffic volumes in the northbound direction are 300 and 1,100 vehicles, respectively and along the southbound direction are 1200 and 350, respectively. The collected field data indicates that the vehicle distribution of users in this HOV lane in both the AM and PM peak hours is dominated by passenger cars (over 90%).

9.2 Future HOV/Managed Lanes

The 8+4 and 10+4 build alternatives propose to construct a total of four HOV/Managed lanes, two in each direction of travel. The four HOV/Managed lanes would traverse most of the Project limits on the I-5, from the I-5/I-805 merge to Harbor Drive in Oceanside, totaling a distance of approximately 27 miles. The HOV/Managed lanes would be separated from the main lanes by either a painted buffer or permanent concrete barrier, depending on the alternative chosen.

9.2.1 Description of HOV/Managed Lanes

HOV/Managed lanes are limited-access, barrier or buffer-separated freeway lanes that provide free or reduced cost access to qualifying HOVs, and also allow single occupancy vehicles (SOV) to gain access to HOV lanes by paying a toll. The tolls change throughout the day according to real-time traffic conditions to manage the number of vehicles in the HOV/Managed lanes and to maintain traffic volumes consistent with uncongested levels of service even during peak travel periods. Access to the lanes may be provided at intermittent points. The separation and the limited access points are important tools for managing traffic flows on HOV/Managed lanes.

Level of Service C (1650 vehicles per hour per lane) would be maintained on the HOV/Managed lanes for the I-5 corridor within project limits for both 8+4 and 10+4 build alternatives. The HOV/Managed lanes capacity would be approximately 3300 vehicles per hour (two HOV lanes) along the corridor, except the segment between La Jolla Village Drive and I-5/I-805 junction where the capacity would be approximately1650 vehicle per hour (one HOV lane).

A value pricing study was performed by Parsons Brinckerhoff Consultants to investigate the technical, financial, and feasibility of HOV/managed lanes on the corridor between the cities of La Jolla and Oceanside. Subjects of interest examined by the study included traffic operations (traffic demand, HOV/managed lane access, impacts to main lane traffic), pricing strategies (fixed/flat rate, preset variable rate, dynamic variable rate), electronic toll collection requirements, potential revenue, equity, and performance monitoring requirements. The study contains the following information:

- Value pricing for the I-5 managed lanes is feasible for both the 8+4 and 10+4 Alternatives and for both barrier-and buffer-separated design treatments.
- There is sufficient demand to justify a managed lane facility.
- Access will need to be controlled through any designated ingress and egress points along I-5 main lanes and direct access ramps (DAR) with local streets.
- The public is favorable to lane management.

9.2.2 Weekday HOV Volumes on the Managed Lanes

A list of select I-5 freeway segments within the Project limits and their respective weekday peak hour HOV volumes are compiled in Tables 9.1 and 9.2. The two tables provide a brief summary of weekday peak hour HOV traffic volumes for each alternative through each of the five cities traversed by the Project. SOV volumes are not included in the tables. Due to the fact that 8+4 alternative has four (4) general purpose lanes and 10+4 alternative has five (5) general purpose lanes, the general purpose lanes for the 8+4 alternative would be more congested, therefore the HOV/Managed lanes would attract more traffic. Consequently, the overall predicted traffic volumes in the Year 2030, on the HOV/Managed lanes with 8+4 alternative would be higher than the 10+4 alternative.

Table 9.1 Weekday Northbound HOV Volumes (SOV Volumes Not Included)

Freeway Segment		Existing*		2030 No Build*		2030 8+4		2030 10+4	
From	To	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
La Jolla Village Drive	Genesee Avenue	X	X	X	X	1,600	1,530	1,500	1,280
I-5 / I-805 Junction	Carmel Valley Road	300	1,100	1,920	1,620	2,000	2,540	1,880	2,450
Carmel Valley Road	Lomas Santa Fe	300	1,100	1,580	1,230	1,640	2,130	1,520	2,040
Santa Fe Drive	La Costa Avenue	X	X	X	X	2,120	2,470	1,900	2,270
La Costa Avenue	Cannon Road	X	X	X	X	2,030	2,180	1,820	2,170
SR-78	Oceanside Blvd	X	X	X	X	1,900	2,240	1,700	2,100

Table 9.2 Weekday Southbound HOV Volumes (SOV Volumes Not Included)

Freeway Segment		Existing*		2030 No Build*		2030 8+4		2030 10+4	
From	To	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
Oceanside Blvd	SR-78	X	X	X	X	2,570	2,030	2,170	1,650
Cannon Road	La Costa Avenue	X	X	X	X	2,460	2,380	2,080	1,920
La Costa Avenue	Santa Fe Drive	X	X	X	X	2,410	2,330	2,050	1,880
Lomas Santa Fe	Carmel Valley Road	1,200	350	1,030	1,010	2,400	2,030	2,050	1,640
Carmel Valley Road	I-5 / I-805 Junction	1,200	350	1,500	1,480	2,800	2,430	2,450	2,040
Genesee Avenue	La Jolla Village Drive	X	X	X	X	1,500	1,850	1,120	1,460

9.2.3 Weekday-Peak Hour HOV/Managed Lanes Utilization and Tolling Capacity

The *Traffic Demand Forecasting Report* (Technical Report No. 5) prepared by Wilson & Company provides predicted HOV volumes for 8+4 and 10+4 alternatives in the Year 2030. Figures 9.1 to 9.5 present the demand weekday peak hour HOV volumes for 8+4 and 10+4 alternatives in the Year 2030 and compare them with the HOV/Managed lanes capacity.

The figures exhibit a directional trend to the HOV demand volume between the northbound and southbound directions. The demand volume in the northbound direction is higher during the PM peak hour and lower during the AM peak hour. In contrast, the demand volume in the southbound direction is lower during the PM peak hour and higher during the AM peak hour.

The tolling capacity for the HOV/managed lanes is the difference between the HOV/Managed Lanes capacity volume and the HOV demand volume. The tolling capacities along the corridor would change per changes in demand volumes in the AM and PM peak periods in the northbound and southbound directions. Figures 9.1 to 9.5 were utilized to develop Tables 9.3 and 9.4 that contain a list of the freeway segments along with the predicted Year 2030 average tolling capacities and average HOV demand volumes in the AM and PM peak periods for the 8+4 and 10+4 alternatives. The segments were selected to represent the entire I-5 corridor within the project limits.

The HOV/Managed Lanes with the 8+4 alternative would have less predicted tolling capacity than that with the 10+4 alternative in the Year 2030.

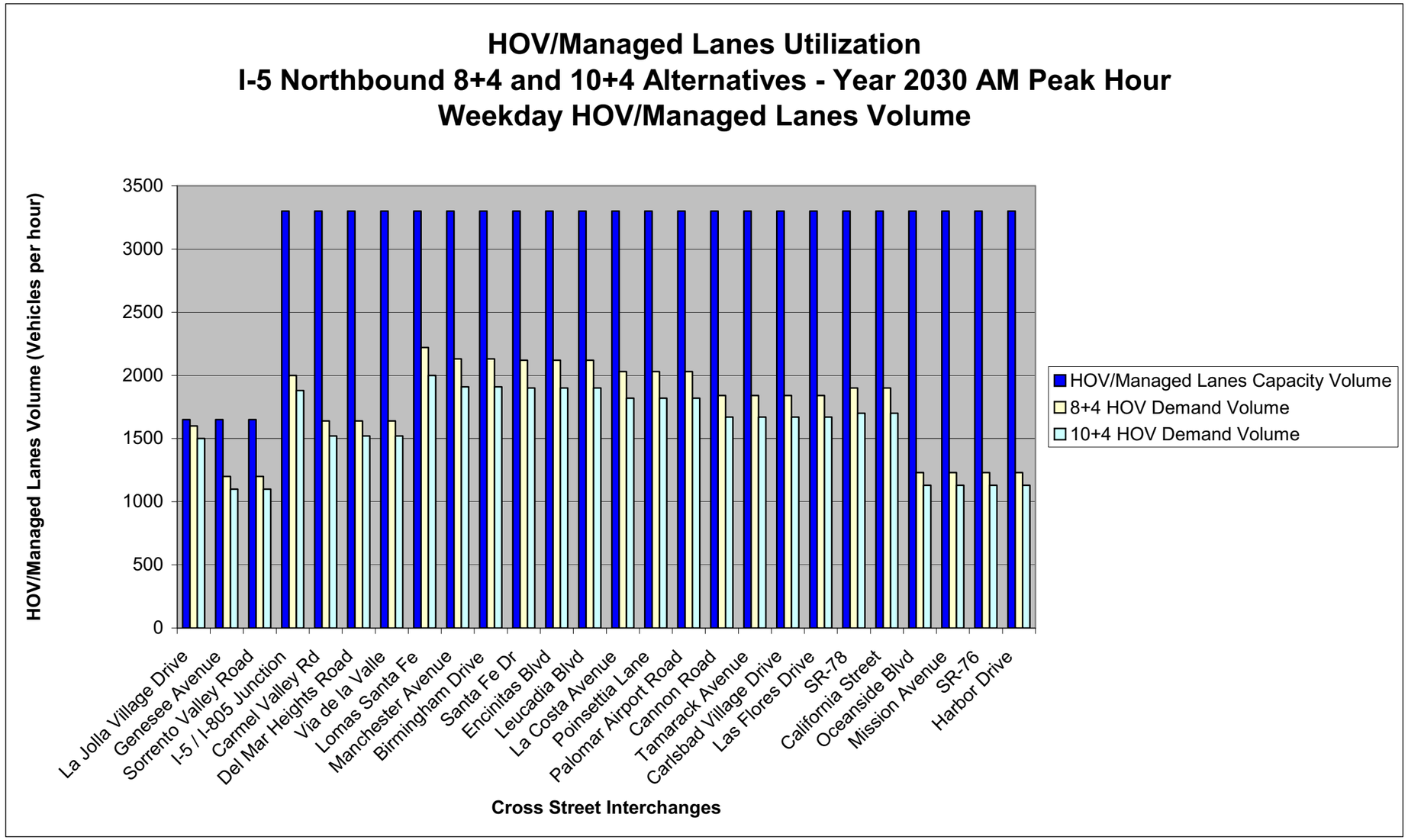


Figure 9.1 I-5 NB 8+4 and 10+4 Alternatives- Year 2030 AM Peak Hour Weekday HOV Managed Lanes Volume

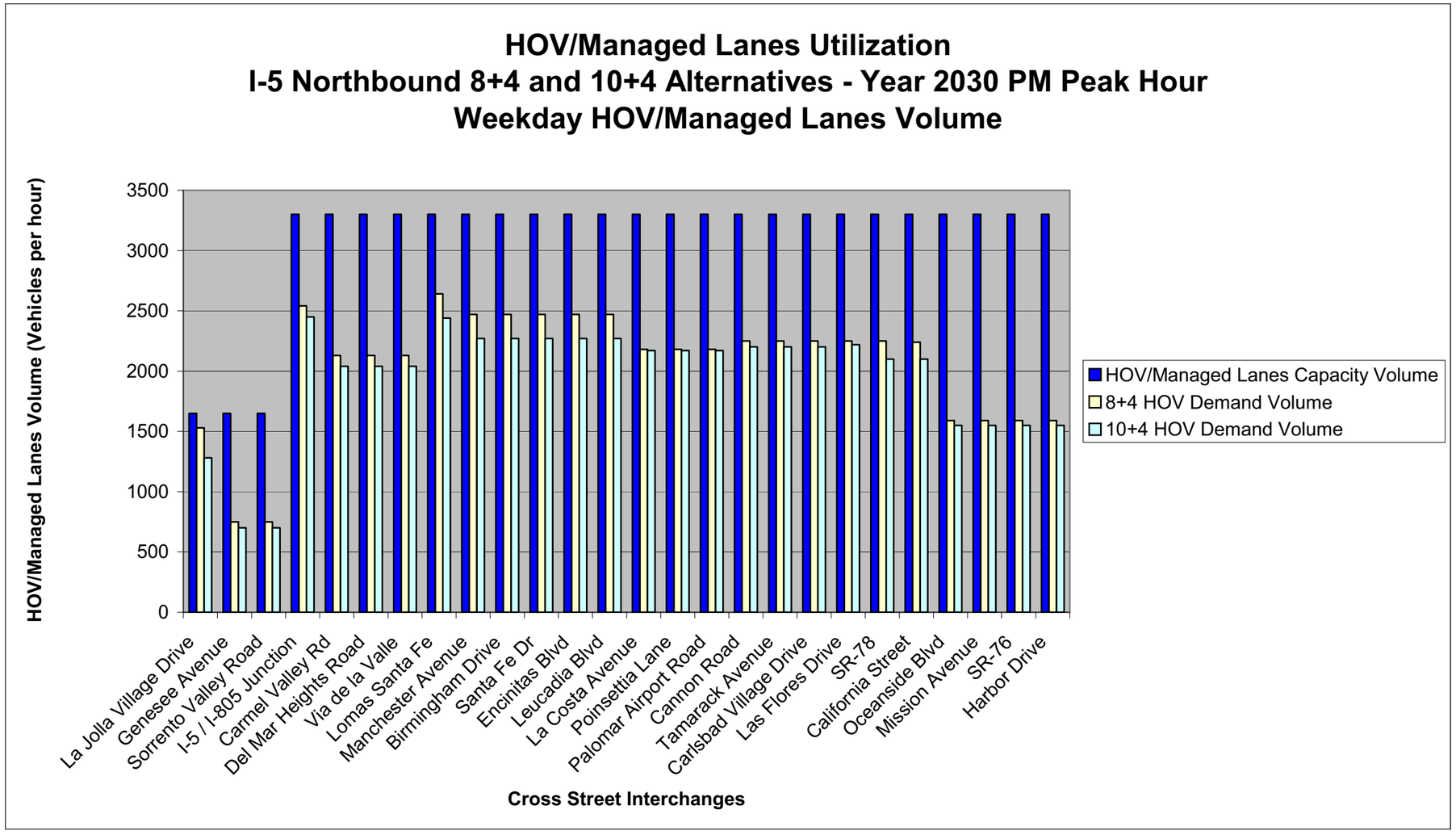


Figure 9.2 I-5 NB 8+4 and 10+4 Alternatives- Year 2030 PM Peak Hour Weekday HOV Managed Lanes Volume

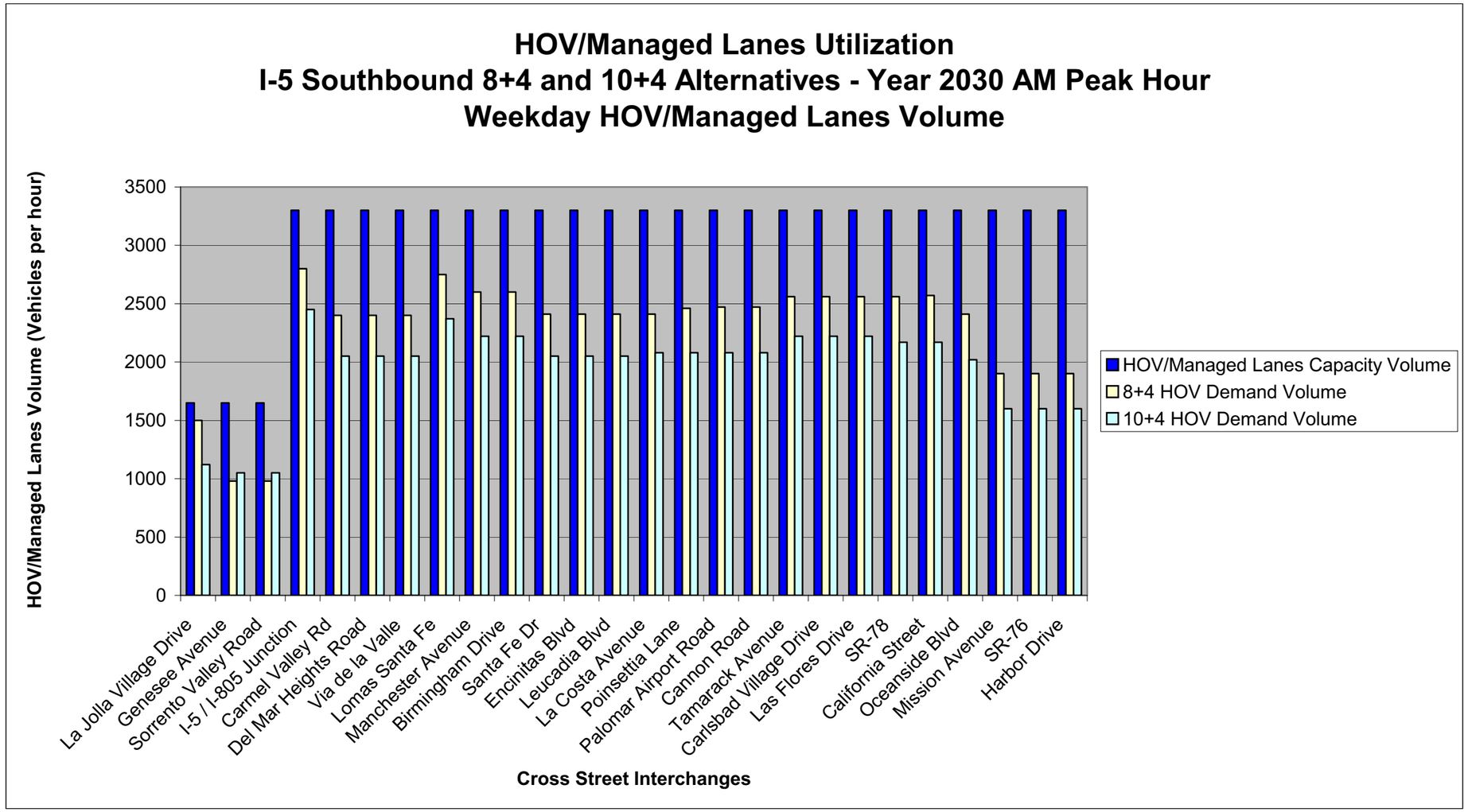


Figure 9.3 I-5 SB 8+4 and 10+4 Alternatives- Year 2030 AM Peak Hour Weekday HOV Managed Lanes Volume

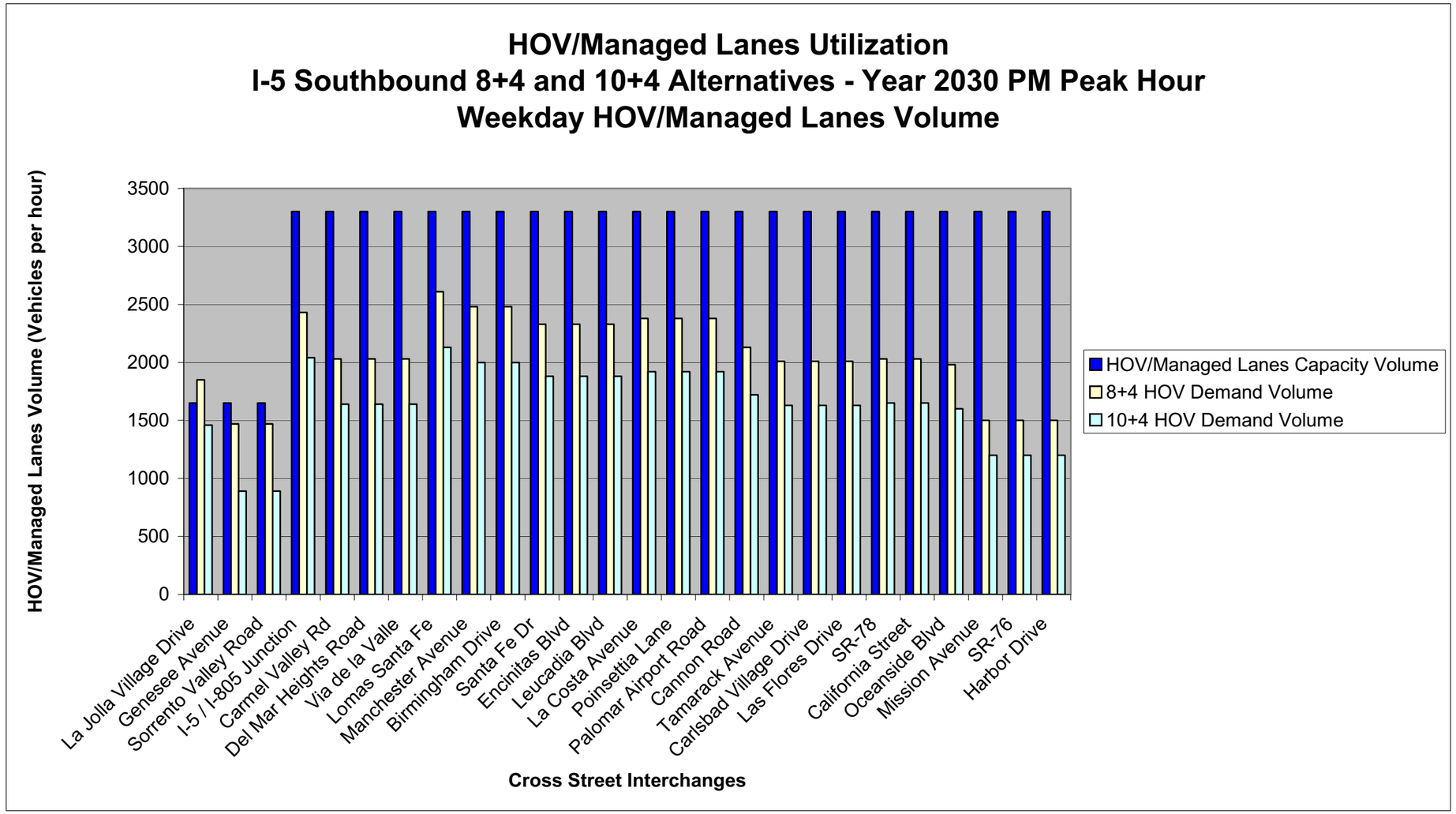


Figure 9.4 I-5 SB 8+4 and 10+4 Alternatives- Year 2030 PM Peak Hour Weekday HOV Managed Lanes Volume

Table 9.3 Weekday Northbound 2030 HOV Demand and Tolling Capacity Volumes (VPH) for 8+4 and 10+4

Freeway Segment		2030 HOV/Managed Lanes Capacity- 8+4 & 10+4	2030 8+4 HOV Demand		2030 8+4 Tolling Capacity		2030 10+4 HOV Demand		2030 10+4 Tolling Capacity	
From	To		AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
La Jolla Village Drive	Genesee Avenue	1650	1,600	1,530	50	120	1,500	1,280	100	370
I-5 / I-805 Junction	Carmel Valley Road	3300	2,000	2,540	1,300	760	1,880	2,450	1,420	850
Carmel Valley Road	Lomas Santa Fe	3300	1,640	2,130	1,660	1,170	1,520	2,040	1,780	1,260
Santa Fe Drive	La Costa Avenue	3300	2,120	2,470	1,180	830	1,900	2,270	1,400	1,030
La Costa Avenue	Cannon Road	3300	2,030	2,180	1,270	1,120	1,820	2,170	1,480	1,130
SR-78	Oceanside Blvd	3300	1,900	2,250	1,400	1,050	1,700	2,100	1,600	1,200

Table 9.4 Weekday Southbound 2030 HOV Demand and Tolling Capacity Volumes (VPH) for 8+4 and 10+4

Freeway Segment		2030 HOV/Managed Lanes Capacity- 8+4 & 10+4	2030 8+4 HOV Demand		2030 8+4 Tolling Capacity		2030 10+4 HOV Demand		2030 10+4 Tolling Capacity	
From	To		AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
Oceanside Blvd	SR-78	3300	2,490	2,000	810	1,300	2,100	1,625	1,200	1,675
Cannon Road	La Costa Avenue	3300	2,470	2,300	830	1,000	2,080	1,850	1,220	1,450
La Costa Avenue	Santa Fe Drive	3300	2,410	2,350	890	950	2,060	1,890	1,240	1,410
Lomas Santa Fe	Carmel Valley Road	3300	2,520	2,220	780	1,080	2,160	1,800	1,140	2,160
Carmel Valley Road	I-5 / I-805 Junction	3300	2,400	2,030	900	1,270	2,050	1,640	1,250	1,660
Genesee Avenue	La Jolla Village Drive	1650	980	1,470	670	180	1,050	890	600	760

9.2.4 Weekend HOV/Managed Lanes Utilization and Tolling Capacity

Wilson & Company completed a study to determine the proportion of HOV in the I-5 weekend traffic stream. The study concluded that the overall proportion of HOV to single occupancy vehicles (SOV) was approximately 60:40. The weekend SOV and HOV volumes are presented in Tables 8.1 and 8.2 of Chapter 8 of this report.

The existing HOV to SOV proportions for a typical weekend along the northbound direction for the 10:00-10:30 AM, 1:00-1:30 PM, and 4:00-4:30 PM were 63:37, 54:46, and 64:36. The overall proportion for the northbound direction was 61:39. In the southbound direction the HOV proportions were 57:43, 55:44, and 65:35. The overall proportion for the southbound direction was 59:41. The predicted 2030 weekend HOV to SOV proportion would be consistent with the current proportion. Due to high existing HOV traffic in the existing I-5 weekend traffic stream during the weekend peak periods, no predicted weekend tolling capacity is expected in the Year 2030.

10.0 Effects of Opening the Interchange Modifications on I-5 at Lomas Sante Fe Drive and the HOV Extension between Via de la Valle and Manchester Road

Figures 10.1 to 10.4 amend Figures 3.1 and 3.2 and Tables 5.1 to 5.13 to report travel times and delay for the additional years 2007, 2008, and 2009. During the additional years mentioned (2007 and 2008), two Caltrans projects were initiated and completed. The two Caltrans projects were the modification of Lomas Sante Fe Interchange and extension of HOV lanes between Via de la Valle and Manchester Road, which were completed in June 2008 and September 2008, respectively.

During that time period (2007 to 2008), the aforementioned projects were completed and provided increased traffic capacity in these project areas. As a result, these two projects likely have decreased travel time in the overall corridor project area. In addition, an economic recession that reportedly started in December 2007 may have contributed to the decreased travel time within the corridor as personal and business travel was reduced.

10.1 Northbound Travel Time

Figure 10.1 illustrates that from 2003 to 2007, the trend for the average peak hour travel time with respect to time of day remained consistent with an average decrease of approximately 1 minute per year. From 2007 to 2008, the peak hour average travel time decreased by about 6 minutes. However, from 2008 to 2009, Figure 10.1 shows no change in travel time in the northbound direction.

As shown in Figure 10.1 for years 2003 to 2007, the peak congested period was spread between 2pm and 7pm for a total of 5 hours. Figure 10.1 illustrates that in 2008 and 2009, the peak congested period was spread between 3pm and 6:30pm, resulting in the reduction of peak congested period from approximately 5 hours to 3.5 hours.

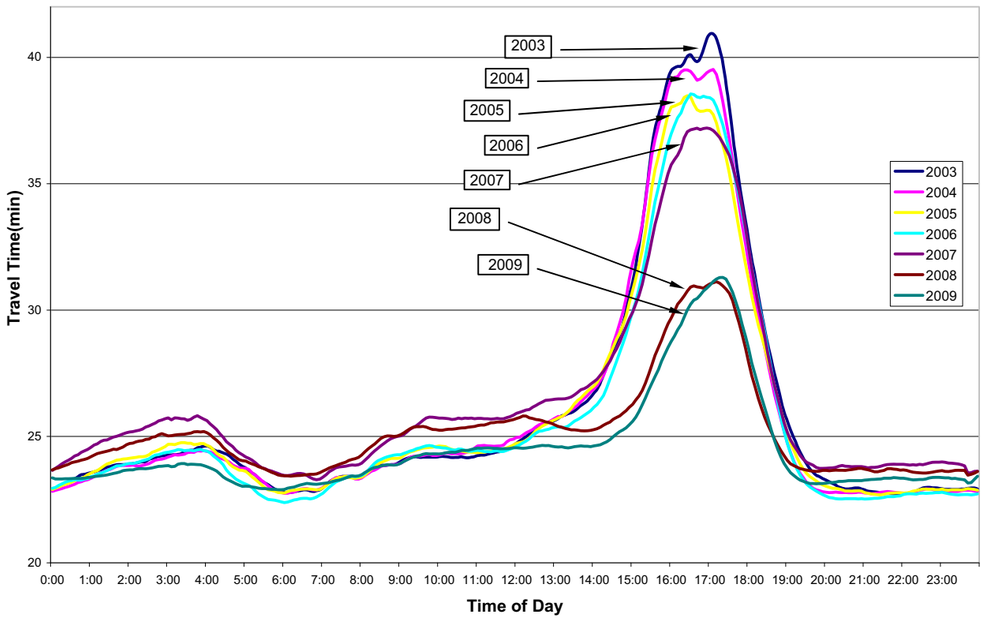


Figure 10.1: Northbound Weekday Traffic Average Travel Time: Harbor Drive to La Jolla Village Drive

10.2 Southbound Travel Time

Similarly, in the southbound direction, the effects of completing the HOV extension and Lomas Santa Fe Interchange projects, and the current economic recession, resulted in a decrease in southbound travel time, as illustrated in Figure 10.2. Before these projects were completed and prior to the recession, the overall basic southbound trends for the peak hour average travel time, as illustrated by Figure 10.2, was increasing from 2003 through 2007. Although travel time decreased in 2008 as compared to 2007 for the southbound direction, the overall trend was still increasing from 2008 through 2009.

The average travel time shown on Figure 10.2 during the southbound AM peak has increased 2 minutes from 45 minutes in 2006 to 47 minutes in 2007. From 2007 to 2009, the peak hour average travel time had decreased by 16 minutes from 47 minutes in 2007 to 31 minutes in 2009. The average travel time during southbound PM peak has increased about 5 minutes from 31 minutes in 2006 to 36 minutes in 2007. In 2008, average travel time decreased by 12 minutes to 34 minutes, but increased by 8 minutes to 42 minutes in 2009.

As shown in Figure 10.2, for years 2003 through 2007 and year 2009, the AM peak congested period was spread between 6am and 9am for a total of 3 hours. In 2008, the AM peak congested period occurred between 7am and 9am for a total of 2 hours, which is 1 hour less than the previous years (2003 to 2007) and the following year (2009). The PM peak congested period from 2003 through 2009, as illustrated on figure 10.2, was spread between 3:30pm and 6pm for a total of 2.5 hours.

Evidently, as shown above, the completion of the two improvement projects in 2008 coupled with the current economic recession contributed to the decreased average travel time along the northbound side of the corridor for PM travels. Similarly, for the southbound side, there is also decreased average travel time for AM and PM travels.

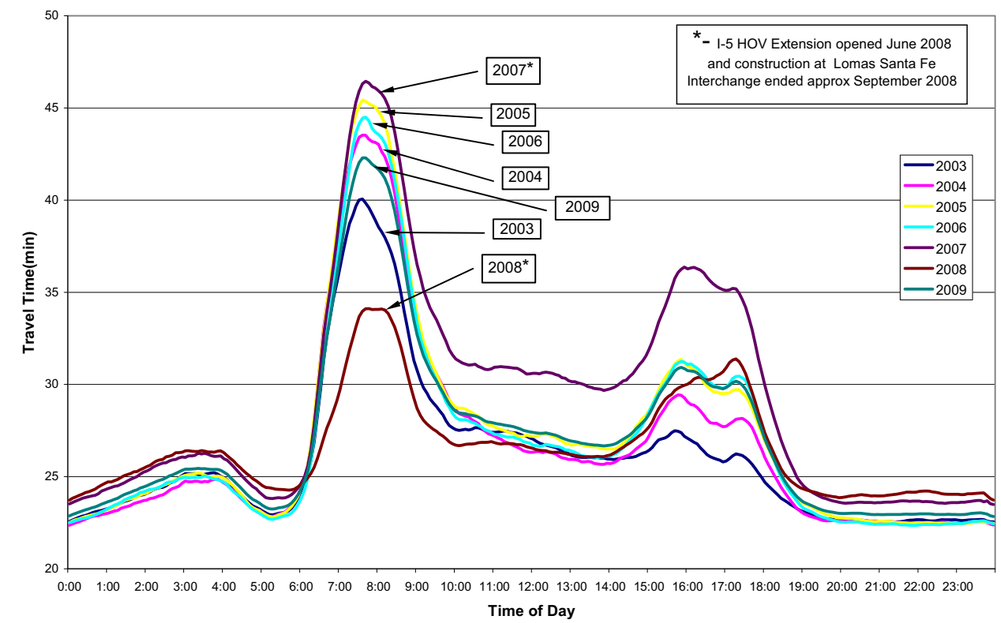


Figure 10.2: Southbound Weekday Traffic Average Travel Time: Harbor Drive to La Jolla Village Drive

10.3 Delay

Average weekday delays and weekday travel times reported in Figures 10.3 and 10.4 update the 2006 PeMS aggregated speed plots depicted in Figures 5.1 and 5.2. The average weekday travel times reported in Figures 10.3 and 10.4 cover the two week periods before and after the opening of the HOV and auxiliary lanes near Lomas Santa Fe. This is in contrast to Figures 10.1 and 10.2 that also report average weekday travel times but on a year-to-year basis (2003 to 2009). However, the resulting travel times in Figures 10.3 and 10.4 complement the data in Figures 10.1 and 10.2.

To account for the effect of opening the HOV and auxiliary lanes, PeMS data was obtained for both northbound and southbound directions on two week periods before and after the opening. For the northbound direction, data obtained from May 16 to May 30, 2008 and from June 2 to June 16, 2008

represent the conditions before and after the opening, respectively. Similarly, in the southbound direction, data collected from May 27 to June 10, 2008 and from June 12 to June 26, 2008 represent the conditions before and after the opening, respectively. In addition, only weekday data (Monday to Friday) was used to obtain the plots. The resulting diagrams (Figures 10.3 and 10.4) show color coded gradient plotted against the time of day and post mile locations along the I-5 corridor. The colors on the plots correspond to speeds along the corridor at different times of the day and ranges from 0 mph (black) to 70+mph (light yellow). In addition, the calculated average weekday delay and average weekday AM/PM travel times are depicted with the plots.

10.3.1 Northbound Delay

Figures 10.3 illustrates that traffic delay for the corridor was decreased due to the modifications. Prior to the opening of the HOV and auxiliary lanes near Lomas Santa Fe, the delay was 2000 vehicle hours according to the sample data used for Figure 10.3. After the opening of auxiliary lanes, the delay decreased from 2000 vehicle hours to 1200 vehicle hours. As a result, average weekday travel time decreased by 4 minutes from 31 minutes before the opening to 27 minutes after the opening.

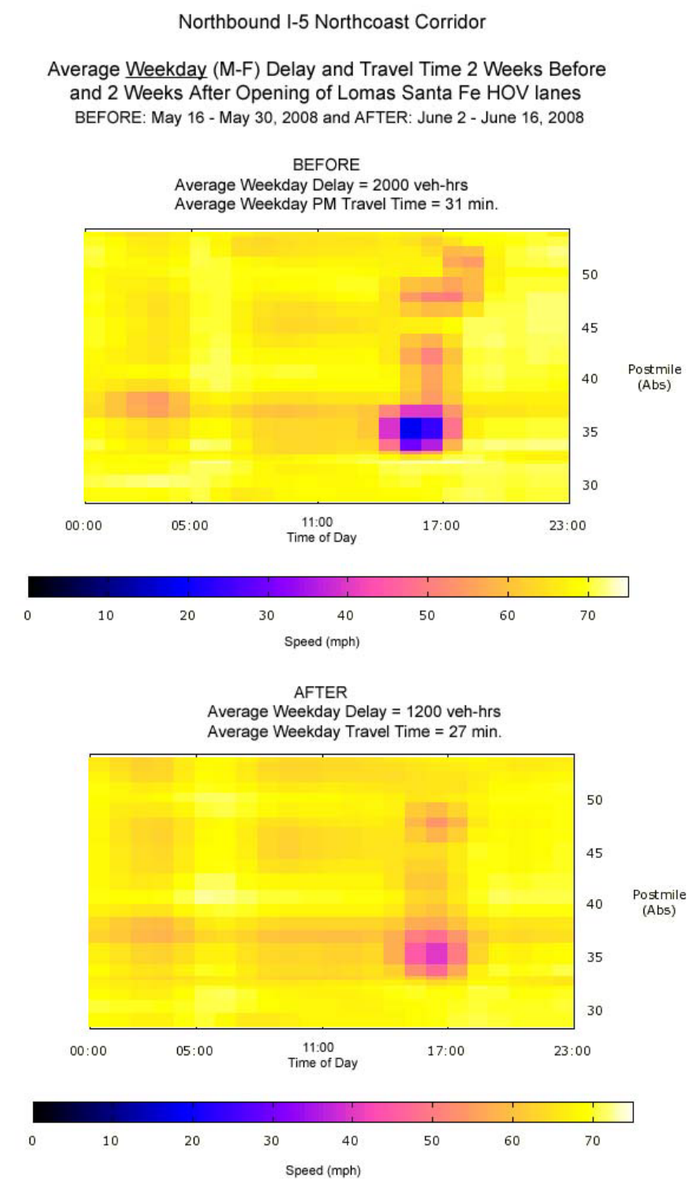


Figure 10.3: I-5 Northbound Weekday Daily Vehicle-Hours of Delay

10.3.2 Southbound Delay

Figures 10.4 illustrates that traffic delay for the corridor was decreased due to the modifications. Prior to the opening of the HOV and auxiliary lanes near Lomas Santa Fe, the delay was 3200 vehicle hours according to the sample data used for Figure 10.4. After the opening of auxiliary lanes, the delay decreased from 3200 vehicle hours to 850 vehicle hours. Accordingly, the average weekday AM travel time decreased by 13 minutes from 40 minutes before the opening to 27 minutes after the opening.

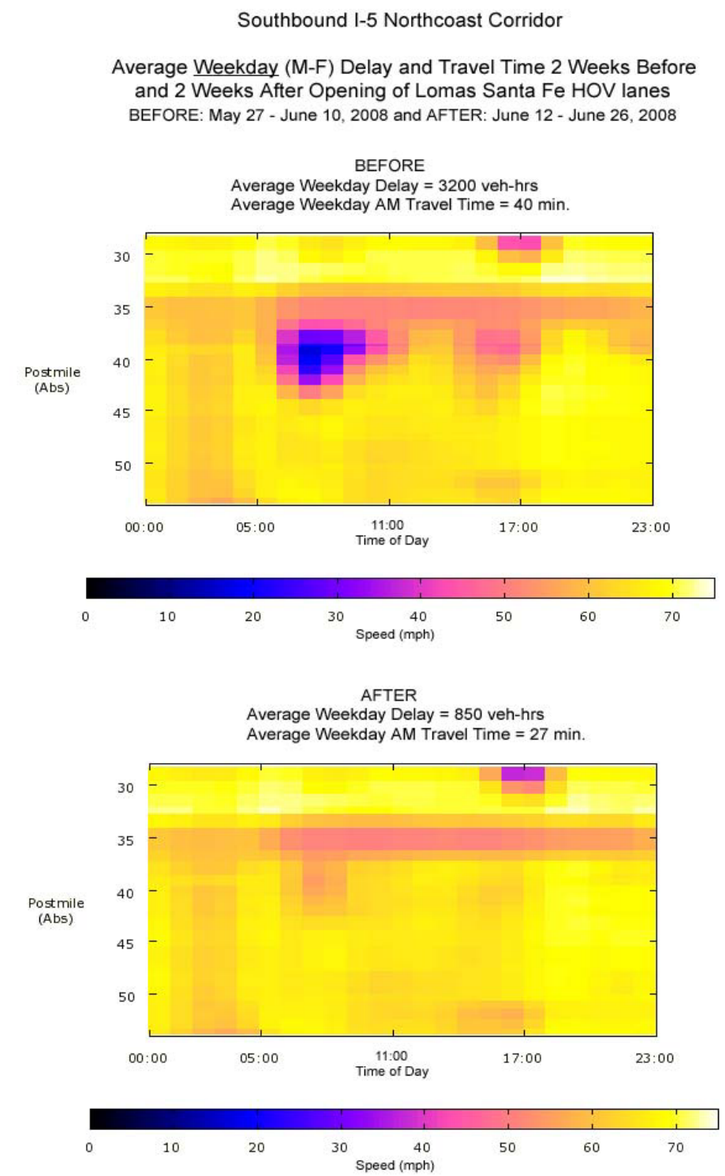
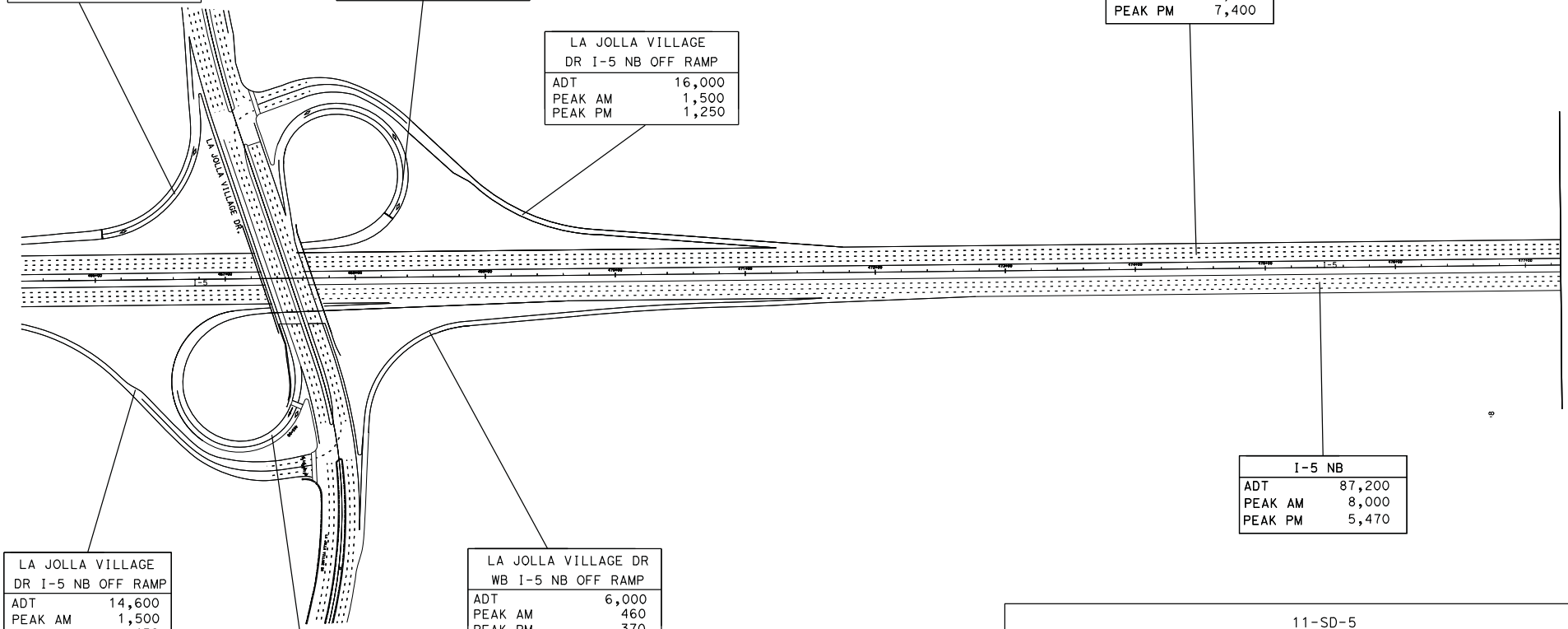


Figure 10.4: Southbound Weekday Daily Vehicle-Hours of Delay



LA JOLLA VILLAGE DR EB I-5 NB ON RAMP	
ADT	9,000
PEAK AM	350
PEAK PM	600

LA JOLLA VILLAGE DR WB I-5 NB OFF RAMP	
ADT	7,000
PEAK AM	250
PEAK PM	900

LA JOLLA VILLAGE DR I-5 NB OFF RAMP	
ADT	16,000
PEAK AM	1,500
PEAK PM	1,250

I-5 SB	
ADT	82,500
PEAK AM	5,430
PEAK PM	7,400

I-5 NB	
ADT	87,200
PEAK AM	8,000
PEAK PM	5,470

LA JOLLA VILLAGE DR I-5 NB OFF RAMP	
ADT	14,600
PEAK AM	1,500
PEAK PM	450

LA JOLLA VILLAGE DR EB I-5 NB OFF RAMP	
ADT	10,800
PEAK AM	740
PEAK PM	950

LA JOLLA VILLAGE DR WB I-5 NB OFF RAMP	
ADT	6,000
PEAK AM	460
PEAK PM	370

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

TRAFFIC VOLUMES AND LANE CONFIGURATIONS

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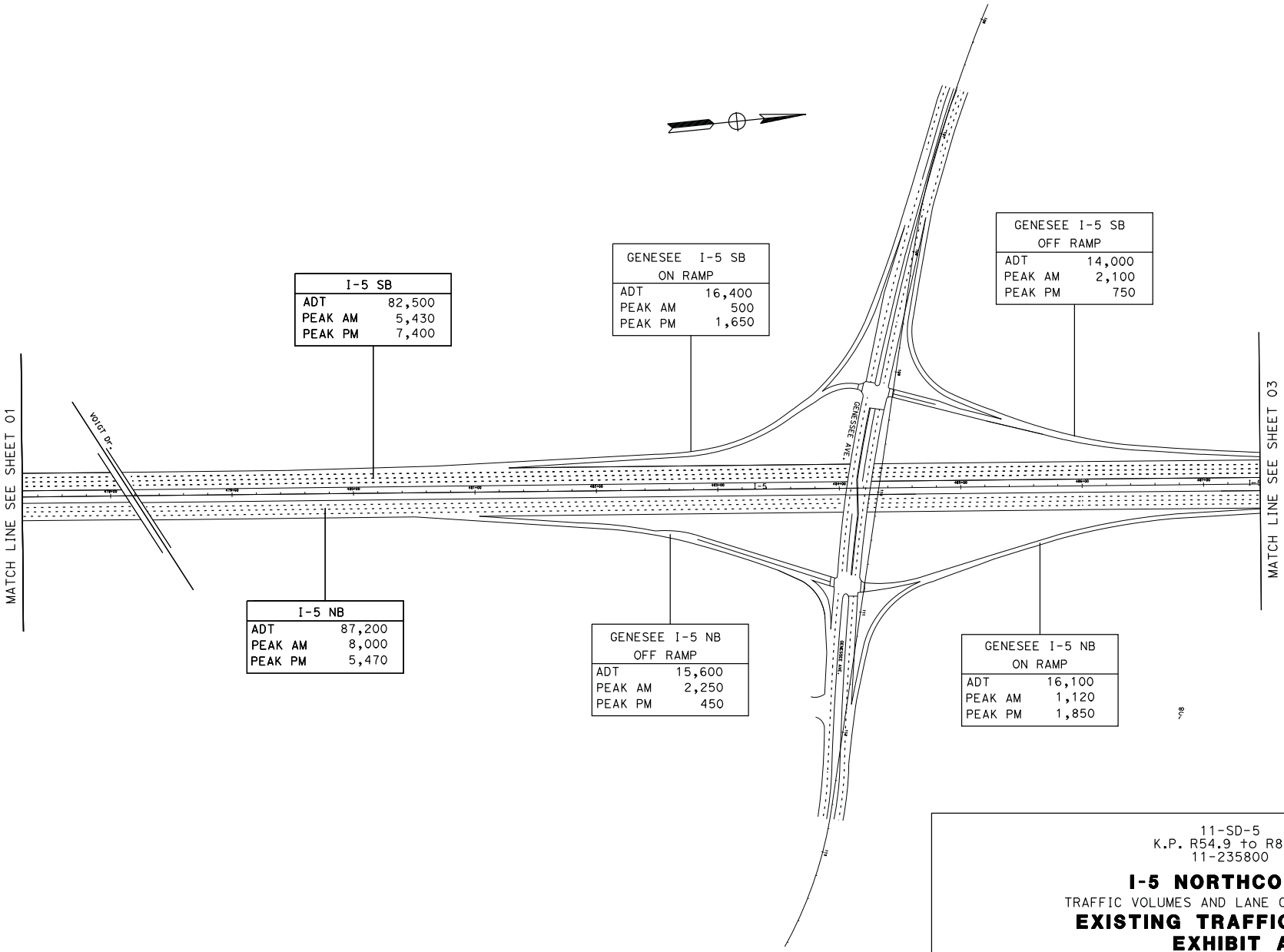

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

TRAFFIC VOLUMES AND LANE CONFIGURATIONS

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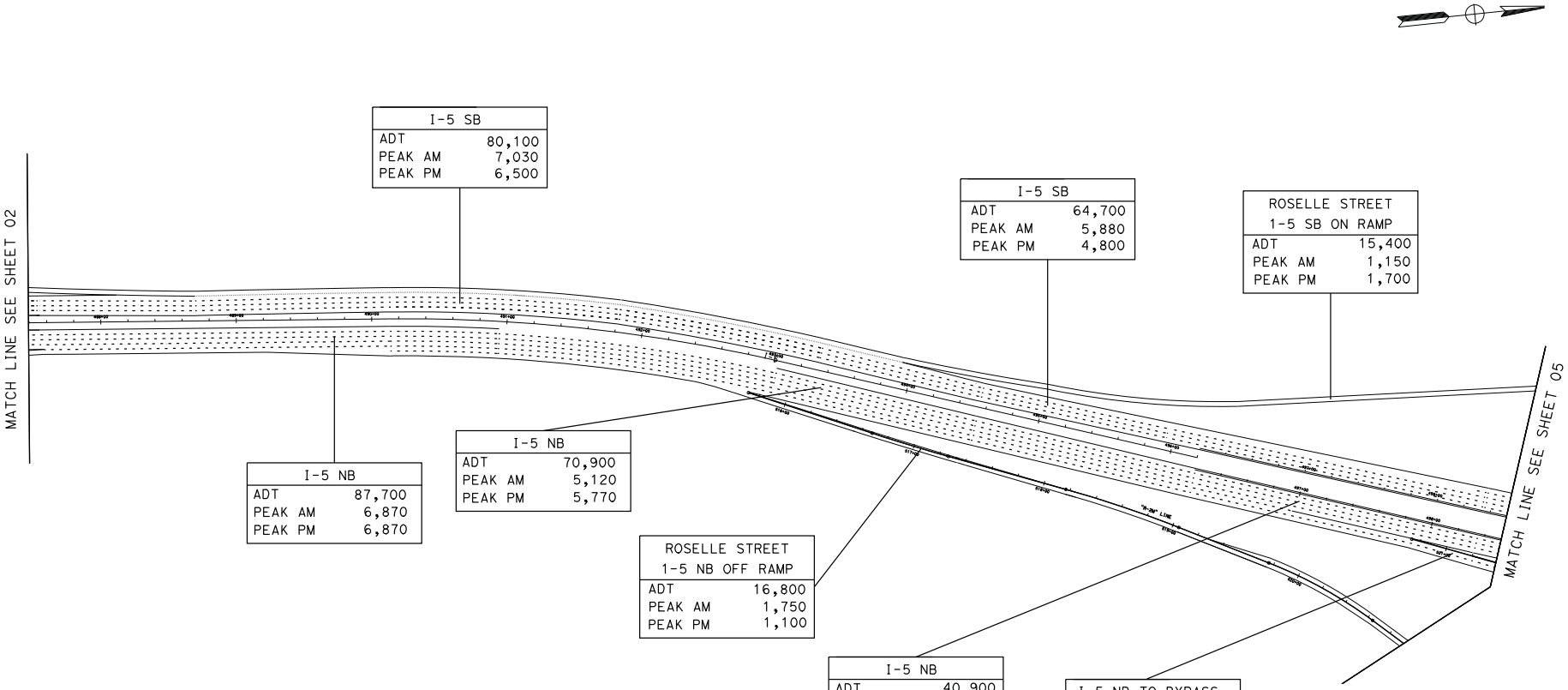

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

TRAFFIC VOLUMES AND LANE CONFIGURATIONS

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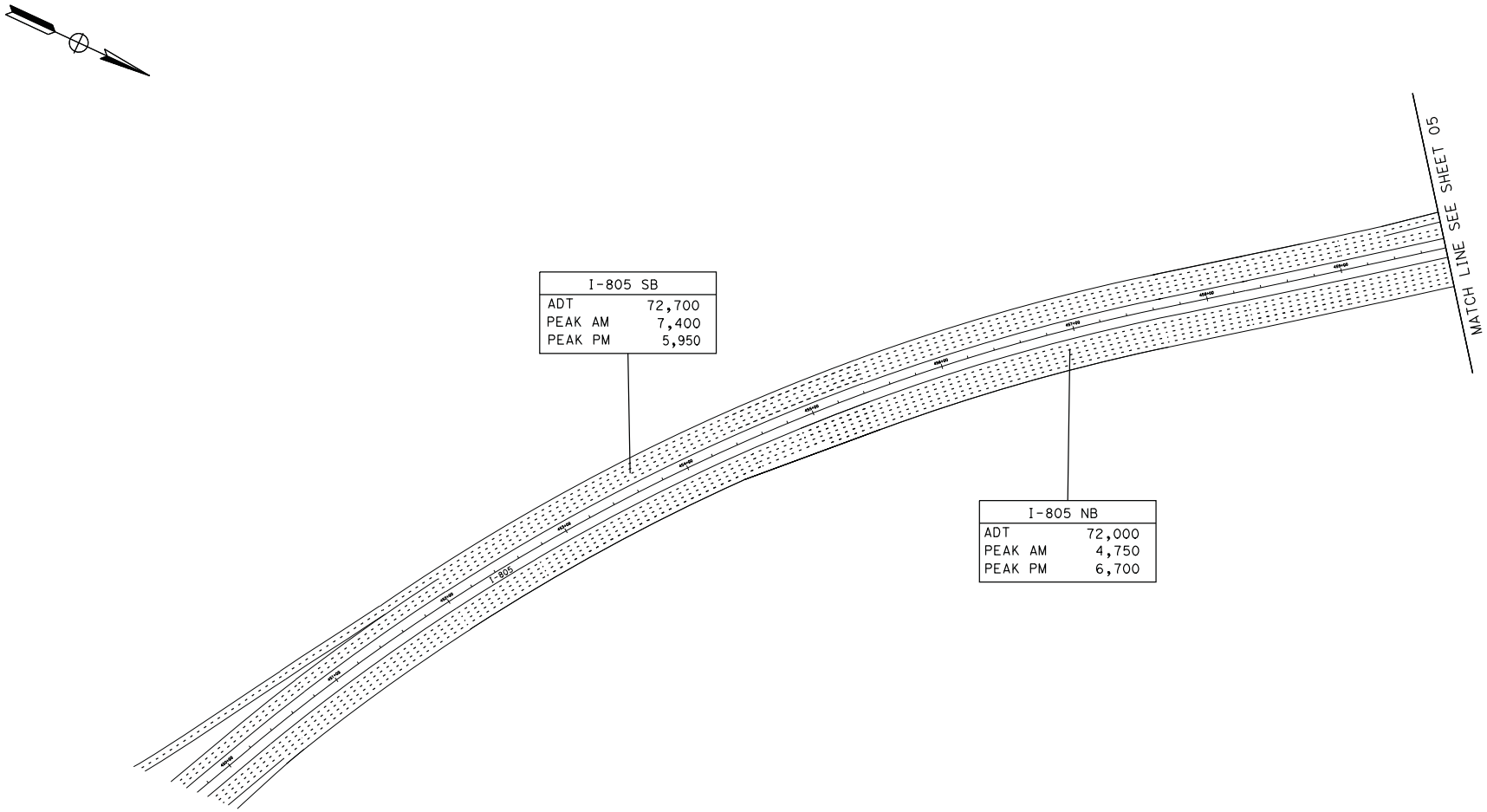

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

TRAFFIC VOLUMES AND LANE CONFIGURATIONS

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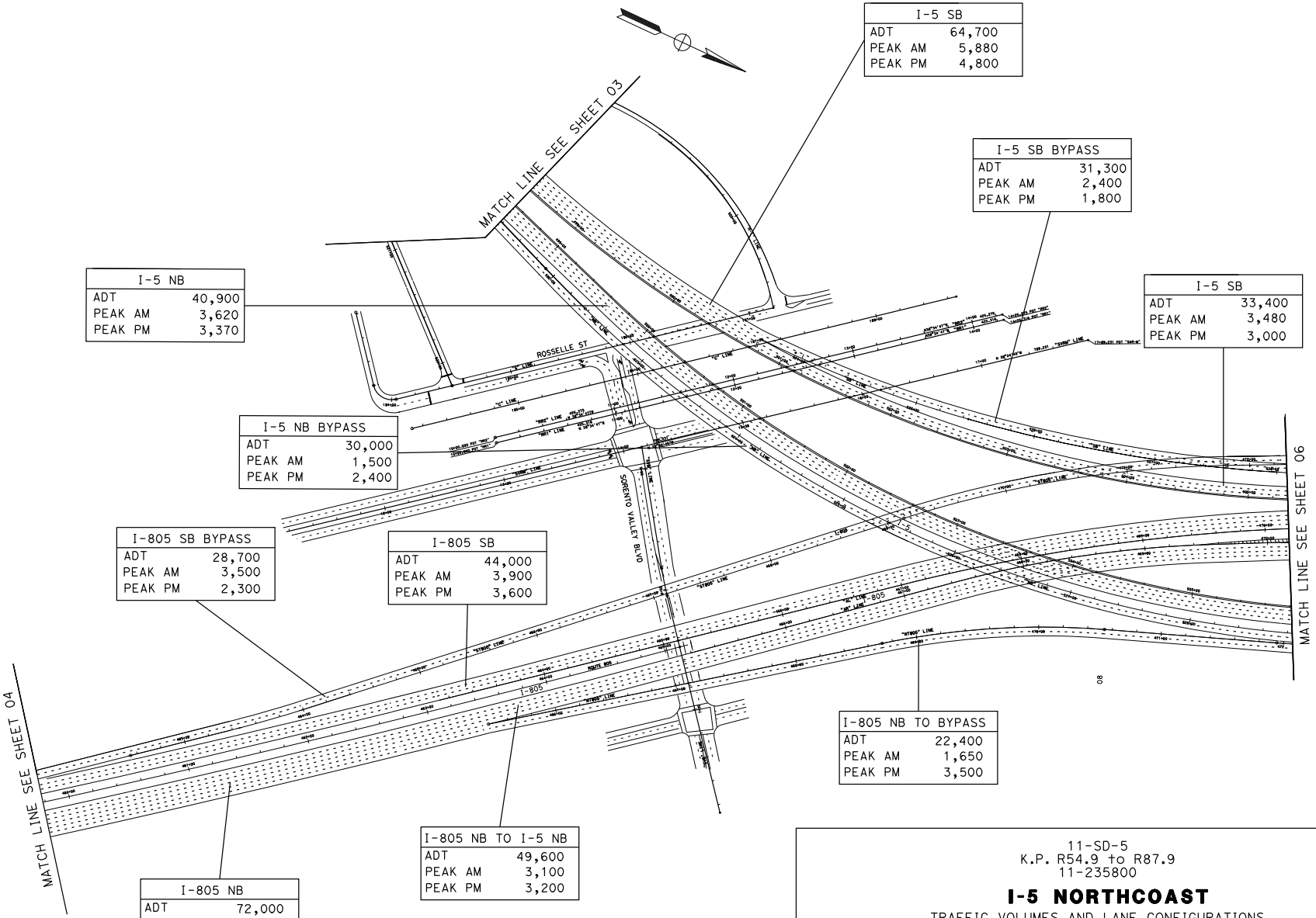

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

TRAFFIC VOLUMES AND LANE CONFIGURATIONS

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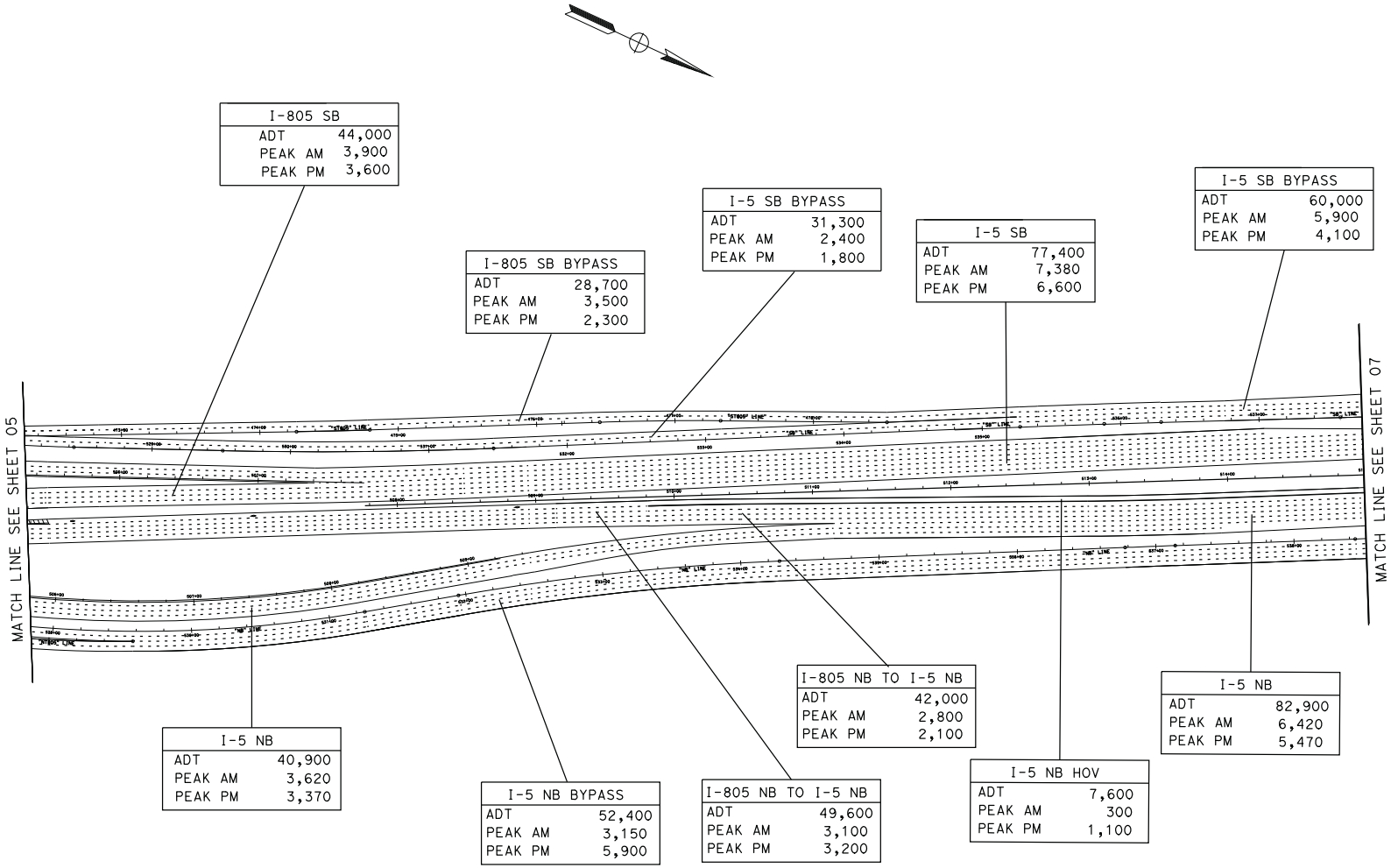

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXISTING TRAFFIC - 2006
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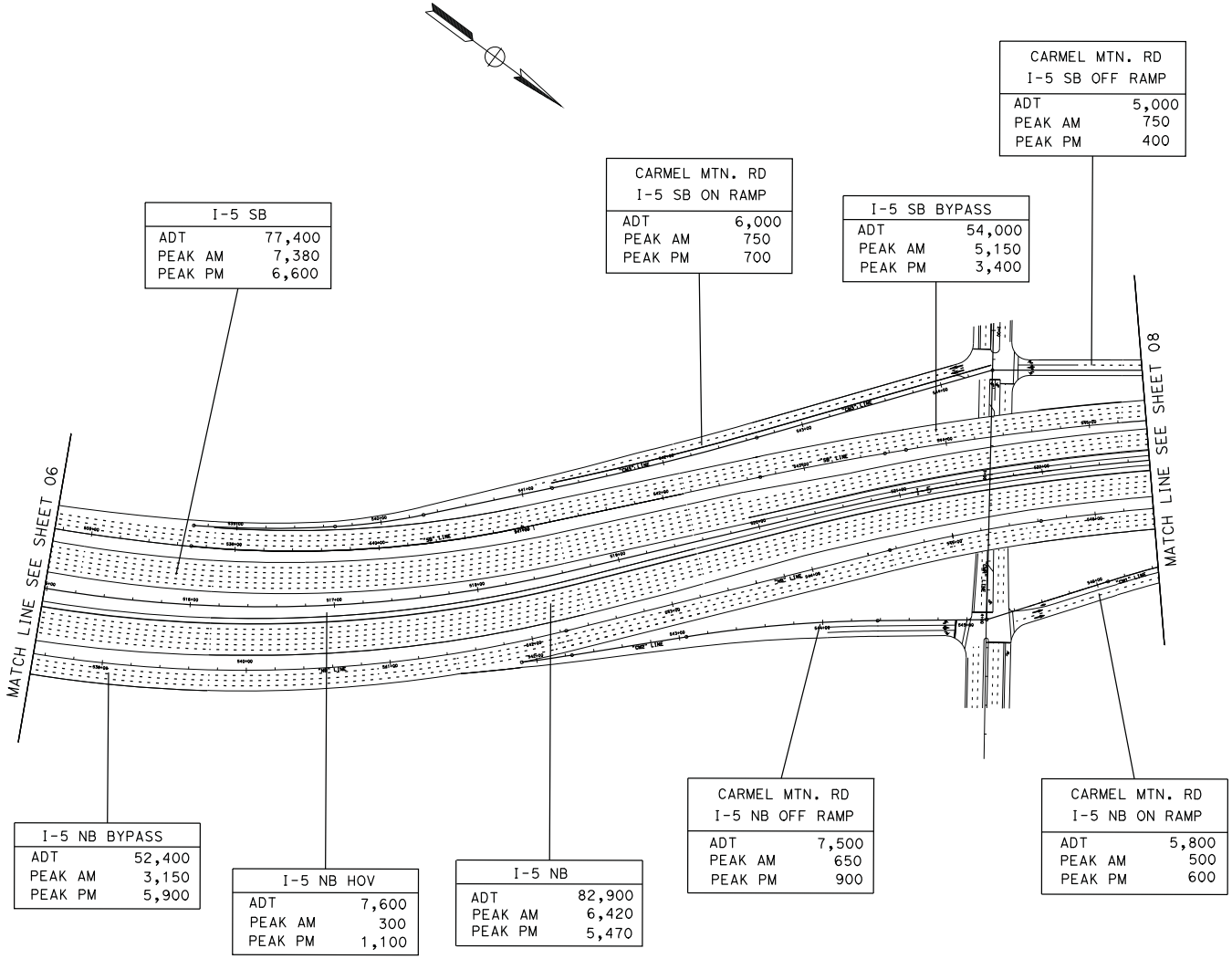

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

TRAFFIC VOLUMES AND LANE CONFIGURATIONS

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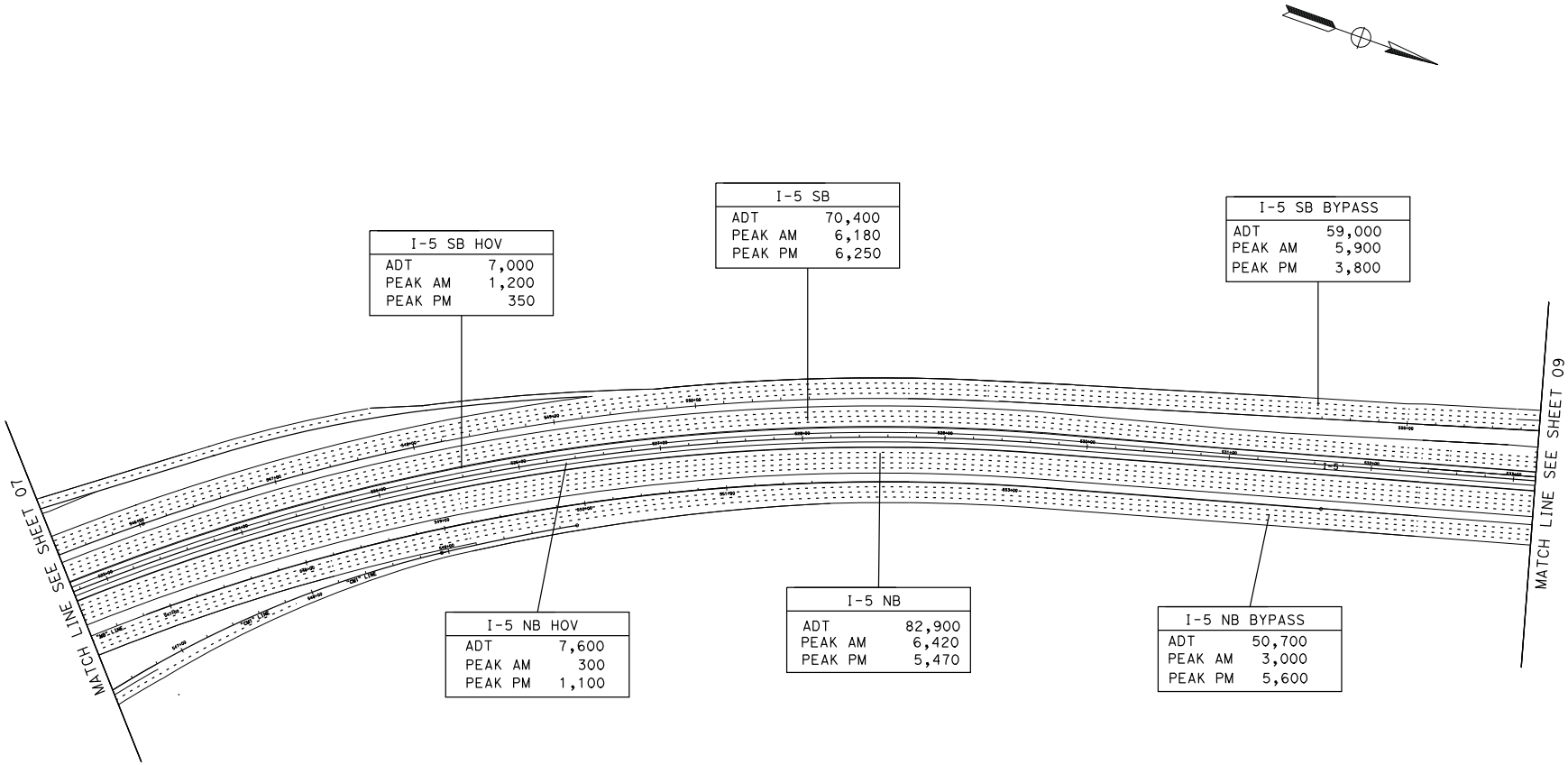

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXISTING TRAFFIC - 2006

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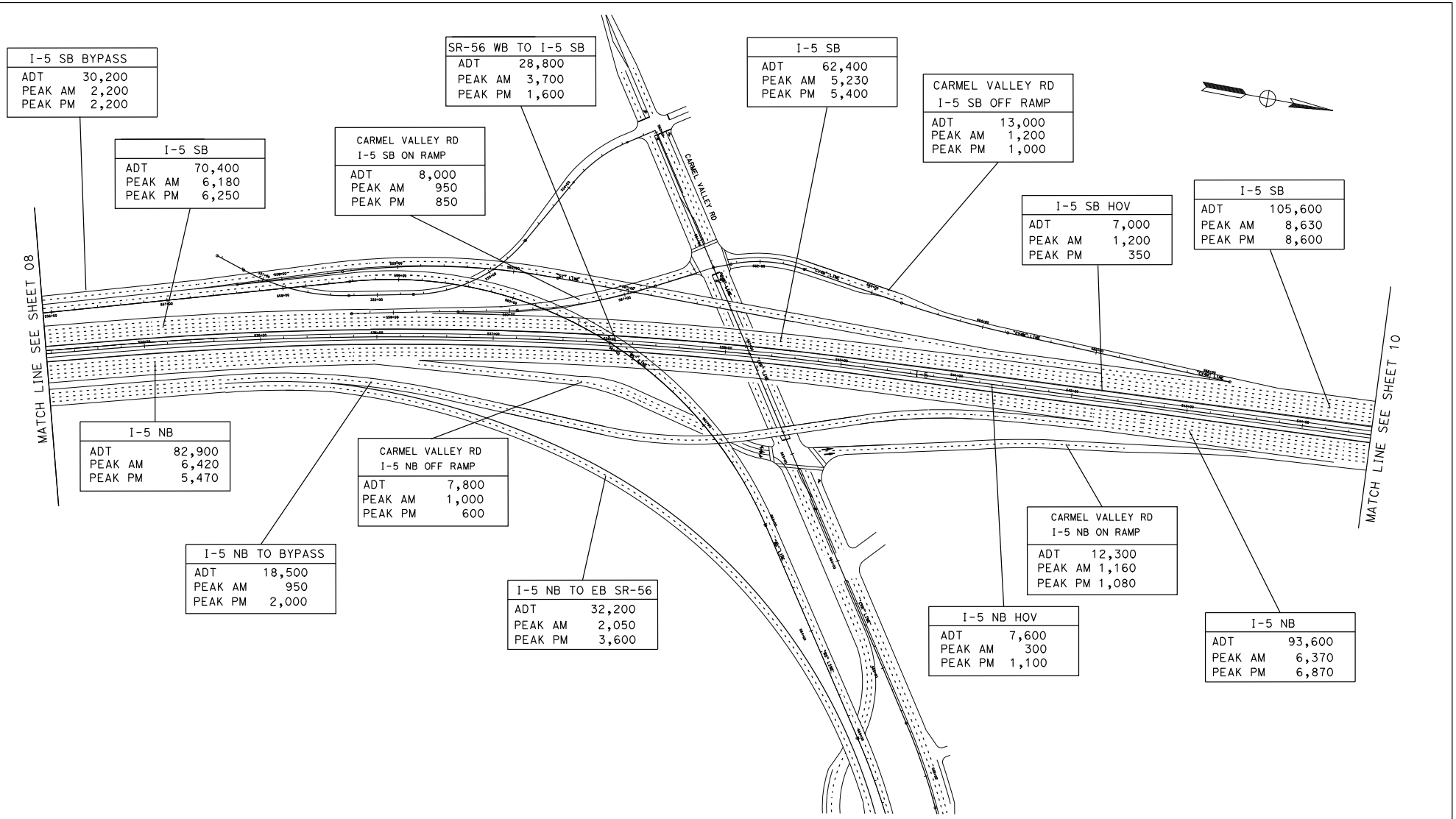

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

TRAFFIC VOLUMES AND LANE CONFIGURATIONS

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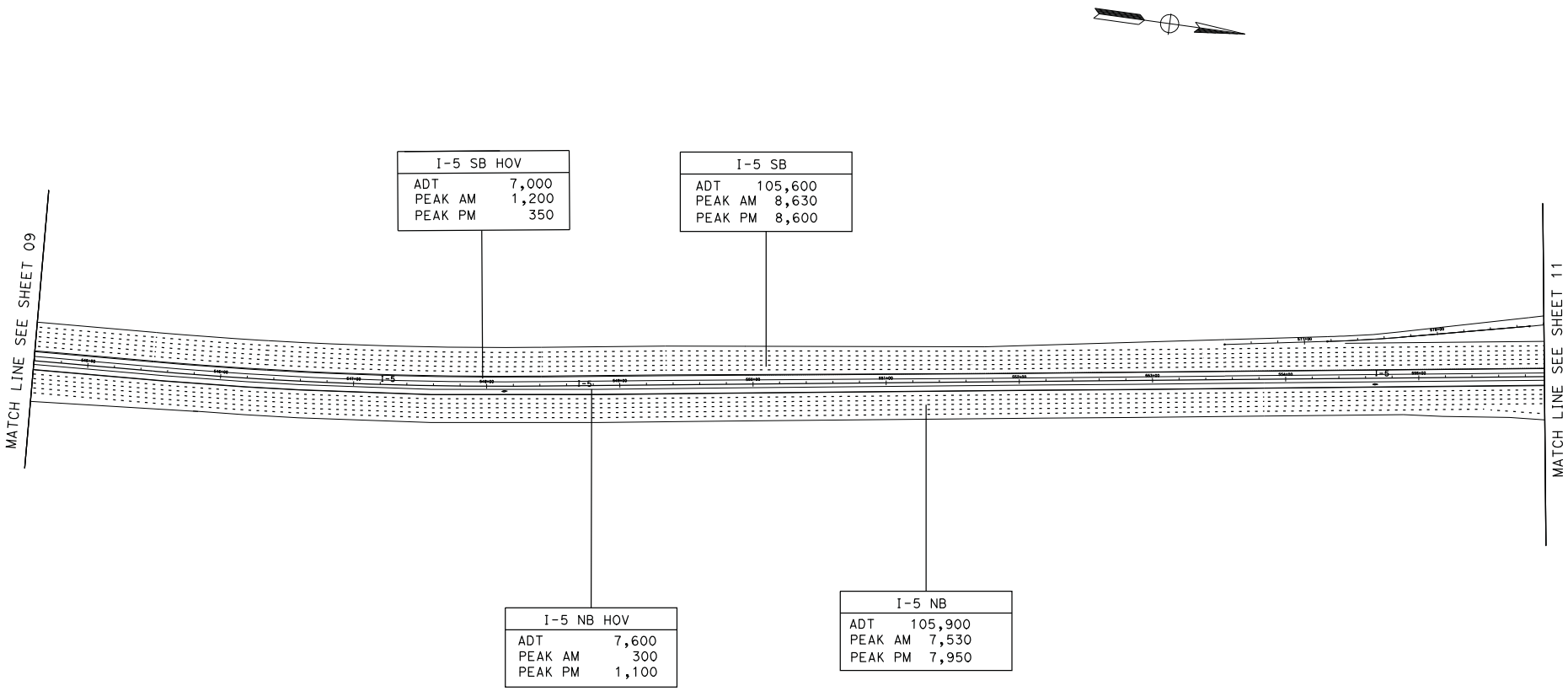

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

TRAFFIC VOLUMES AND LANE CONFIGURATIONS

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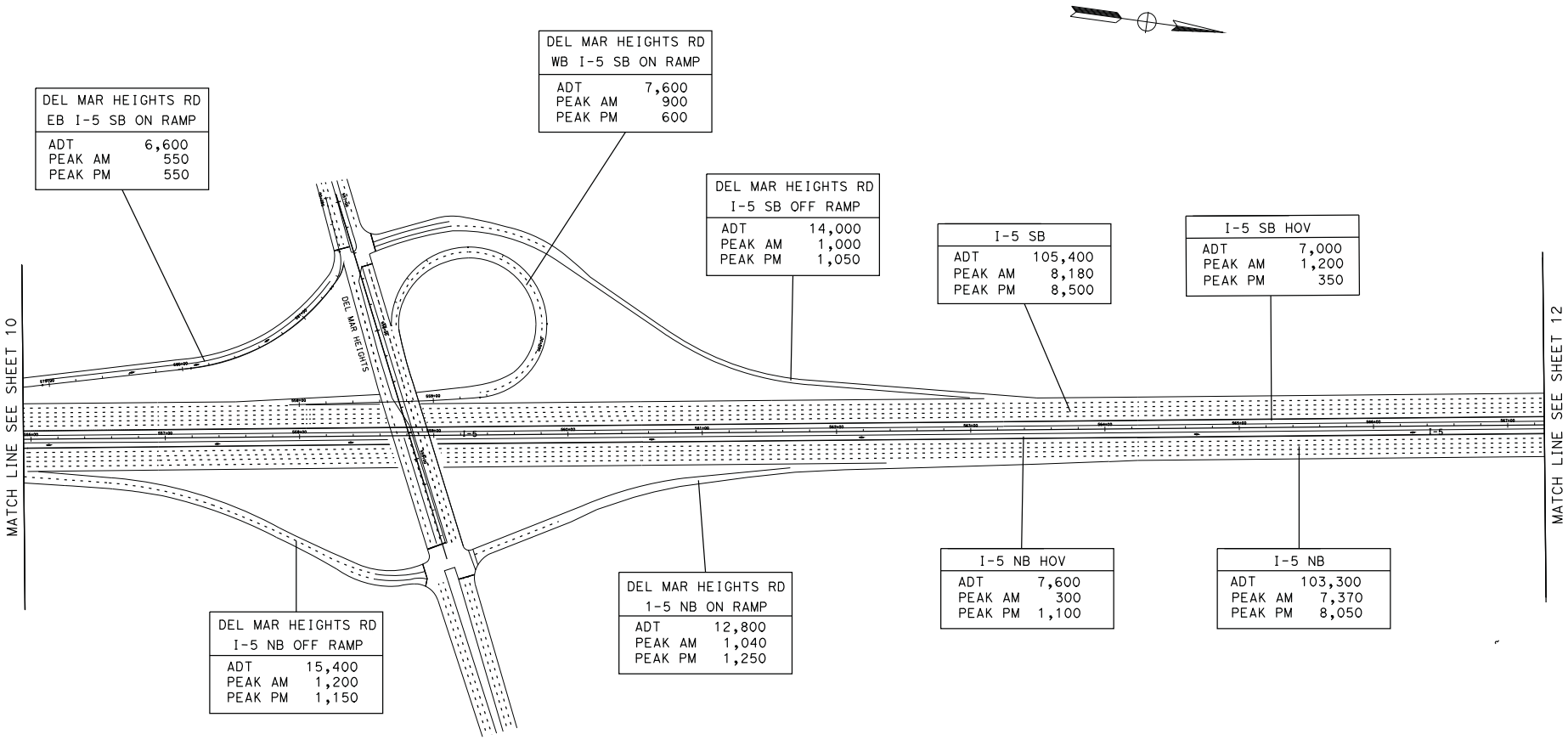

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXISTING TRAFFIC - 2006
EXHIBIT A

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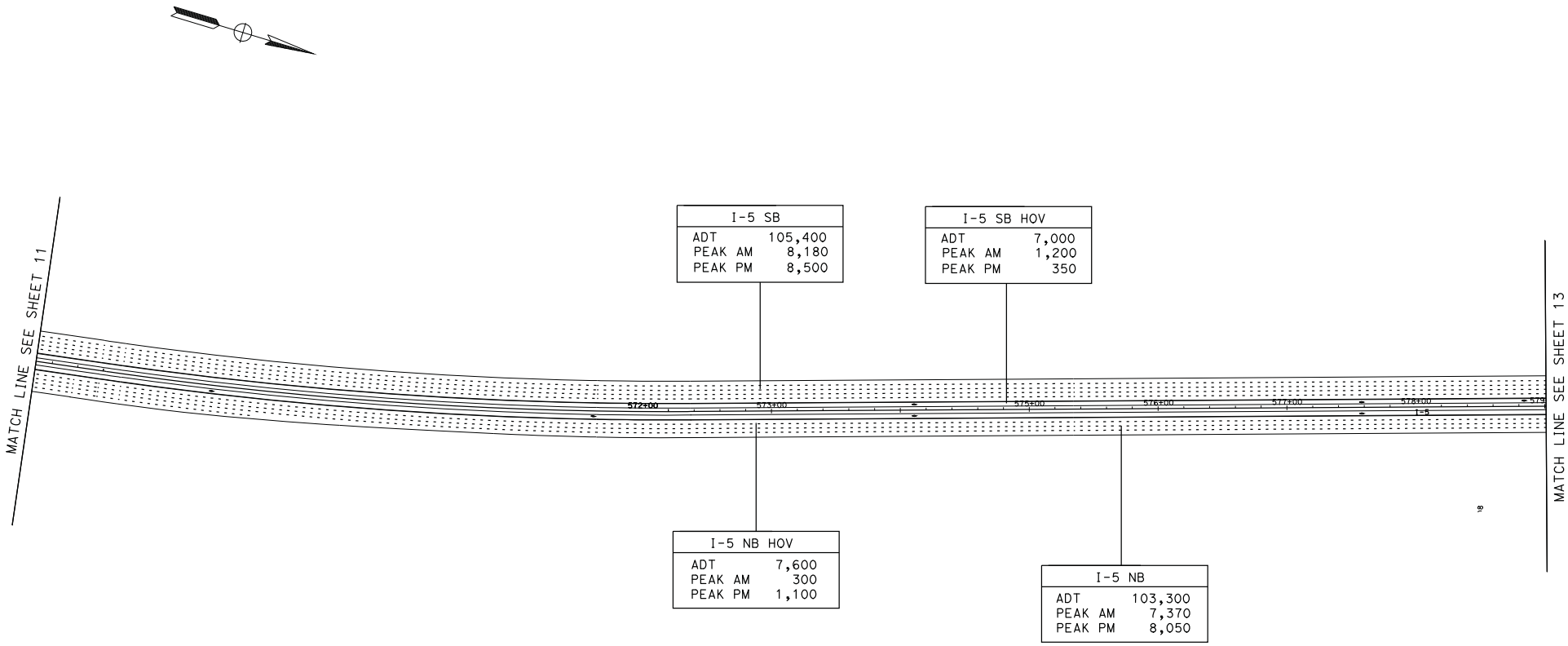

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXISTING TRAFFIC - 2006
EXHIBIT A

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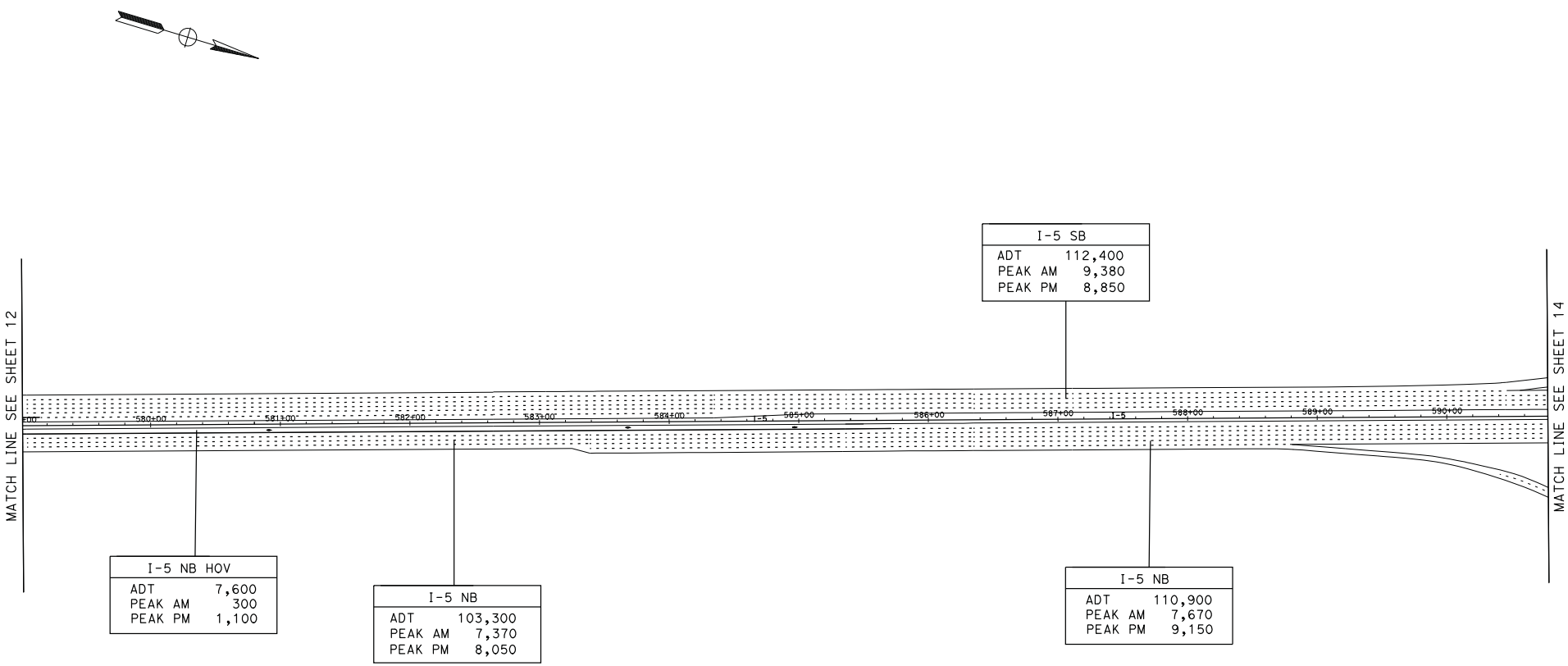

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXISTING TRAFFIC - 2006
EXHIBIT A

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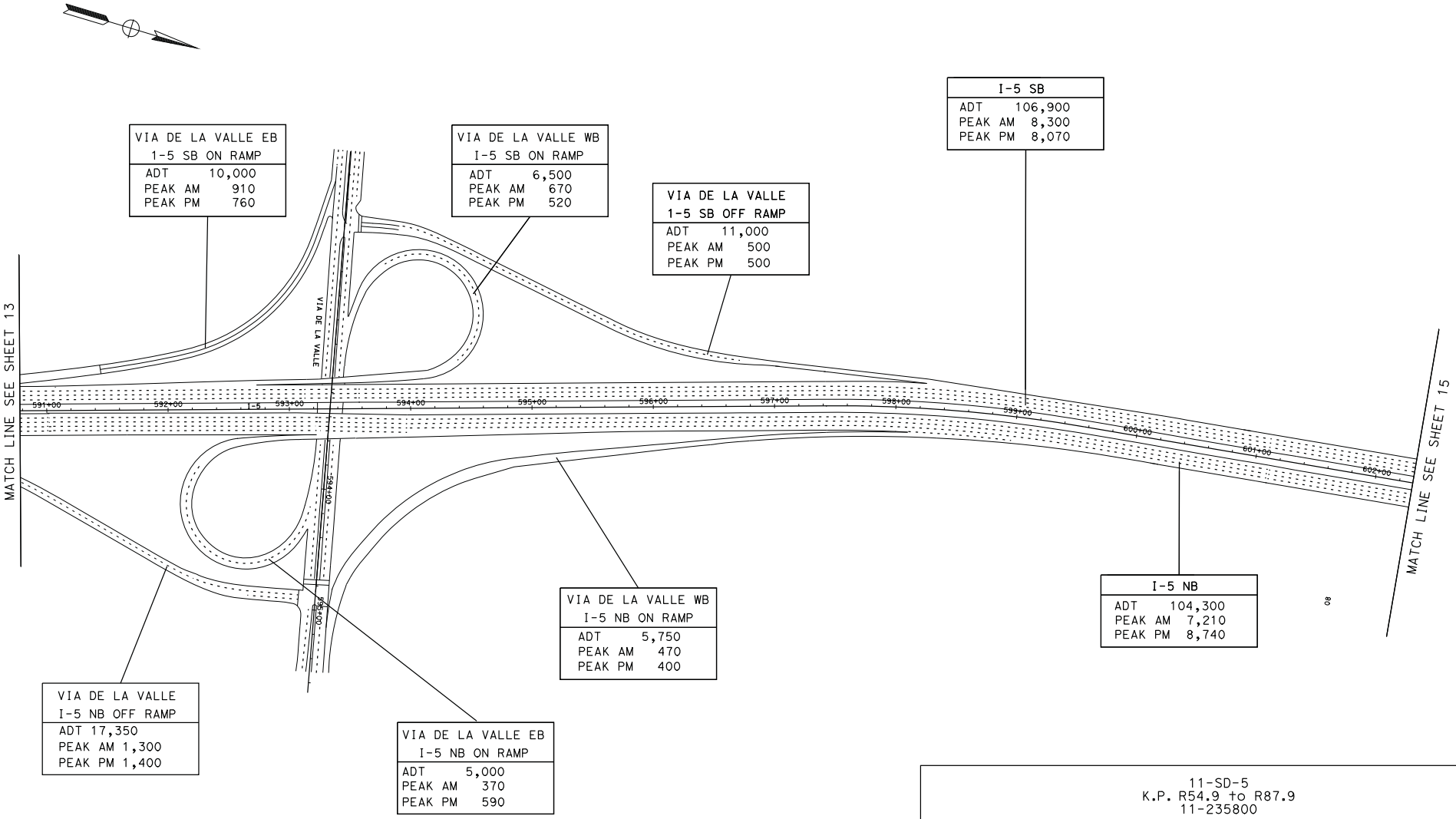

* Note: Existing demand volume

11-SD-5
K.P. R54.9 to R87.9
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I-5 NORTHCOAST

TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXISTING TRAFFIC - 2006
EXHIBIT A

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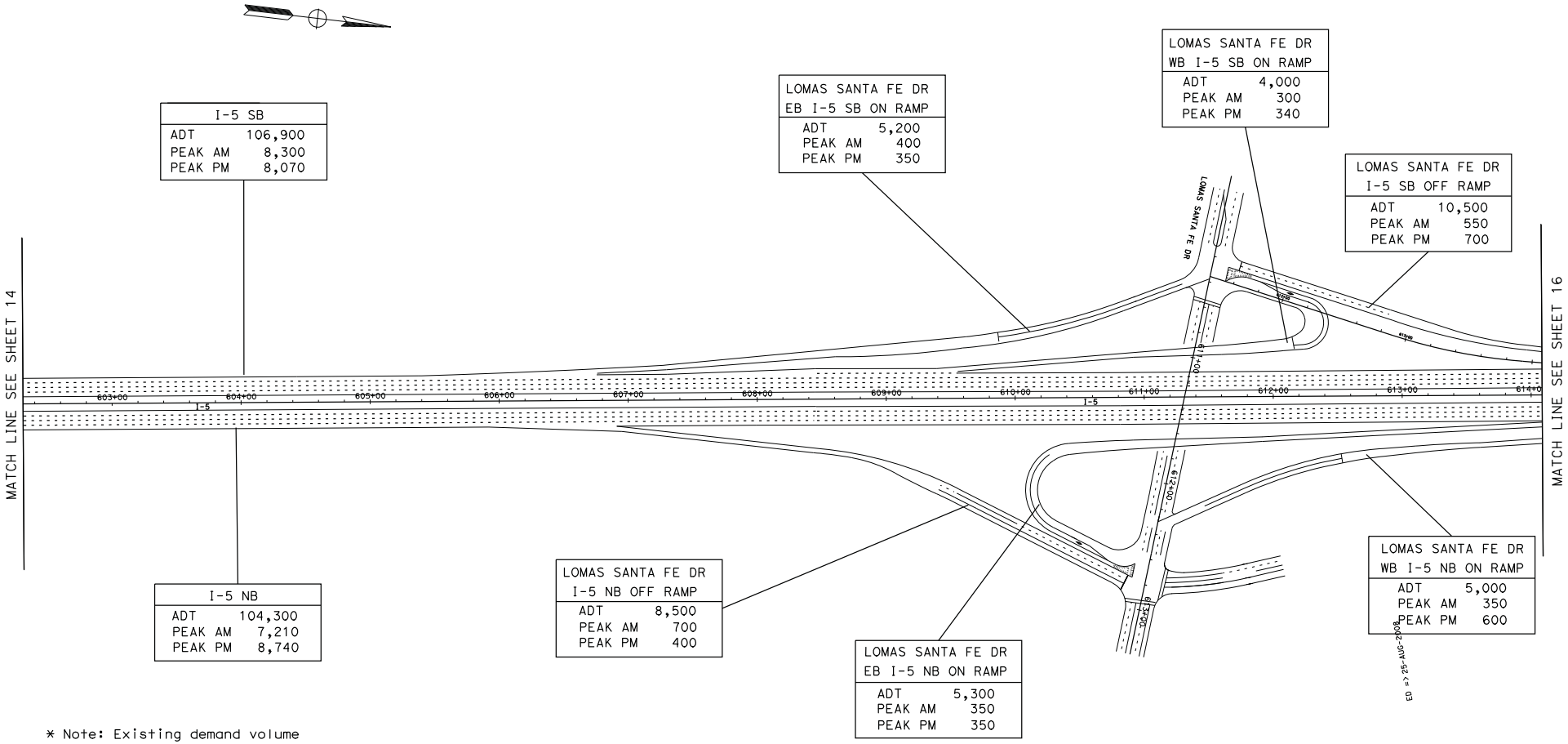


I-5 SB	
ADT	106,900
PEAK AM	8,300
PEAK PM	8,070

I-5 NB	
ADT	104,300
PEAK AM	7,210
PEAK PM	8,740

LOMAS SANTA FE DR EB I-5 SB ON RAMP	
ADT	5,200
PEAK AM	400
PEAK PM	350

LOMAS SANTA FE DR I-5 NB OFF RAMP	
ADT	8,500
PEAK AM	700
PEAK PM	400

LOMAS SANTA FE DR EB I-5 NB ON RAMP	
ADT	5,300
PEAK AM	350
PEAK PM	350

LOMAS SANTA FE DR WB I-5 SB ON RAMP	
ADT	4,000
PEAK AM	300
PEAK PM	340

LOMAS SANTA FE DR I-5 SB OFF RAMP	
ADT	10,500
PEAK AM	550
PEAK PM	700

LOMAS SANTA FE DR WB I-5 NB ON RAMP	
ADT	5,000
PEAK AM	350
PEAK PM	600

* Note: Existing demand volume

DATE PLOTTED => 25-AUG-2008

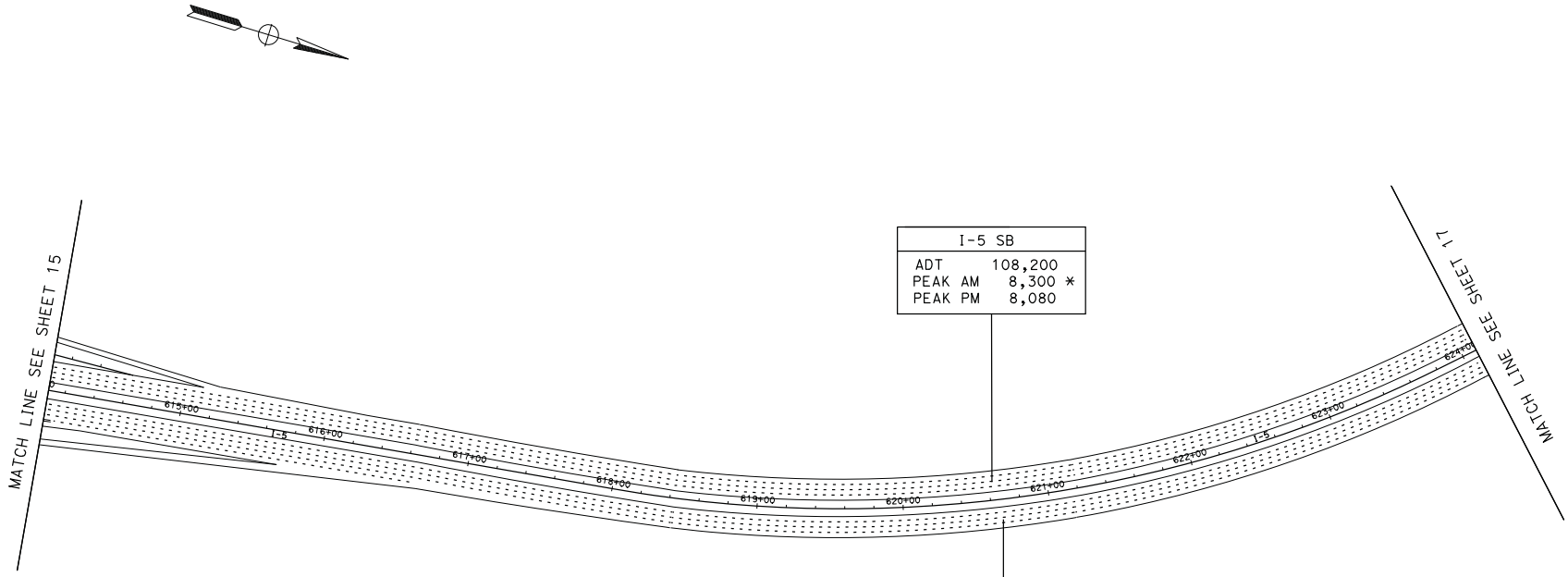
DGN FILE => existing_15LSFdFe.dgn

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXISTING TRAFFIC - 2006
EXHIBIT A



I-5 SB	
ADT	108,200
PEAK AM	8,300 *
PEAK PM	8,080

I-5 NB	
ADT	106,100
PEAK AM	7,210
PEAK PM	9,290

* Note: Existing demand volume

11-SD-5
K.P. R54.9 to R87.9
11-235800

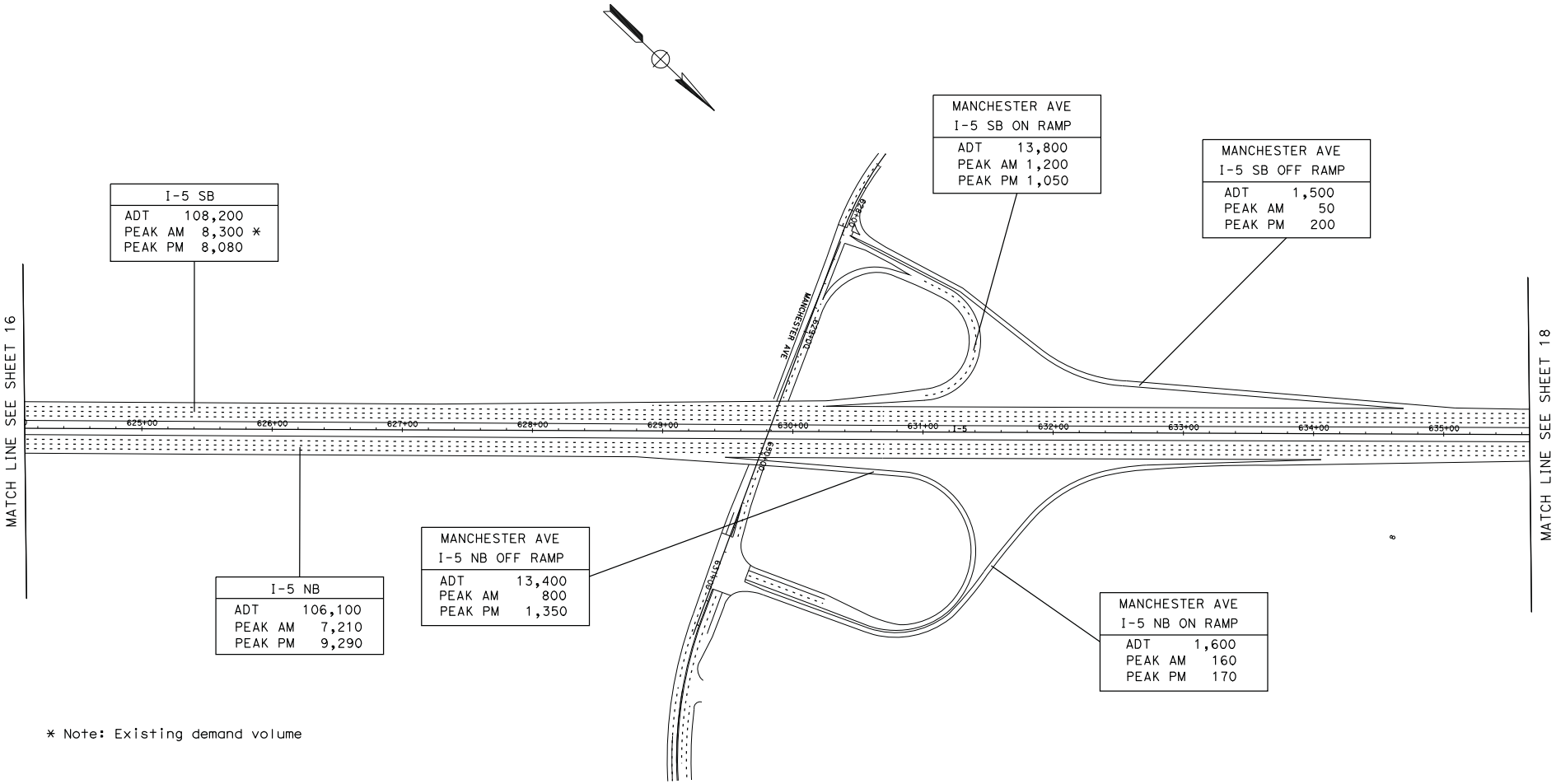
I-5 NORTHCOAST

TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXISTING TRAFFIC - 2006

EXHIBIT A

DGN FILE =>existing_16toManchstr.dgn
DATE PLOTTED =>25-AUG-2008



* Note: Existing demand volume

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

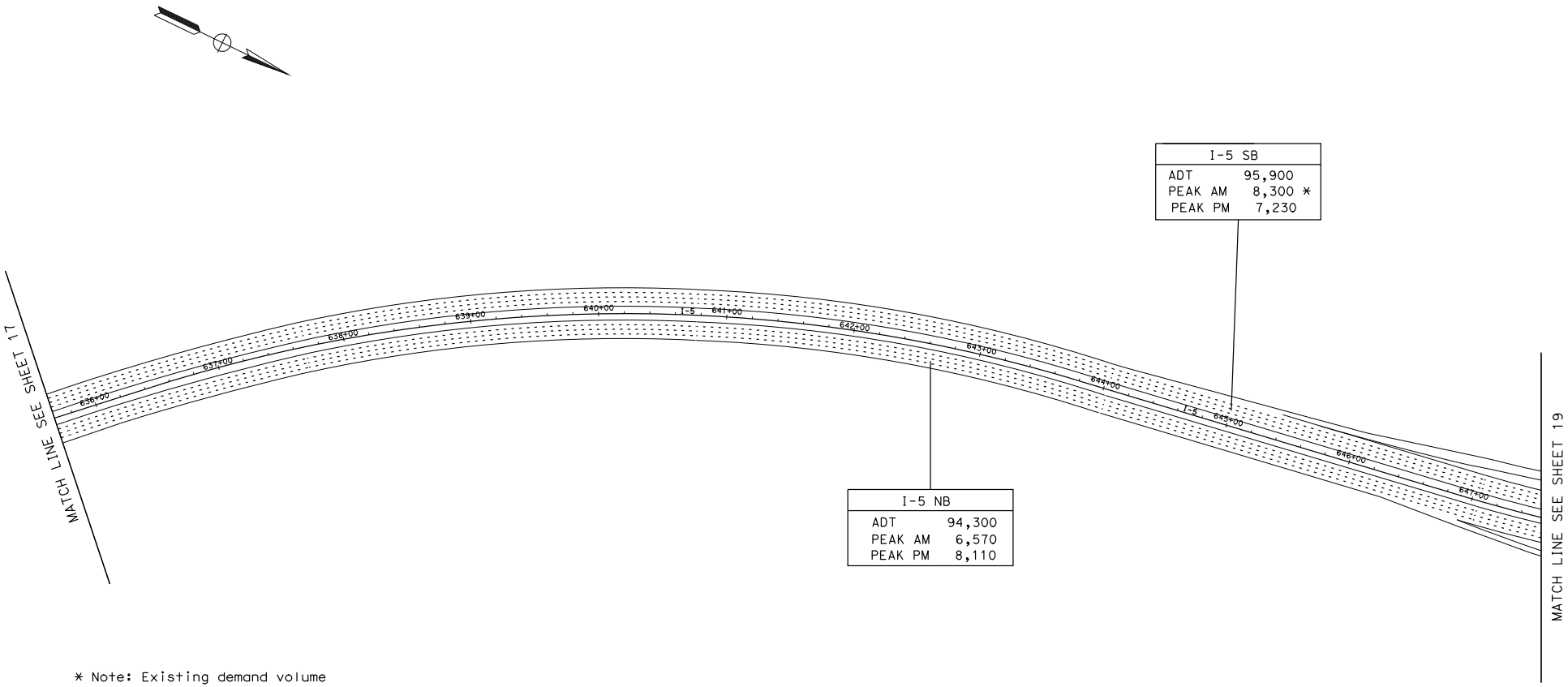
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXISTING TRAFFIC - 2006

EXHIBIT A

DATE PLOTTED => 25-AUG-2008

DGN FILE =>existing_17Manchstr.dgn



I-5 SB	
ADT	95,900
PEAK AM	8,300 *
PEAK PM	7,230

I-5 NB	
ADT	94,300
PEAK AM	6,570
PEAK PM	8,110

* Note: Existing demand volume

DATE PLOTTED => 25-AUG-2008

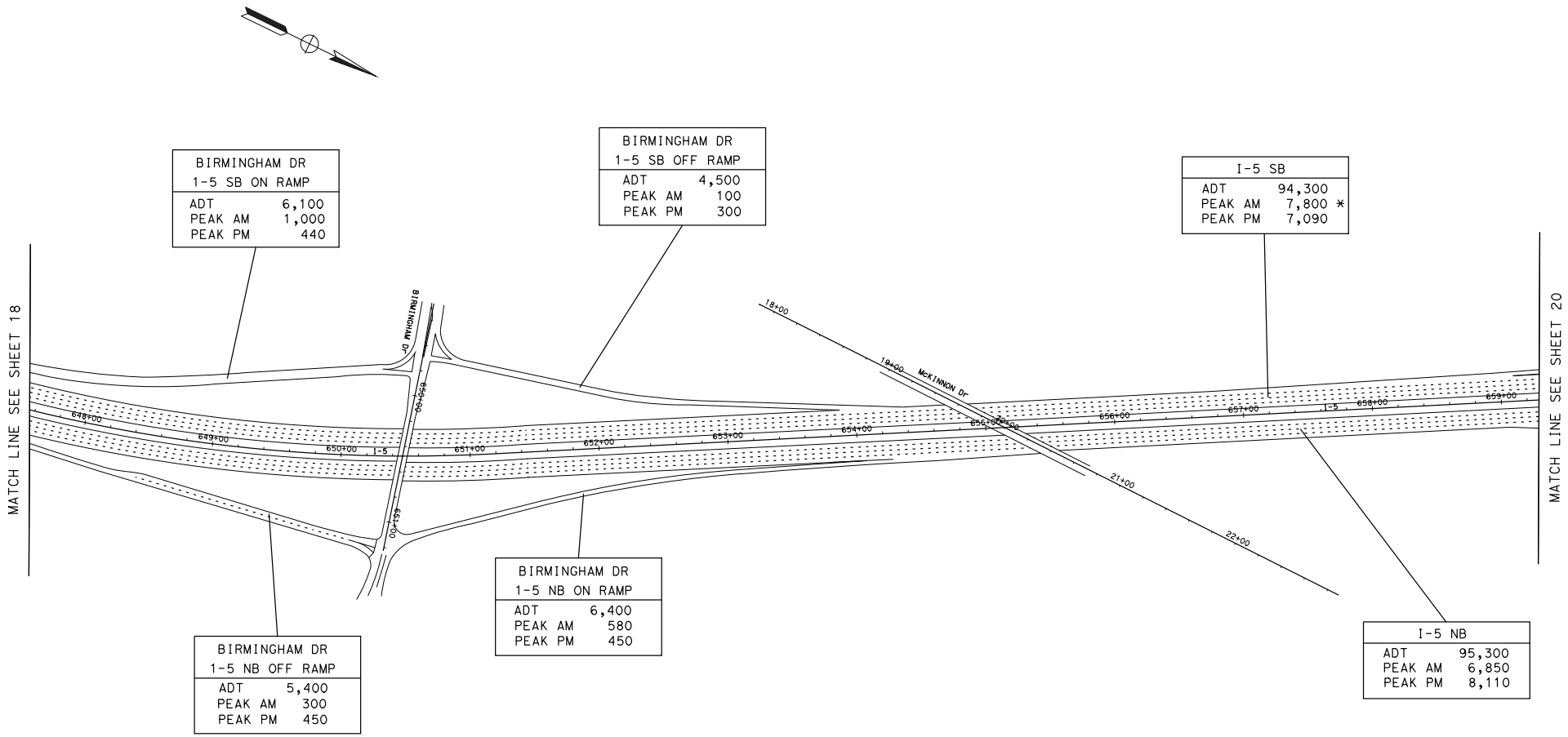
DGN FILE =>existing_18toBirmingham.dgn

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXISTING TRAFFIC - 2006
EXHIBIT A



BIRMINGHAM DR 1-5 SB ON RAMP	
ADT	6,100
PEAK AM	1,000
PEAK PM	440

BIRMINGHAM DR 1-5 SB OFF RAMP	
ADT	4,500
PEAK AM	100
PEAK PM	300

I-5 SB	
ADT	94,300
PEAK AM	7,800 *
PEAK PM	7,090

BIRMINGHAM DR 1-5 NB OFF RAMP	
ADT	5,400
PEAK AM	300
PEAK PM	450

BIRMINGHAM DR 1-5 NB ON RAMP	
ADT	6,400
PEAK AM	580
PEAK PM	450

I-5 NB	
ADT	95,300
PEAK AM	6,850
PEAK PM	8,110

* Note: Existing demand volume

11-SD-5
K.P. R54.9 to R87.9
11-235800

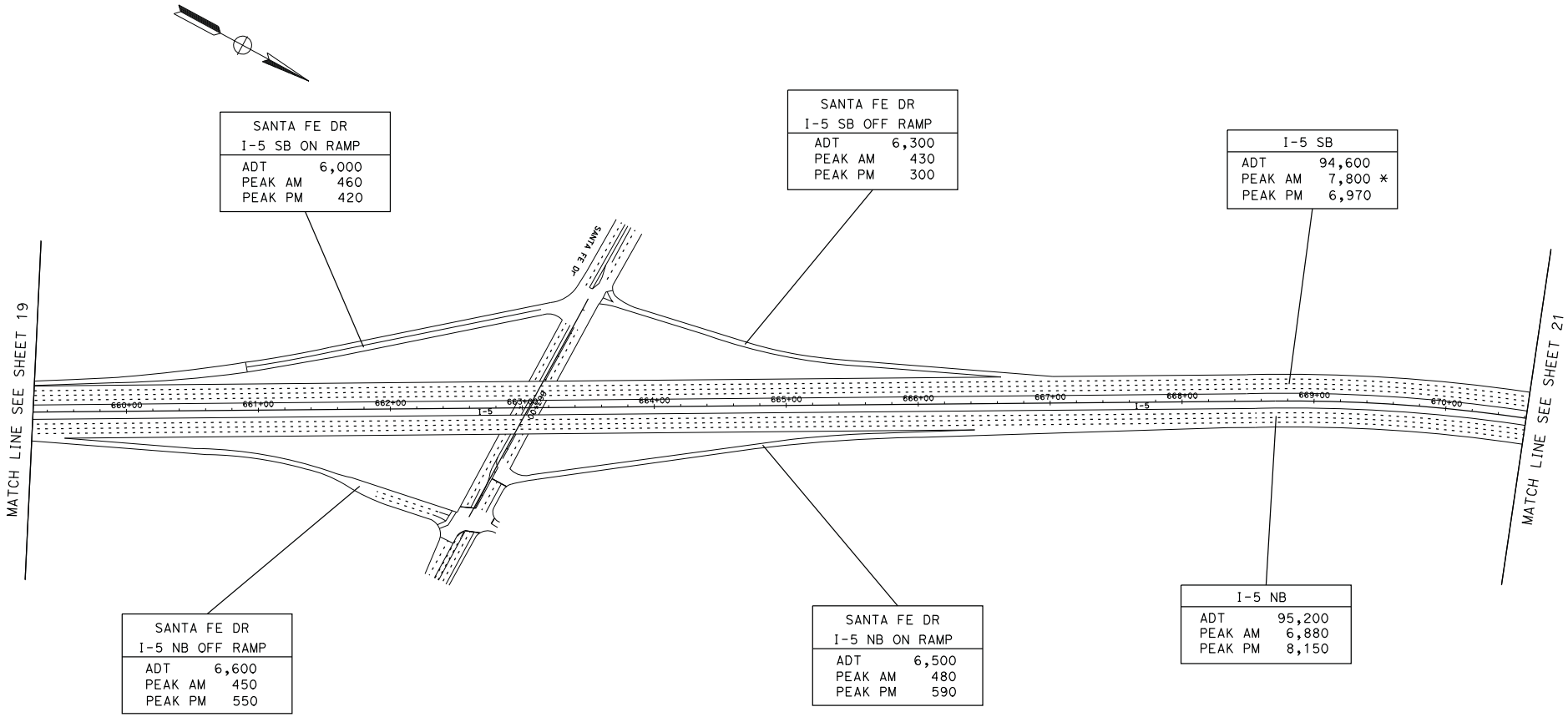
I-5 NORTHCOAST

TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXISTING TRAFFIC - 2006

EXHIBIT A

DGN FILE =>existing_19birmingham.dgn
DATE PLOTTED => 25-AUG-2008



* Note: Existing demand volume

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

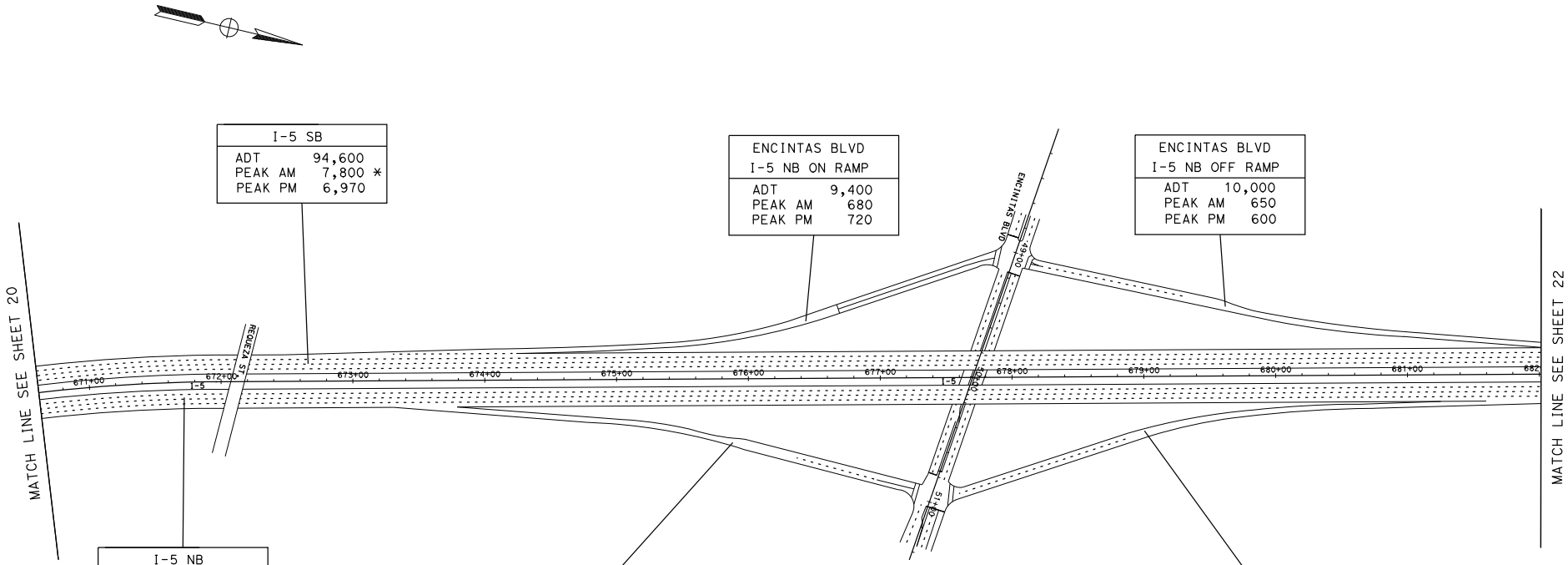
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXISTING TRAFFIC - 2006

EXHIBIT A

DGN FILE =>existing_2005rafedr.dgn

DATE PLOTTED => 25-AUG-2008



* Note: Existing demand volume

11-SD-5
K.P. R54.9 to R87.9
11-235800

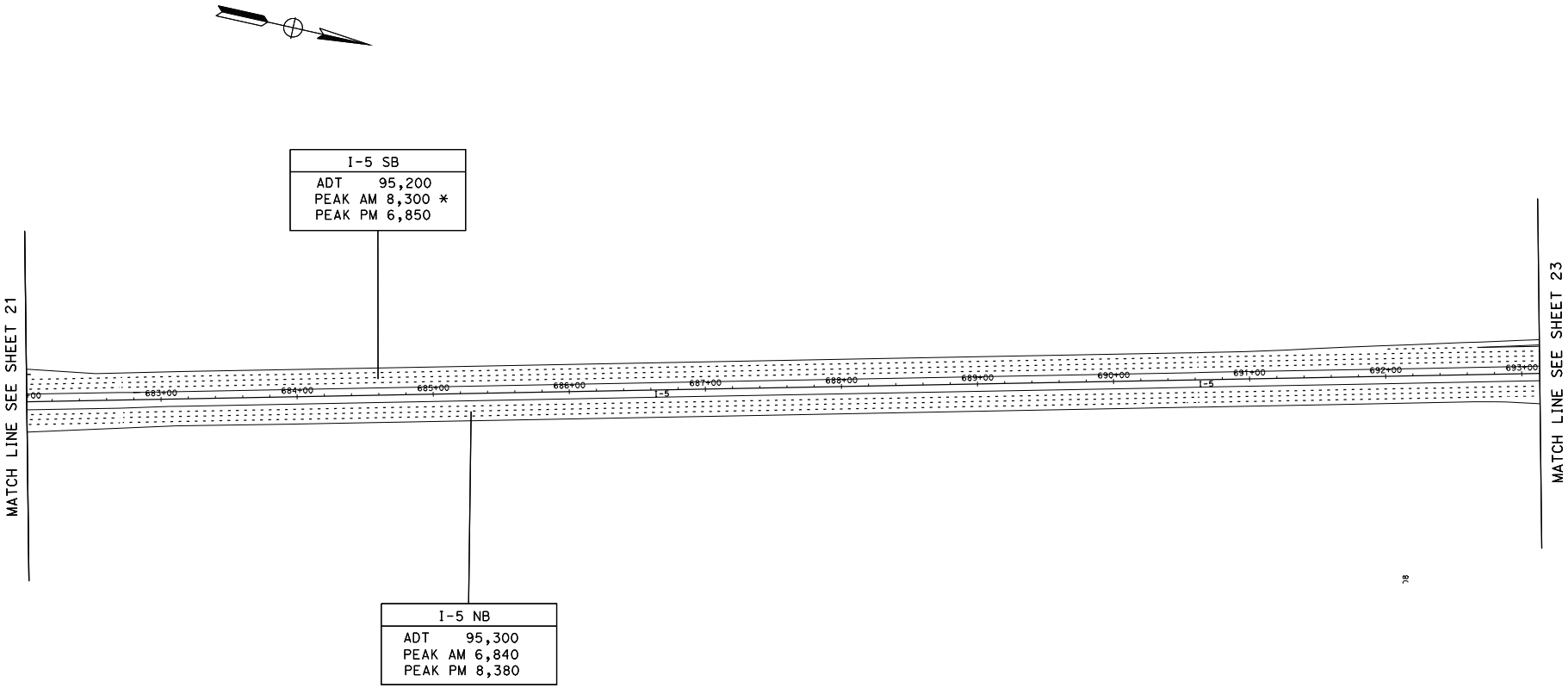
I-5 NORTHCOAST

TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXISTING TRAFFIC - 2006

EXHIBIT A

DGN FILE =>existing_21Encintas.dgn
DATE PLOTTED =>25-AUG-2008



* Note: Existing demand volume

DGN FILE =>existing_22toLeucdia.dgn DATE PLOTTED =>25-AUG-2008

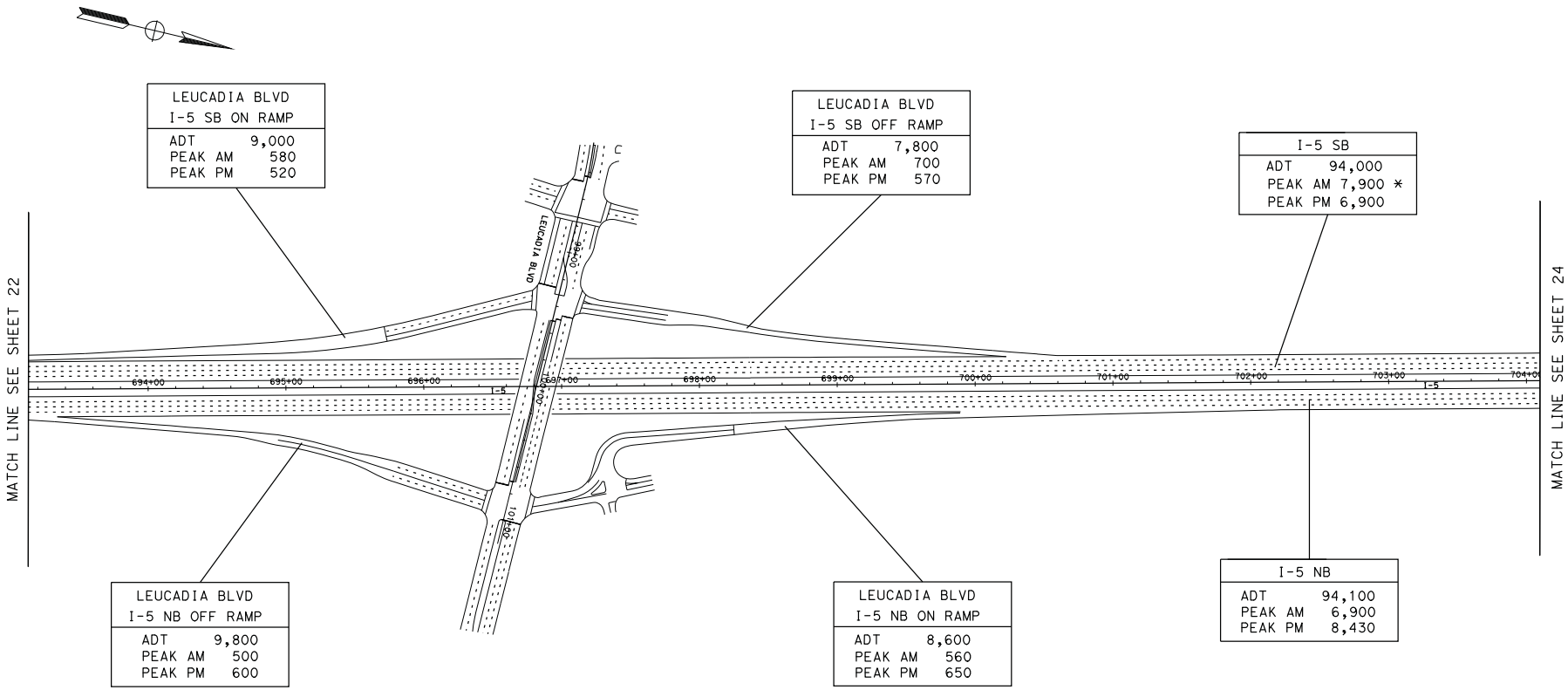
11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXISTING TRAFFIC - 2006

EXHIBIT A



* Note: Existing demand volume

DATE PLOTTED => 25-AUG-2008

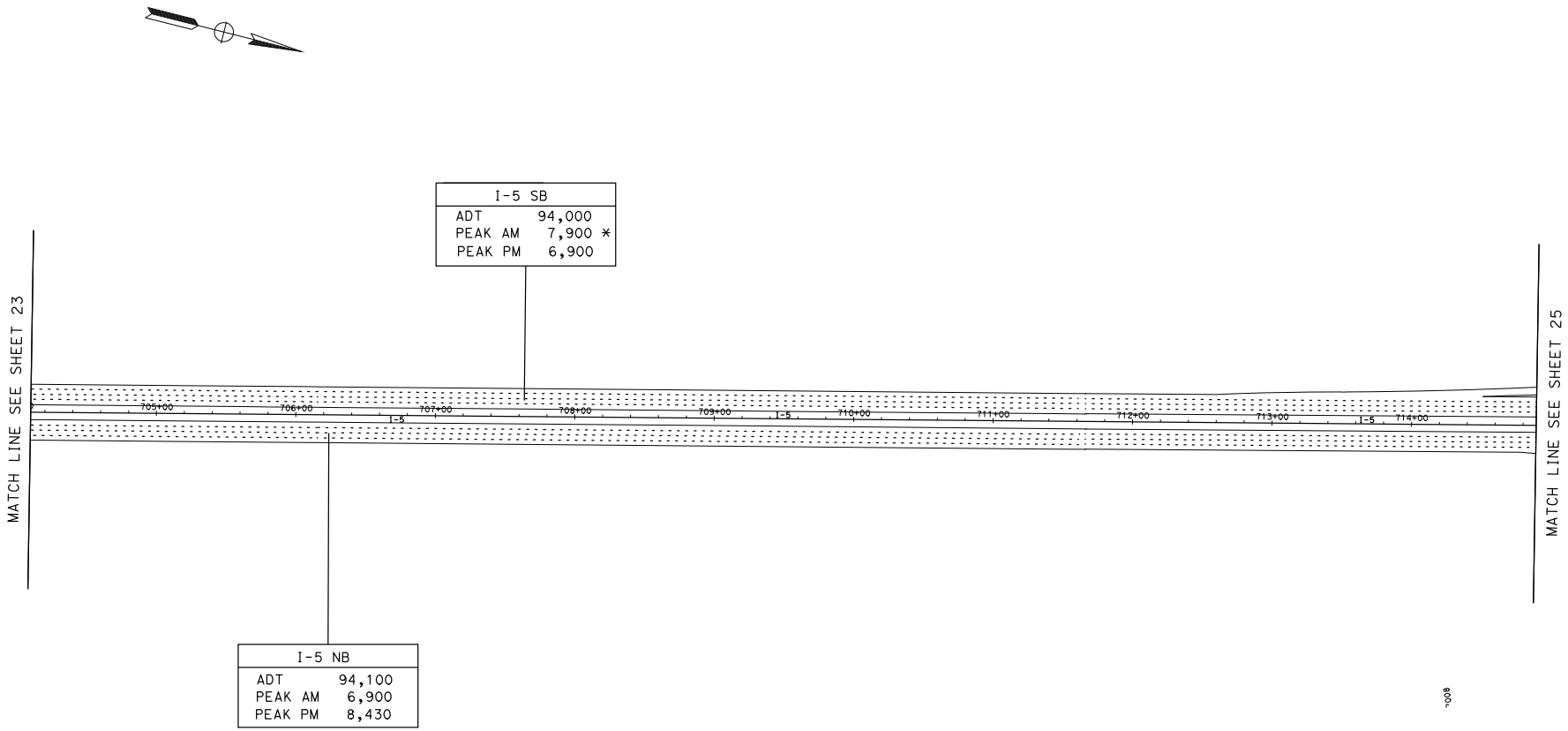
DGN FILE =>existing_23leucdia.dgn

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXISTING TRAFFIC - 2006
EXHIBIT A



* Note: Existing demand volume

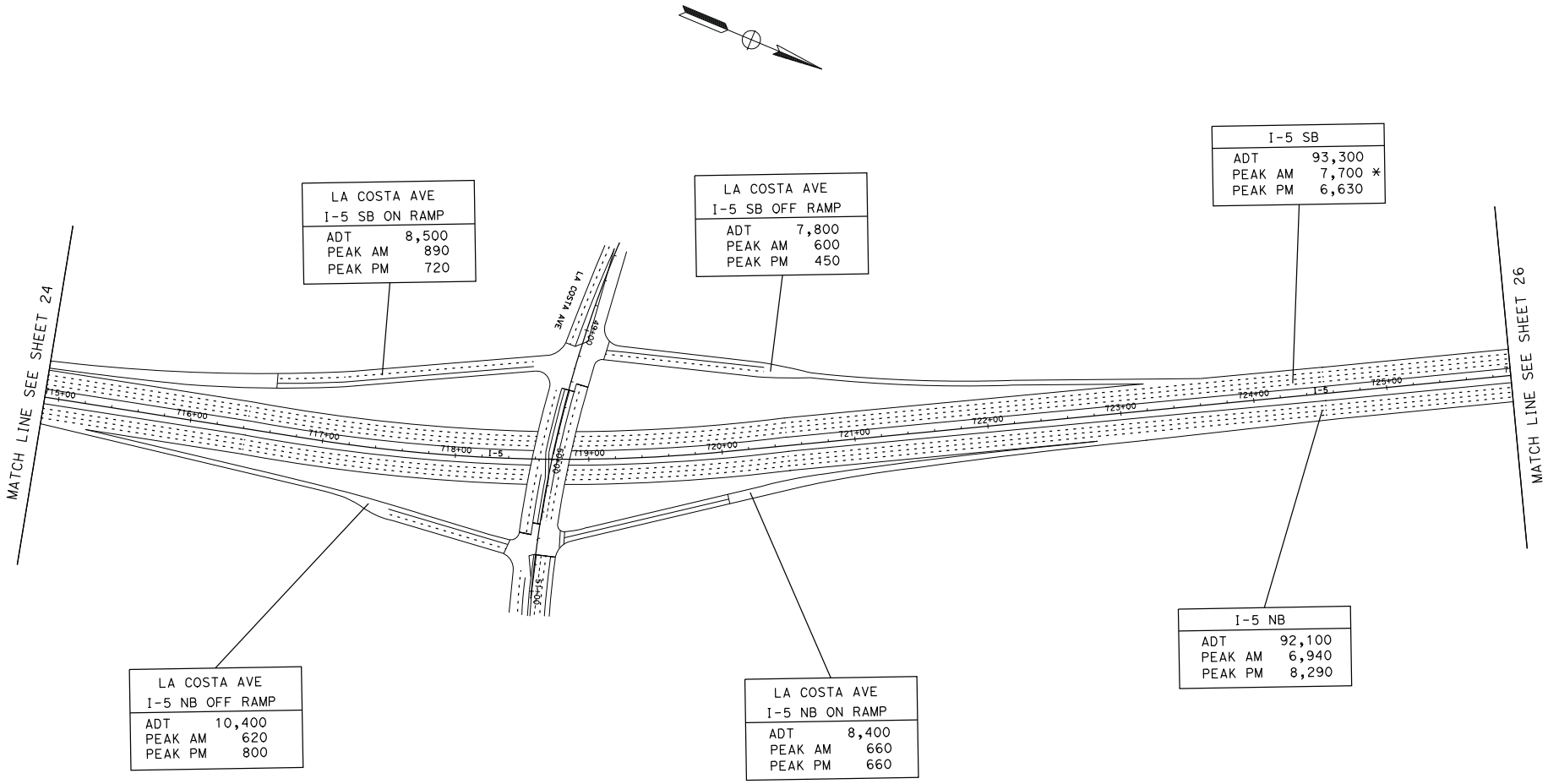
11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXISTING TRAFFIC - 2006
EXHIBIT A

DGN FILE => existing_24toLaCosta.dgn
DATE PLOTTED => 25-AUG-2008



* Note: Existing demand volume

11-SD-5
K.P. R54.9 to R87.9
11-235800

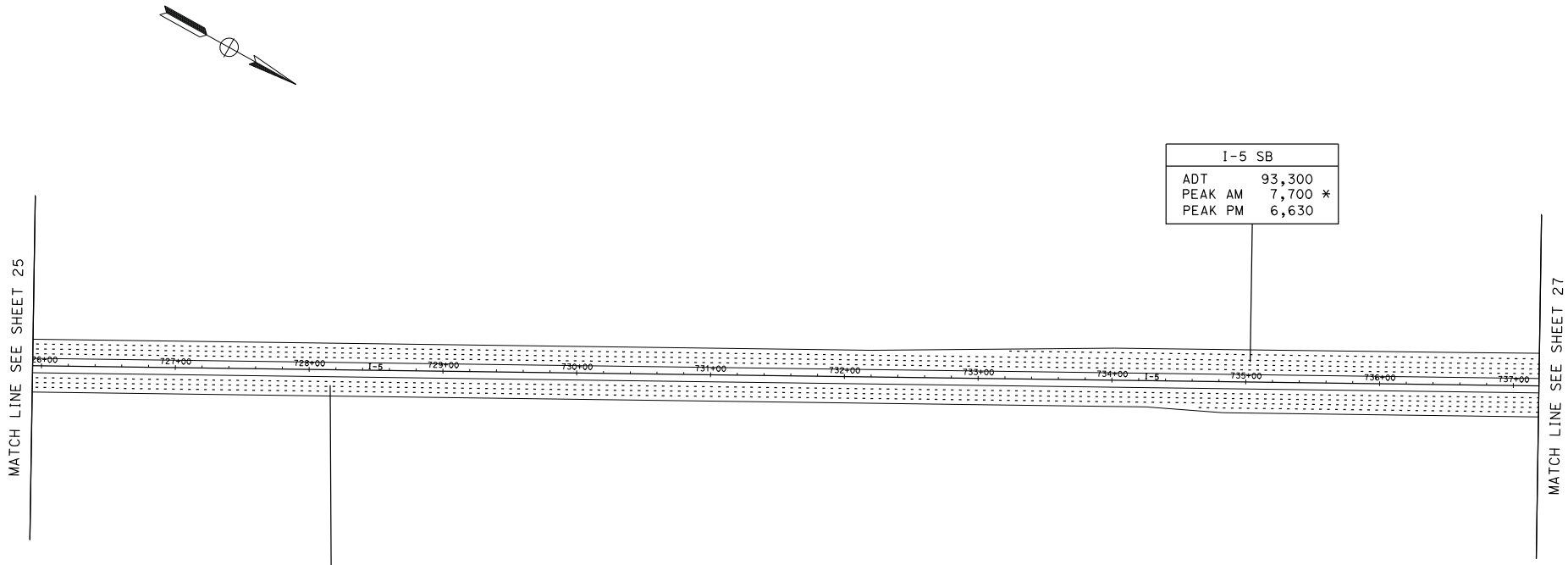
I-5 NORTHCOAST

TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXISTING TRAFFIC - 2006

EXHIBIT A

DGN FILE => existing_25LaCosta.dgn
DATE PLOTTED => 25-AUG-2008



* Note: Existing demand volume

11-SD-5
K.P. R54.9 to R87.9
11-235800

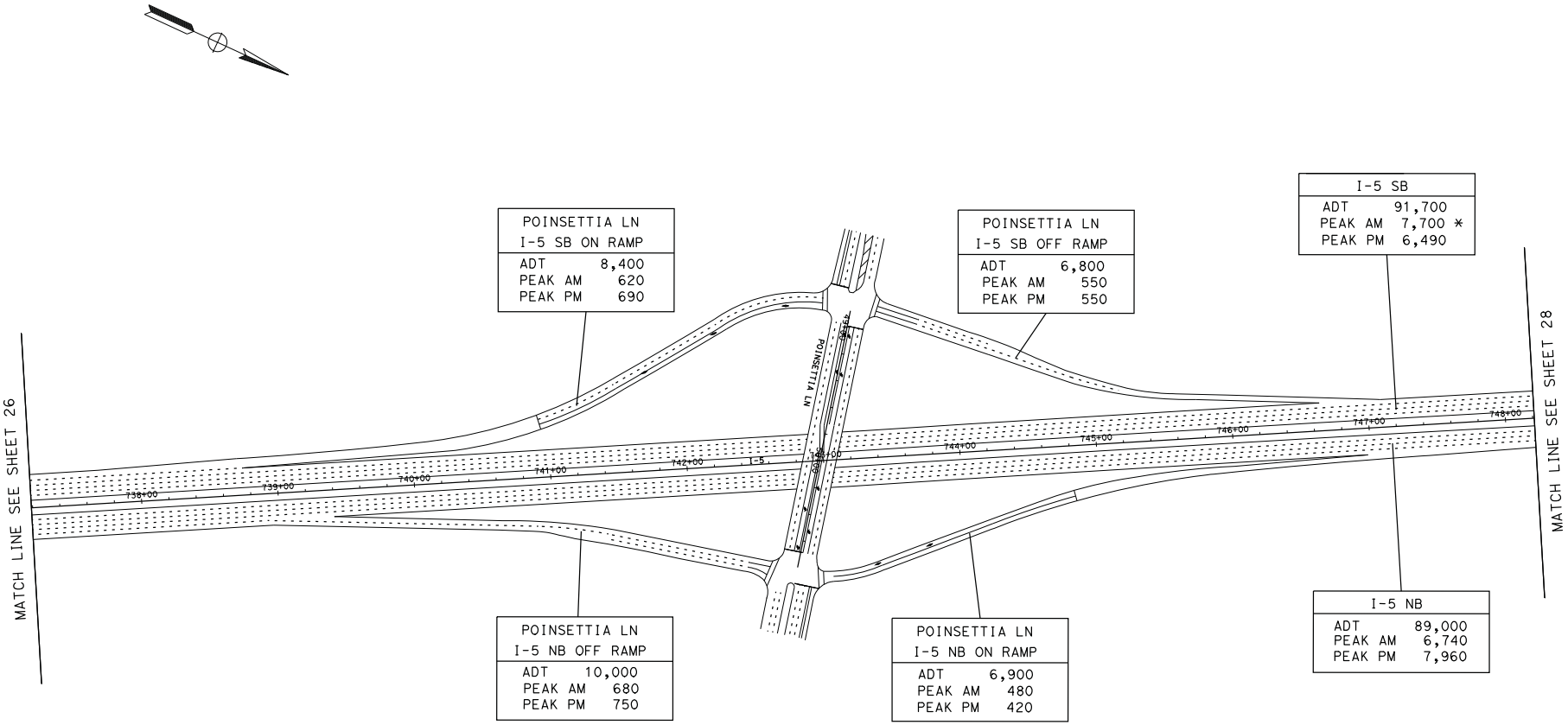
I-5 NORTHCOAST

TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXISTING TRAFFIC - 2006

EXHIBIT A

DGN FILE => existing_26toPolinsettia.dgn DATE PLOTTED => 25-AUG-2008



* Note: Existing demand volume

11-SD-5
K.P. R54.9 to R87.9
11-235800

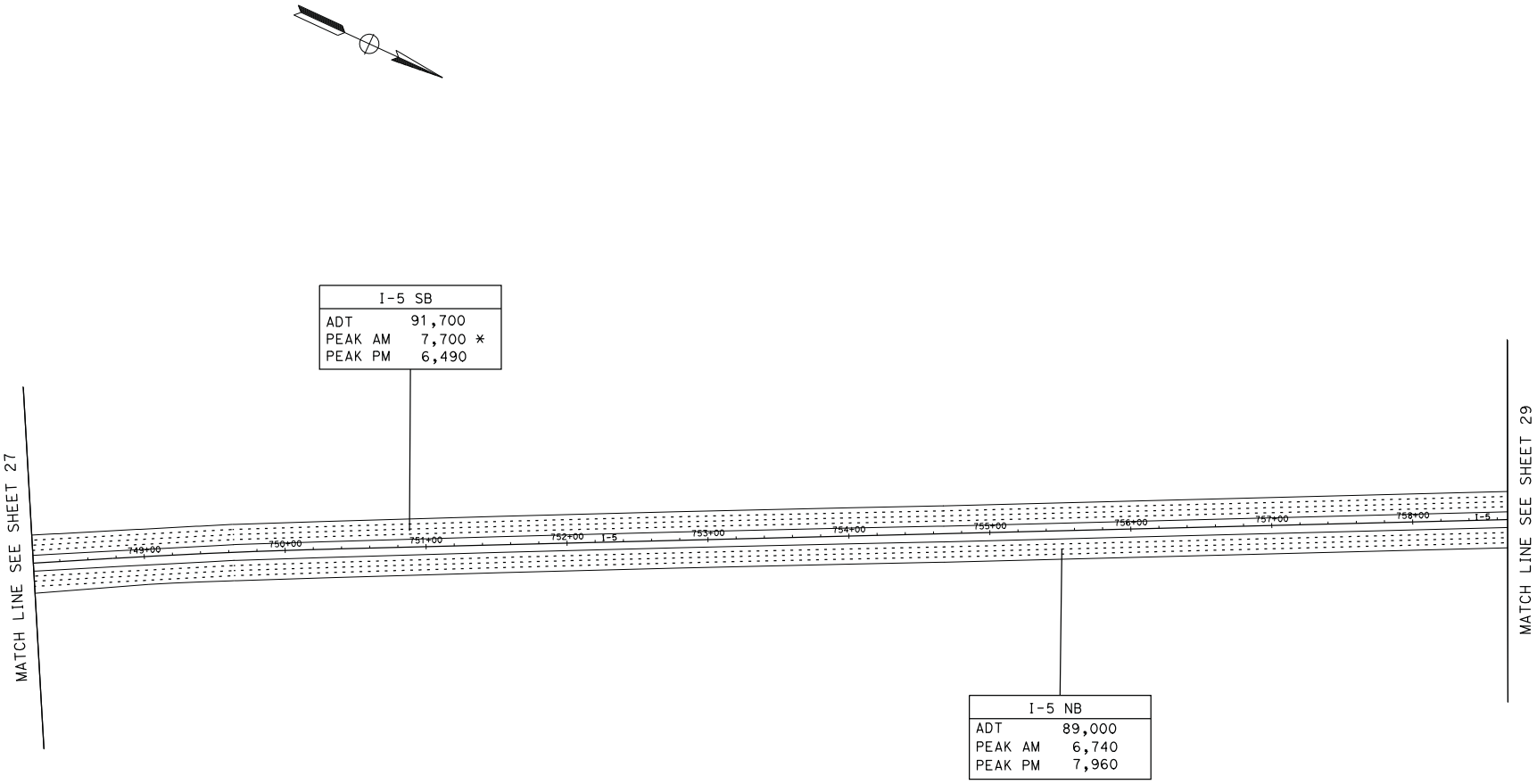
I-5 NORTHCOAST

TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXISTING TRAFFIC - 2006

EXHIBIT A

DGN FILE =>existing_27Poinsettia.dgn DATE PLOTTED =>25-AUG-2008



* Note: Existing demand volume

11-SD-5
K.P. R54.9 to R87.9
11-235800

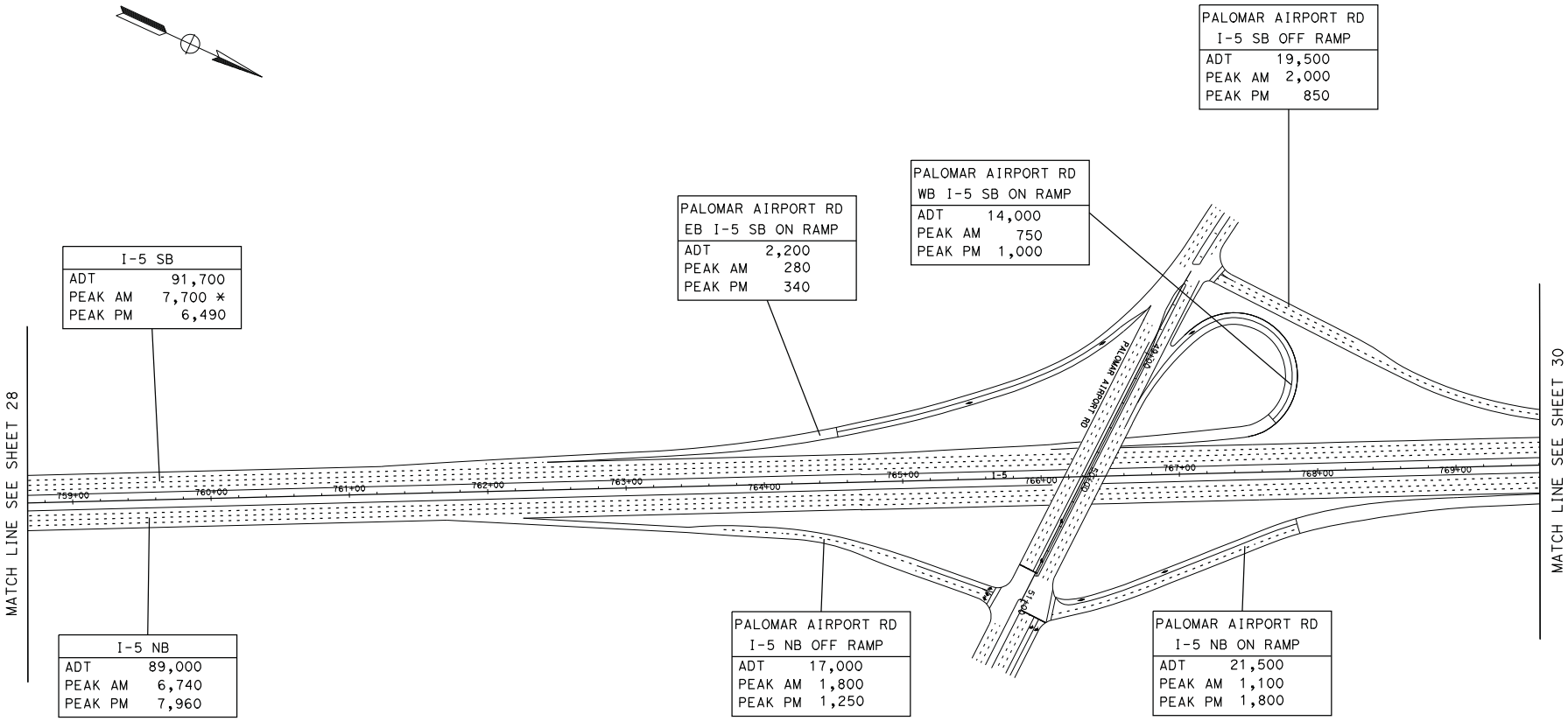
I-5 NORTHCOAST

TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXISTING TRAFFIC - 2006

EXHIBIT A

DGN FILE =>existing_28t=PalmrApt.dgn DATE PLOTTED =>25-AUG-2008



* Note: Existing demand volume

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

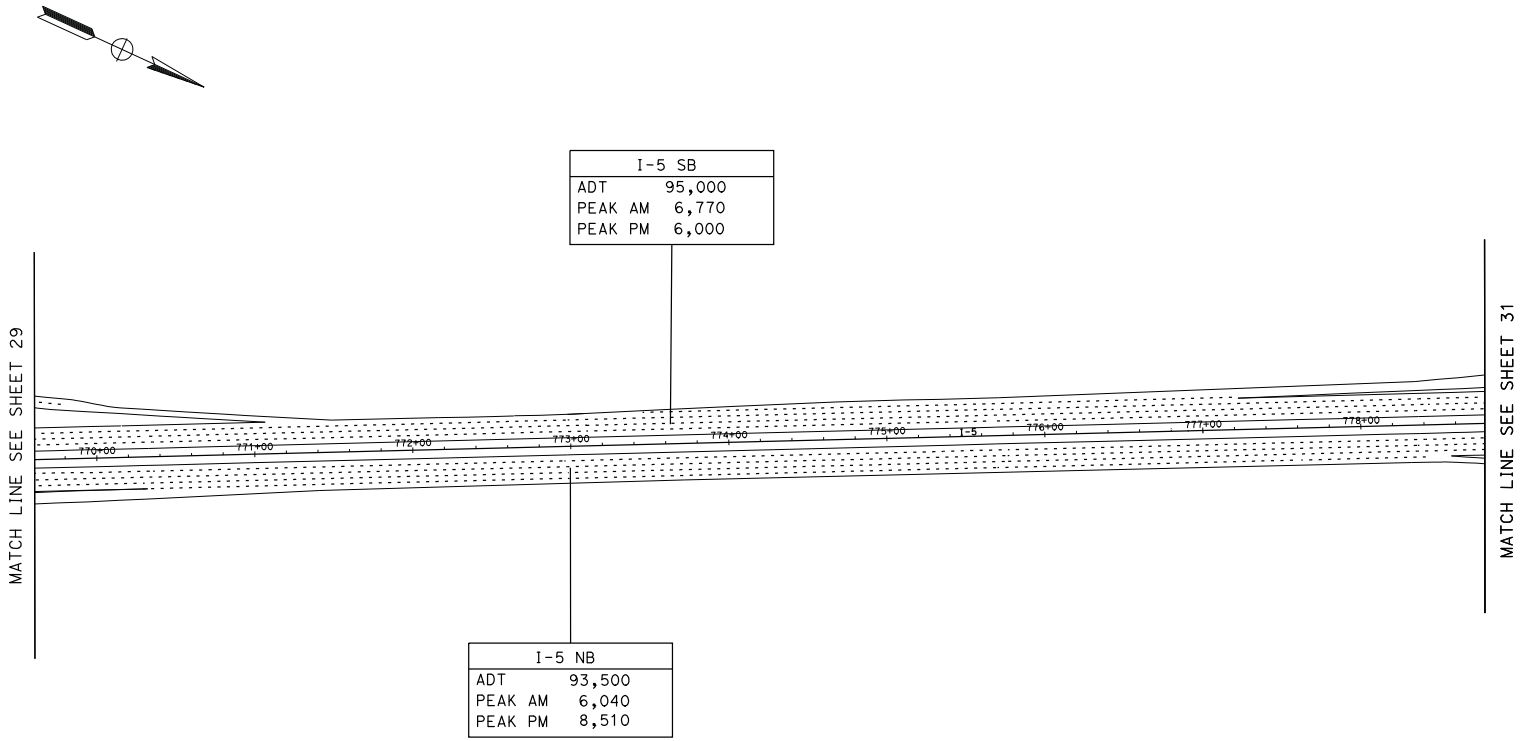
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXISTING TRAFFIC - 2006

EXHIBIT A

DATE PLOTTED => 25-AUG-2008

DGN FILE =>



11-SD-5
K.P. R54.9 to R87.9
11-235800

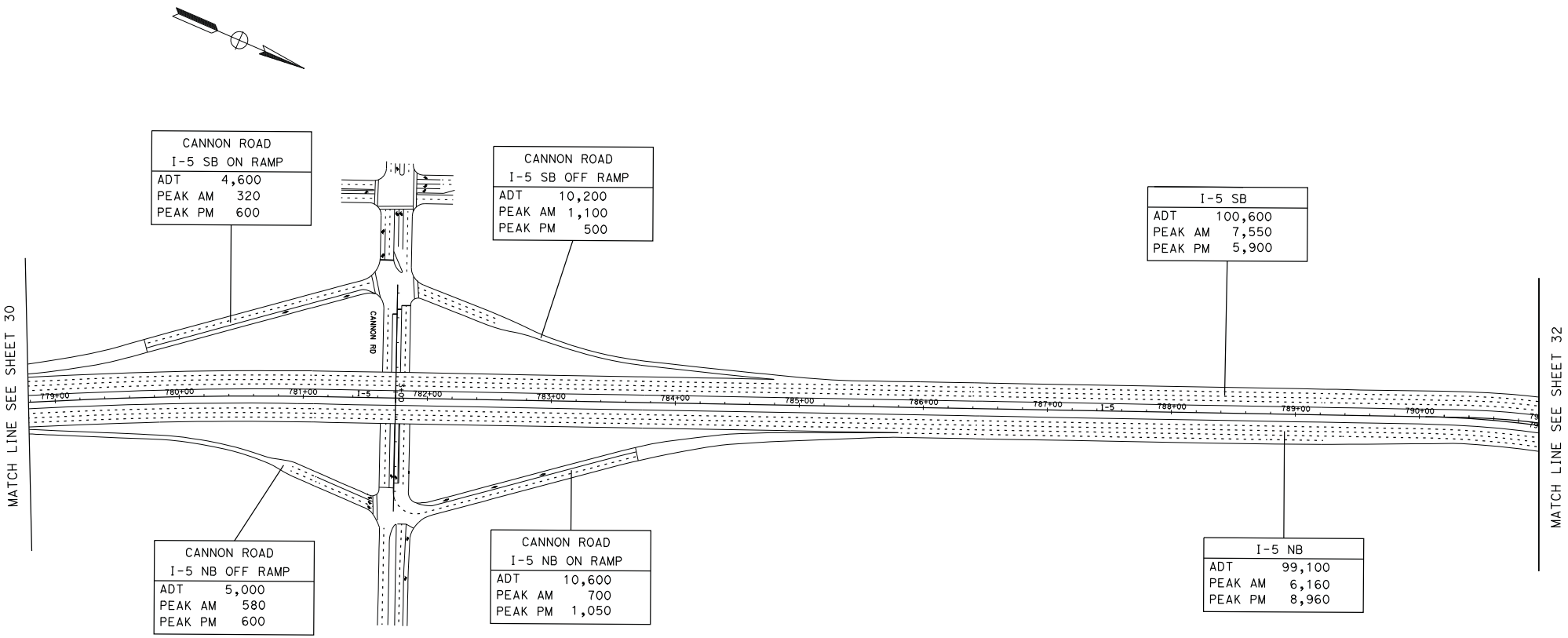
I-5 NORTHCOAST

TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXISTING TRAFFIC - 2006

EXHIBIT A

DGN FILE =>existing_30thcannon.dgn DATE PLOTTED => 25-AUG-2008



DGN FILE =>existing_31cannon.dgn

DATE PLOTTED => 25-AUG-2008

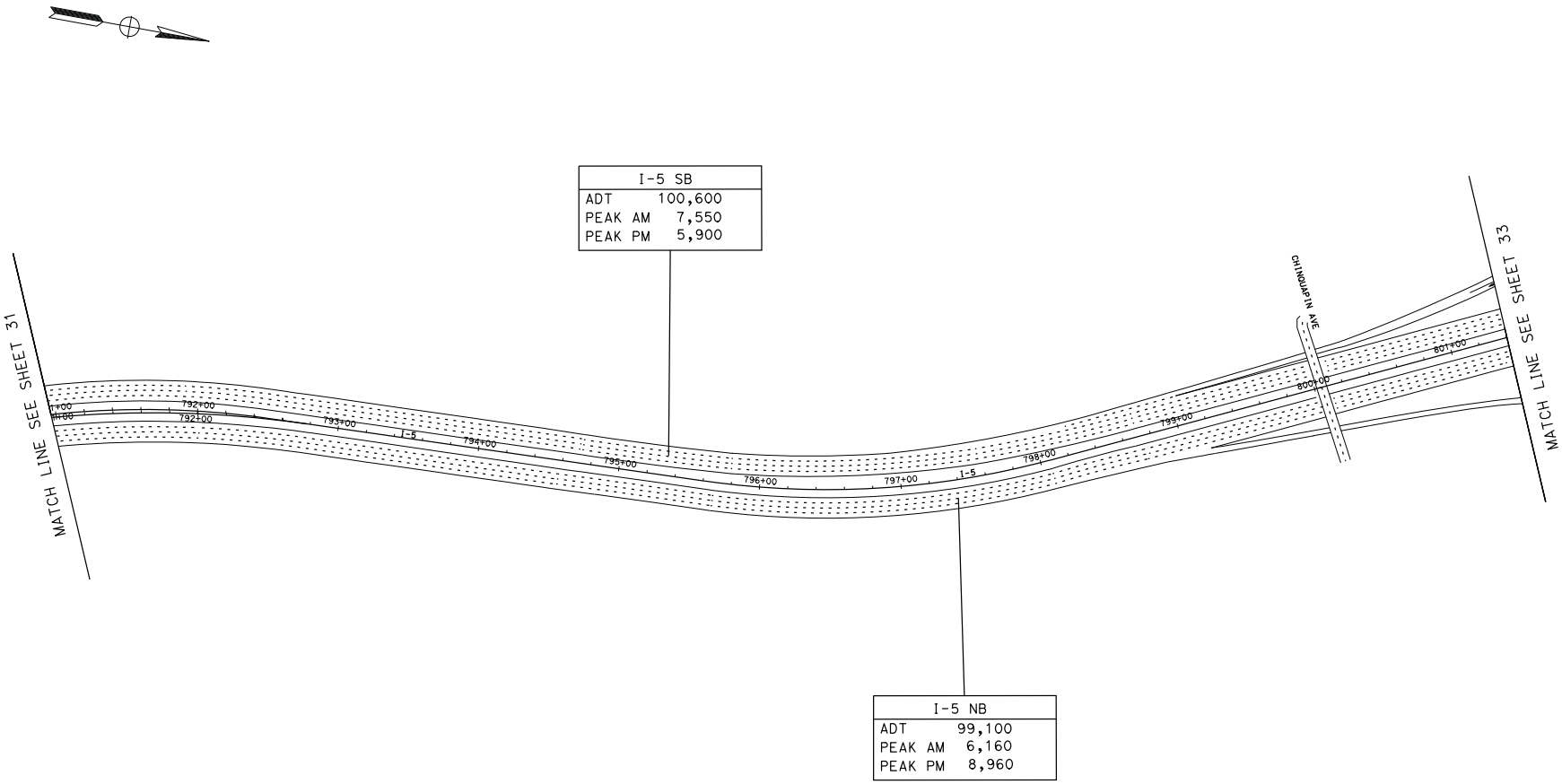
11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXISTING TRAFFIC - 2006

EXHIBIT A



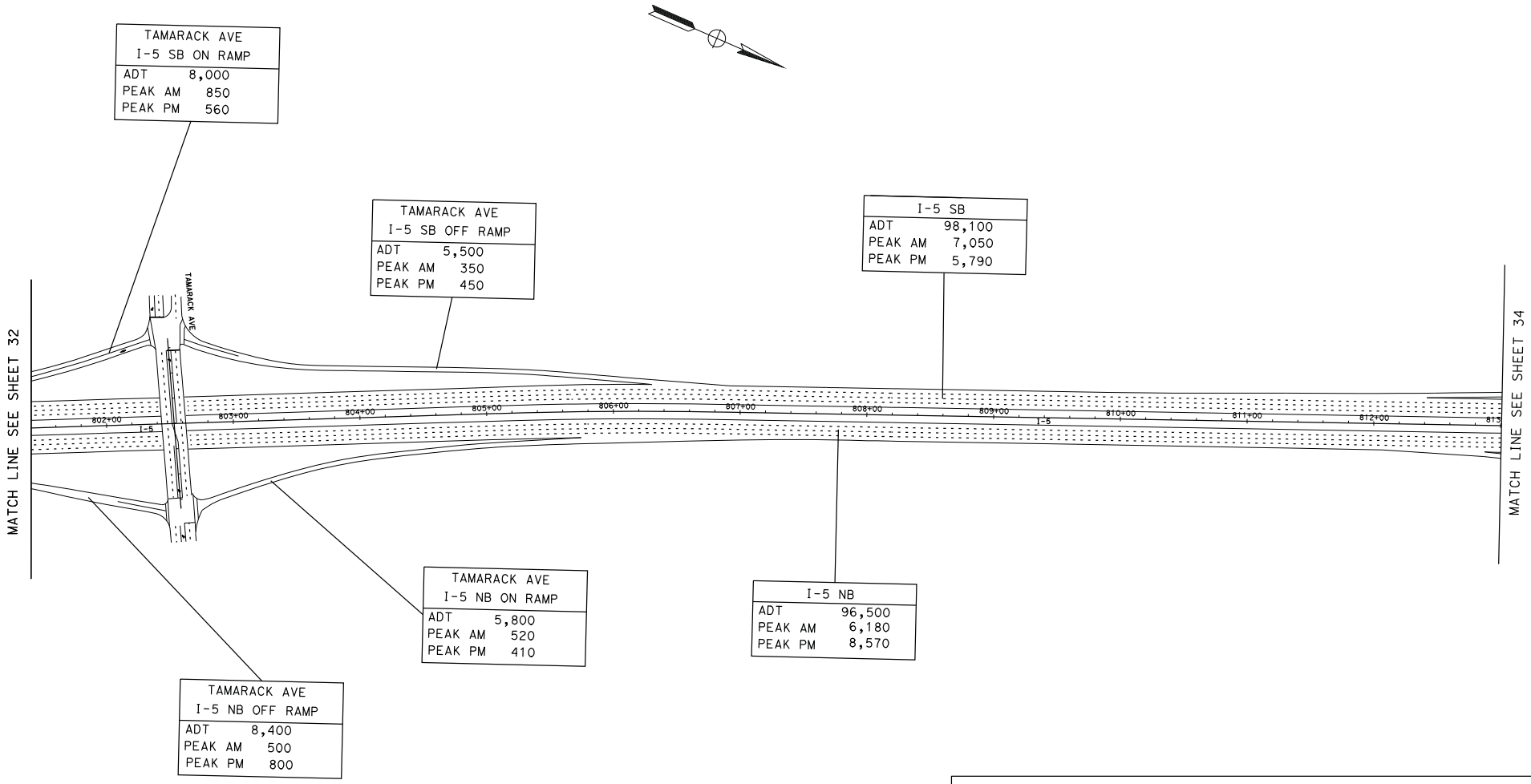
11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXISTING TRAFFIC - 2006
EXHIBIT A

DGN FILE =>existing_32toTamarack.dgn DATE PLOTTED =>25-AUG-2008



11-SD-5
K.P. R54.9 to R87.9
11-235800

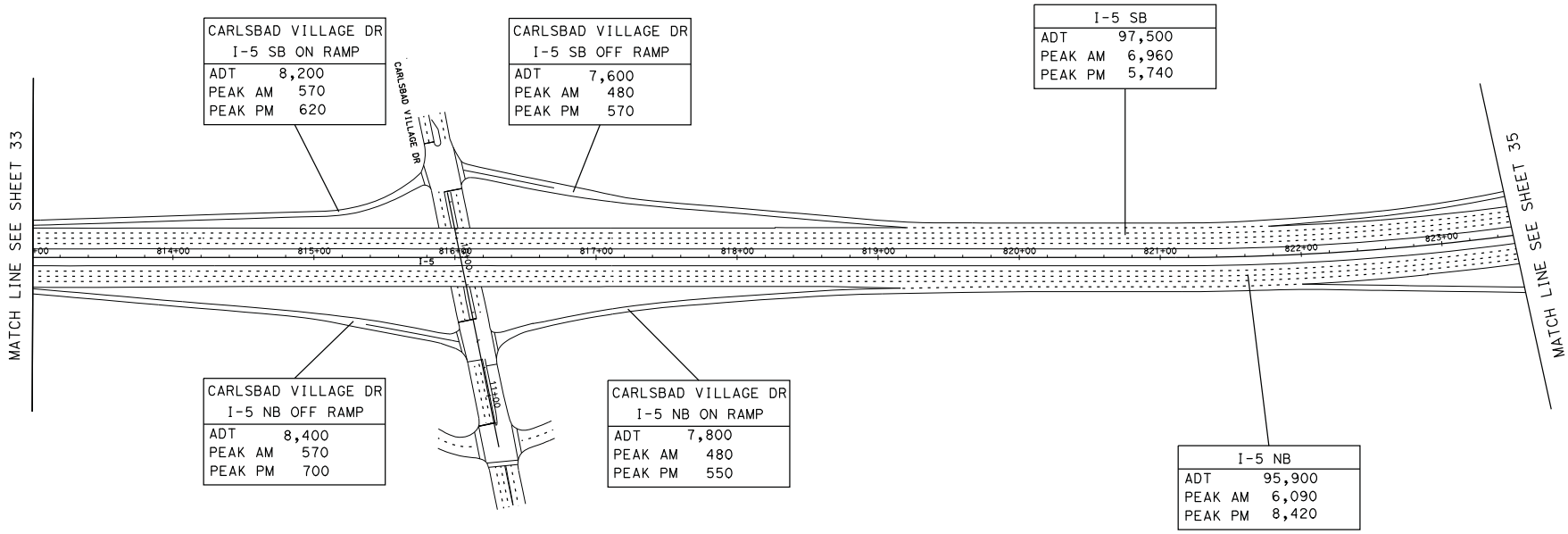
I-5 NORTHCOAST

TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXISTING TRAFFIC - 2006

EXHIBIT A

DGN FILE =>existing_33tamarack.dgn DATE PLOTTED => 25-AUG-2008



11-SD-5
K.P. R54.9 to R87.9
11-235800

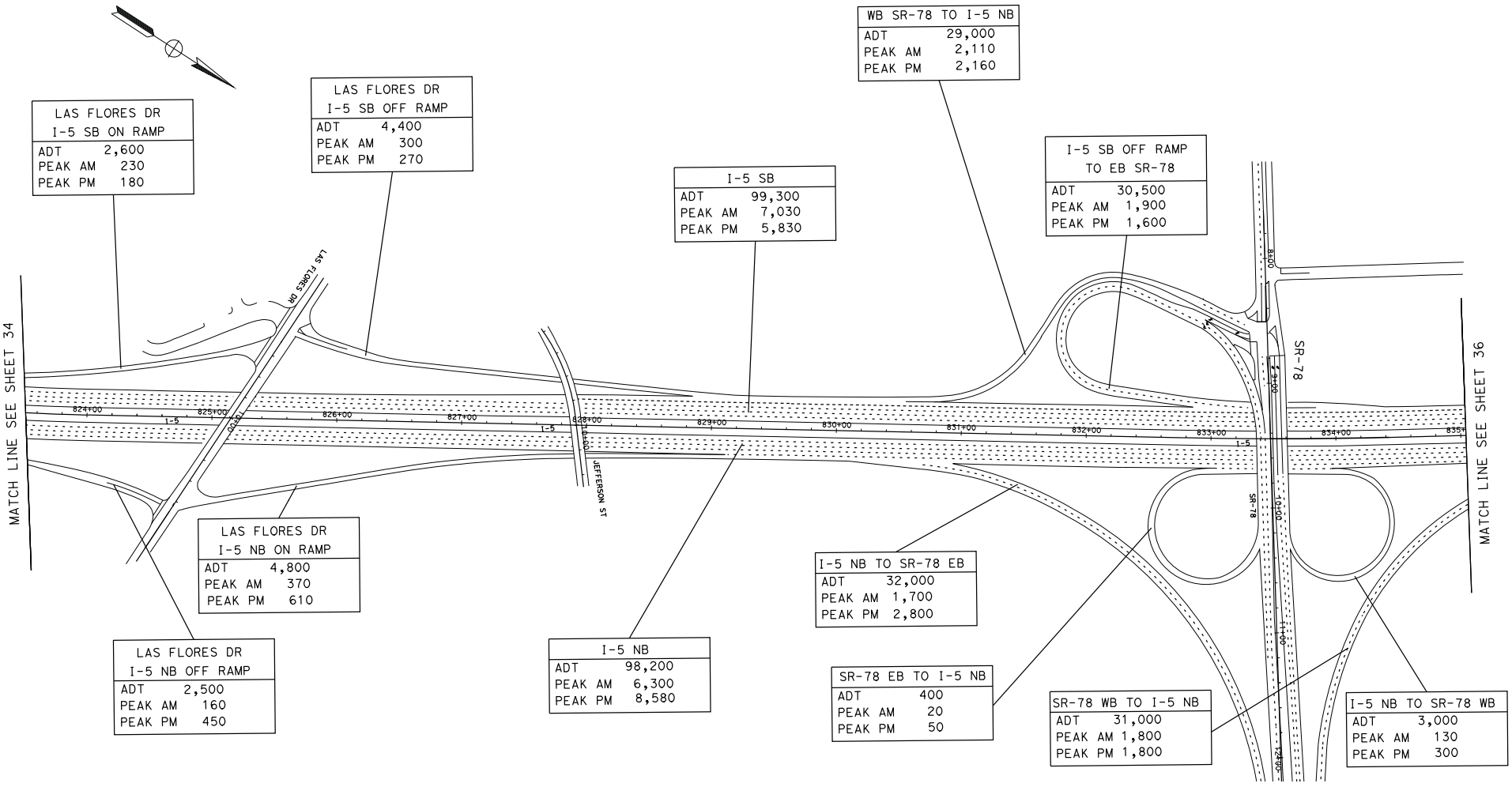
I-5 NORTHCOAST

TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXISTING TRAFFIC - 2006

EXHIBIT A

DGN FILE =>existing_34CarlsbadVD.dgn
DATE PLOTTED => 25-AUG-2008



11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

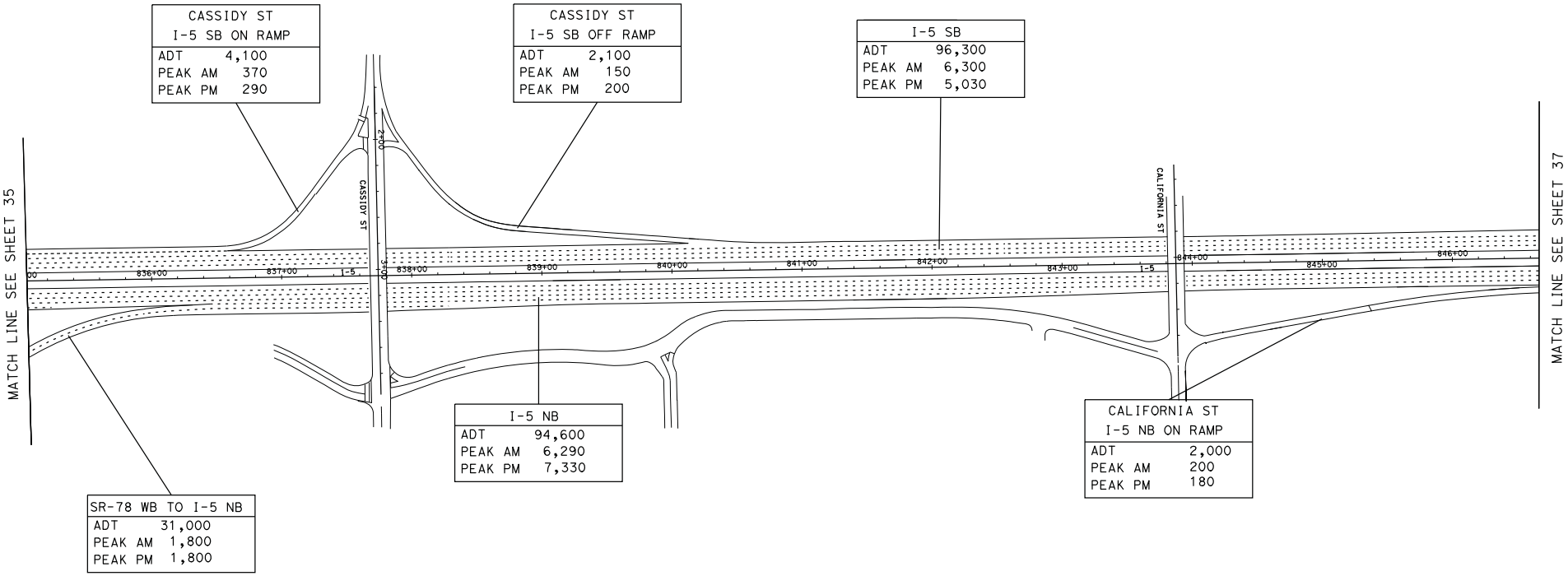
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXISTING TRAFFIC - 2006

EXHIBIT A

DGN FILE =>existing_35LaFlores78.dgn

DATE PLOTTED => 25-AUG-2008



DATE PLOTTED =>25-AUG-2008

DGN FILE =>existing_36CassidyCal.dgn

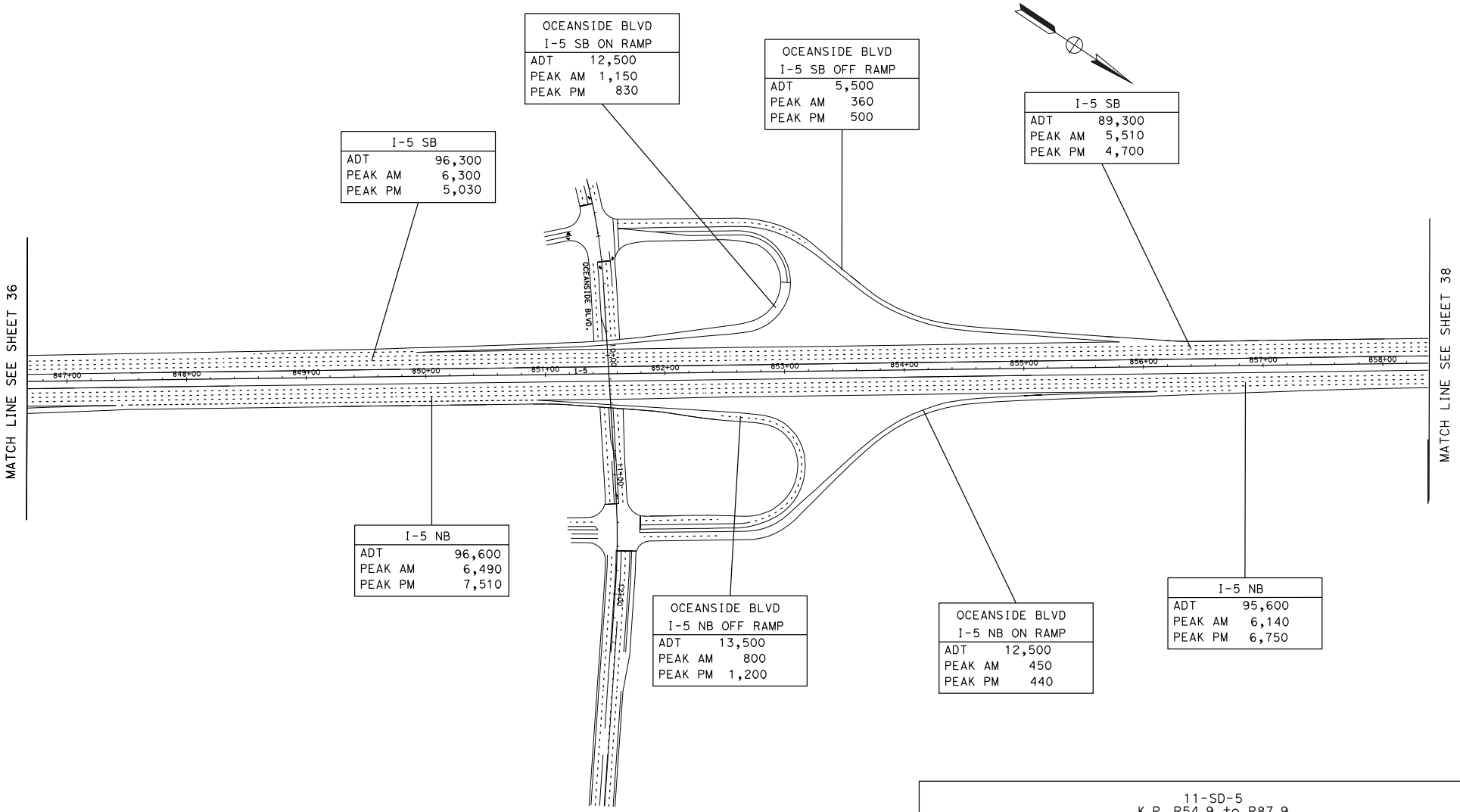
11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXISTING TRAFFIC - 2006

EXHIBIT A



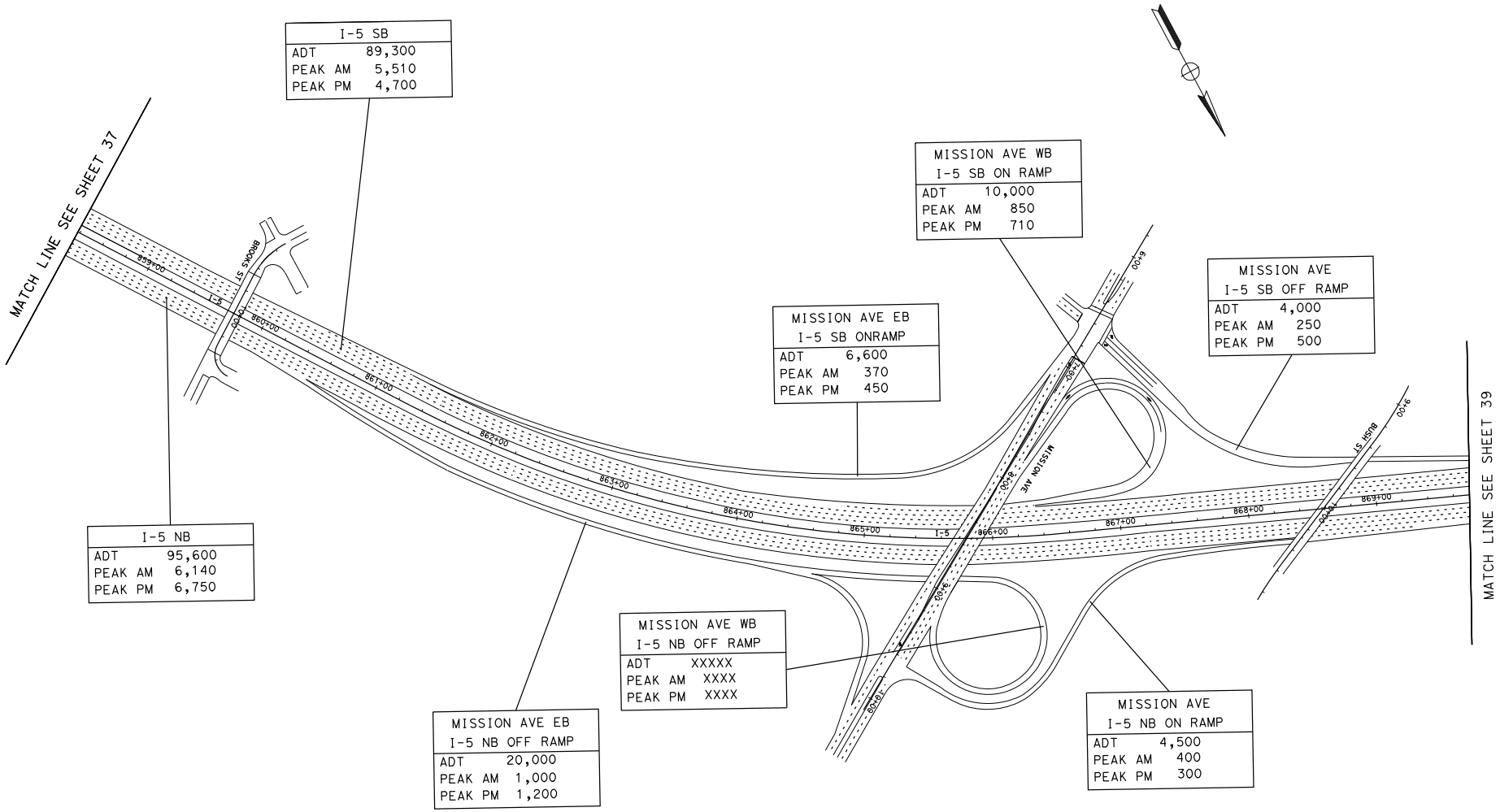
11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXISTING TRAFFIC - 2006
EXHIBIT A

DGN FILE =>existing_370oceanside.dgn
DATE PLOTTED =>25-AUG-2008



11-SD-5
K.P. R54.9 to R87.9
11-235800

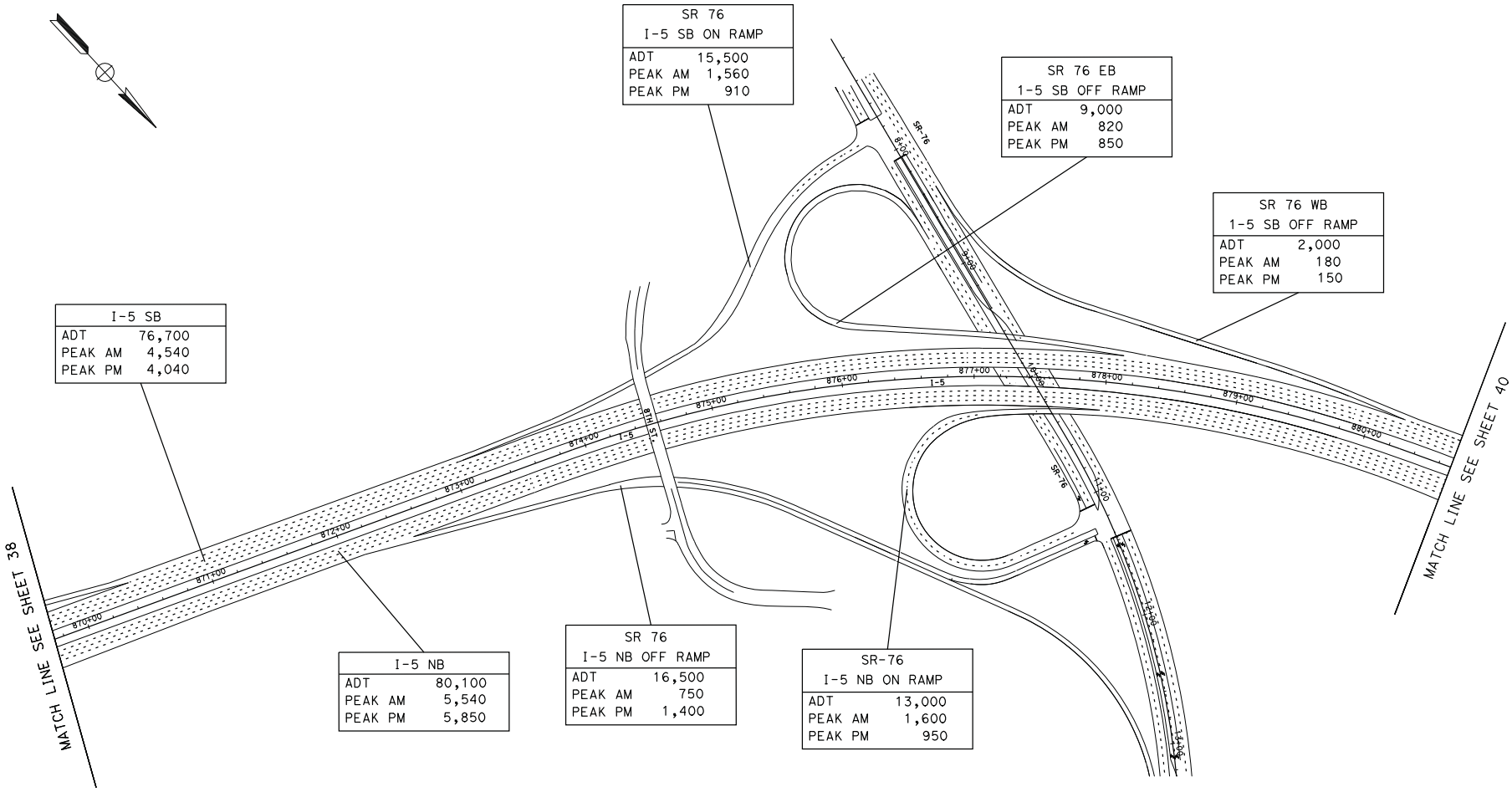
I-5 NORTHCOAST

TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXISTING TRAFFIC - 2006

EXHIBIT A

DGN FILE =>existing_38Mission.dgn
DATE PLOTTED => 25-AUG-2008



11-SD-5
K.P. R54.9 to R87.9
11-235800

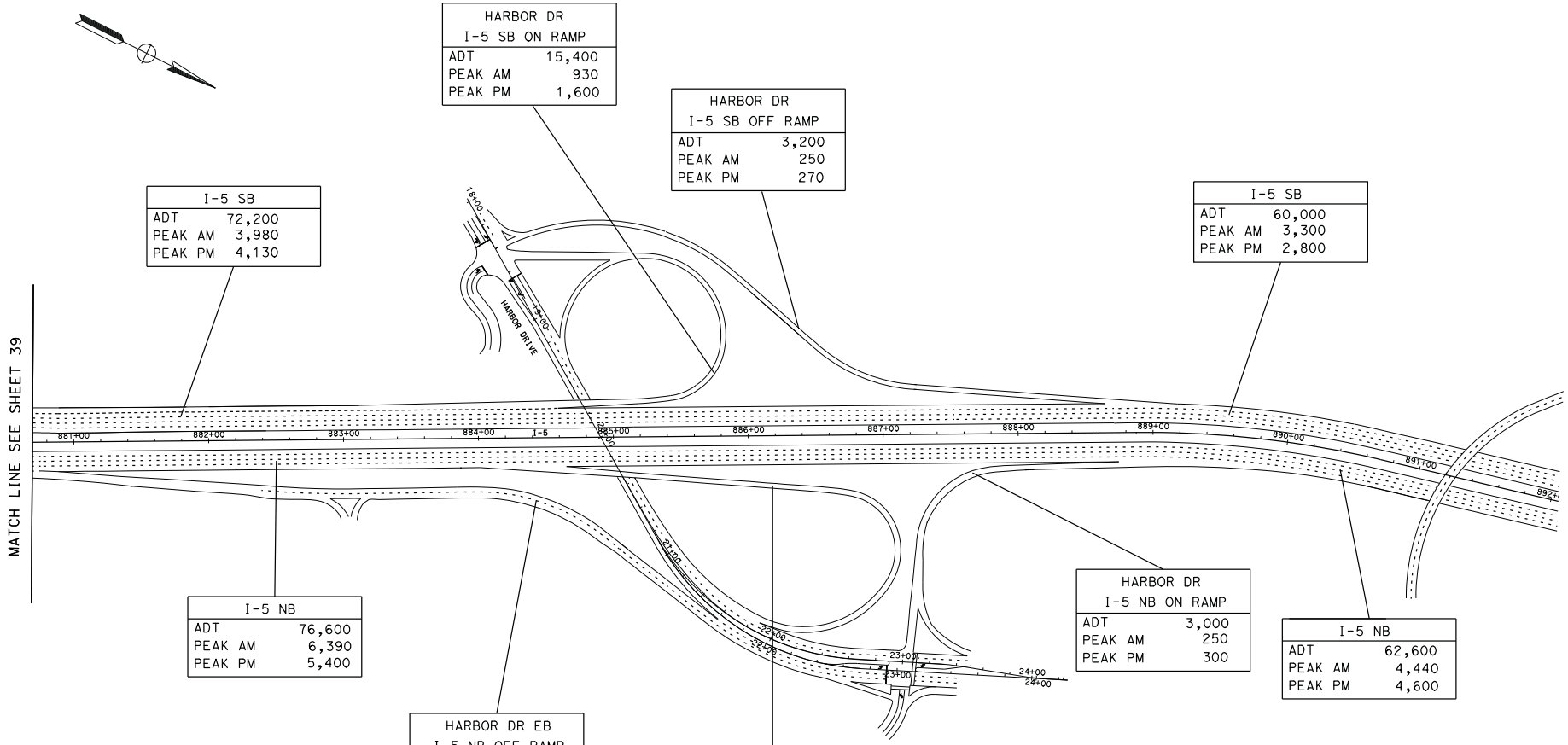
I-5 NORTHCOAST

TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXISTING TRAFFIC - 2006

EXHIBIT A

DGN FILE =>existing_39SR76.dgn
DATE PLOTTED => 25-AUG-2008



11-SD-5
K.P. R54.9 to R87.9
11-235800

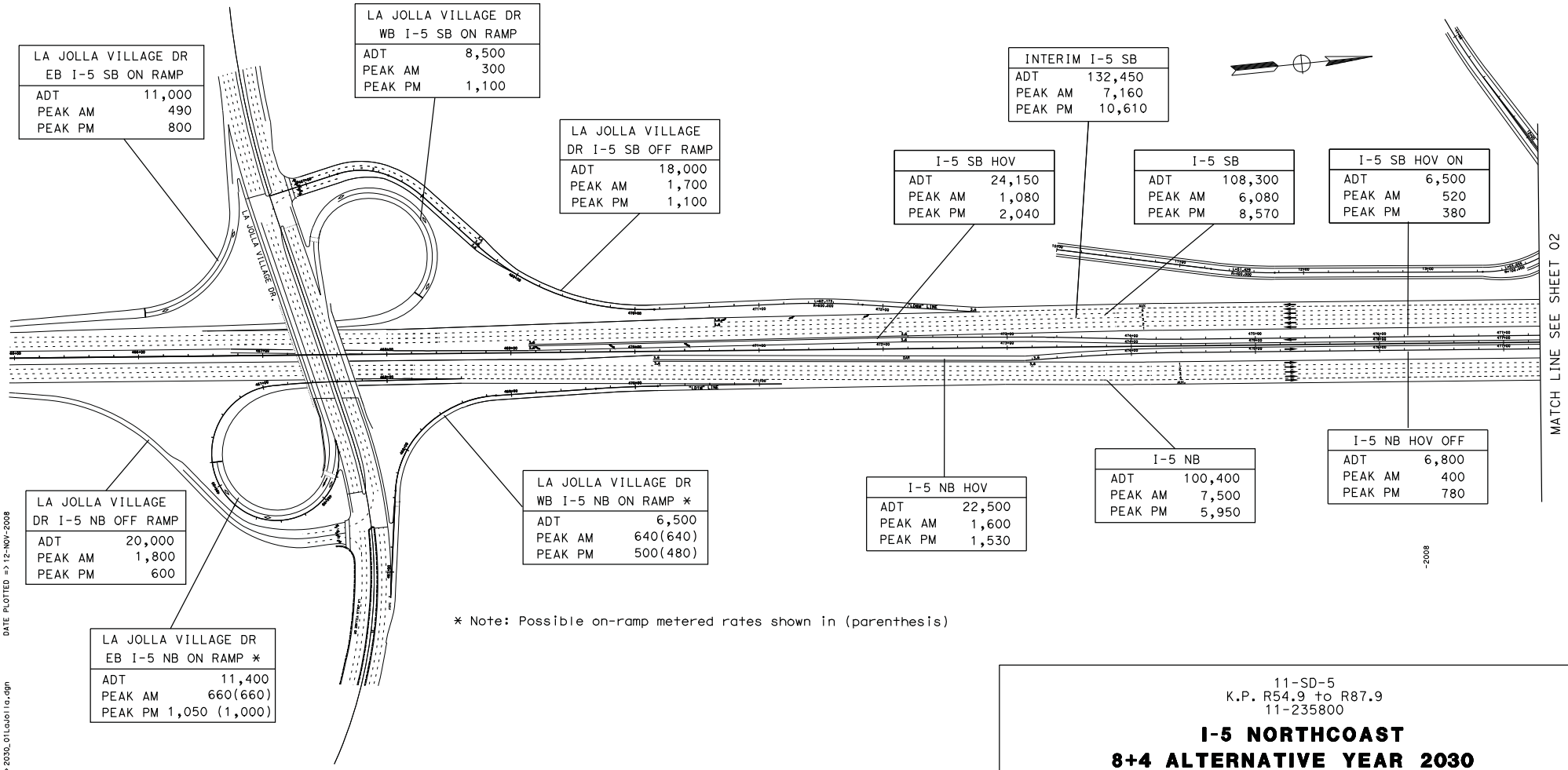
I-5 NORTHCOAST

TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXISTING TRAFFIC - 2006

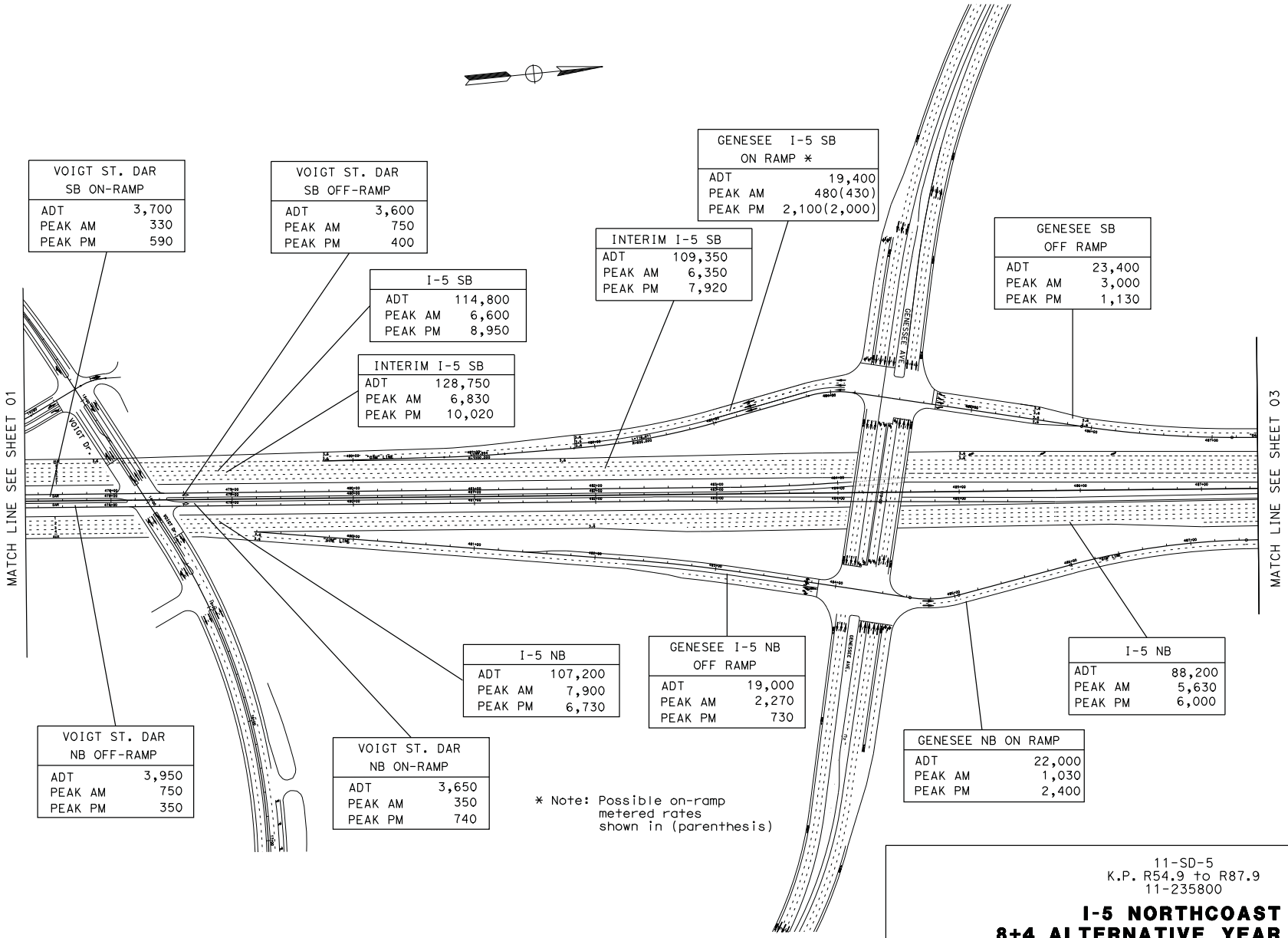
EXHIBIT A

DGN FILE =>existing_40harbor.dgn
DATE PLOTTED =>25-AUG-2008



11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST
8+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT B



VOIGT ST. DAR SB ON-RAMP	
ADT	3,700
PEAK AM	330
PEAK PM	590

VOIGT ST. DAR SB OFF-RAMP	
ADT	3,600
PEAK AM	750
PEAK PM	400

I-5 SB	
ADT	114,800
PEAK AM	6,600
PEAK PM	8,950

INTERIM I-5 SB	
ADT	128,750
PEAK AM	6,830
PEAK PM	10,020

INTERIM I-5 SB	
ADT	109,350
PEAK AM	6,350
PEAK PM	7,920

GENESEE I-5 SB ON RAMP *	
ADT	19,400
PEAK AM	480(430)
PEAK PM	2,100(2,000)

GENESEE SB OFF RAMP	
ADT	23,400
PEAK AM	3,000
PEAK PM	1,130

I-5 NB	
ADT	107,200
PEAK AM	7,900
PEAK PM	6,730

GENESEE I-5 NB OFF RAMP	
ADT	19,000
PEAK AM	2,270
PEAK PM	730

I-5 NB	
ADT	88,200
PEAK AM	5,630
PEAK PM	6,000

VOIGT ST. DAR NB OFF-RAMP	
ADT	3,950
PEAK AM	750
PEAK PM	350

VOIGT ST. DAR NB ON-RAMP	
ADT	3,650
PEAK AM	350
PEAK PM	740

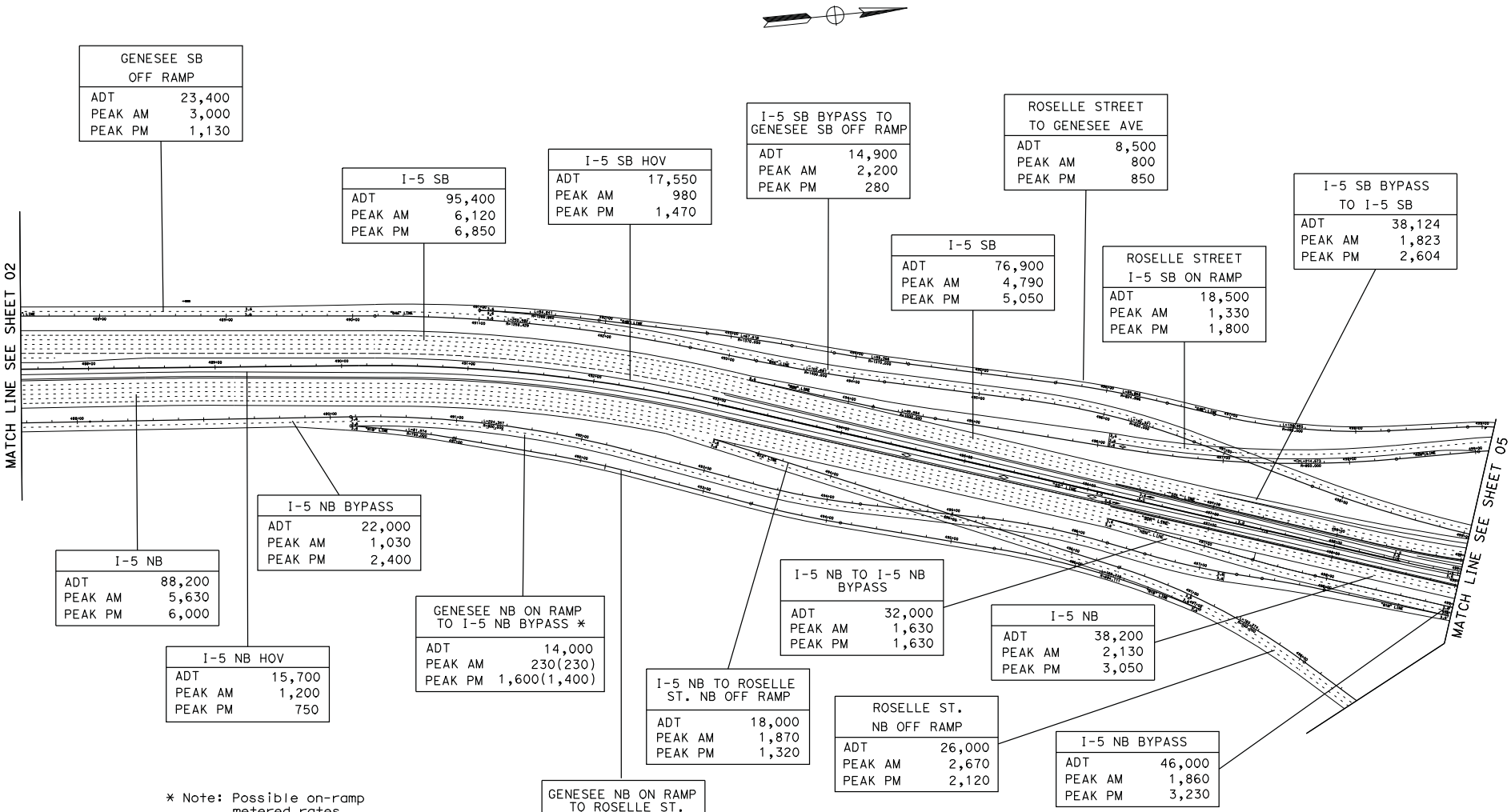
GENESEE NB ON RAMP	
ADT	22,000
PEAK AM	1,030
PEAK PM	2,400

* Note: Possible on-ramp metered rates shown in (parenthesis)

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST
8+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT B

DGN FILE => 2030_02genesee.dgn DATE PLOTTED => 12-NOV-2008

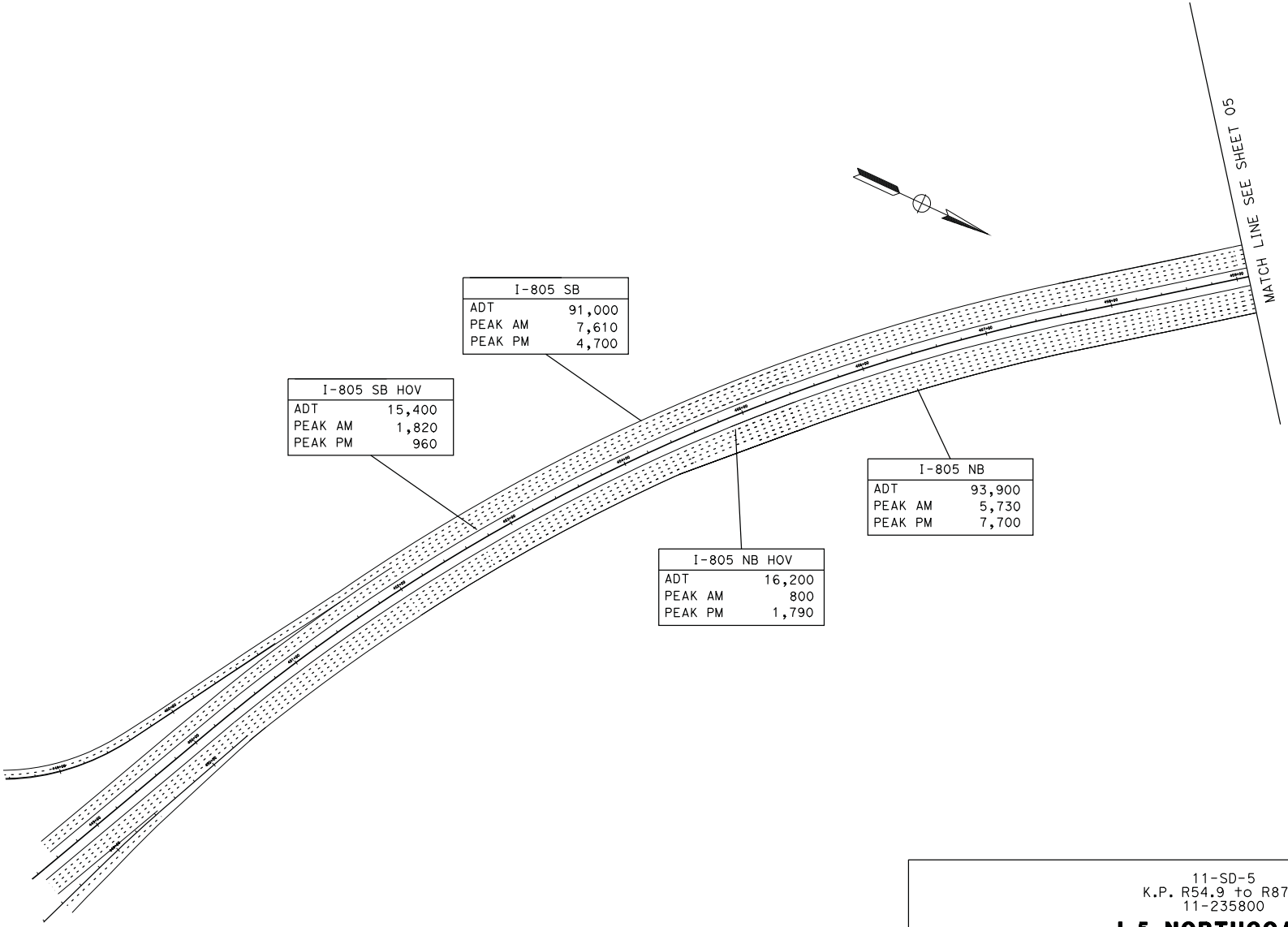


* Note: Possible on-ramp metered rates shown in (parenthesis)

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST
8+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT B

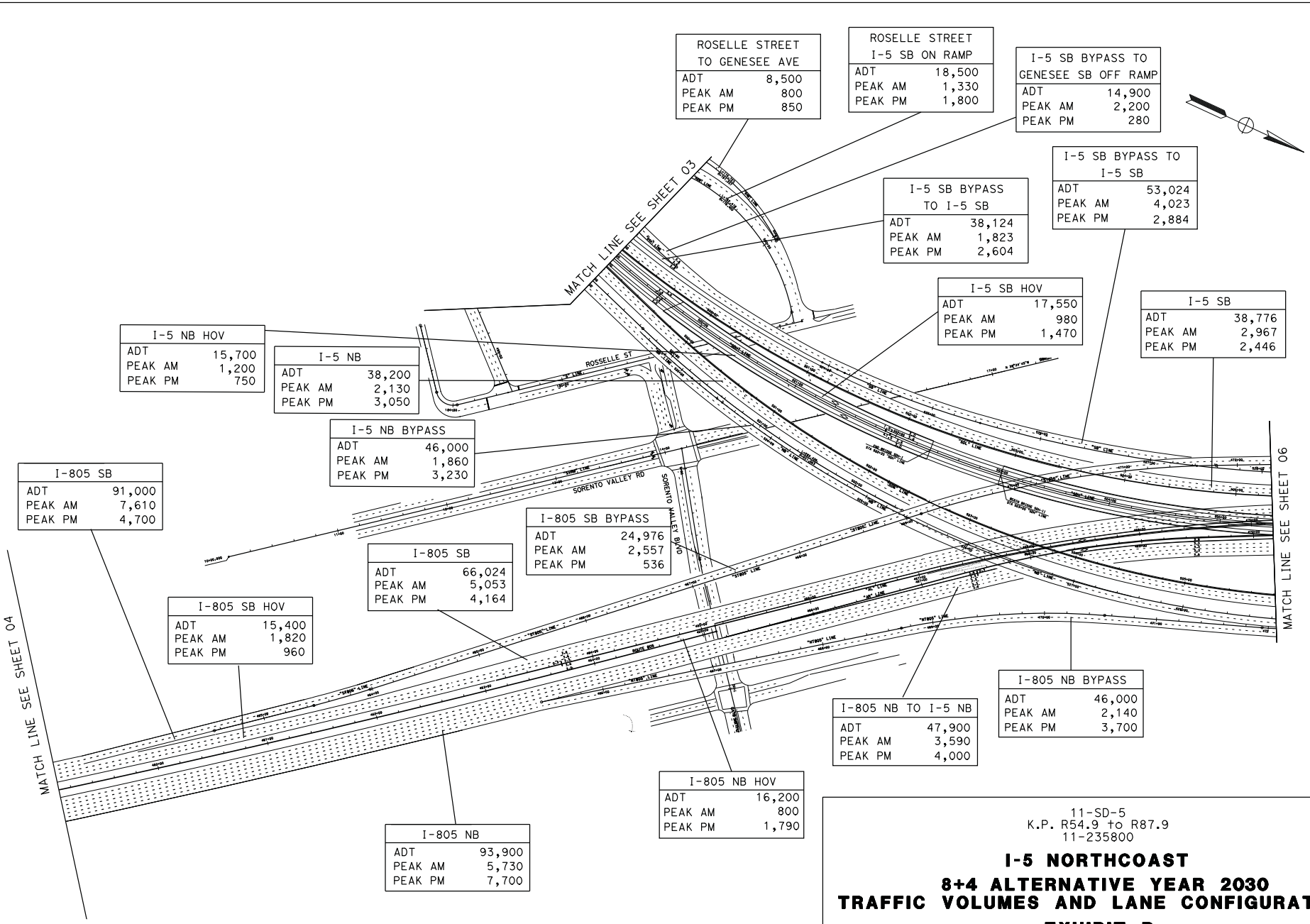
DATE PLOTTED => 12-NOV-2008
DGN FILE => 2030_03bypass.dgn



11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST
8+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT B

DGN FILE => 2030_04Lusk805.dgn
DATE PLOTTED => 12-NOV-2008



11-SD-5
K.P. R54.9 to R87.9
11-235800

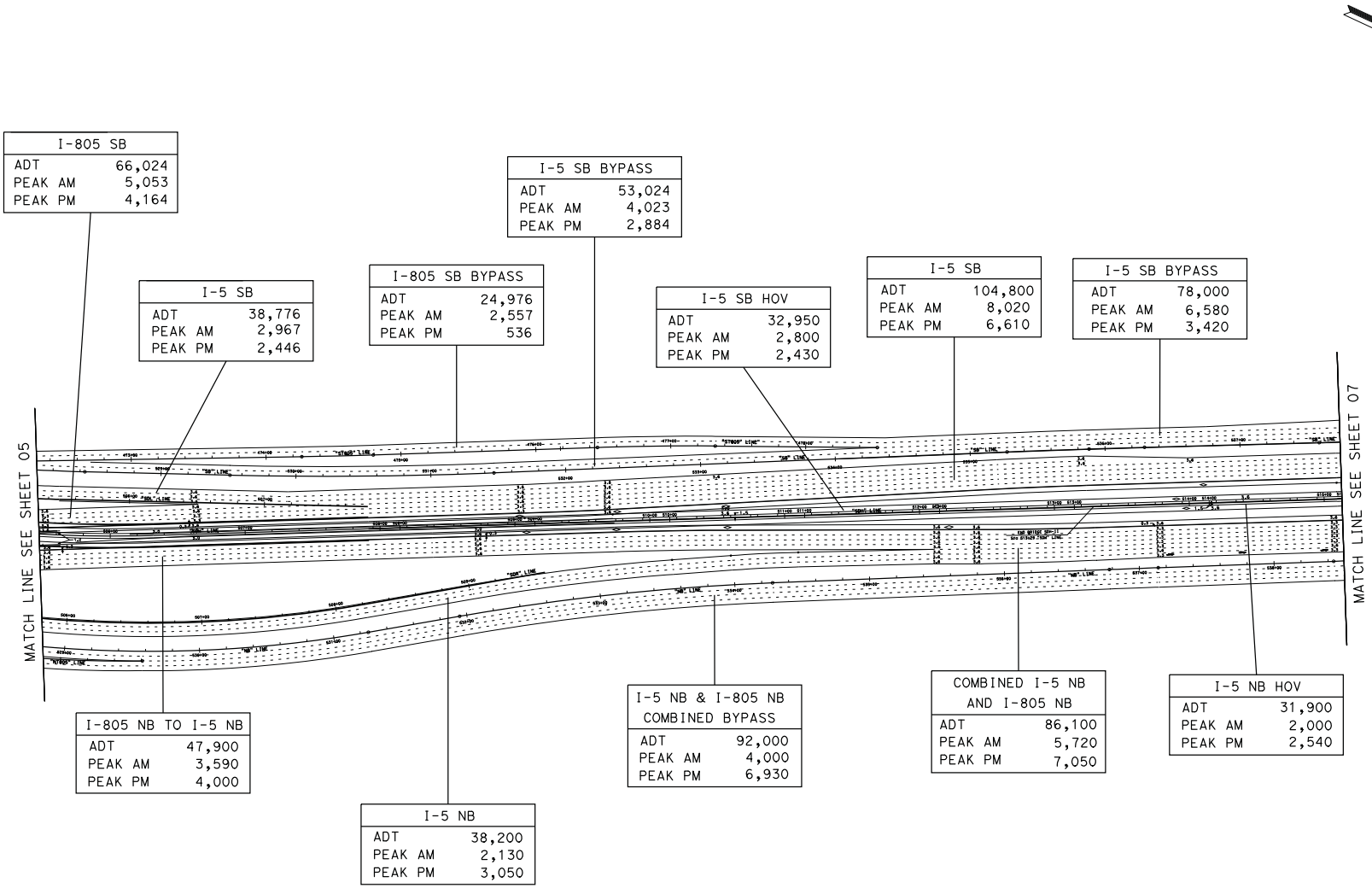
I-5 NORTHCOAST

8+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXHIBIT B

DATE PLOTTED => 12-NOV-2008

DGN FILE => 2030_05Merge5805.dgn

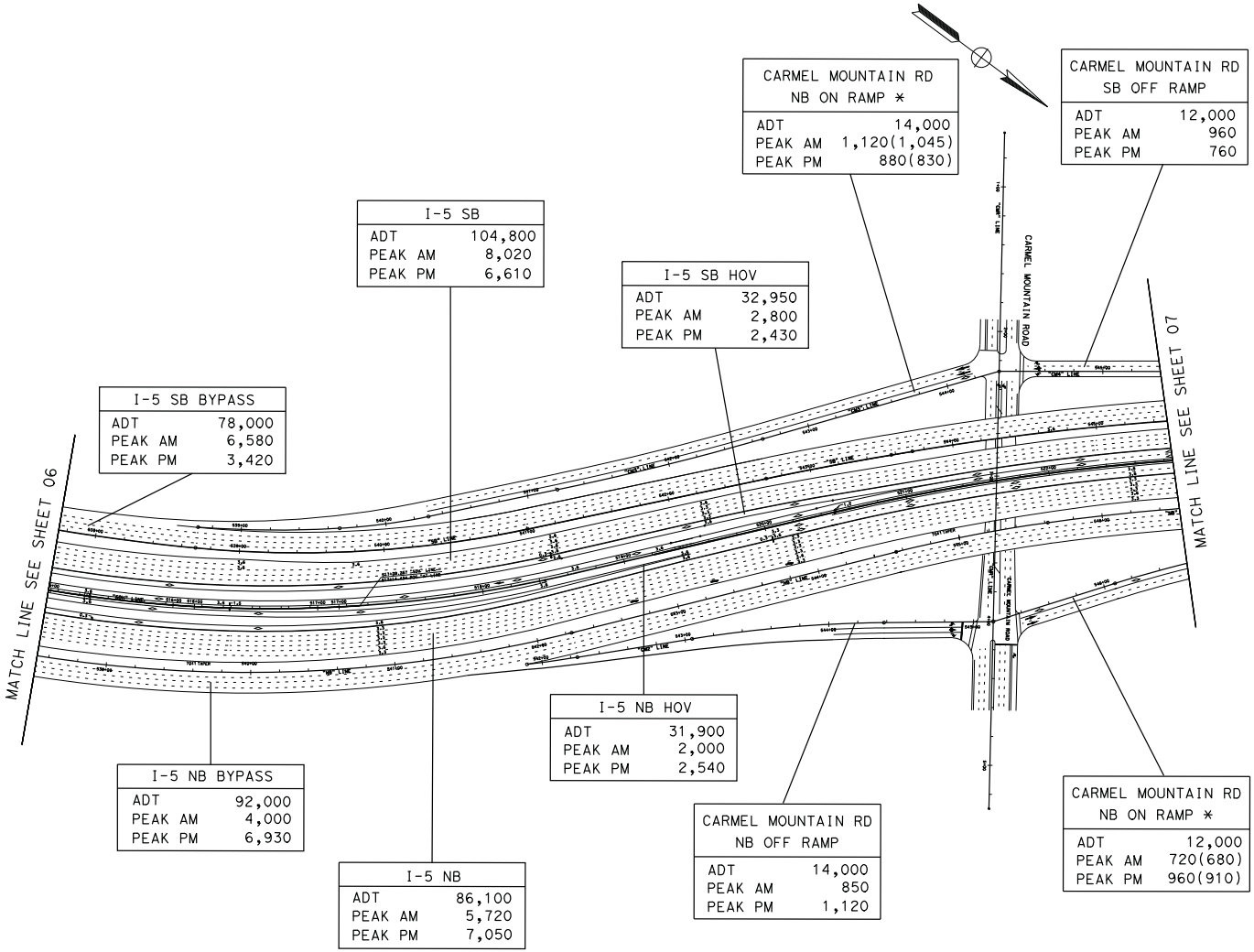


11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

8+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT B

DGN FILE => 2030_06DMHBypassSlipRmp.dgn DATE PLOTTED => 12-NOV-2008



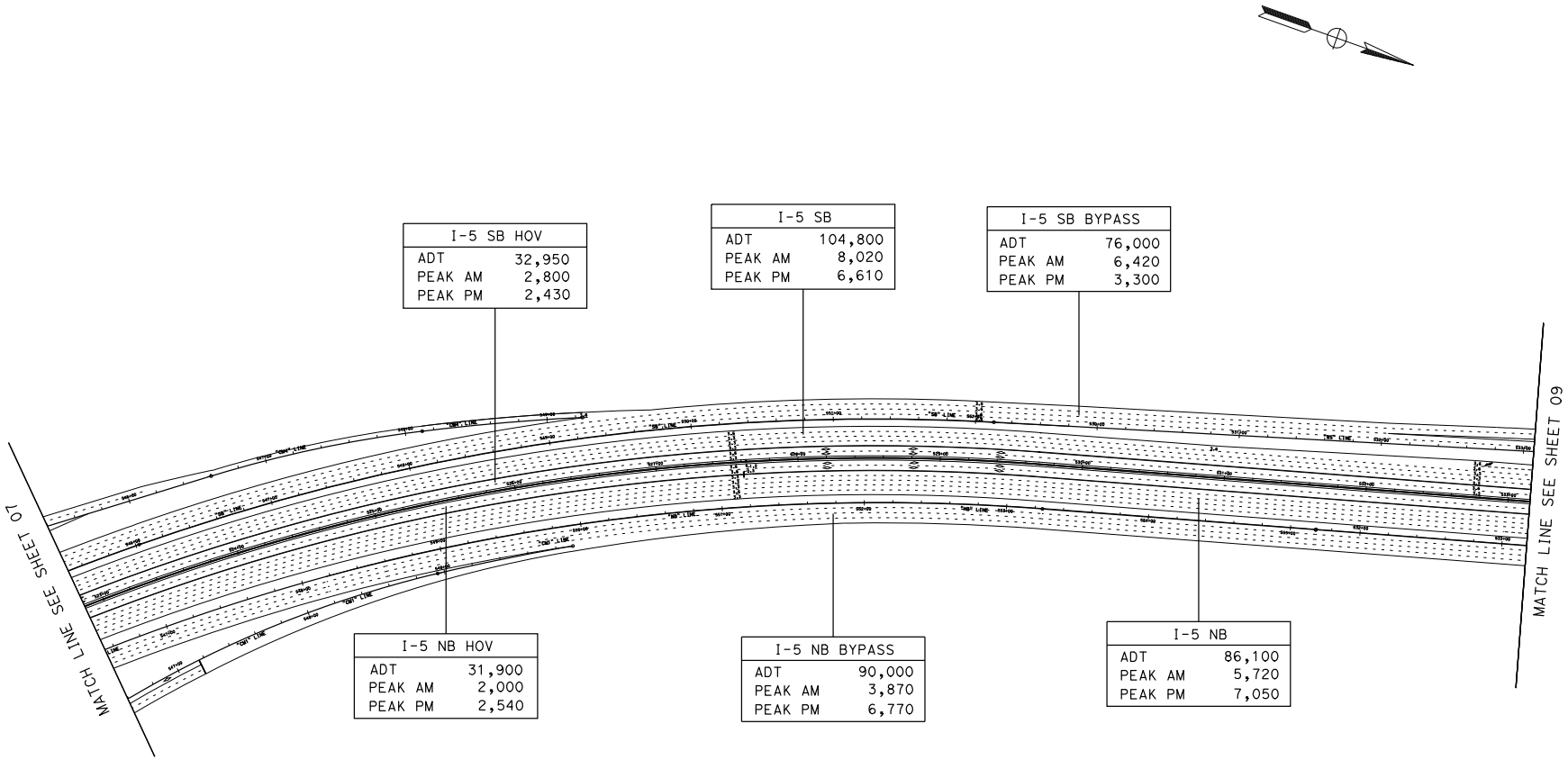
* Note: Possible on-ramp metered rates in (parenthesis)

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

8+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT B

DGN FILE => 2030_07CarmlMtnRd.dgn DATE PLOTTED => 12-NOV-2008

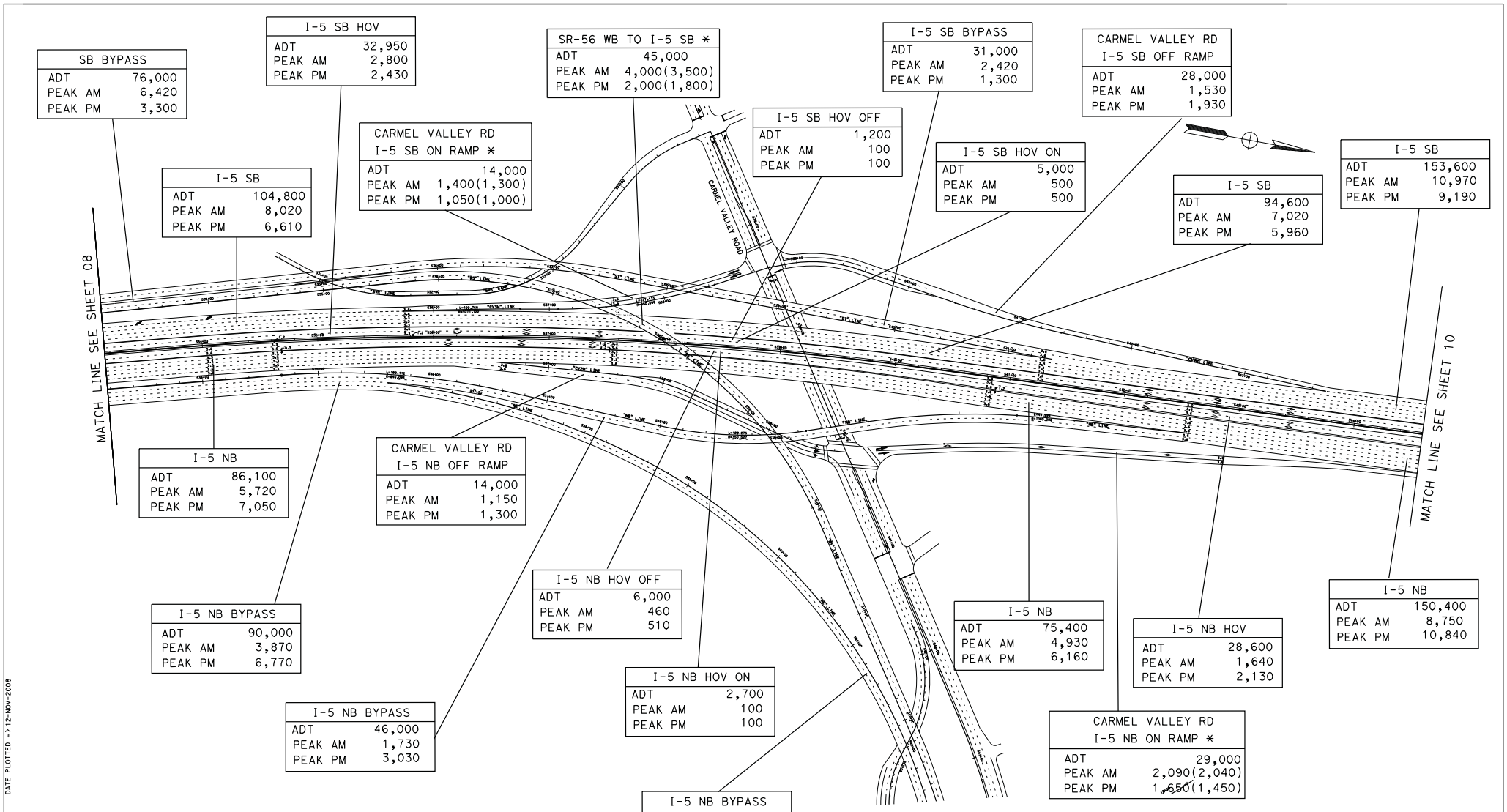


11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

8+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT B

DGN FILE => 2030_08to56CarmiVlyRd.dgn DATE PLOTTED => 12-NOV-2008



* Note: Possible on-ramp metered rates shown in (parenthesis)

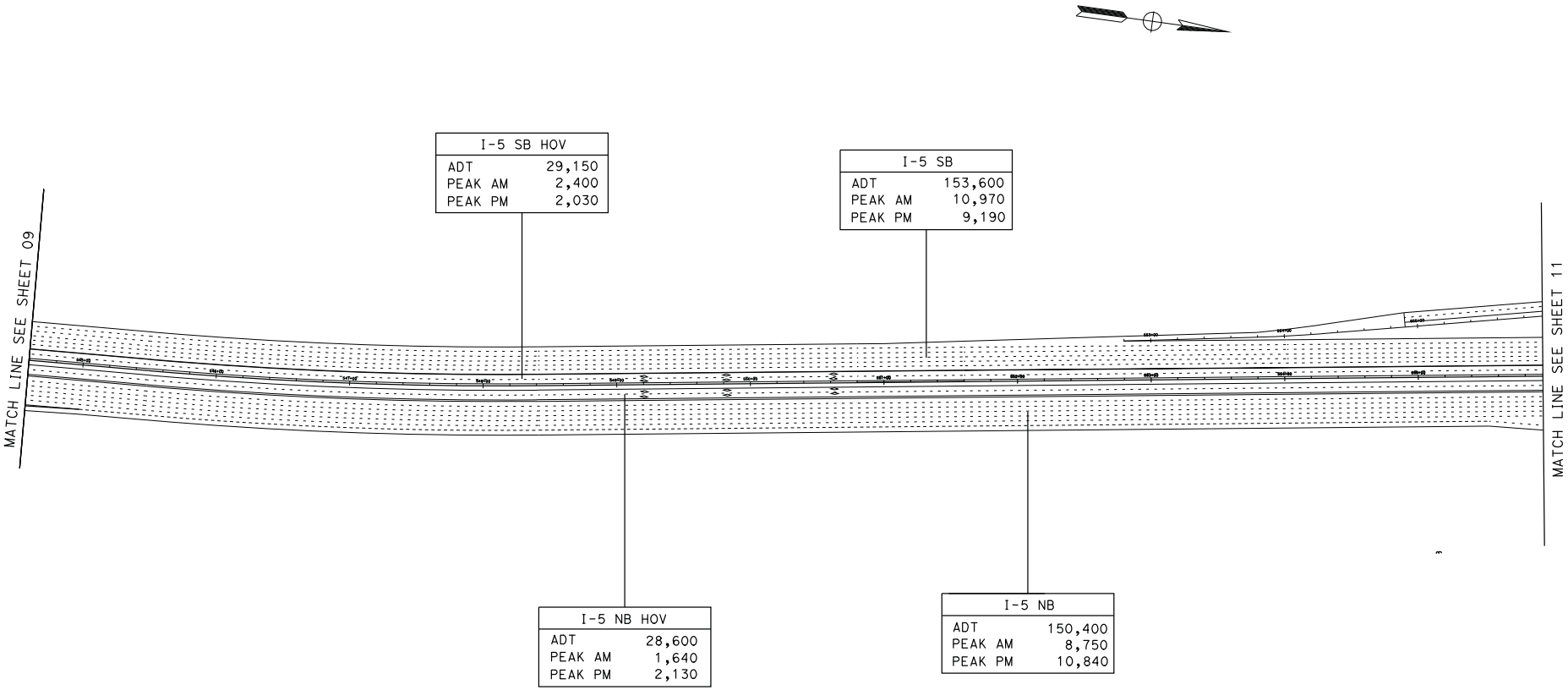
11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

8+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXHIBIT B

DGN FILE =>2030_09CarmlVly56.dgn DATE PLOTTED =>12-NOV-2008

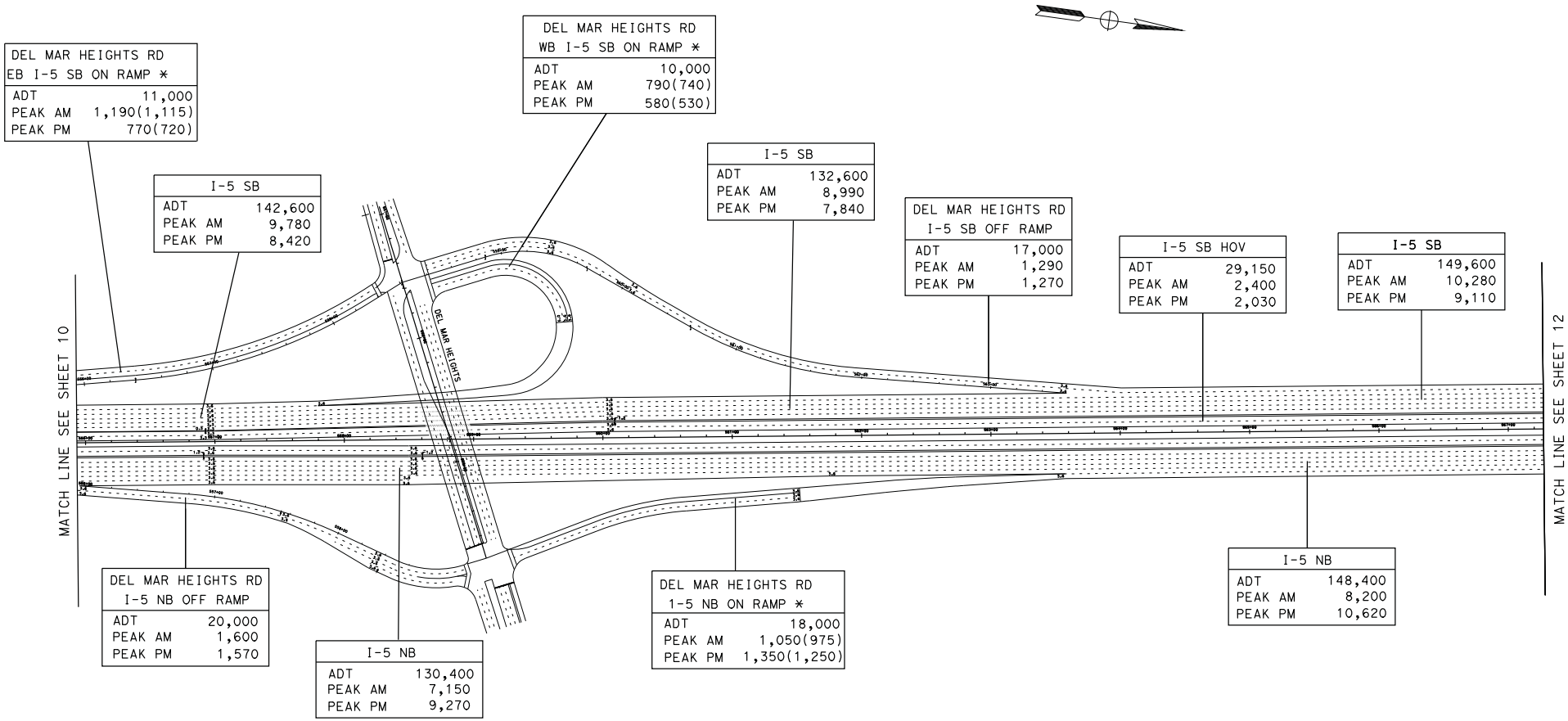


11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

8+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT B

DGN FILE =>2030_10roDel\MarHts.dgn DATE PLOTTED =>12-NOV-2008



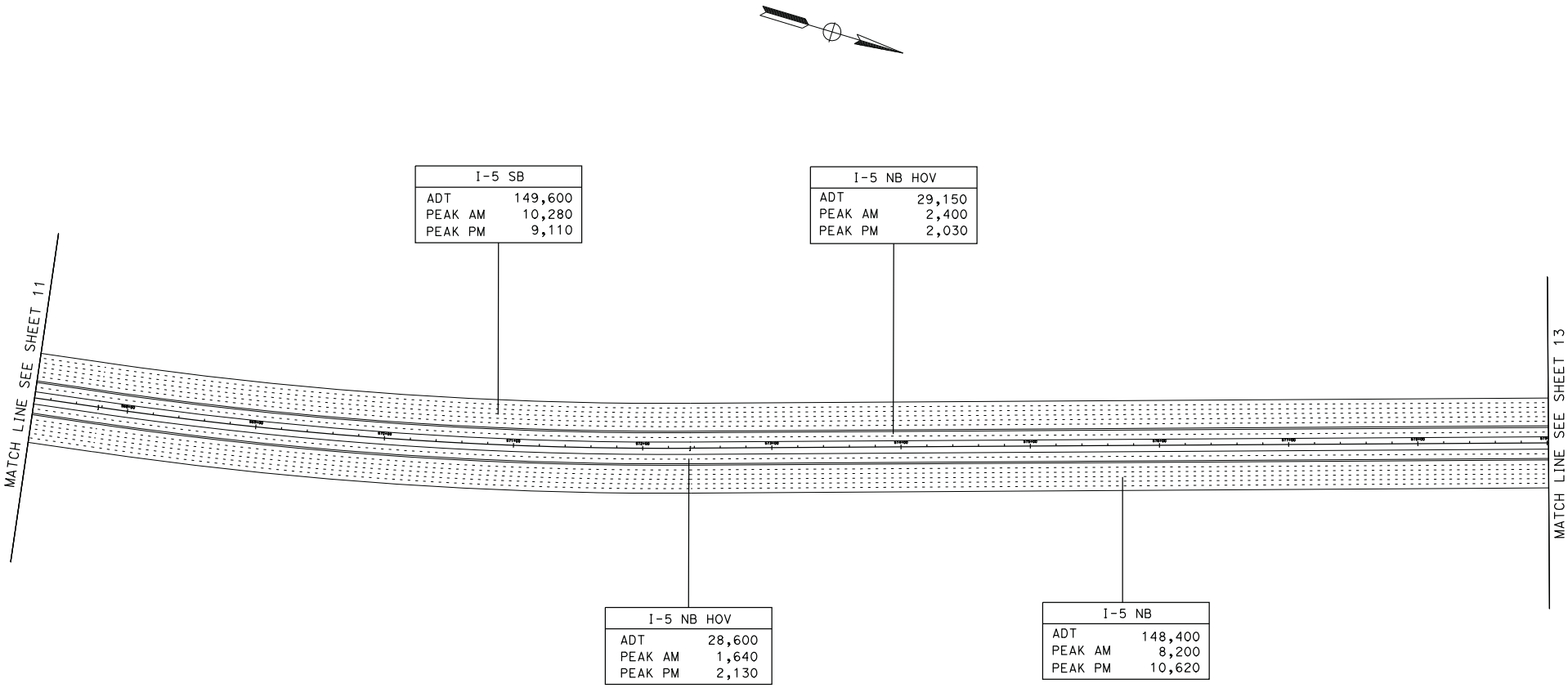
* Note: Possible on-ramp metered rates in (parenthesis)

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

8+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT B

DGN FILE =>2030_11DelMarHts.dgn DATE PLOTTED =>12-NOV-2008



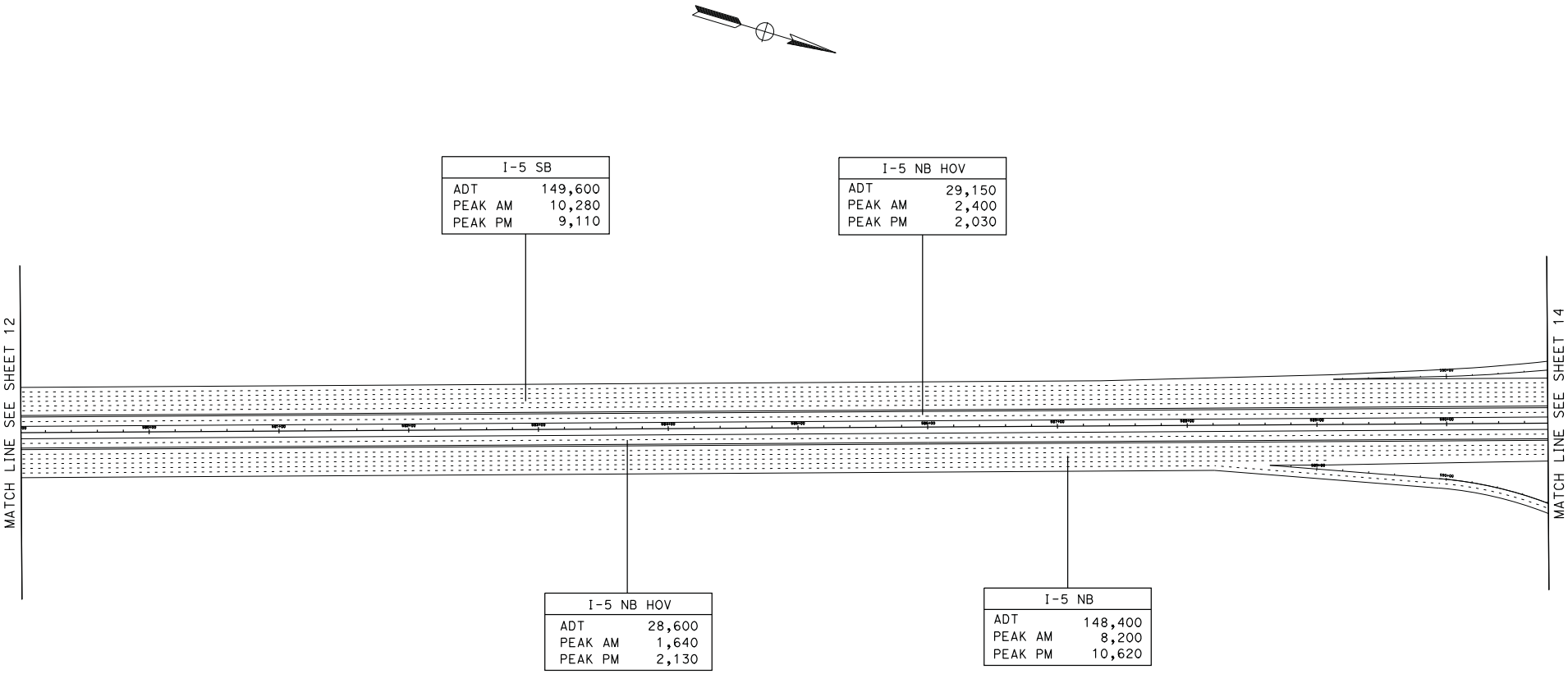
11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

8+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXHIBIT B

DGN FILE =>2030_12rovlabelavalle1.dgn DATE PLOTTED =>12-NOV-2008



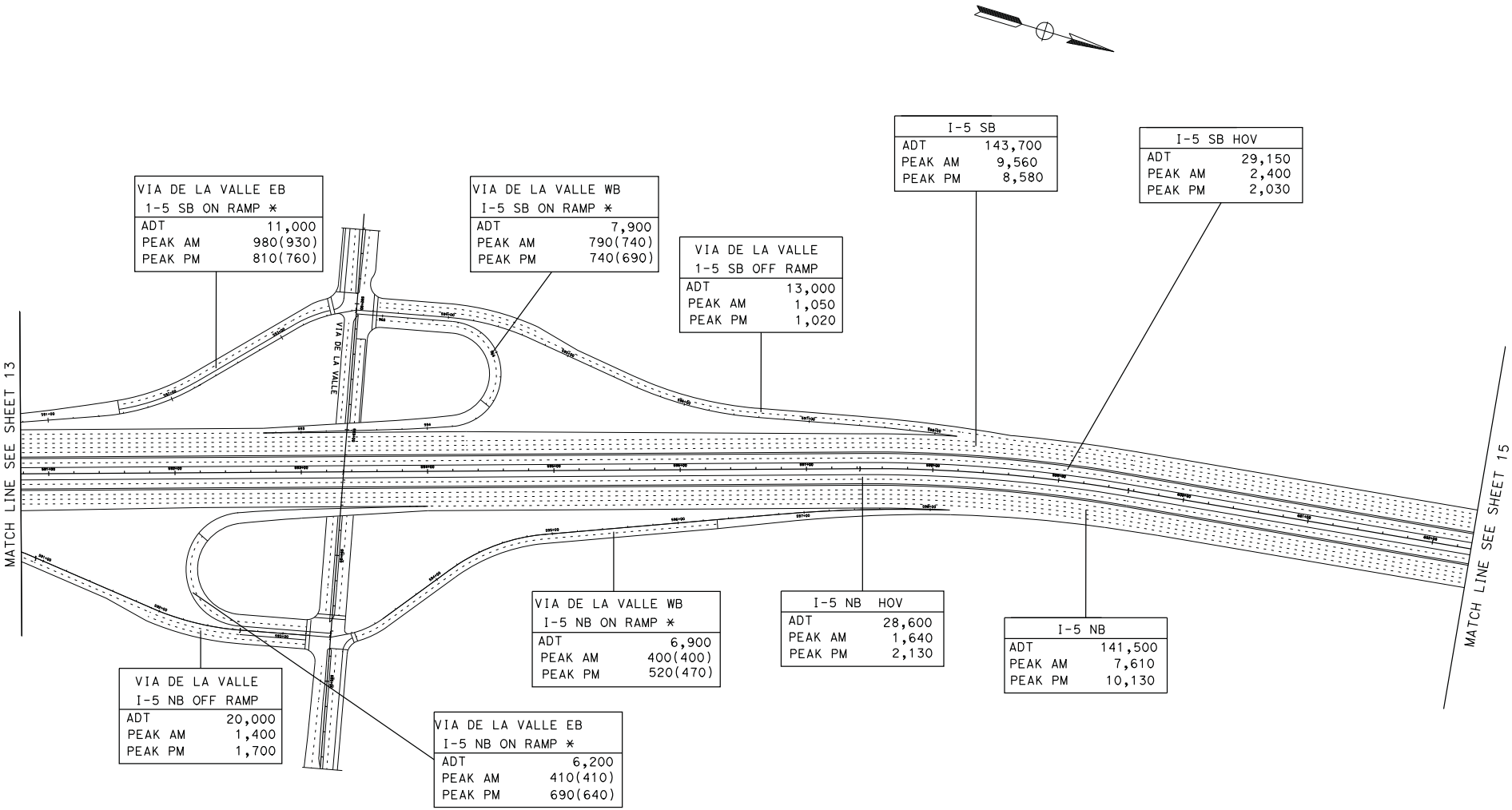
11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

8+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXHIBIT B

DGN FILE => 2030_13toVlabelalvalle2.dgn DATE PLOTTED => 12-NOV-2008



* Note: Possible on-ramp metered rates shown in (parenthesis)

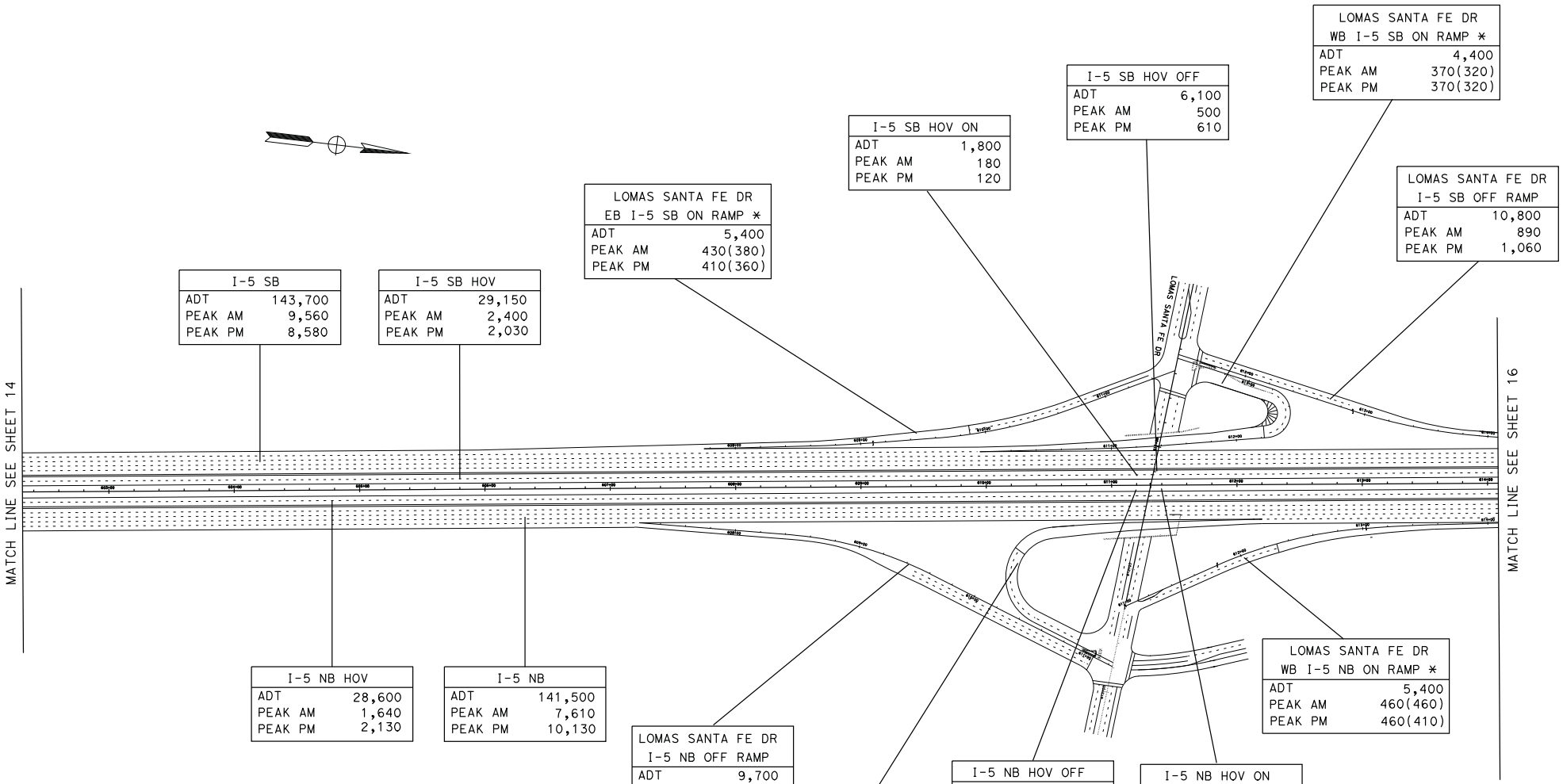
11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

8+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXHIBIT B

DGN FILE =>2030_14ViaDelaValle.dgn
DATE PLOTTED =>12-NOV-2008



I-5 SB	
ADT	143,700
PEAK AM	9,560
PEAK PM	8,580

I-5 SB HOV	
ADT	29,150
PEAK AM	2,400
PEAK PM	2,030

LOMAS SANTA FE DR EB I-5 SB ON RAMP *	
ADT	5,400
PEAK AM	430(380)
PEAK PM	410(360)

I-5 SB HOV ON	
ADT	1,800
PEAK AM	180
PEAK PM	120

I-5 SB HOV OFF	
ADT	6,100
PEAK AM	500
PEAK PM	610

LOMAS SANTA FE DR WB I-5 SB ON RAMP *	
ADT	4,400
PEAK AM	370(320)
PEAK PM	370(320)

LOMAS SANTA FE DR I-5 SB OFF RAMP	
ADT	10,800
PEAK AM	890
PEAK PM	1,060

I-5 NB HOV	
ADT	28,600
PEAK AM	1,640
PEAK PM	2,130

I-5 NB	
ADT	141,500
PEAK AM	7,610
PEAK PM	10,130

LOMAS SANTA FE DR I-5 NB OFF RAMP	
ADT	9,700
PEAK AM	690
PEAK PM	810

LOMAS SANTA FE DR EB I-5 NB ON RAMP *	
ADT	6,300
PEAK AM	480(480)
PEAK PM	530(480)

I-5 NB HOV OFF	
ADT	1,700
PEAK AM	120
PEAK PM	170

I-5 NB HOV ON	
ADT	7,200
PEAK AM	600
PEAK PM	570

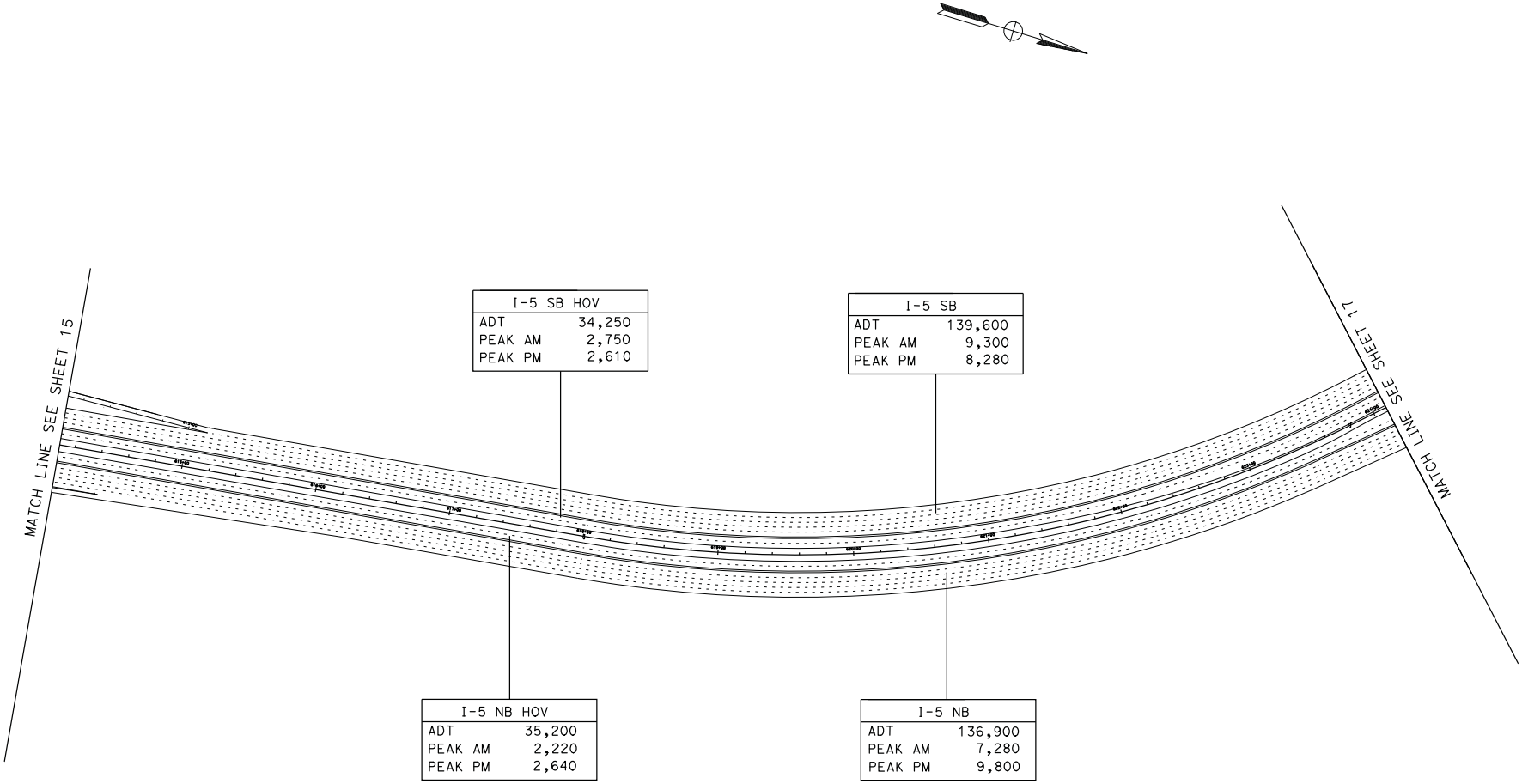
LOMAS SANTA FE DR WB I-5 NB ON RAMP *	
ADT	5,400
PEAK AM	460(460)
PEAK PM	460(410)

* Note: Possible on-ramp metered rates shown in (parenthesis)

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST
8+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT B

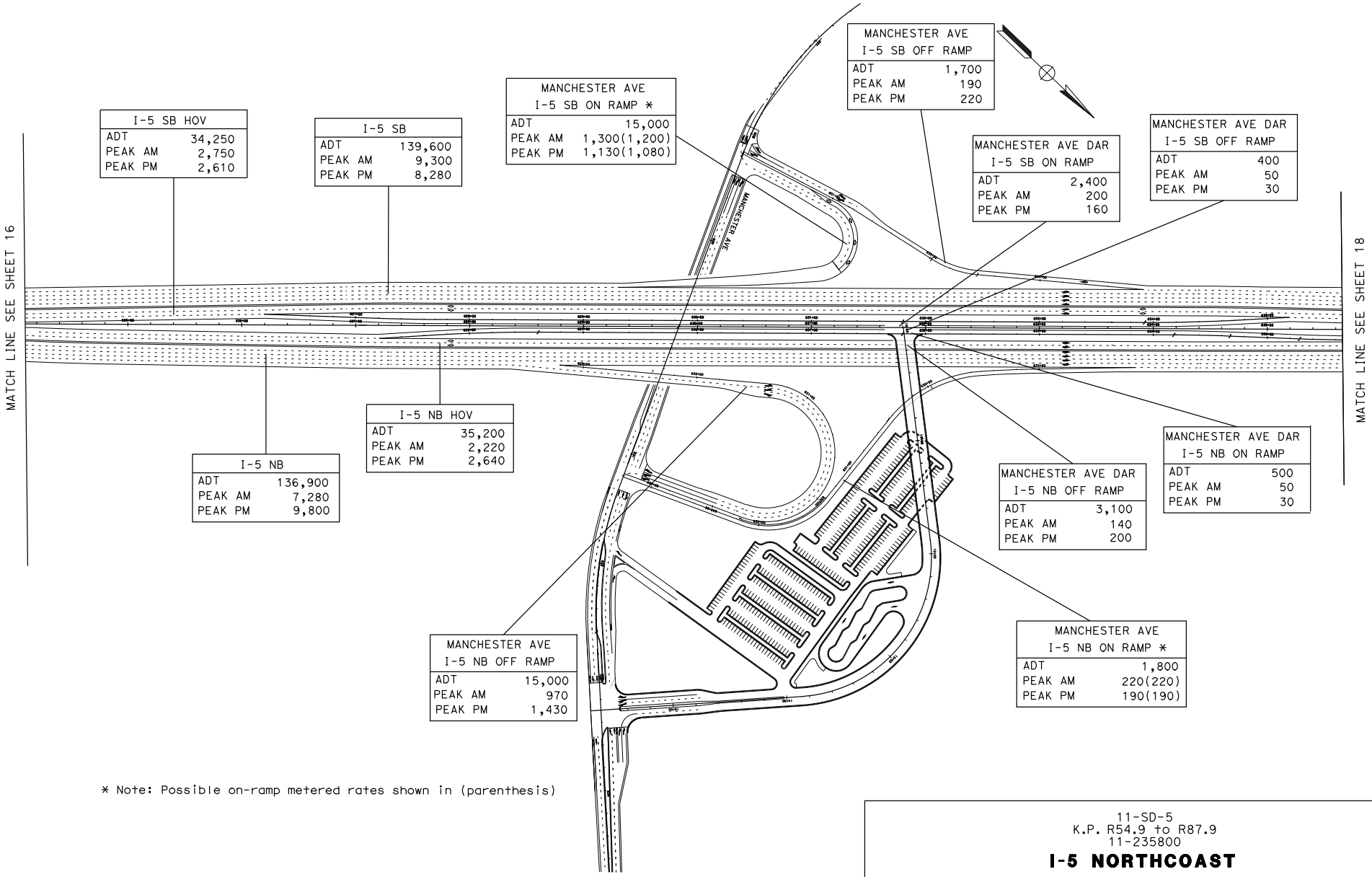
DGN FILE => 2030_15LomasSfdFe.dgn DATE PLOTTED => 12-NOV-2008



11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST
8+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT B

DGN FILE => 2030_16toManchester.dgn DATE PLOTTED => 12-NOV-2008



* Note: Possible on-ramp metered rates shown in (parenthesis)

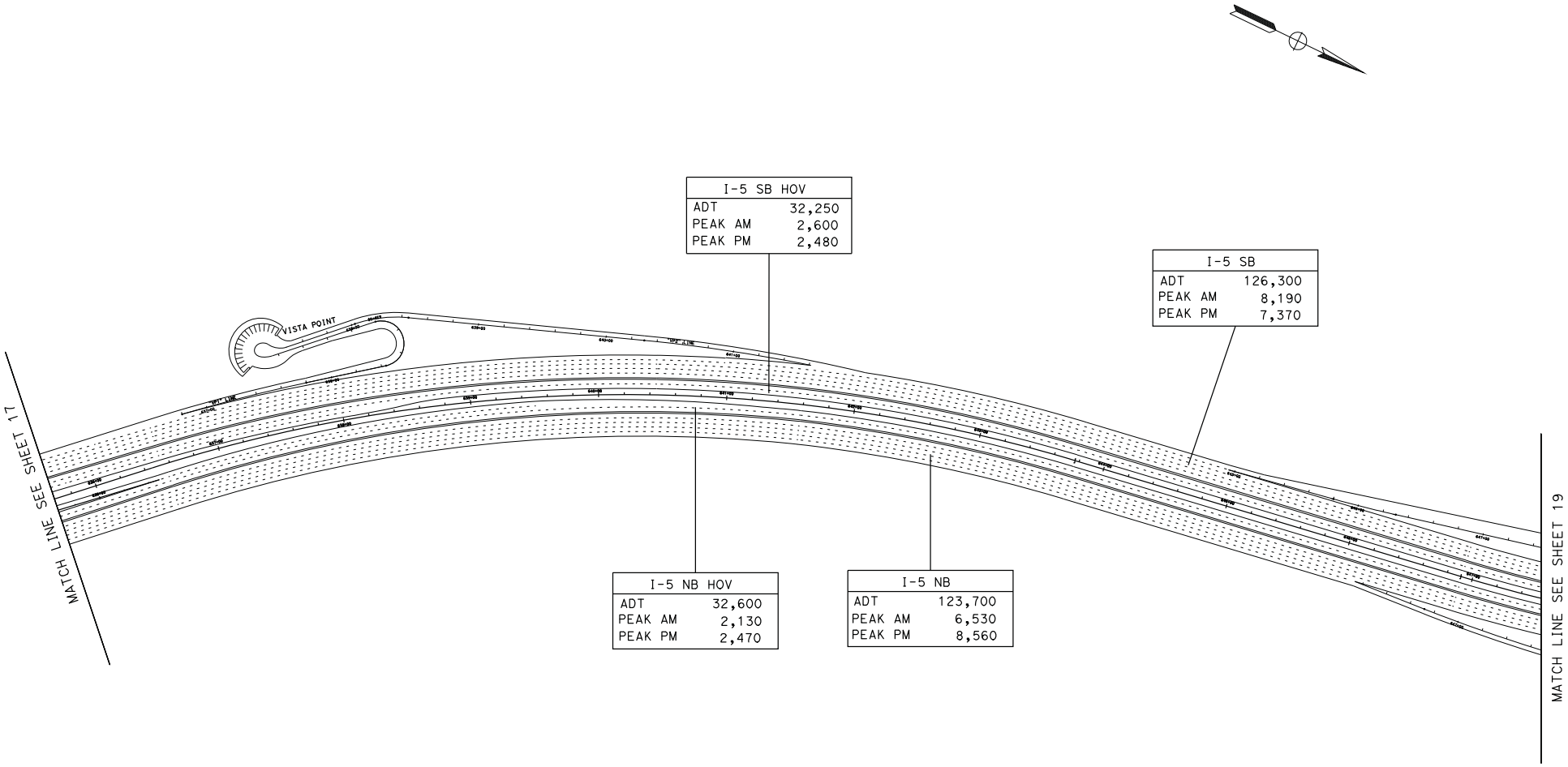
11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

8+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXHIBIT B

DGN FILE =>2030_17Manchester.dgn DATE PLOTTED =>12-NOV-2008



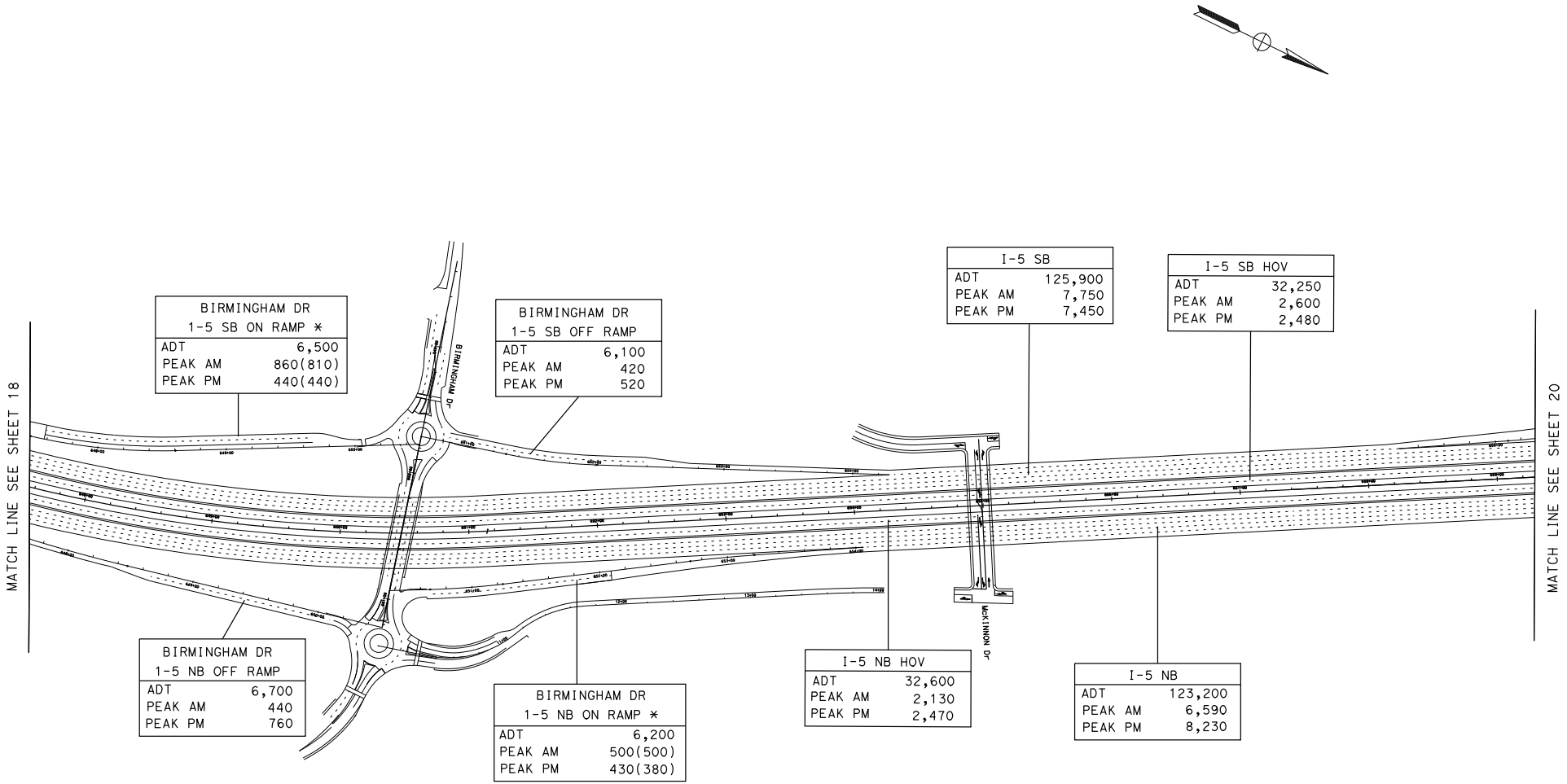
11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

8+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXHIBIT B

DGN FILE =>2030_18to81mingham.dgn DATE PLOTTED =>12-NOV-2008



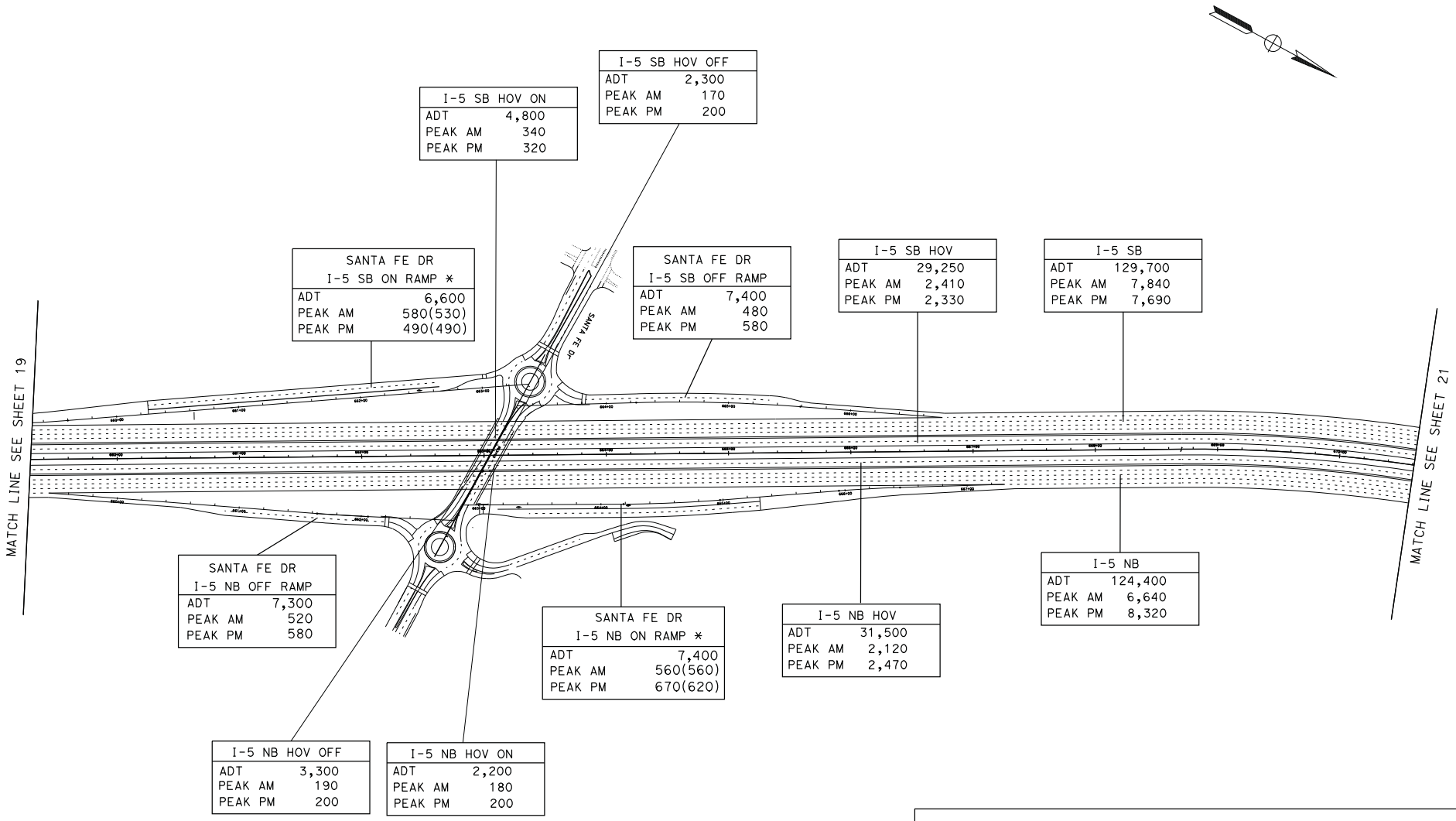
* Note: Possible on-ramp meter rates in (parenthesis)

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST
8+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXHIBIT B

DGN FILE => 2030_198birmingham.dgn DATE PLOTTED => 12-NOV-2008

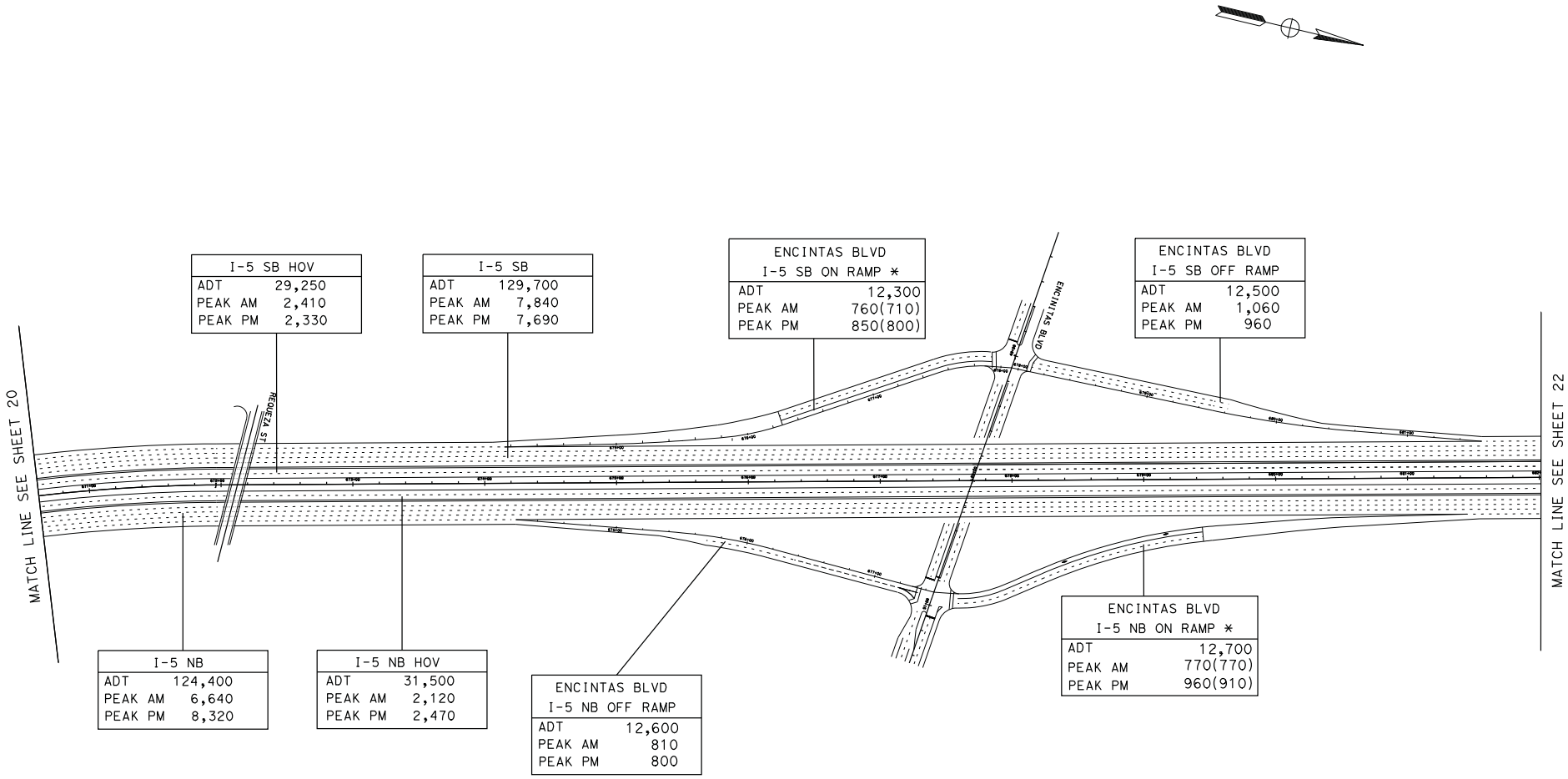


* Note: Possible on-ramp metered rates in (parenthesis)

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST
8+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT B

DGN FILE =>2030_20SantaFeDr.dgn DATE PLOTTED =>12-NOV-2008

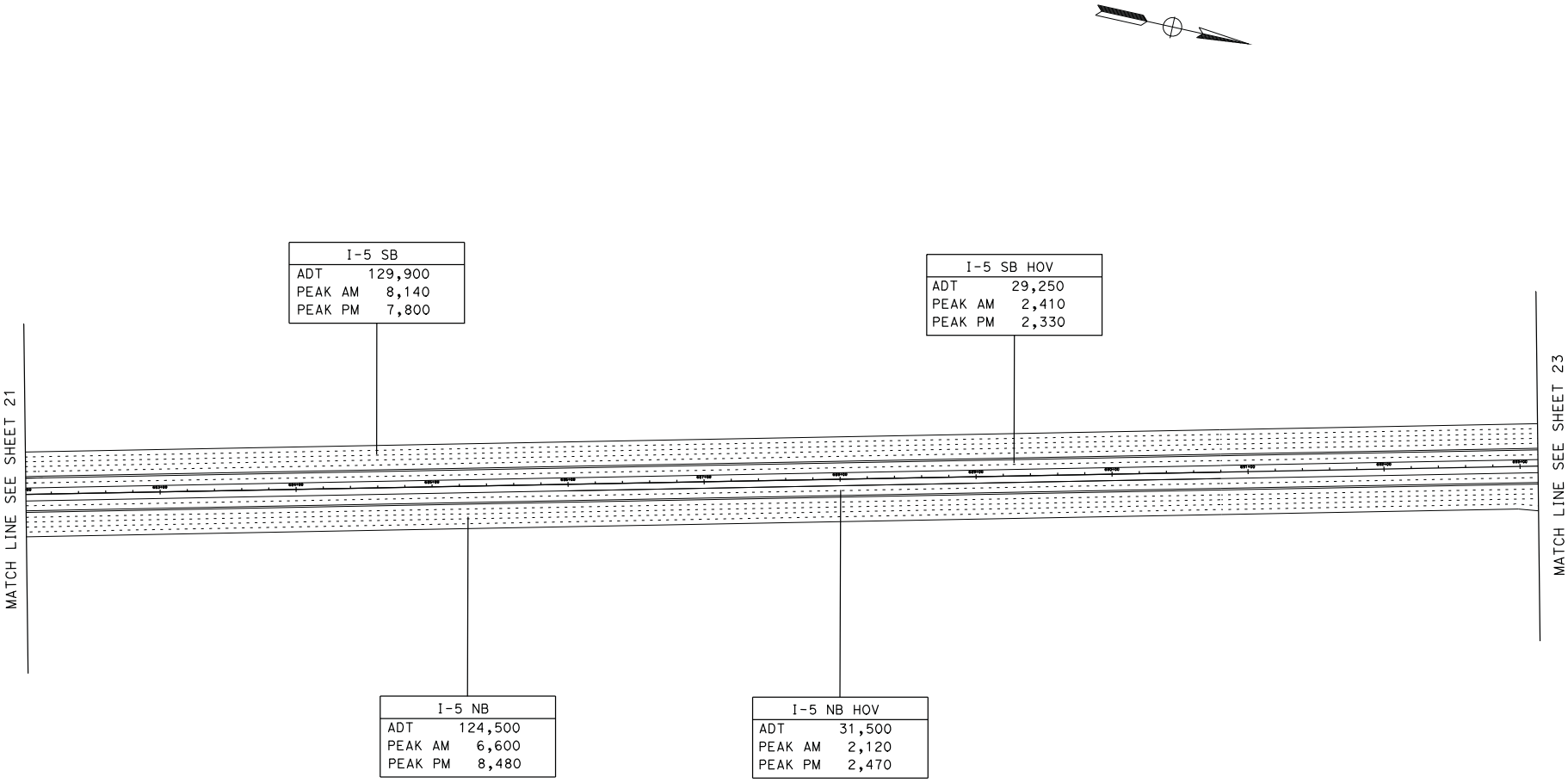


* Note: Possible on-ramp metered rates shown in (parenthesis)

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST
8+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT B

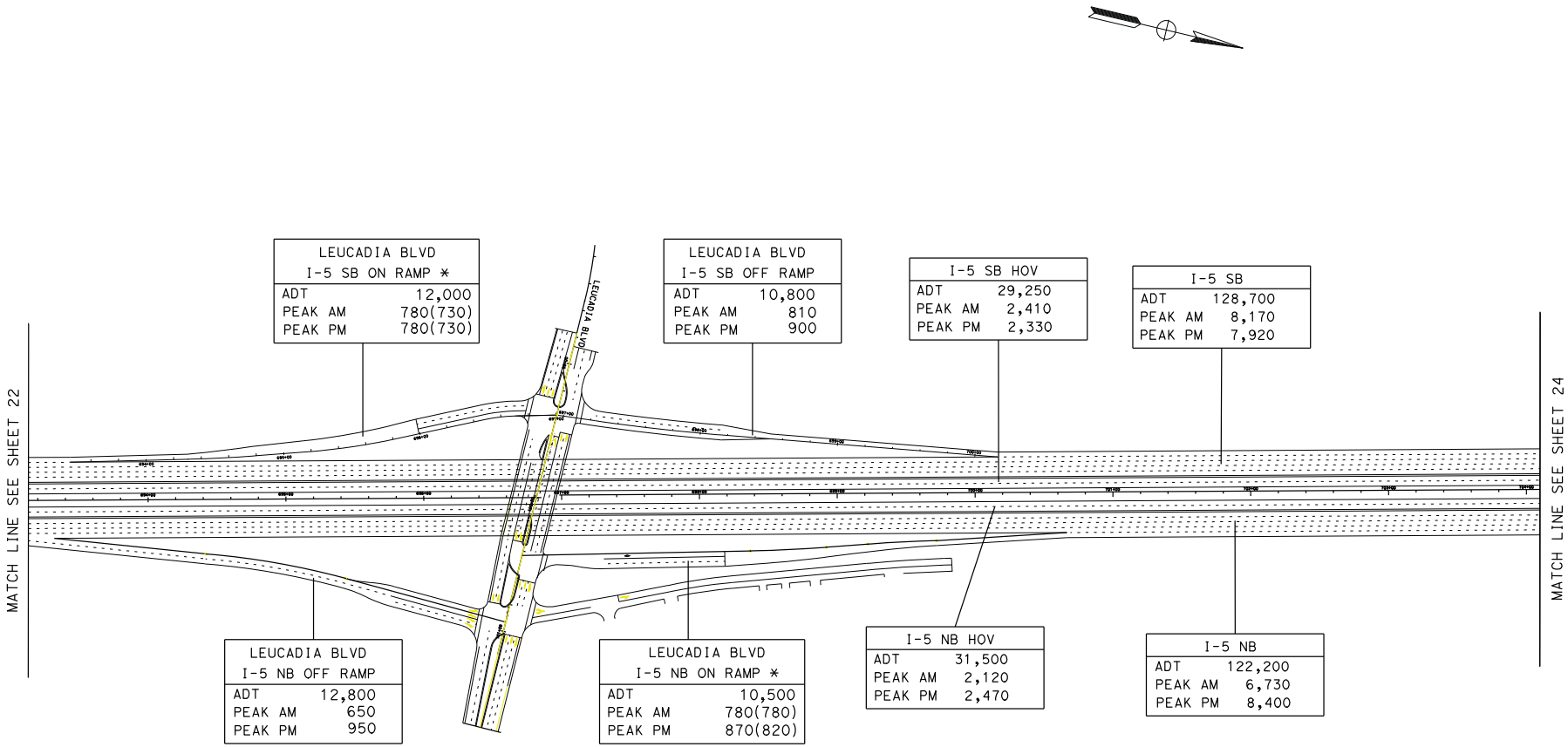
DGN FILE => 2030_21Encinitas.dgn
DATE PLOTTED => 12-NOV-2008



11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST
8+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT B

DGN FILE =>2030_22toLeucodio.dgn DATE PLOTTED =>12-NOV-2008



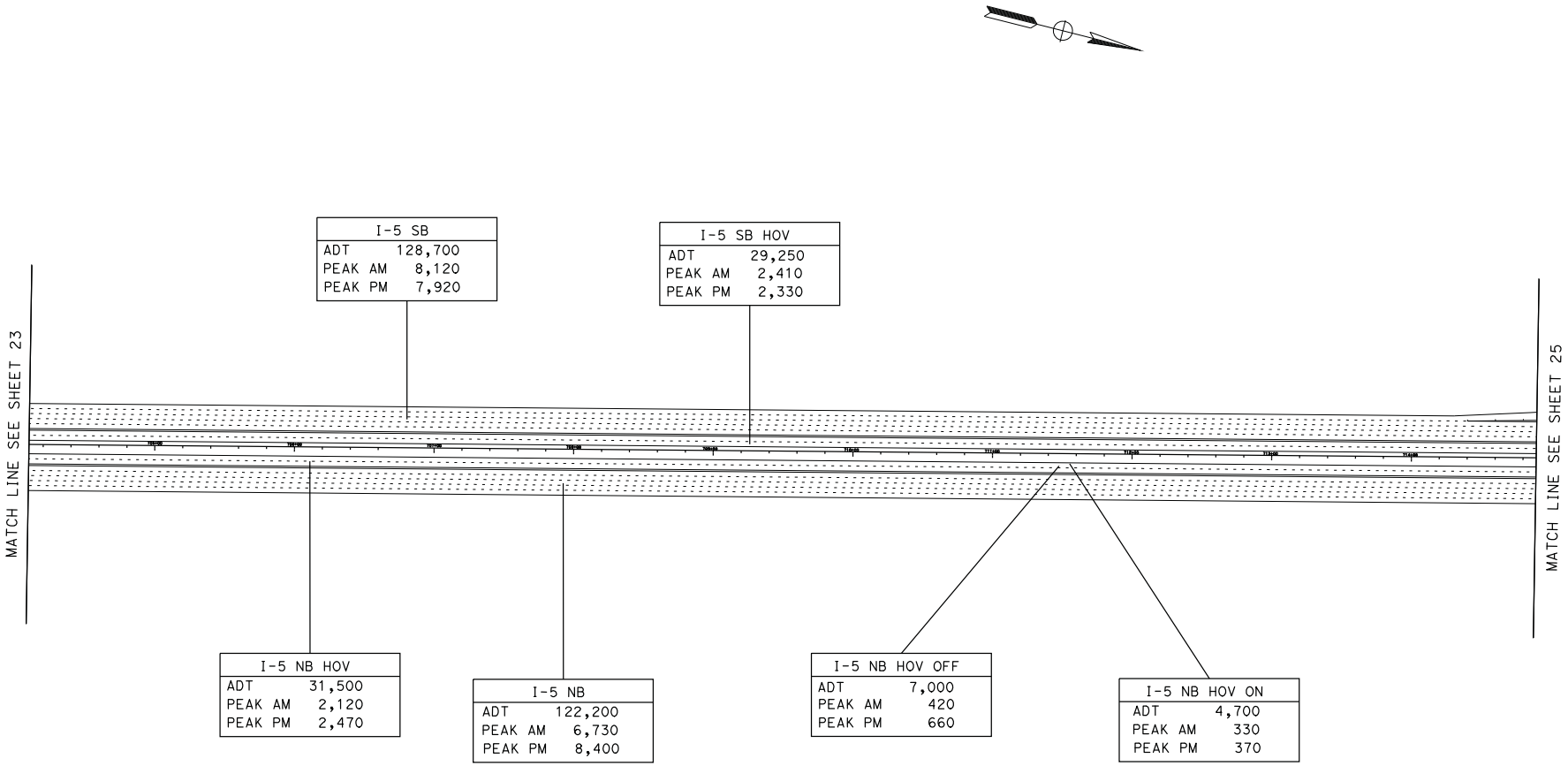
* Note: Possible on-ramp metered rates shown in (parenthesis)

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

8+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT B

DGN FILE =>2030_23Leucadia.dgn DATE PLOTTED =>12-NOV-2008



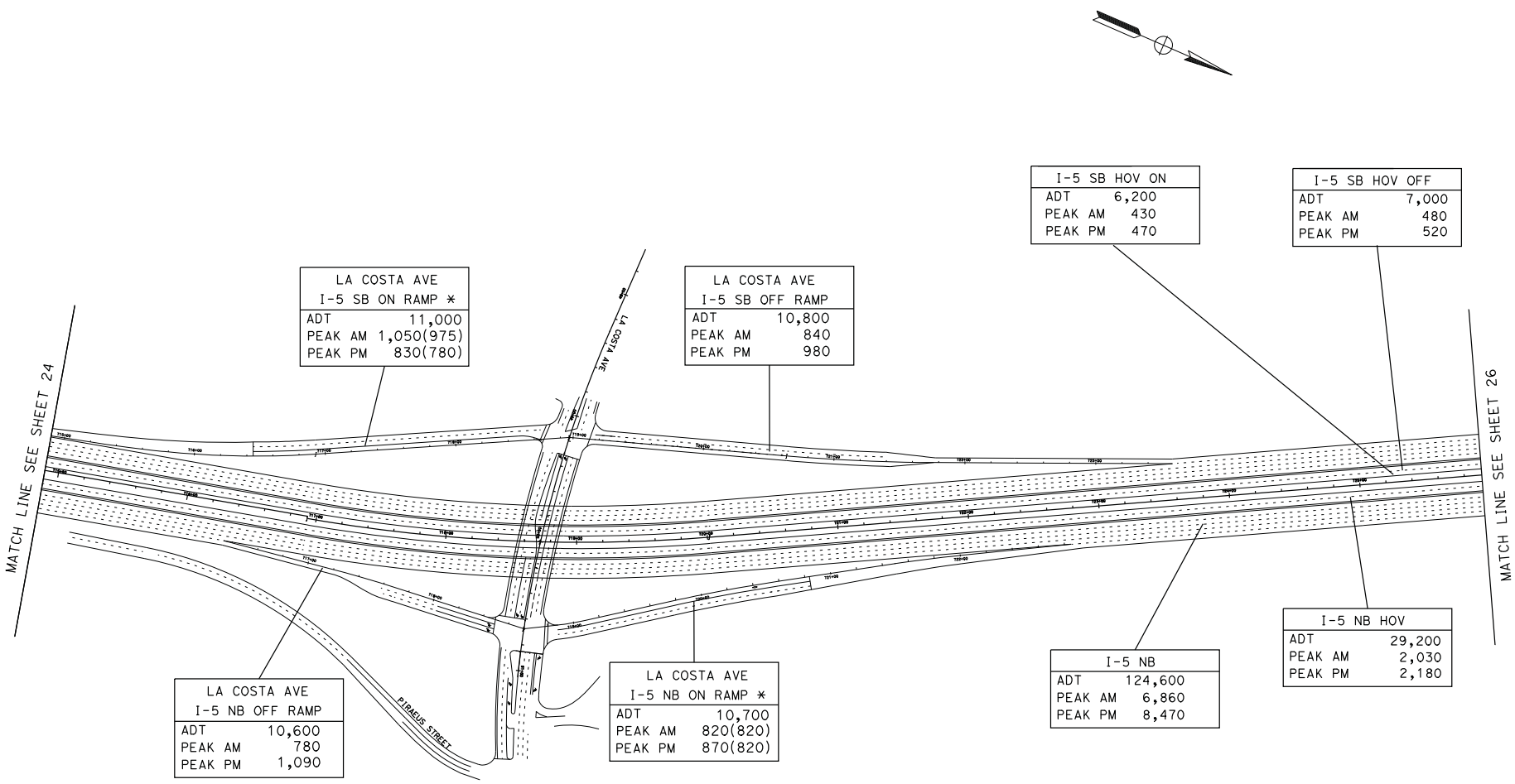
11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

8+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXHIBIT B

DGN FILE => 2030_24toLaCosta.dgn DATE PLOTTED => 12-NOV-2008



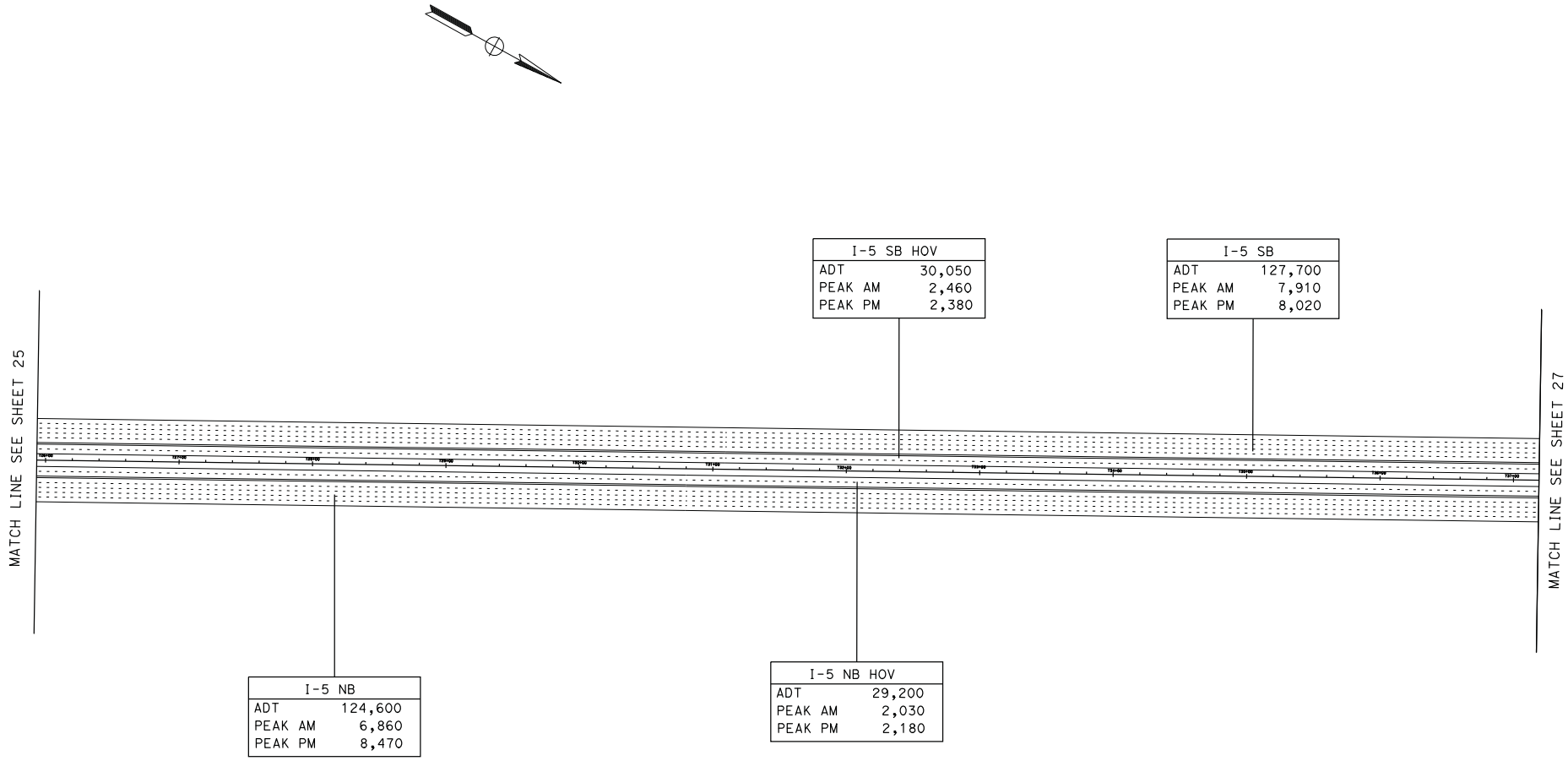
11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

8+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXHIBIT B

DGN FILE => 2030_25LaCosta.dgn
DATE PLOTTED => 12-NOV-2008

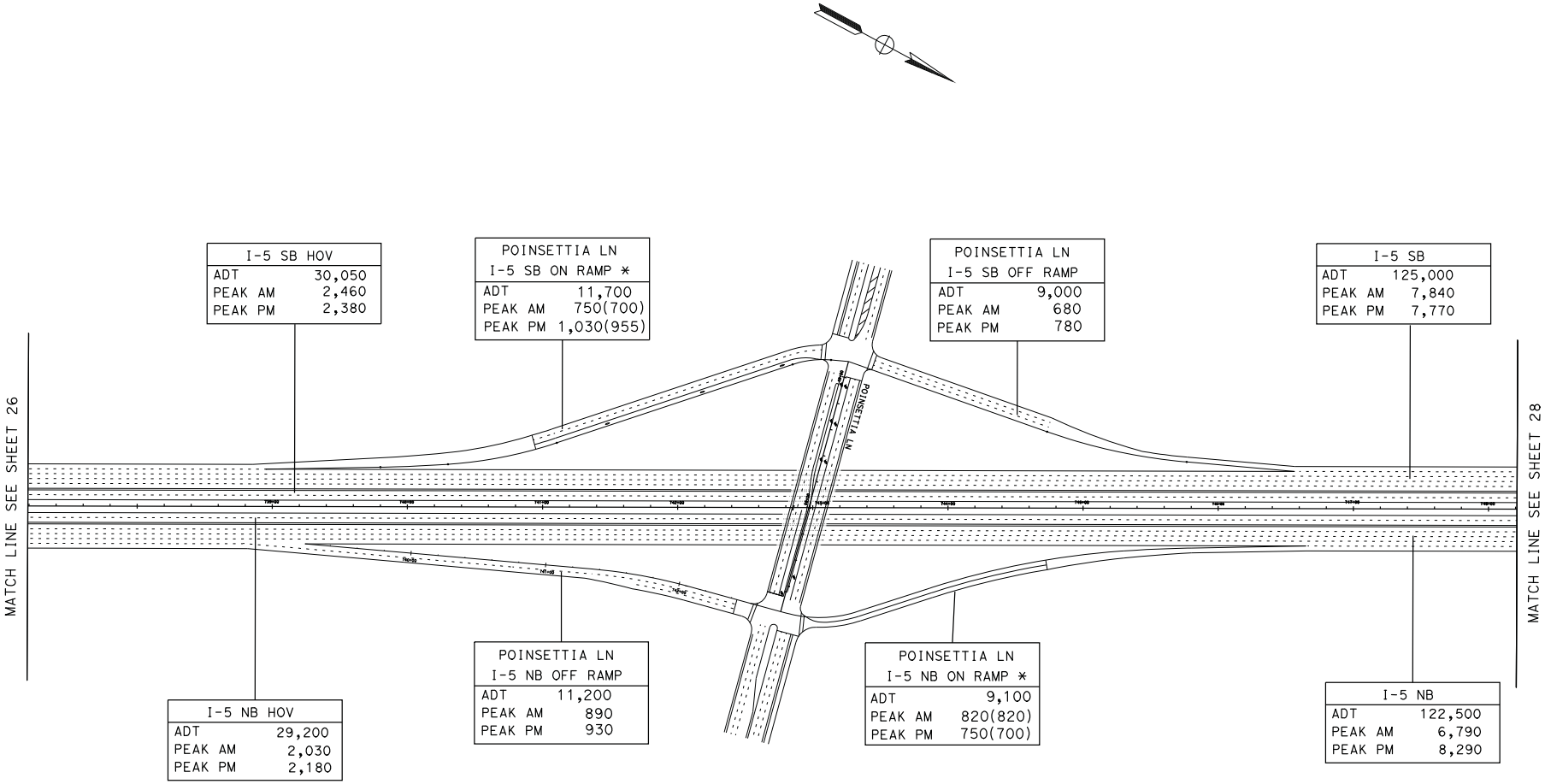


11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

8+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT B

DGN FILE =>2030_26toPolinset1a.dgn DATE PLOTTED =>12-NOV-2008



* Note: Possible on-ramp metered rates shown in (parenthesis)

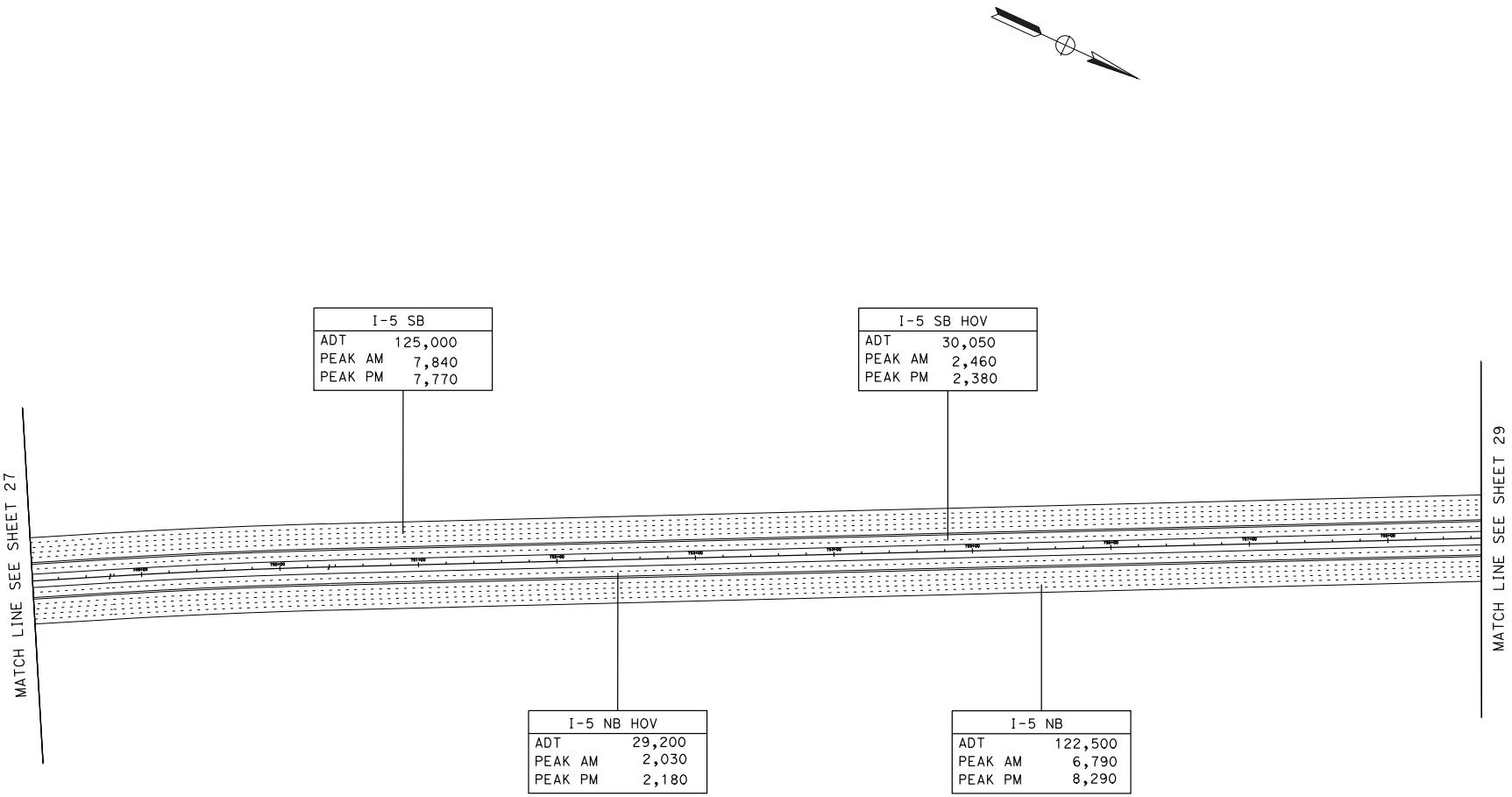
11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

8+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXHIBIT B

DGN FILE =>2030_27Poinsettia.dgn DATE PLOTTED =>12-NOV-2008

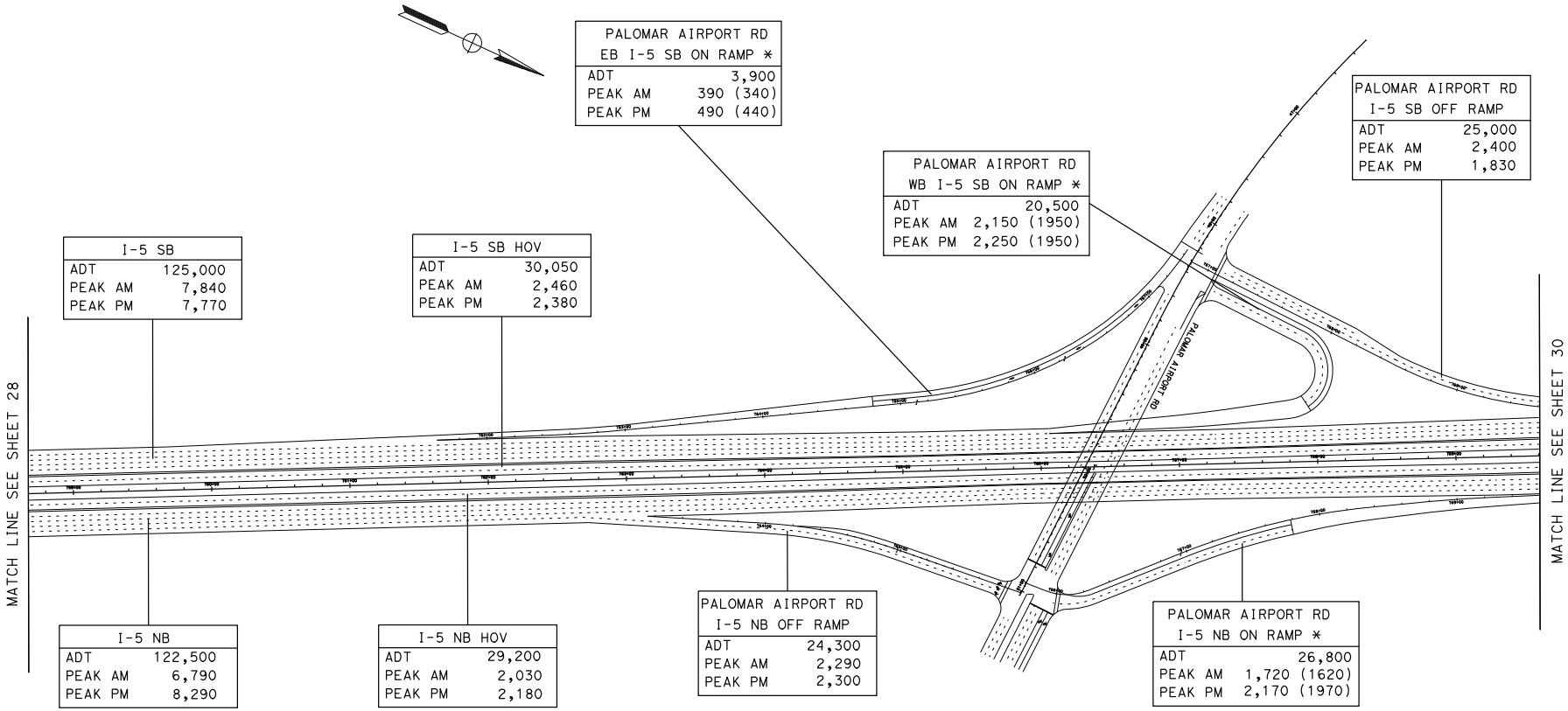


11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

8+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT B

DGN FILE => 2030_28toPalmrAptRd.dgn DATE PLOTTED => 12-NOV-2008



* Note: Possible on-ramp metered rates in (parenthesis)

11-SD-5
K.P. R54.9 to R87.9
11-235800

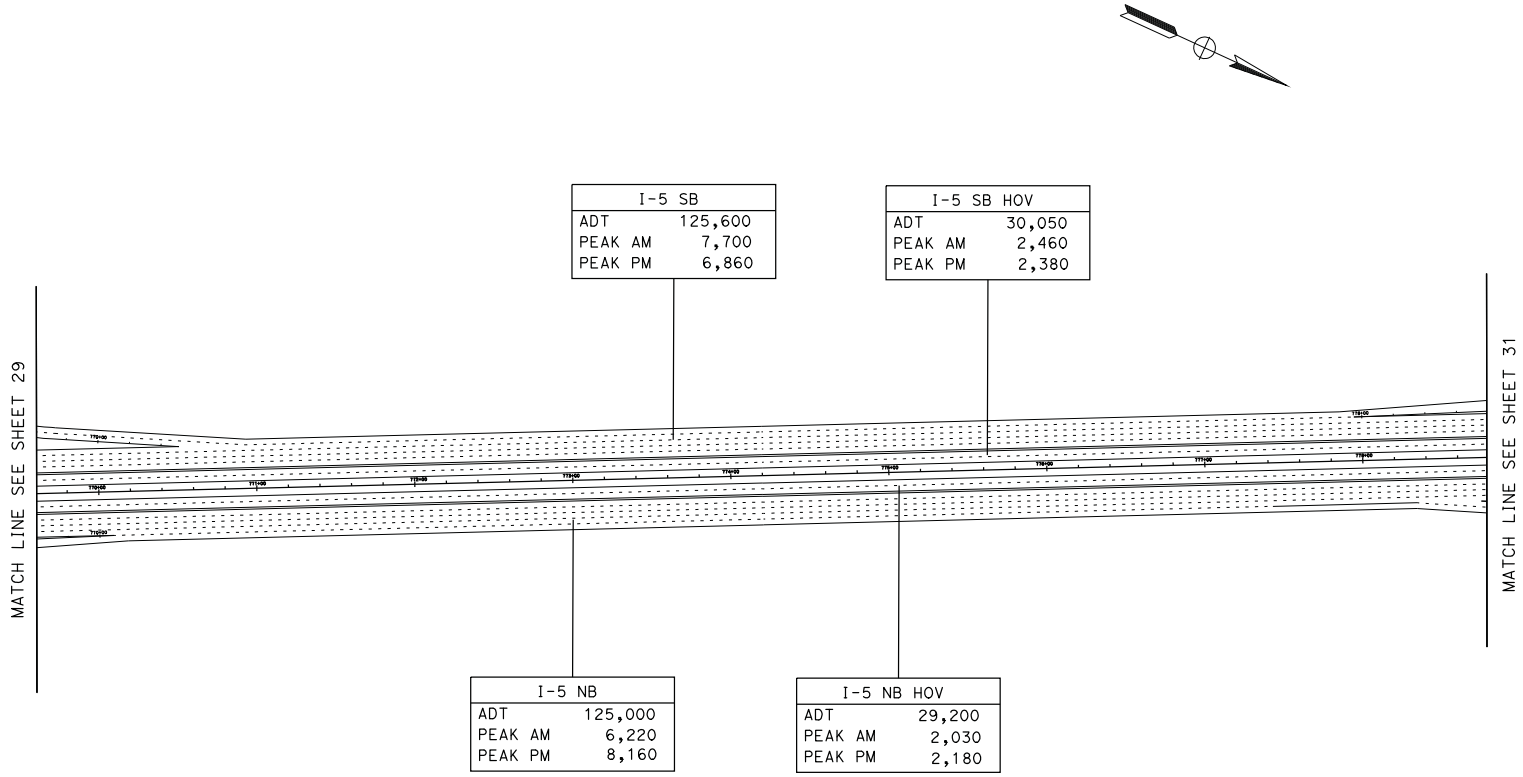
I-5 NORTHCOAST

8+4 ALTERNATIVE YEAR 2030

TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXHIBIT B

DGN FILE =>2030_29PalmrAptRd.dgn
DATE PLOTTED =>12-NOV-2008

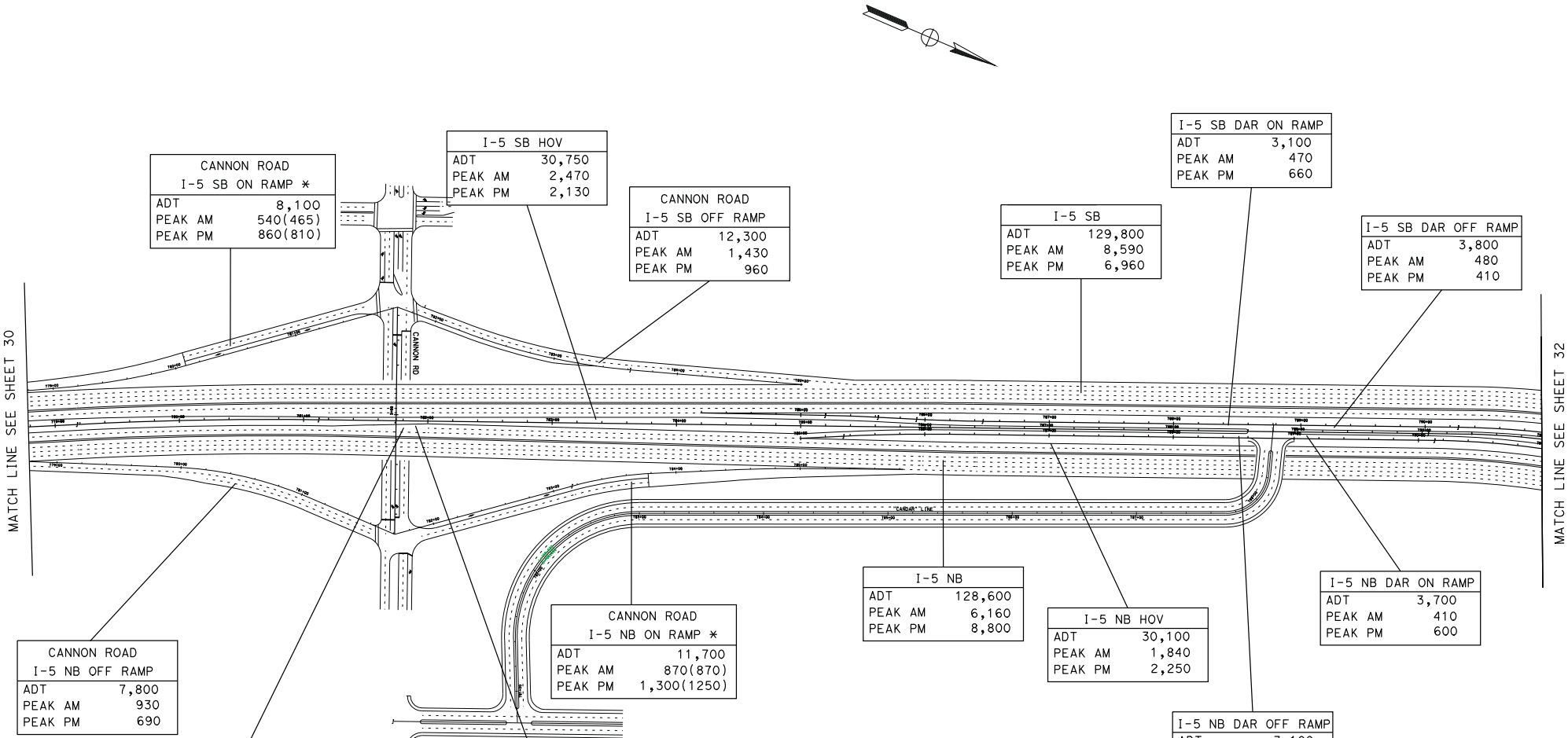


11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

8+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT B

DGN FILE => 2030_3otoCannon.dgn
DATE PLOTTED => 12-NOV-2008



CANNON ROAD I-5 SB ON RAMP *	
ADT	8,100
PEAK AM	540(465)
PEAK PM	860(810)

I-5 SB HOV	
ADT	30,750
PEAK AM	2,470
PEAK PM	2,130

CANNON ROAD I-5 SB OFF RAMP	
ADT	12,300
PEAK AM	1,430
PEAK PM	960

I-5 SB	
ADT	129,800
PEAK AM	8,590
PEAK PM	6,960

I-5 SB DAR ON RAMP	
ADT	3,100
PEAK AM	470
PEAK PM	660

I-5 SB DAR OFF RAMP	
ADT	3,800
PEAK AM	480
PEAK PM	410

CANNON ROAD I-5 NB OFF RAMP	
ADT	7,800
PEAK AM	930
PEAK PM	690

I-5 NB HOV ON	
ADT	5,100
PEAK AM	380
PEAK PM	470

I-5 NB HOV OFF	
ADT	4,800
PEAK AM	380
PEAK PM	500

CANNON ROAD I-5 NB ON RAMP *	
ADT	11,700
PEAK AM	870(870)
PEAK PM	1,300(1250)

I-5 NB	
ADT	128,600
PEAK AM	6,160
PEAK PM	8,800

I-5 NB HOV	
ADT	30,100
PEAK AM	1,840
PEAK PM	2,250

I-5 NB DAR ON RAMP	
ADT	3,700
PEAK AM	410
PEAK PM	600

I-5 NB DAR OFF RAMP	
ADT	3,100
PEAK AM	600
PEAK PM	500

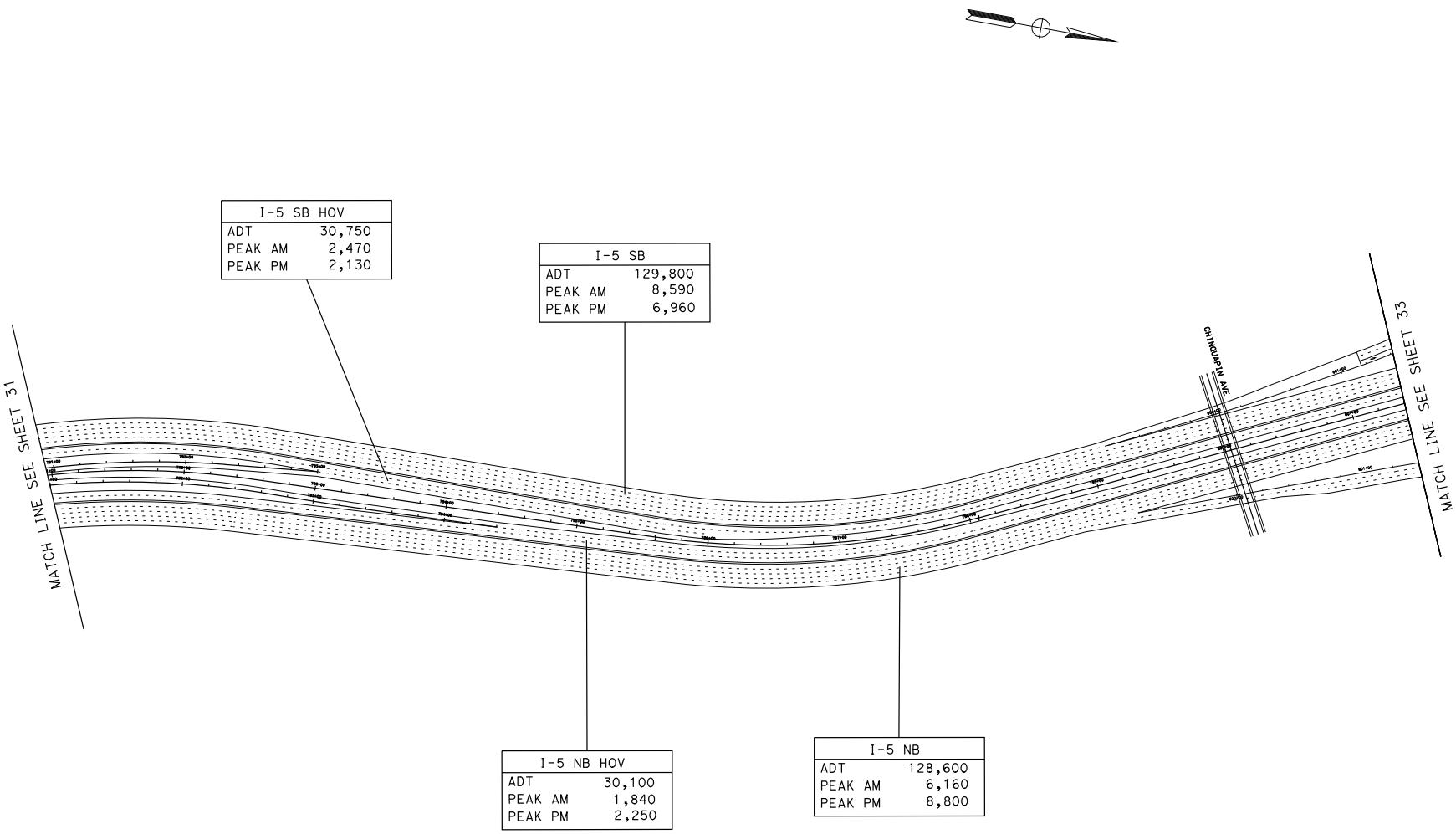
* Note: Possible on-ramp metered rates in (parenthesis)

DATE PLOTTED =>12-NOV-2008

DGN FILE =>2030_31Cannon.dgn

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST
8+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT B

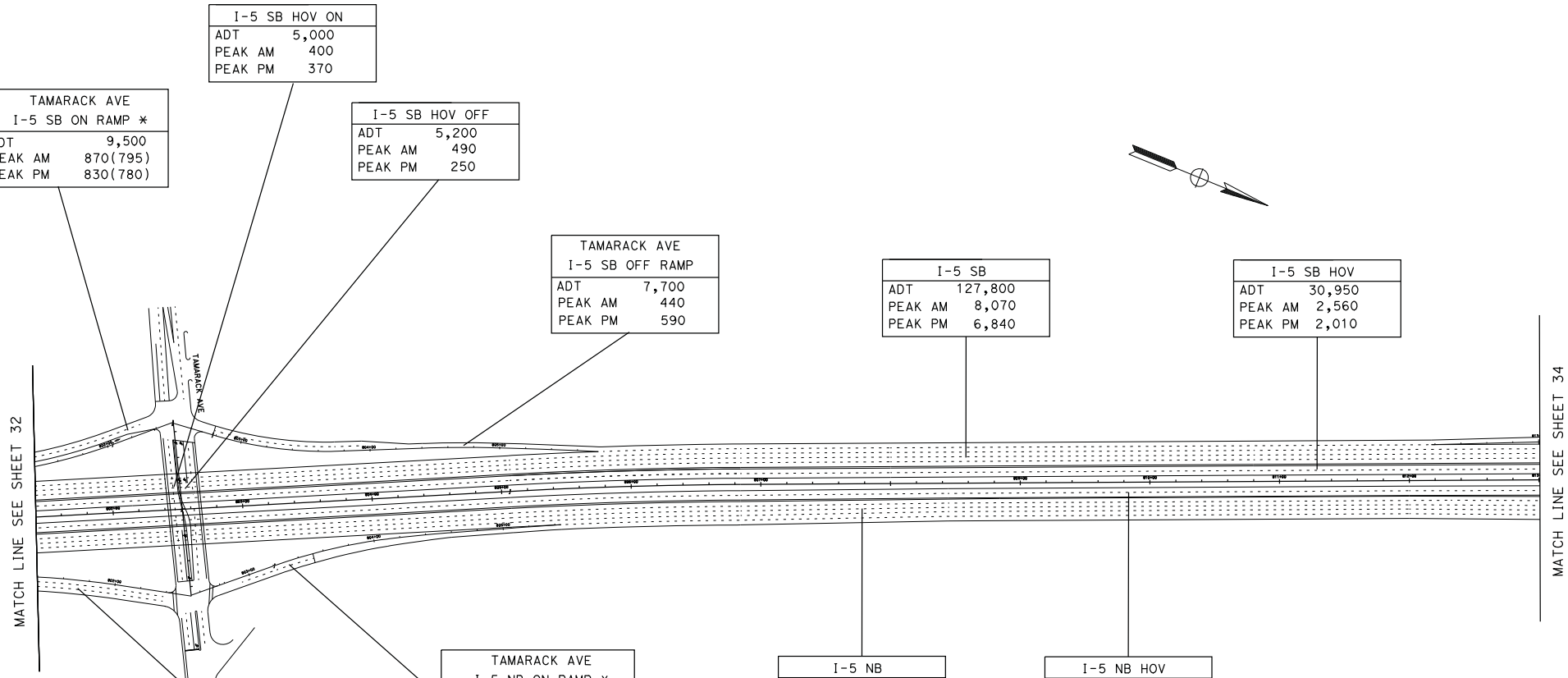


11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

8+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT B

DGN FILE =>2030_32toTamarack.dgn
DATE PLOTTED =>12-NOV-2008



TAMARACK AVE I-5 SB ON RAMP *	
ADT	9,500
PEAK AM	870(795)
PEAK PM	830(780)

I-5 SB HOV ON	
ADT	5,000
PEAK AM	400
PEAK PM	370

I-5 SB HOV OFF	
ADT	5,200
PEAK AM	490
PEAK PM	250

TAMARACK AVE I-5 SB OFF RAMP	
ADT	7,700
PEAK AM	440
PEAK PM	590

I-5 SB	
ADT	127,800
PEAK AM	8,070
PEAK PM	6,840

I-5 SB HOV	
ADT	30,950
PEAK AM	2,560
PEAK PM	2,010

TAMARACK AVE I-5 NB ON RAMP *	
ADT	7,800
PEAK AM	530(530)
PEAK PM	640(590)

I-5 NB	
ADT	126,800
PEAK AM	5,980
PEAK PM	8,560

I-5 NB HOV	
ADT	30,100
PEAK AM	1,840
PEAK PM	2,250

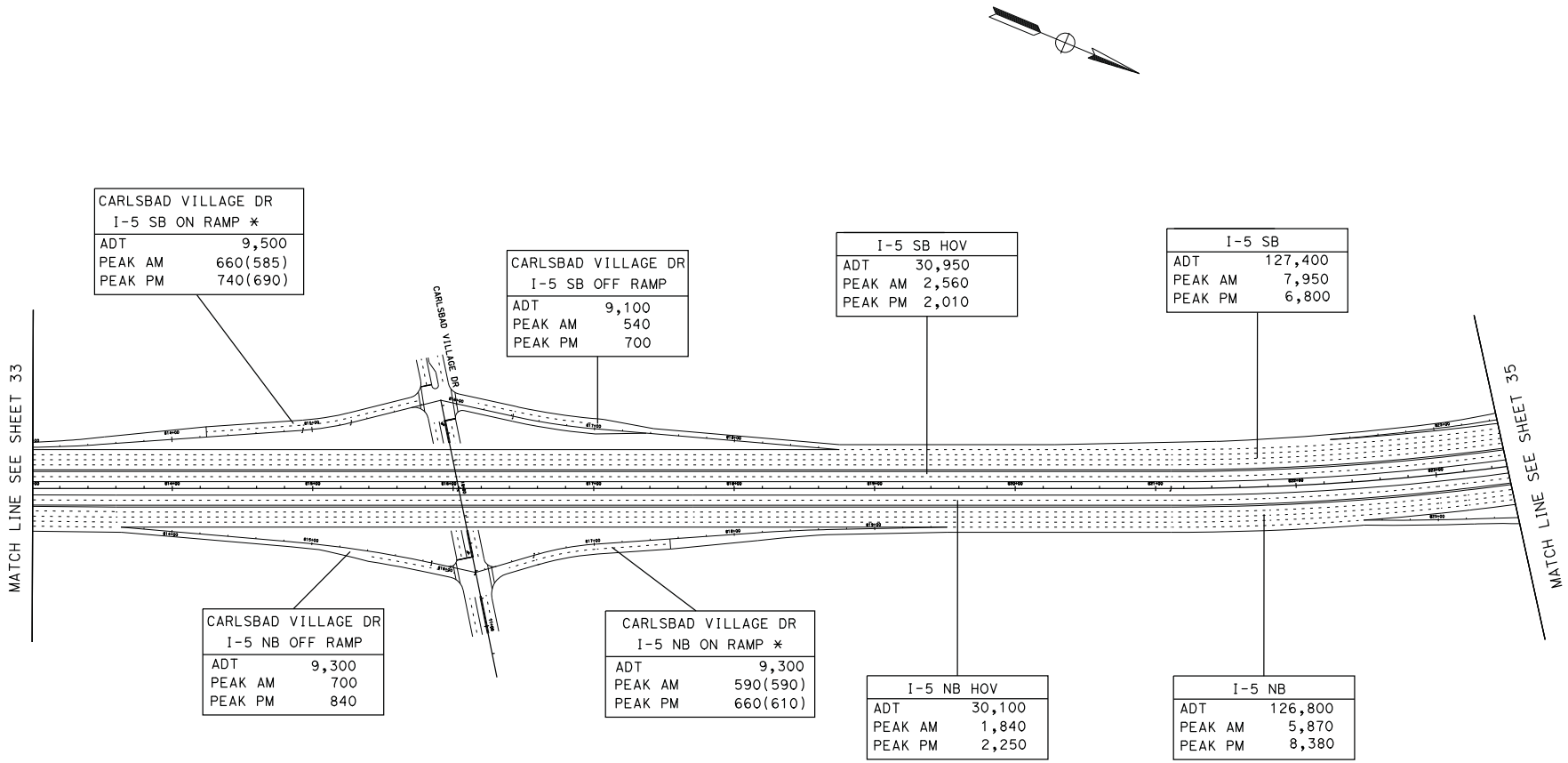
TAMARACK AVE I-5 NB OFF RAMP	
ADT	9,600
PEAK AM	710
PEAK PM	880

* Note: Possible metered rates shown in (parenthesis)

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST
8+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT B

DGN FILE =>2030_33Tamarack.dgn
DATE PLOTTED =>12-NOV-2008



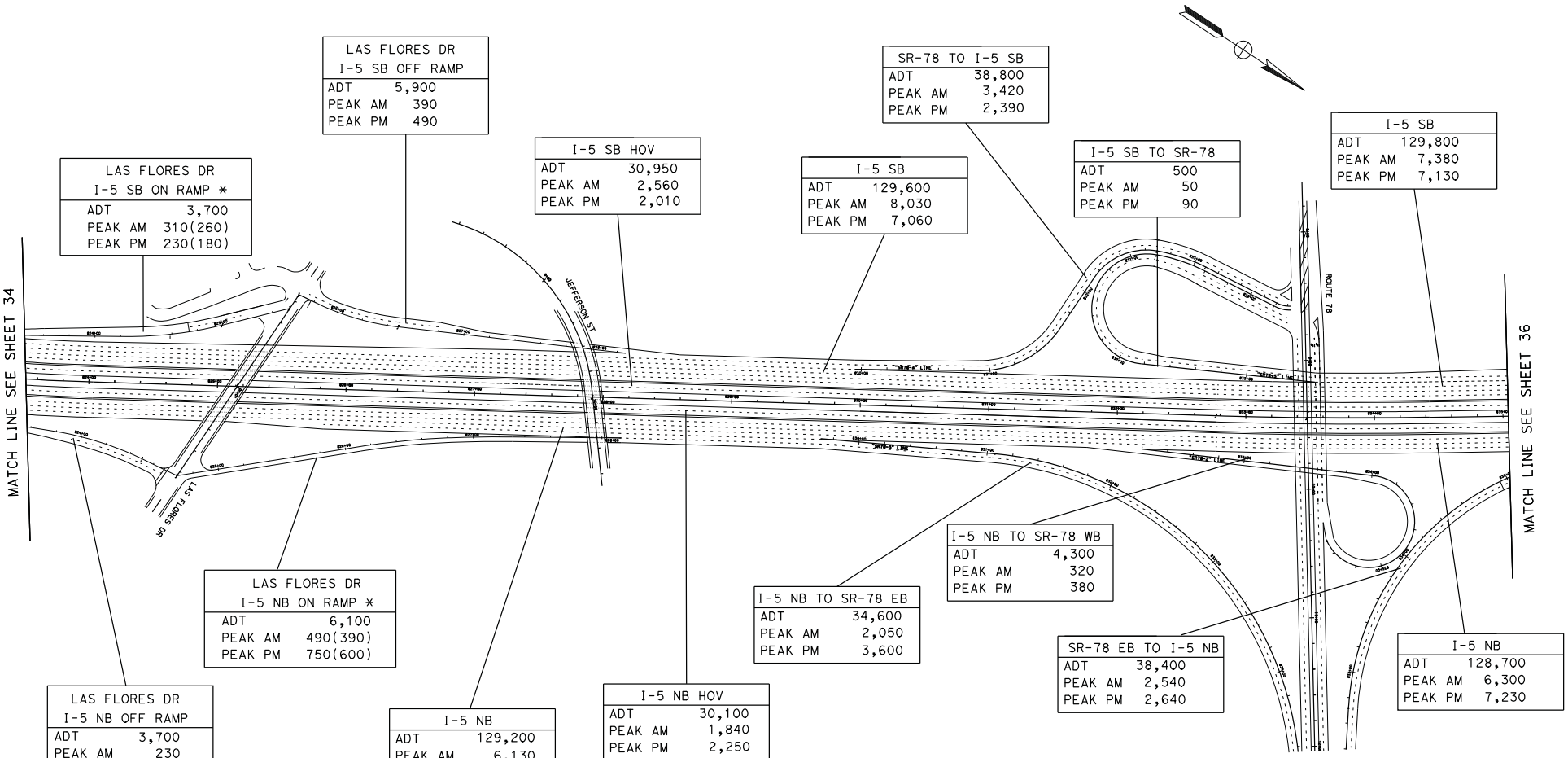
* Note: Possible metered rates shown in (parenthesis)

DGN FILE => 2030_34CarlsbadVD.dgn DATE PLOTTED => 12-NOV-2008

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

8+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT B

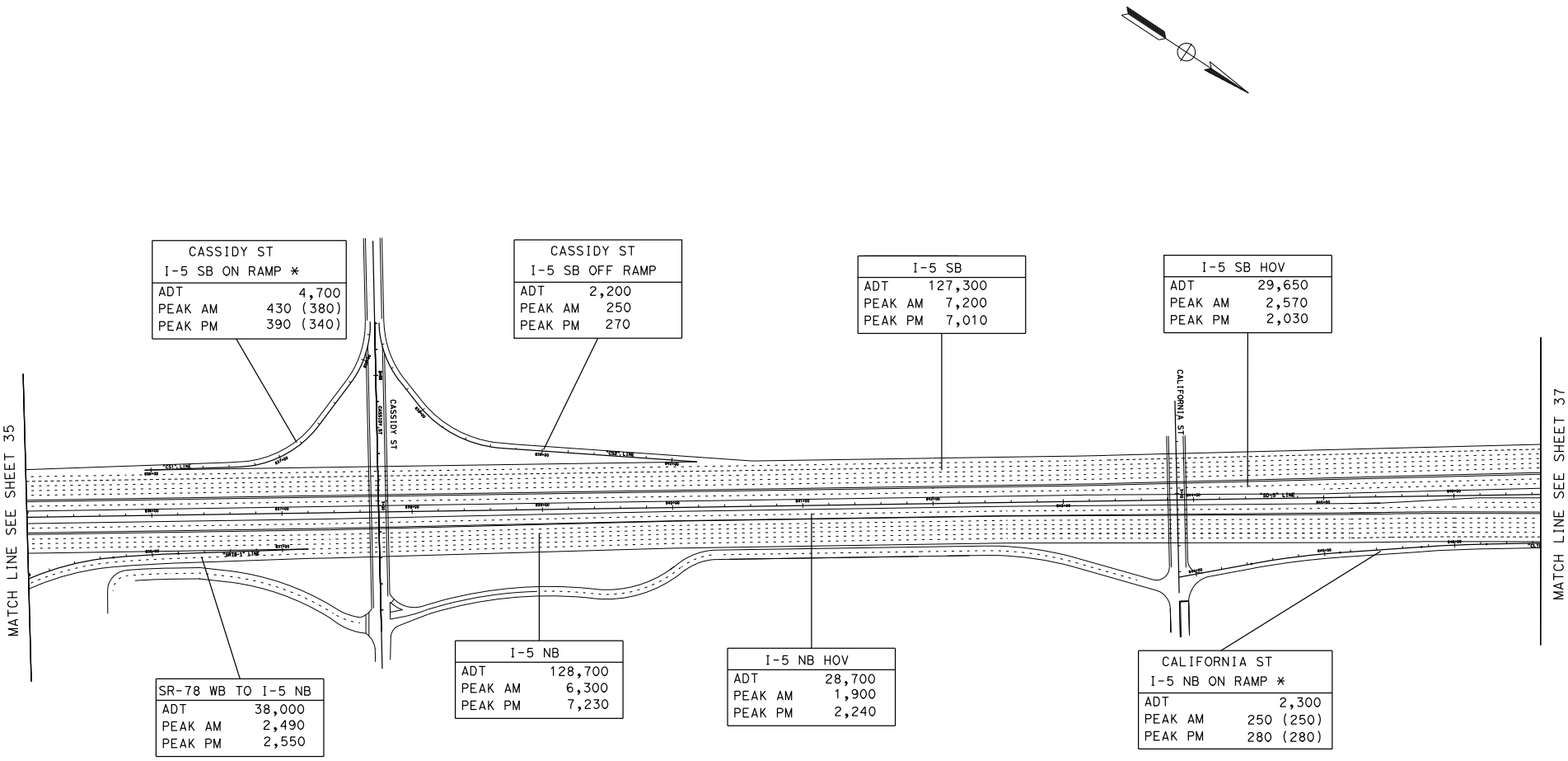


* Note: Possible on-ramp metered rates shown in (parenthesis)

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST
8+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT B

DGN FILE =>2030_35LasFlores78.dgn
DATE PLOTTED =>12-NOV-2008



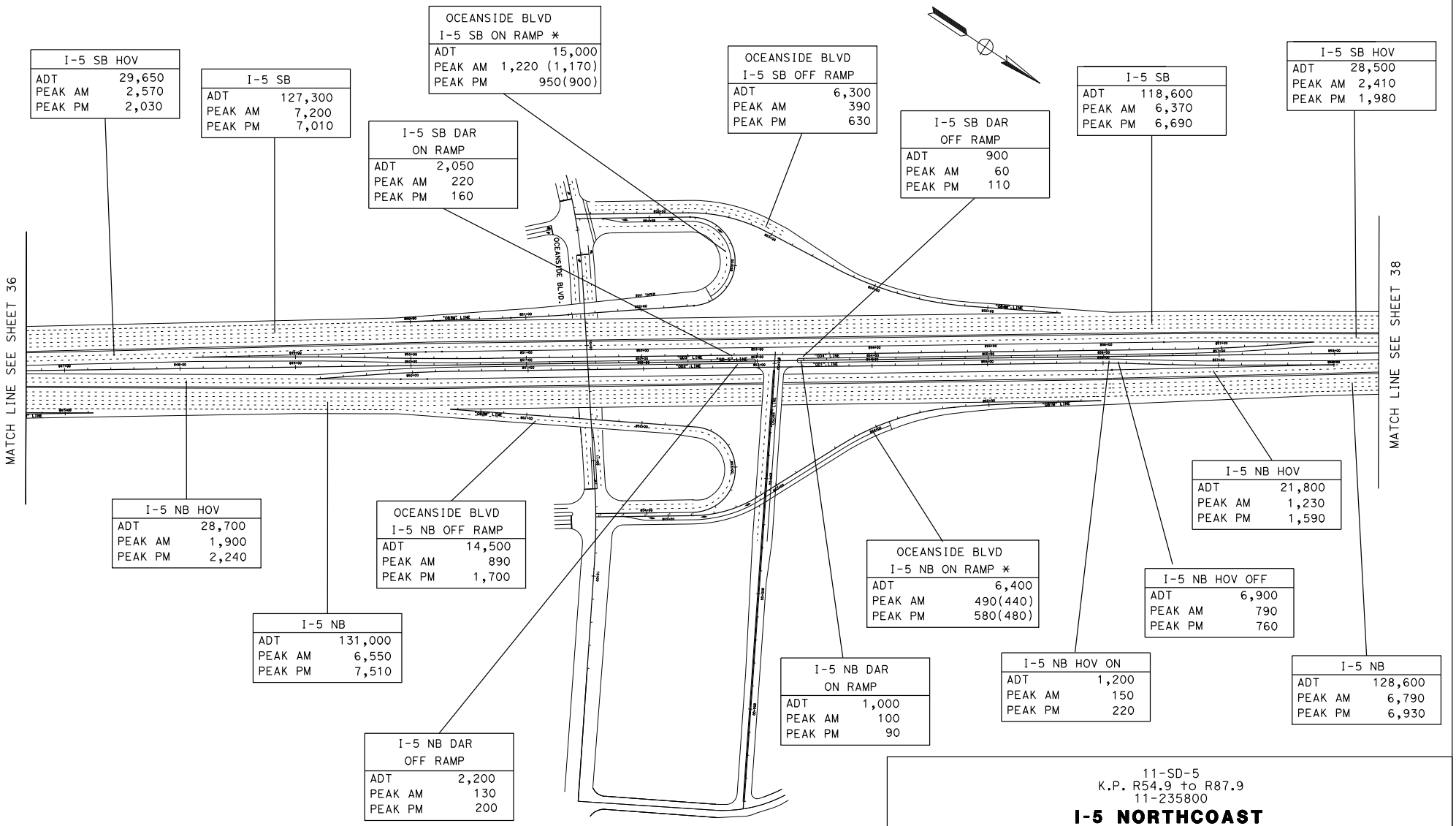
* Note: Possible on-ramp metered rates shown in (parenthesis)

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

8+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT B

DGN FILE => 2030_36CassidyCA.dgn
DATE PLOTTED => 12-NOV-2008



* Note: Possible on-ramp metered rates shown in (parenthesis)

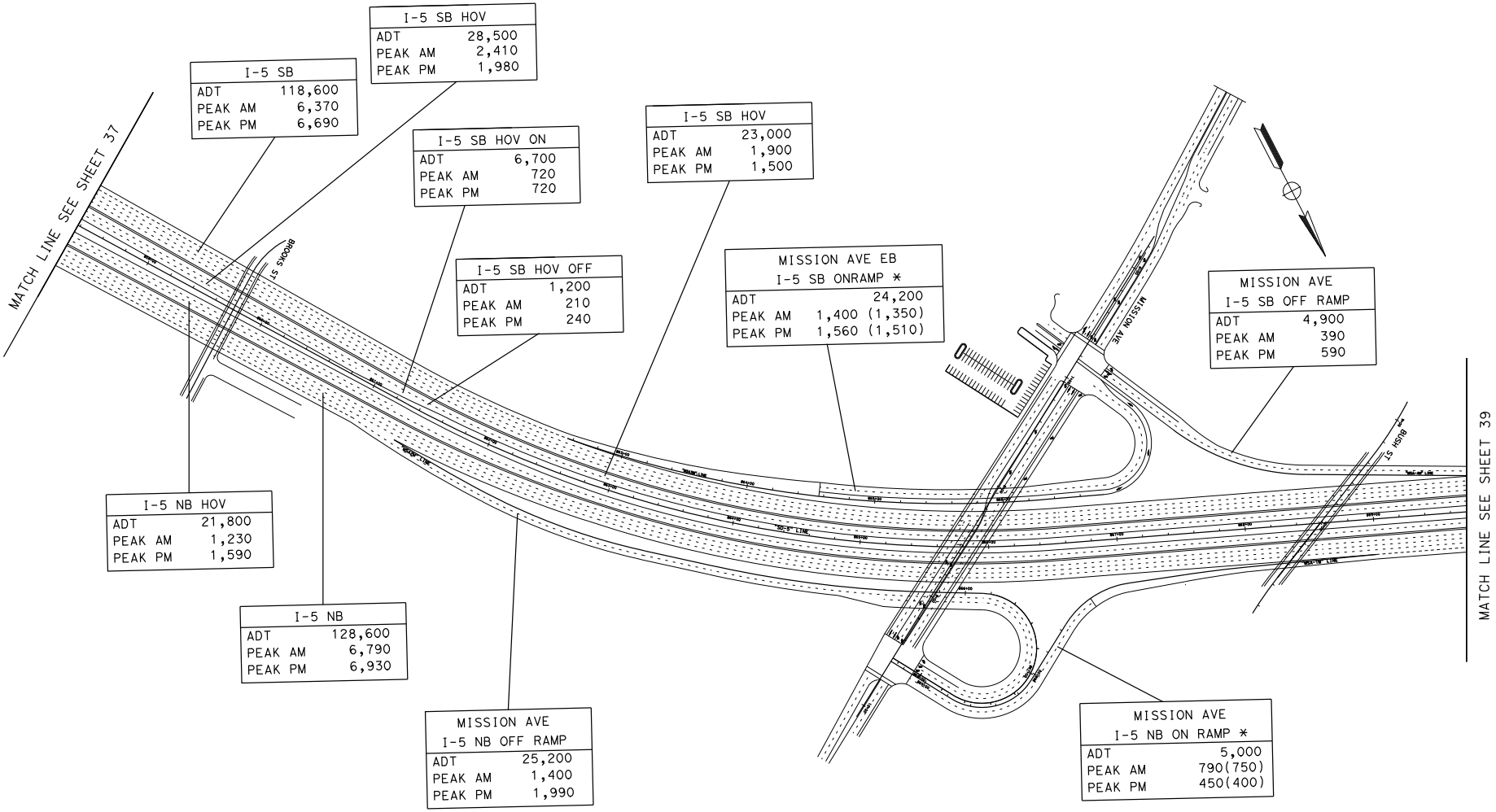
11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

8+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXHIBIT B

DGN FILE => 2030_370Oceanside.dgn
DATE PLOTTED => 12-NOV-2008

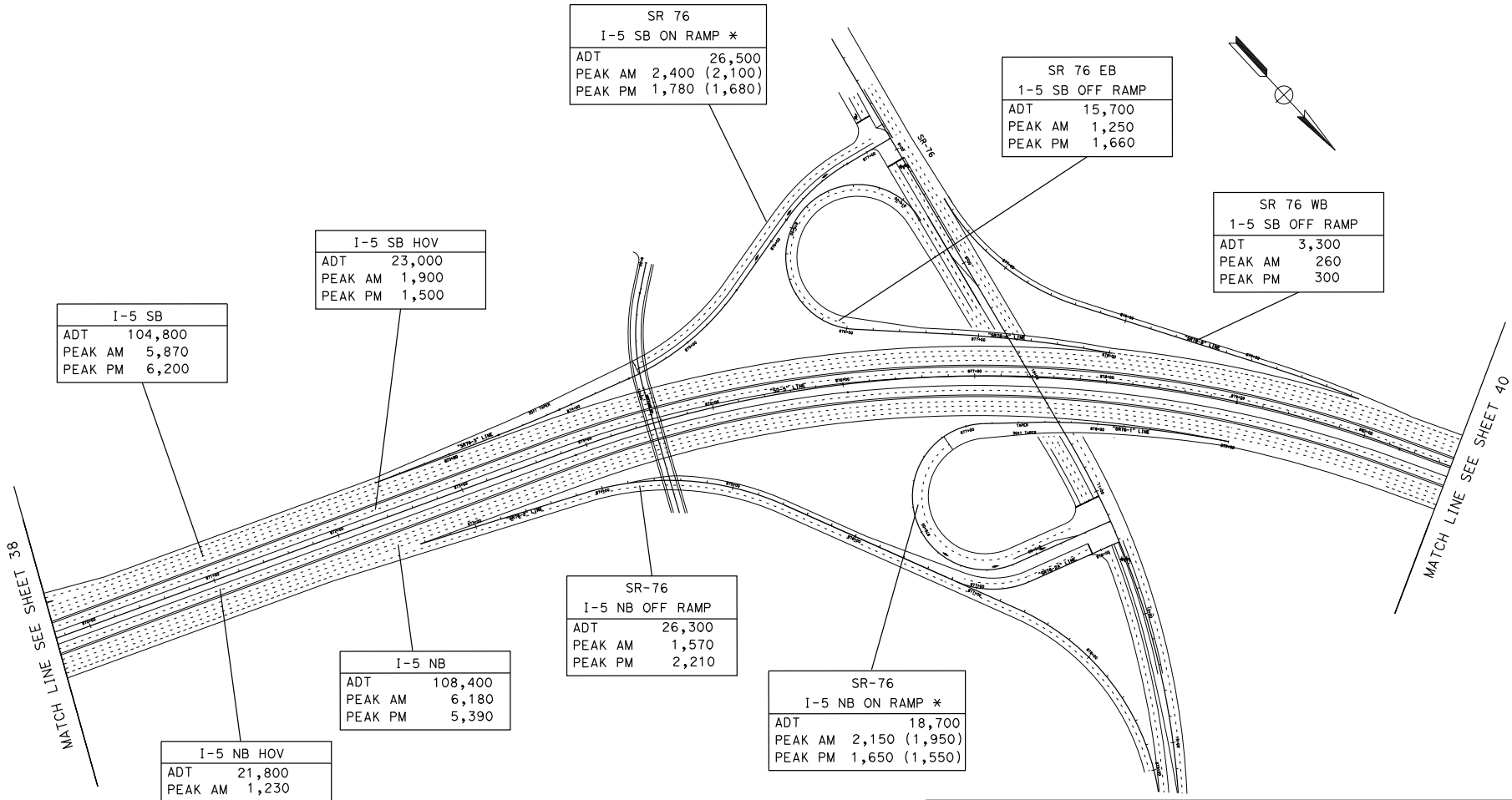


* Note: Possible on-ramp metered rates shown in (parenthesis)

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST
8+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT B

DATE PLOTTED => 12-NOV-2008
DGN FILE => 2030_38Mission.dgn

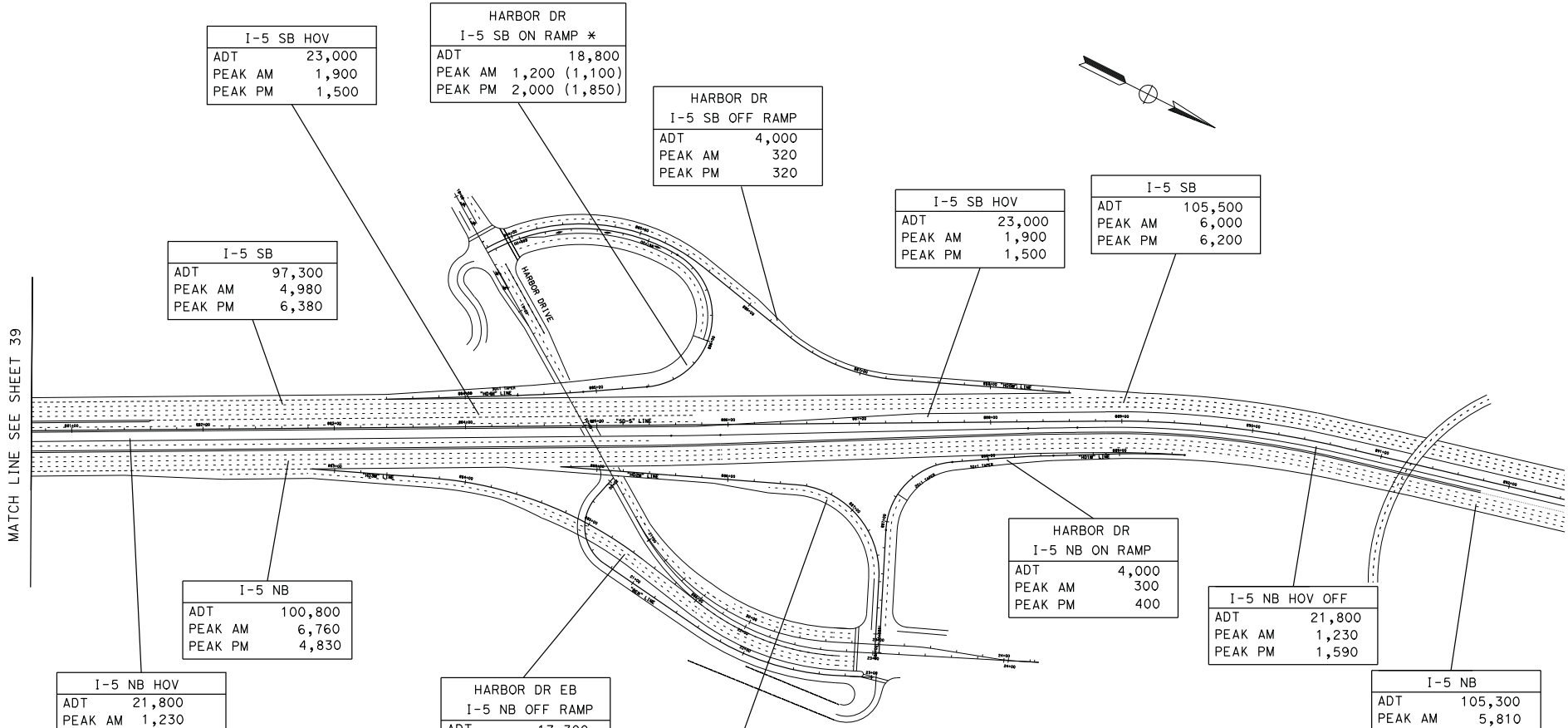


* Note: Possible on-ramp metered rates shown in (parenthesis)

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST
8+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT B

DGN FILE =>2030_39Rte76.dgn
DATE PLOTTED =>12-NOV-2008



* Note: Possible on-ramp metered rates shown in (parenthesis)

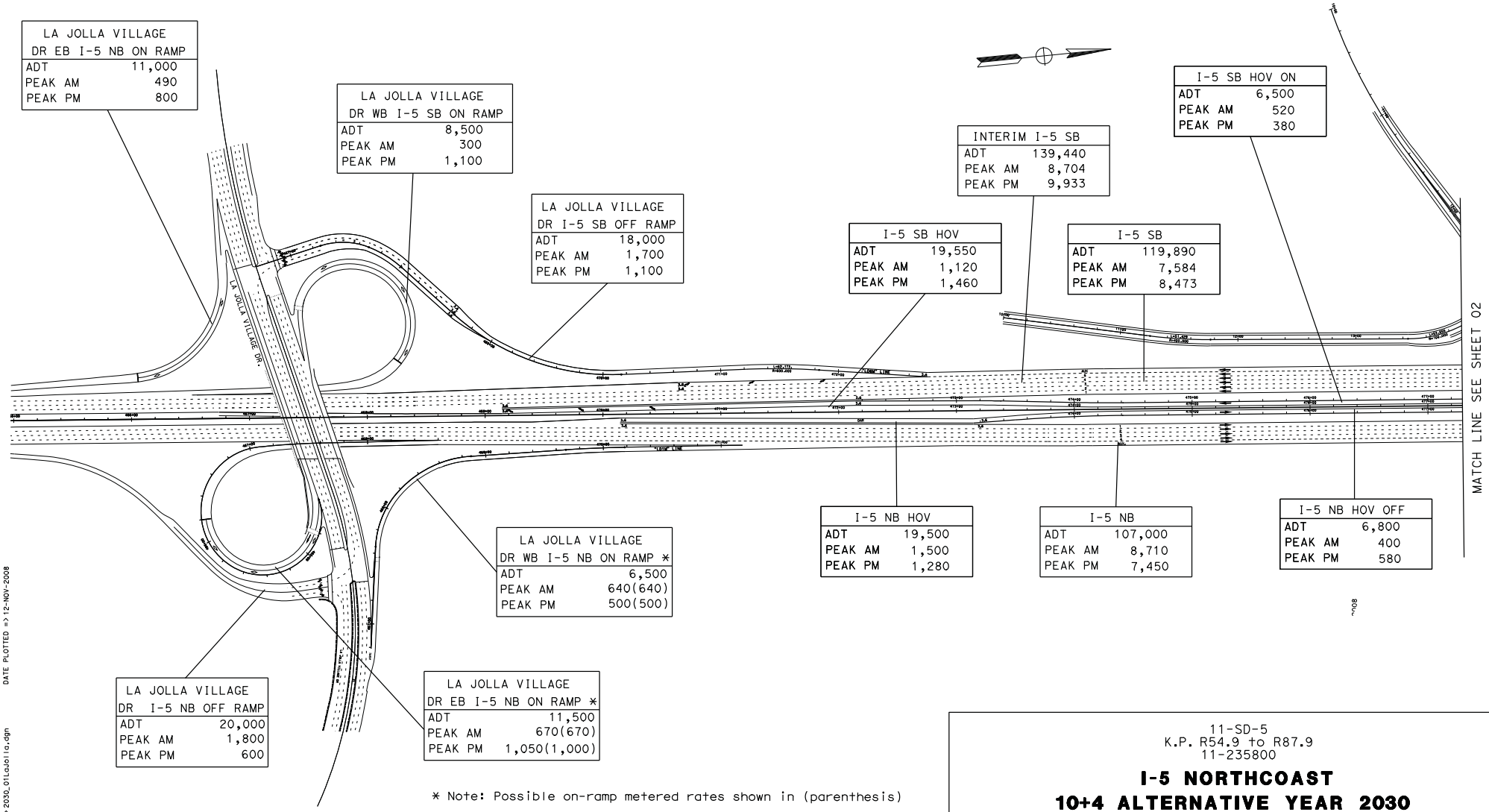
11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

8+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXHIBIT B

DGN FILE => 2030_40HarborDr.dgn
DATE PLOTTED => 12-NOV-2008

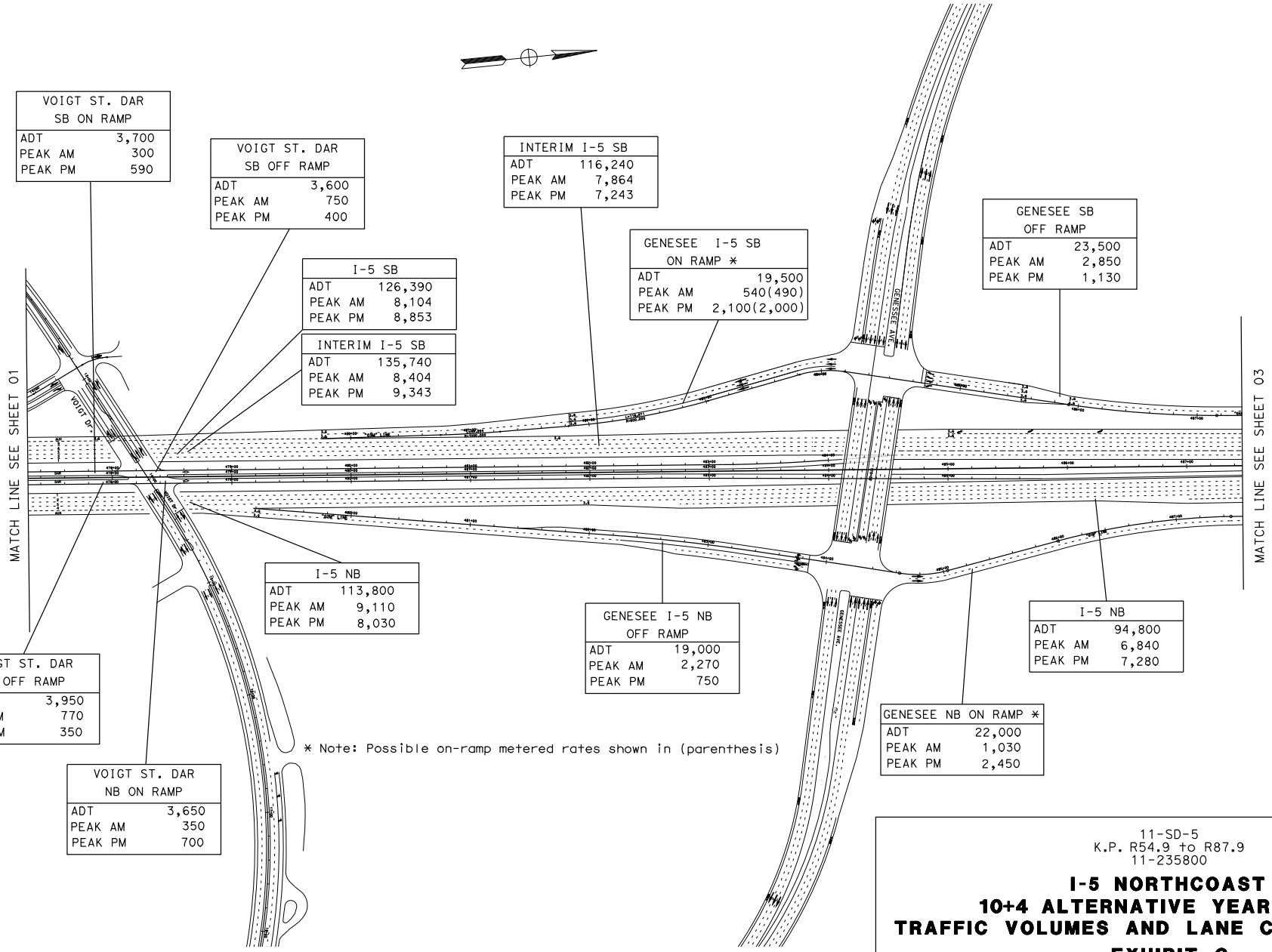


* Note: Possible on-ramp metered rates shown in (parenthesis)

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST
10+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT C

DGN FILE => 2030_01LaJolla.dgn
DATE PLOTTED => 12-NOV-2008



VOIGT ST. DAR SB ON RAMP	
ADT	3,700
PEAK AM	300
PEAK PM	590

VOIGT ST. DAR SB OFF RAMP	
ADT	3,600
PEAK AM	750
PEAK PM	400

I-5 SB	
ADT	126,390
PEAK AM	8,104
PEAK PM	8,853

INTERIM I-5 SB	
ADT	135,740
PEAK AM	8,404
PEAK PM	9,343

INTERIM I-5 SB	
ADT	116,240
PEAK AM	7,864
PEAK PM	7,243

GENESEE I-5 SB ON RAMP *	
ADT	19,500
PEAK AM	540(490)
PEAK PM	2,100(2,000)

GENESEE SB OFF RAMP	
ADT	23,500
PEAK AM	2,850
PEAK PM	1,130

I-5 NB	
ADT	113,800
PEAK AM	9,110
PEAK PM	8,030

GENESEE I-5 NB OFF RAMP	
ADT	19,000
PEAK AM	2,270
PEAK PM	750

I-5 NB	
ADT	94,800
PEAK AM	6,840
PEAK PM	7,280

VOIGT ST. DAR NB OFF RAMP	
ADT	3,950
PEAK AM	770
PEAK PM	350

VOIGT ST. DAR NB ON RAMP	
ADT	3,650
PEAK AM	350
PEAK PM	700

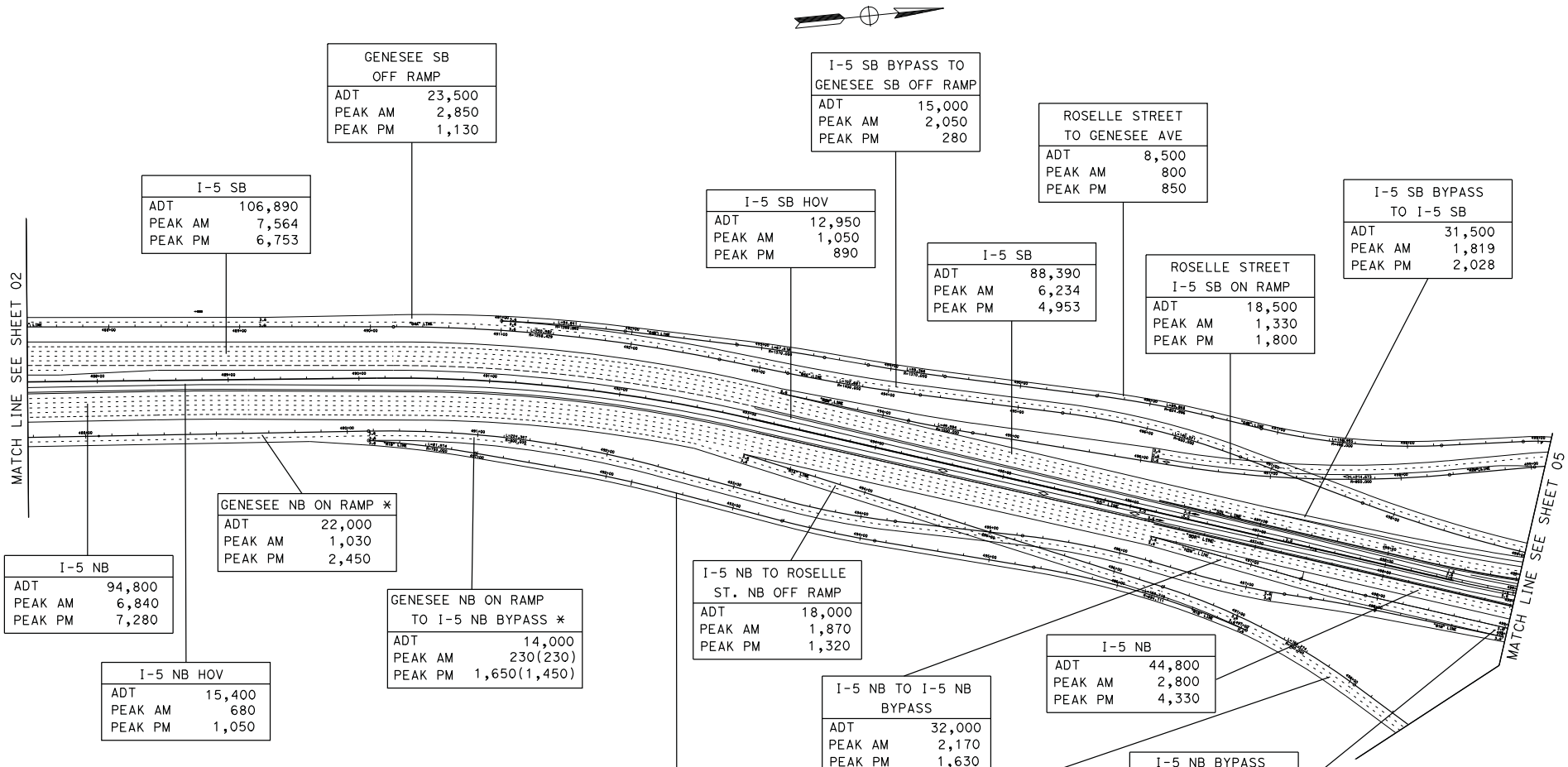
GENESEE NB ON RAMP *	
ADT	22,000
PEAK AM	1,030
PEAK PM	2,450

* Note: Possible on-ramp metered rates shown in (parenthesis)

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST
10+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT C

DGN FILE => 2030_02genesee.dgn DATE PLOTTED => 12-NOV-2008



GENESEE SB OFF RAMP	
ADT	23,500
PEAK AM	2,850
PEAK PM	1,130

I-5 SB	
ADT	106,890
PEAK AM	7,564
PEAK PM	6,753

I-5 SB BYPASS TO GENESEE SB OFF RAMP	
ADT	15,000
PEAK AM	2,050
PEAK PM	280

ROSELLE STREET TO GENESEE AVE	
ADT	8,500
PEAK AM	800
PEAK PM	850

I-5 SB HOV	
ADT	12,950
PEAK AM	1,050
PEAK PM	890

I-5 SB BYPASS TO I-5 SB	
ADT	31,500
PEAK AM	1,819
PEAK PM	2,028

I-5 SB	
ADT	88,390
PEAK AM	6,234
PEAK PM	4,953

ROSELLE STREET I-5 SB ON RAMP	
ADT	18,500
PEAK AM	1,330
PEAK PM	1,800

GENESEE NB ON RAMP *	
ADT	22,000
PEAK AM	1,030
PEAK PM	2,450

I-5 NB	
ADT	94,800
PEAK AM	6,840
PEAK PM	7,280

I-5 NB TO ROSELLE ST. NB OFF RAMP	
ADT	18,000
PEAK AM	1,870
PEAK PM	1,320

GENESEE NB ON RAMP TO I-5 NB BYPASS *	
ADT	14,000
PEAK AM	230(230)
PEAK PM	1,650(1,450)

I-5 NB	
ADT	44,800
PEAK AM	2,800
PEAK PM	4,330

I-5 NB HOV	
ADT	15,400
PEAK AM	680
PEAK PM	1,050

I-5 NB TO I-5 NB BYPASS	
ADT	32,000
PEAK AM	2,170
PEAK PM	1,630

I-5 NB BYPASS	
ADT	46,000
PEAK AM	2,400
PEAK PM	3,280

ROSELLE ST. NB OFF RAMP	
ADT	26,000
PEAK AM	2,670
PEAK PM	2,120

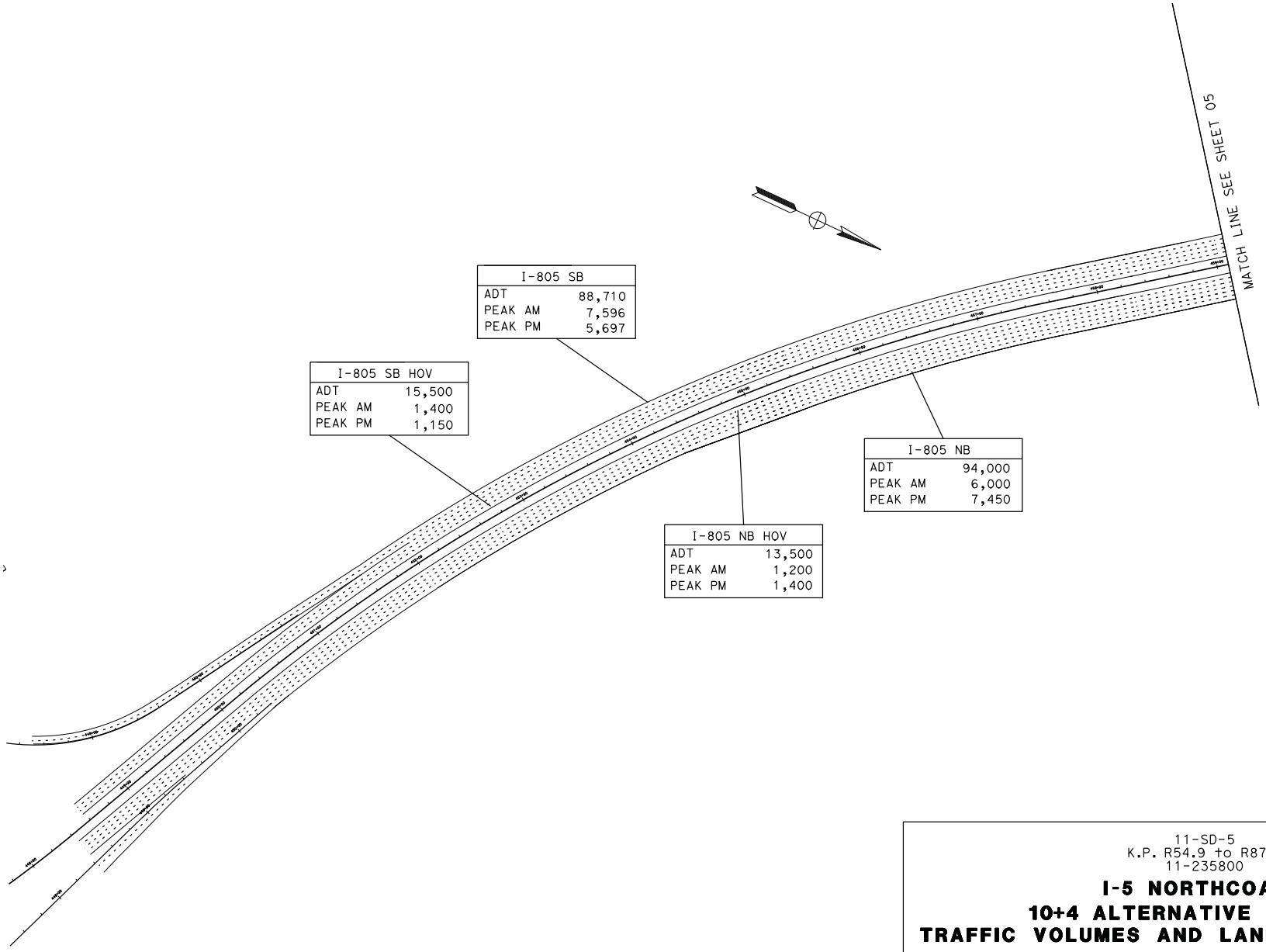
GENESEE NB ON RAMP TO ROSELLE ST.	
ADT	8,000
PEAK AM	800
PEAK PM	800

* Note: Possible on-ramp metered rates shown in (parenthesis)

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST
10+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT C

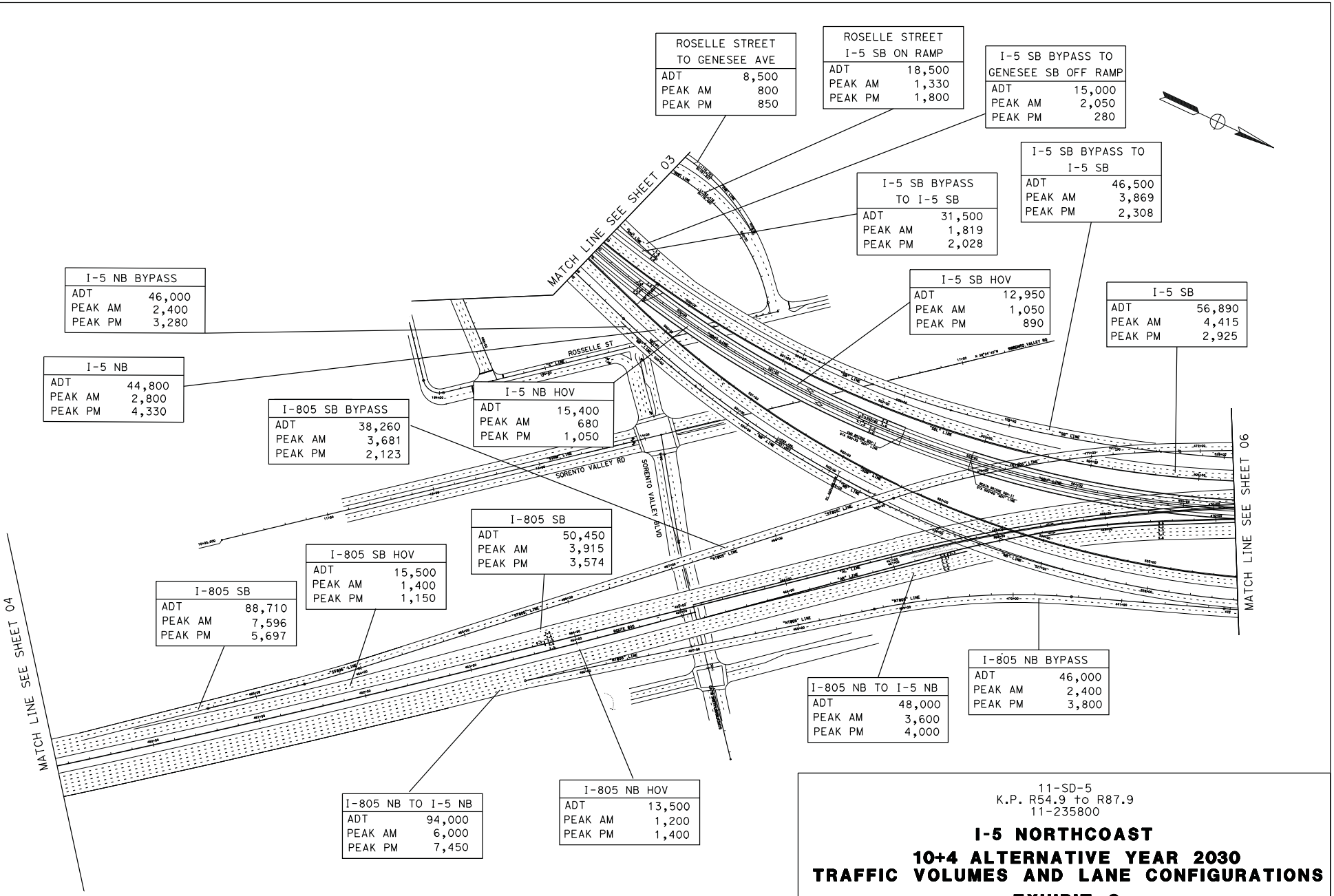
DATE PLOTTED => 12-NOV-2008
DGN FILE => 2030_03Bypass.dgn



11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST
10+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT C

DGN FILE => 2030_04Lusk805.dgn
DATE PLOTTED => 12-NOV-2008



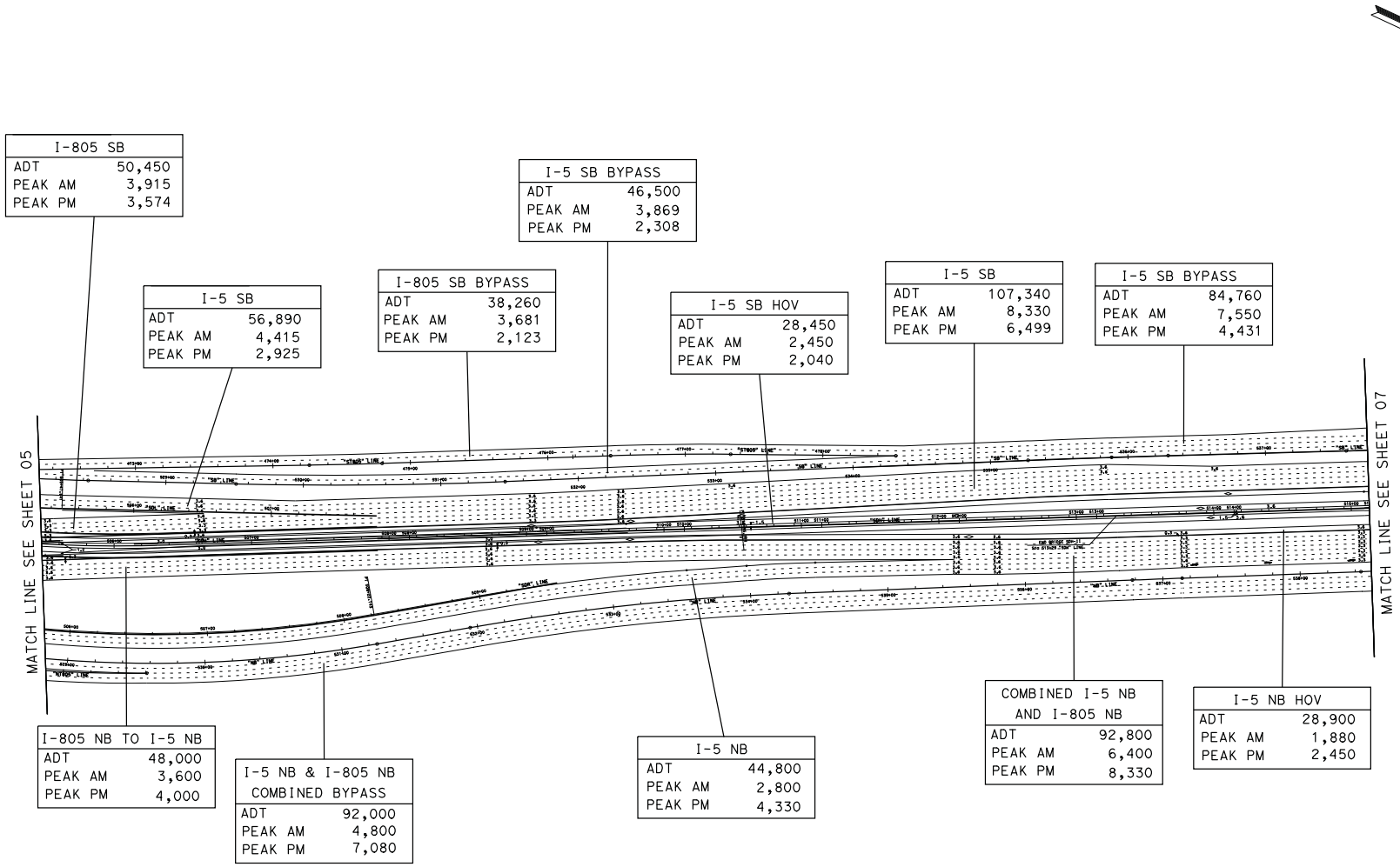
11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

10+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXHIBIT C

DGN FILE =>2030_05Merge5805.dgn
DATE PLOTTED =>12-NOV-2008

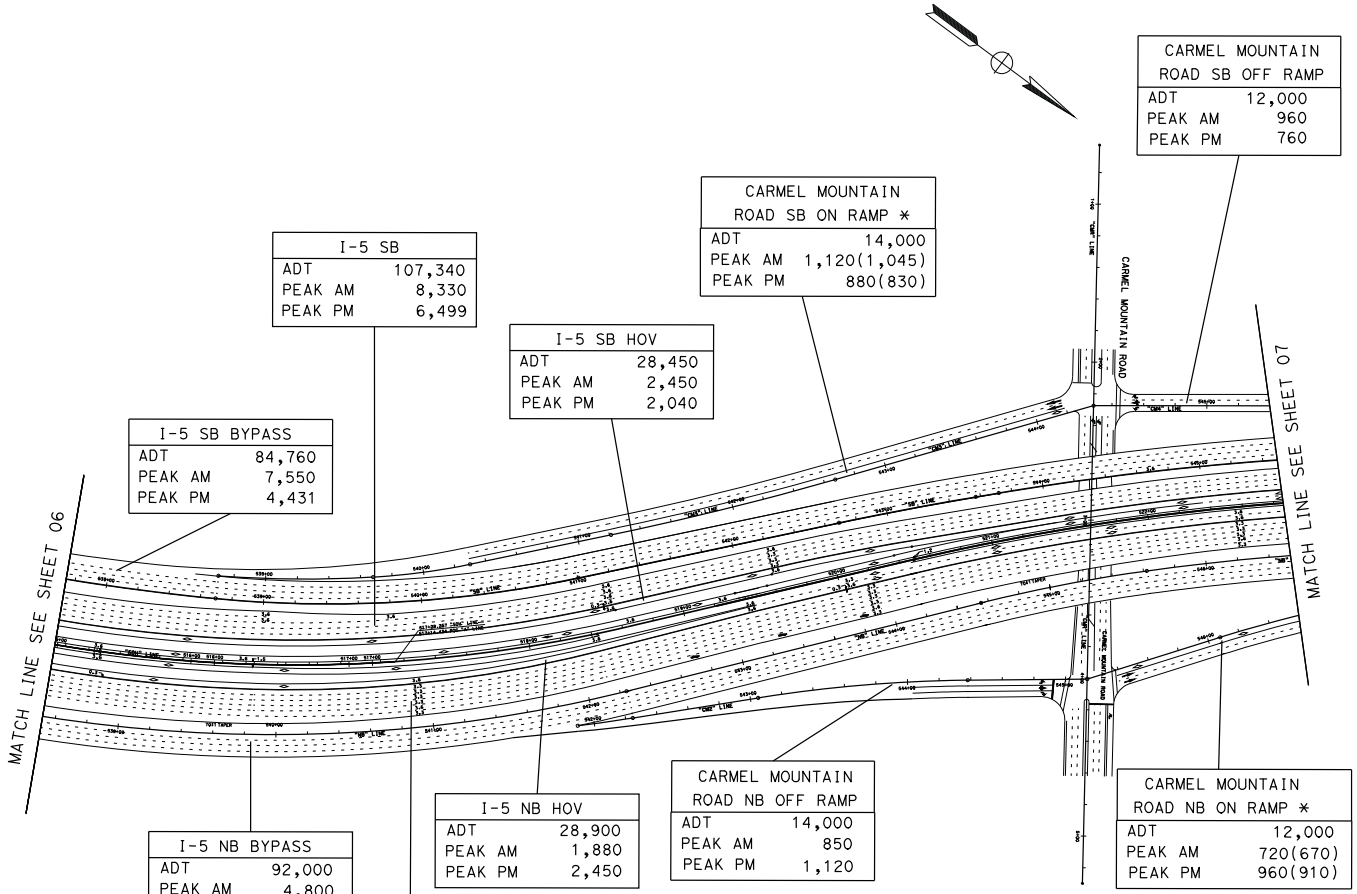


11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

10+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT C

DGN FILE => 2030_06DMHBypassSlipRmp.dgn DATE PLOTTED => 12-NOV-2008



I-5 SB	
ADT	107,340
PEAK AM	8,330
PEAK PM	6,499

I-5 SB BYPASS	
ADT	84,760
PEAK AM	7,550
PEAK PM	4,431

I-5 SB HOV	
ADT	28,450
PEAK AM	2,450
PEAK PM	2,040

CARMEL MOUNTAIN ROAD SB ON RAMP *	
ADT	14,000
PEAK AM	1,120(1,045)
PEAK PM	880(830)

CARMEL MOUNTAIN ROAD SB OFF RAMP	
ADT	12,000
PEAK AM	960
PEAK PM	760

I-5 NB BYPASS	
ADT	92,000
PEAK AM	4,800
PEAK PM	7,080

I-5 NB	
ADT	92,800
PEAK AM	6,400
PEAK PM	8,330

I-5 NB HOV	
ADT	28,900
PEAK AM	1,880
PEAK PM	2,450

CARMEL MOUNTAIN ROAD NB OFF RAMP	
ADT	14,000
PEAK AM	850
PEAK PM	1,120

CARMEL MOUNTAIN ROAD NB ON RAMP *	
ADT	12,000
PEAK AM	720(670)
PEAK PM	960(910)

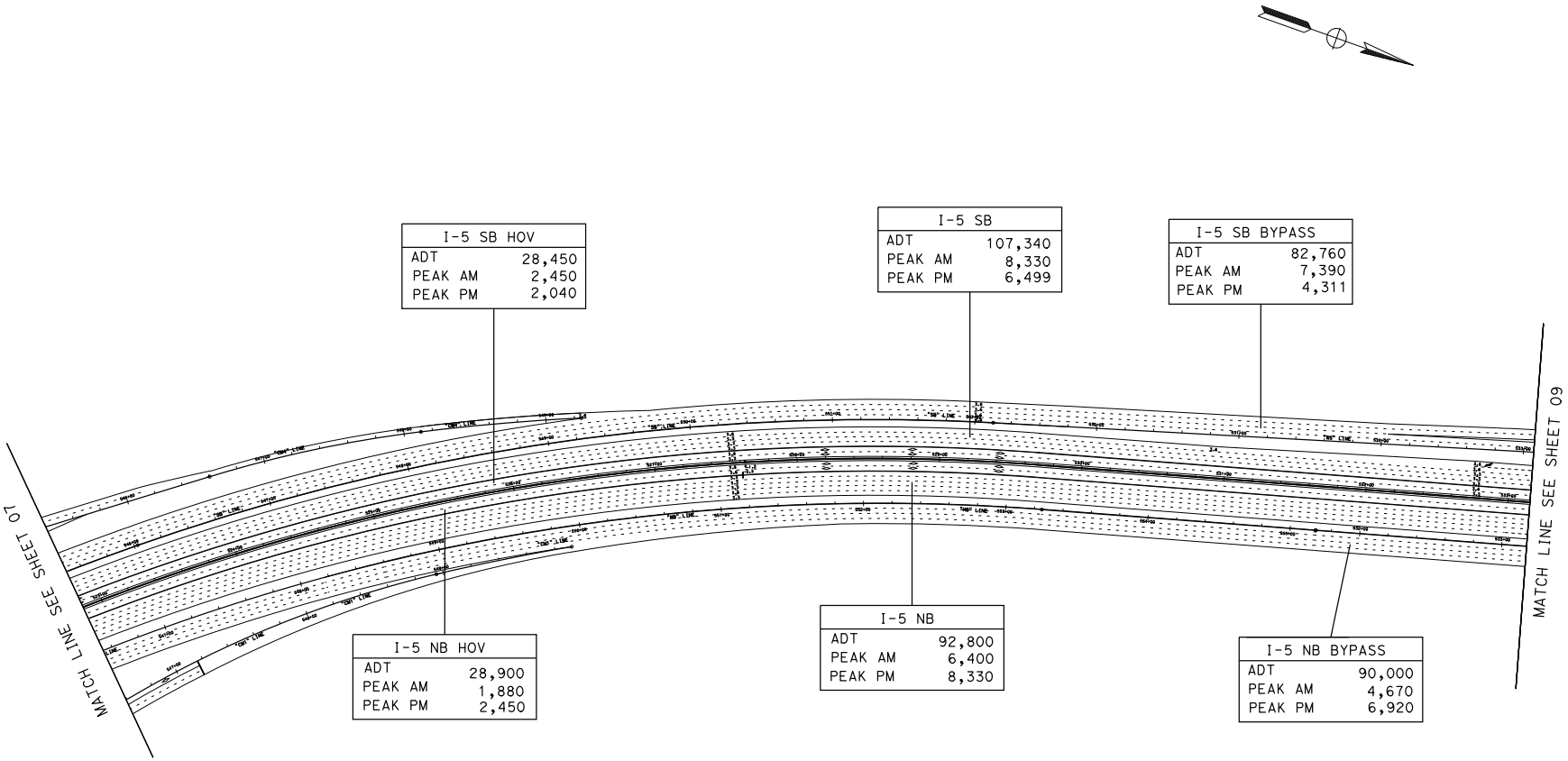
* Note: Possible on-ramp metered rates shown in (parenthesis)

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

10+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT C

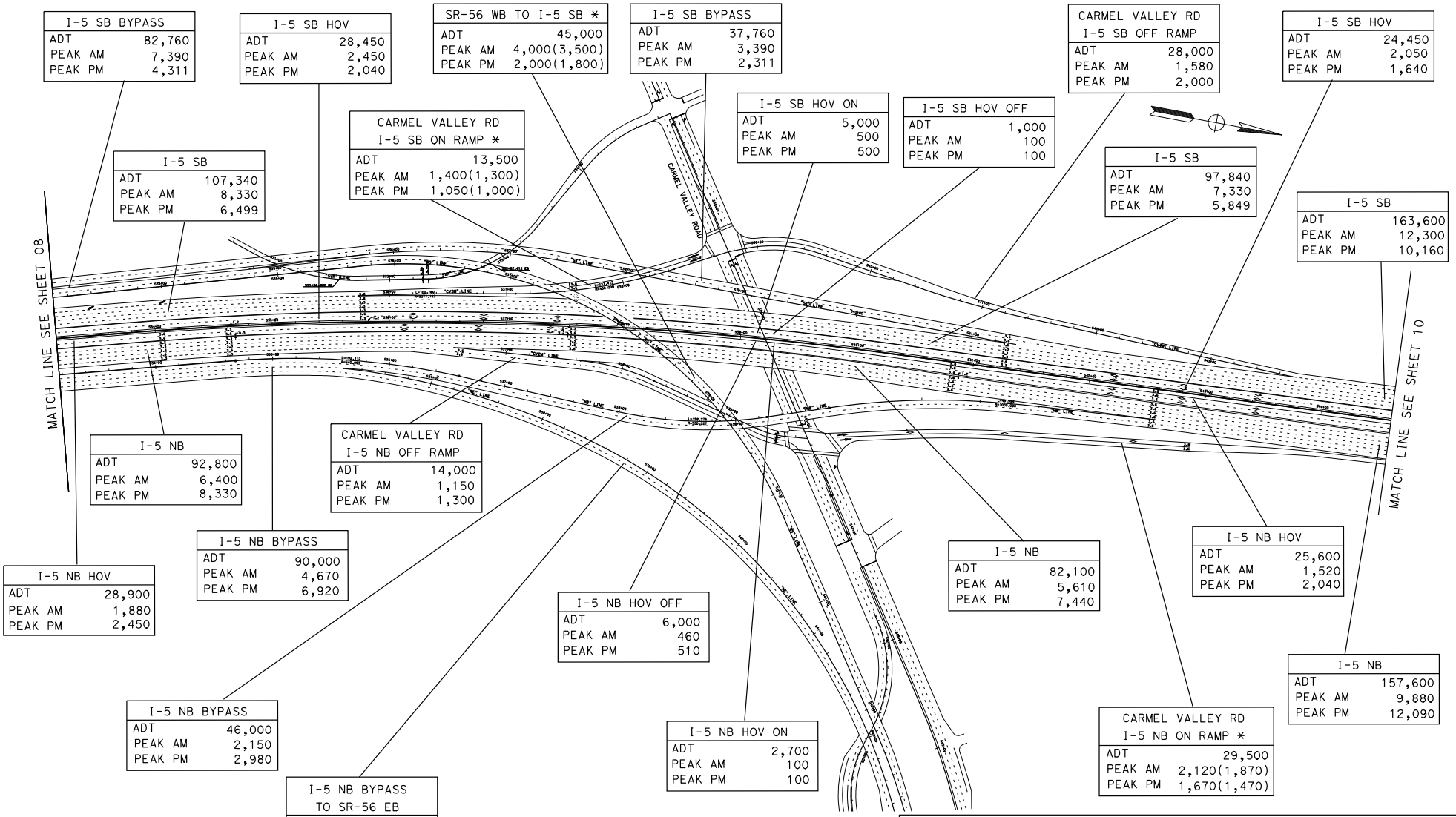
DGN FILE => 2030_07CarmelMtnRd.dgn DATE PLOTTED => 12-NOV-2008



11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST
10+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT C

DGN FILE => 2030_08to56CarmiVlyRd.dgn DATE PLOTTED => 12-NOV-2008

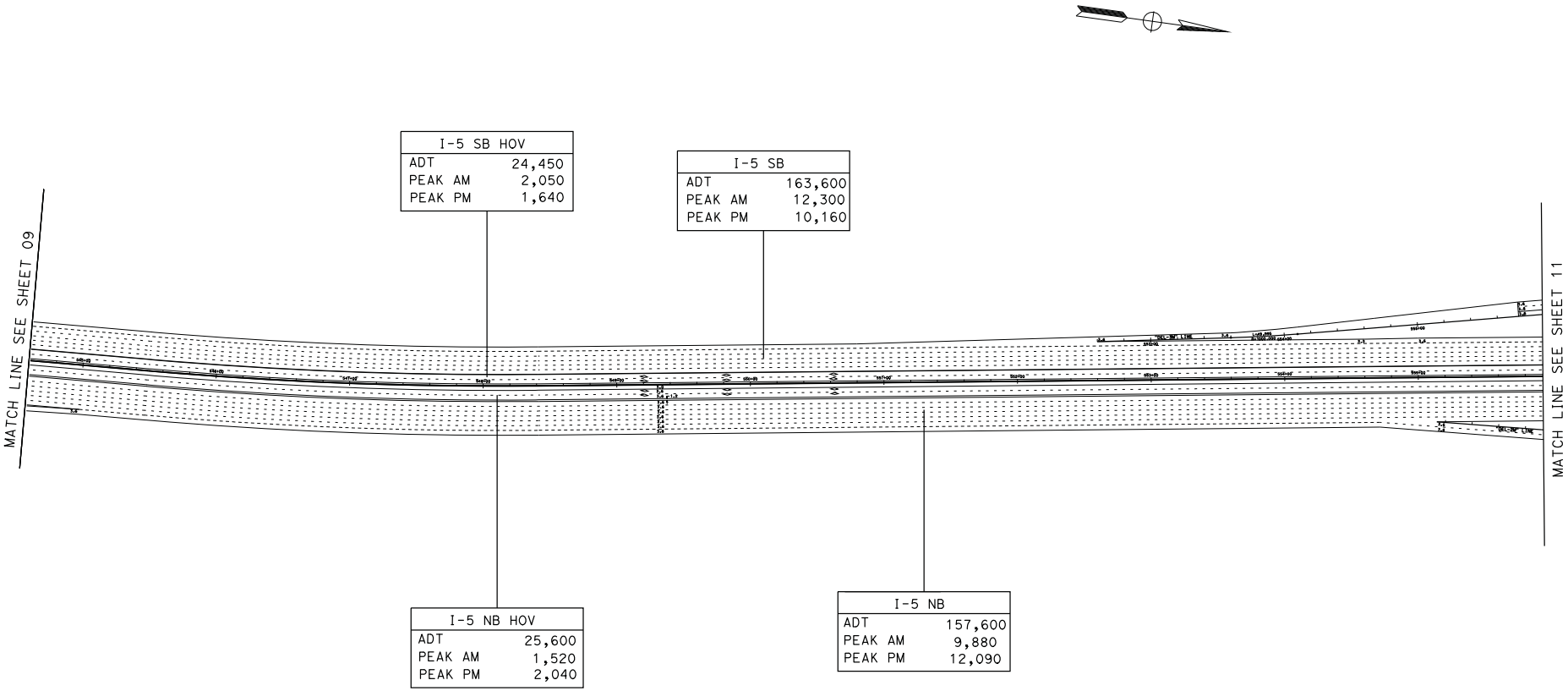


* Note: Possible on-ramp metered rates shown in (parenthesis)

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST
10+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT C

DGN FILE =>2030_09CarmlVly56.dgn DATE PLOTTED =>12-NOV-2008

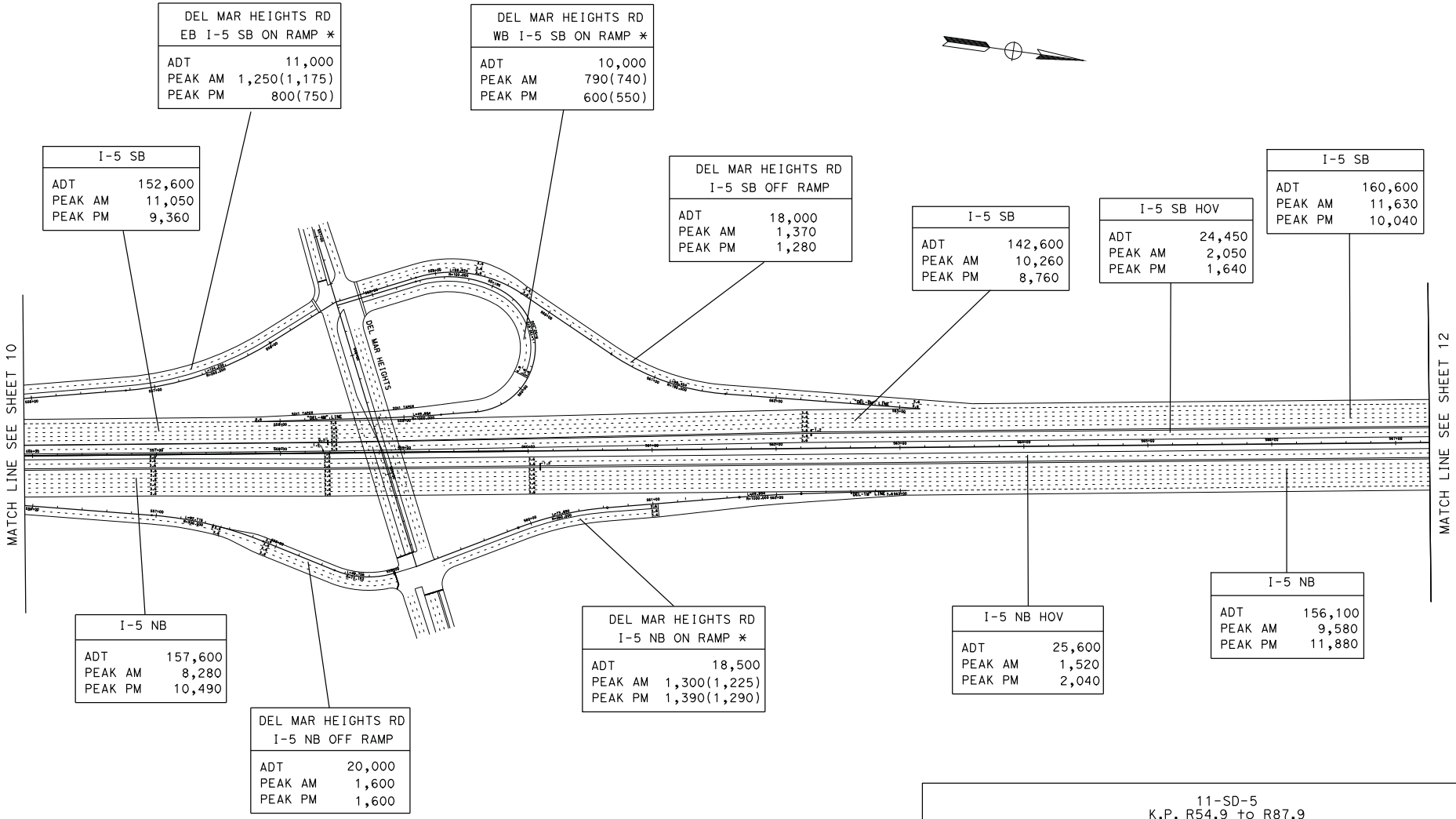


11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

10+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT C

DGN FILE =>2030_10+0el\MarHts.dgn DATE PLOTTED =>12-NOV-2008



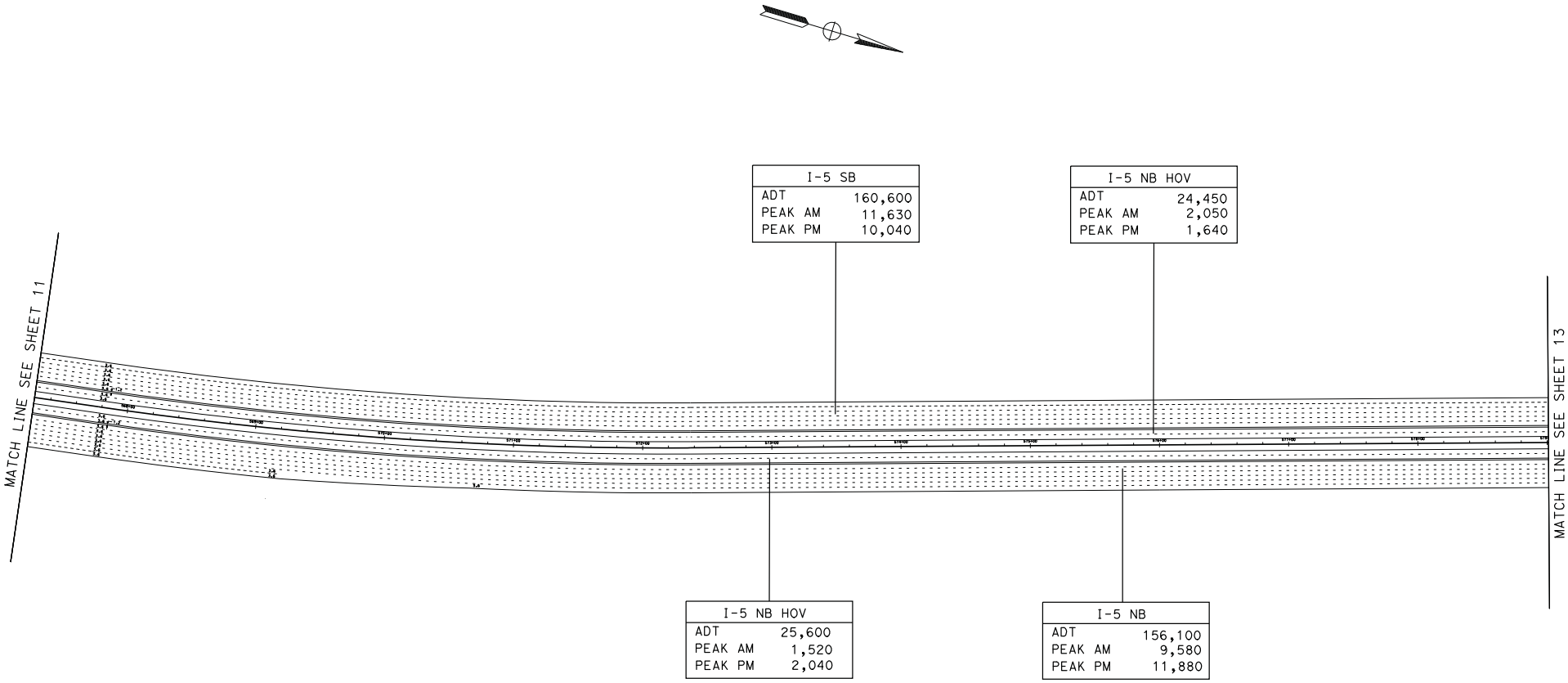
* Note: Possible on-ramp metered rates shown in (parenthesis)

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

10+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT C

DGN FILE => 2030_11DelMarHts.dgn DATE PLOTTED => 12-NOV-2008



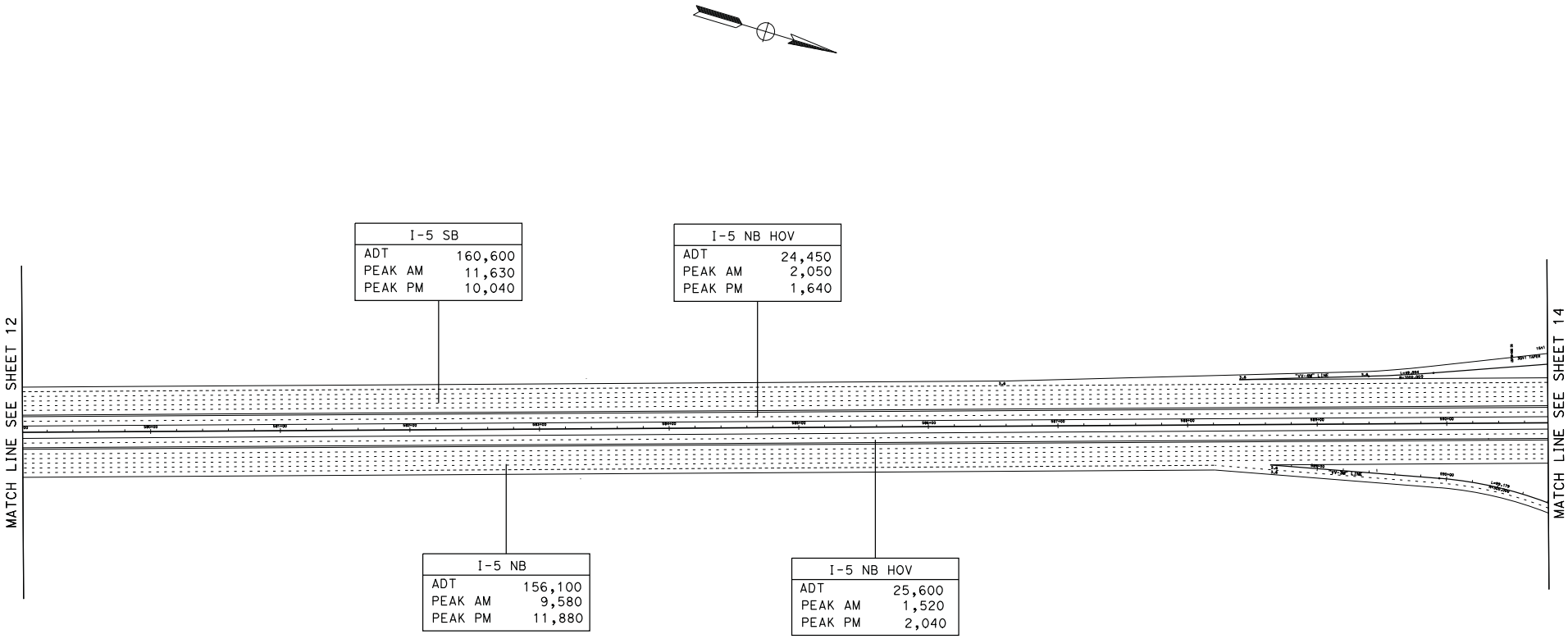
11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

10+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXHIBIT C

DGN FILE =>2030_12roVIdeIaVaIIei.dgn DATE PLOTTED =>12-NOV-2008



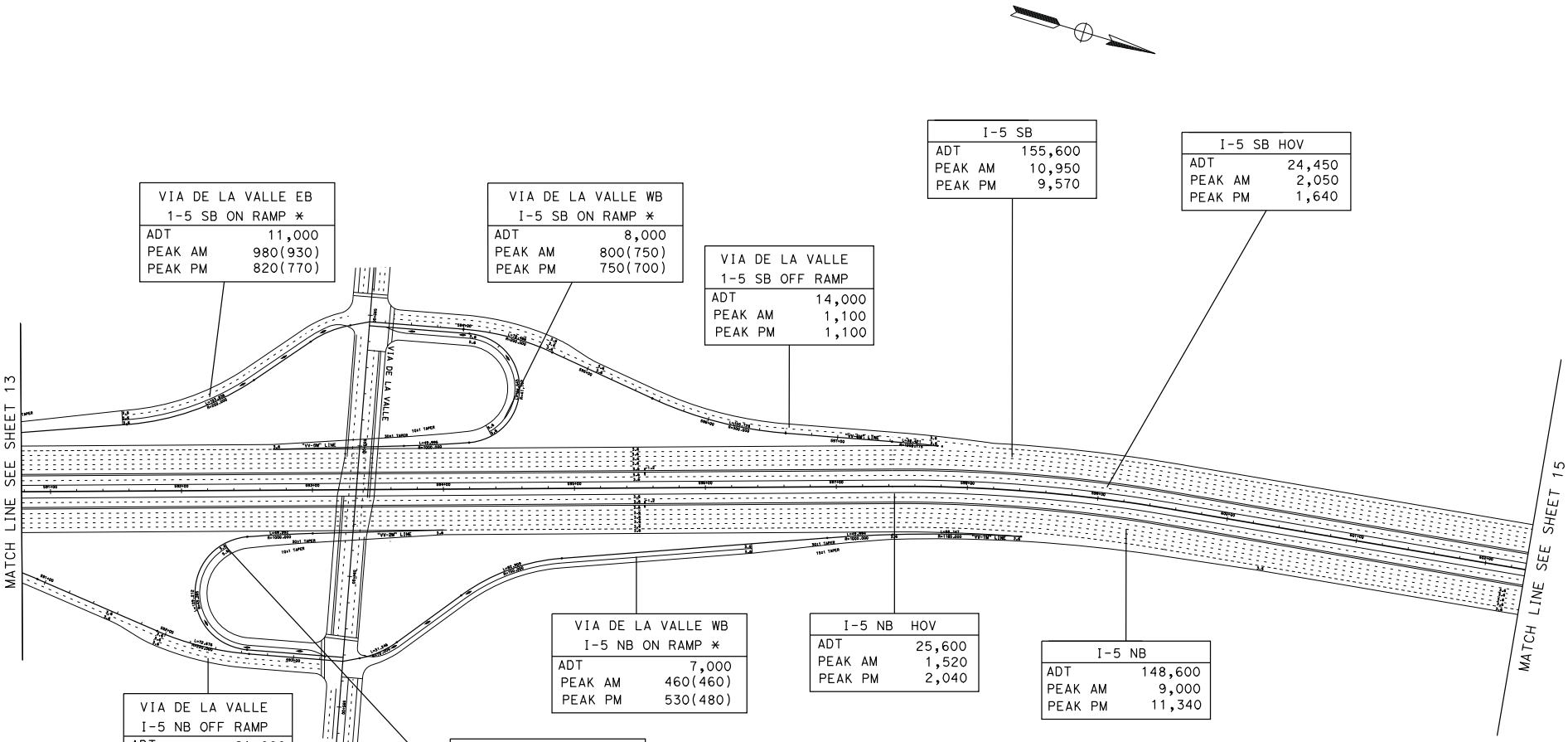
11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

10+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXHIBIT C

DGN FILE => 2030_13toVIdelaValle2.dgn DATE PLOTTED => 12-NOV-2008

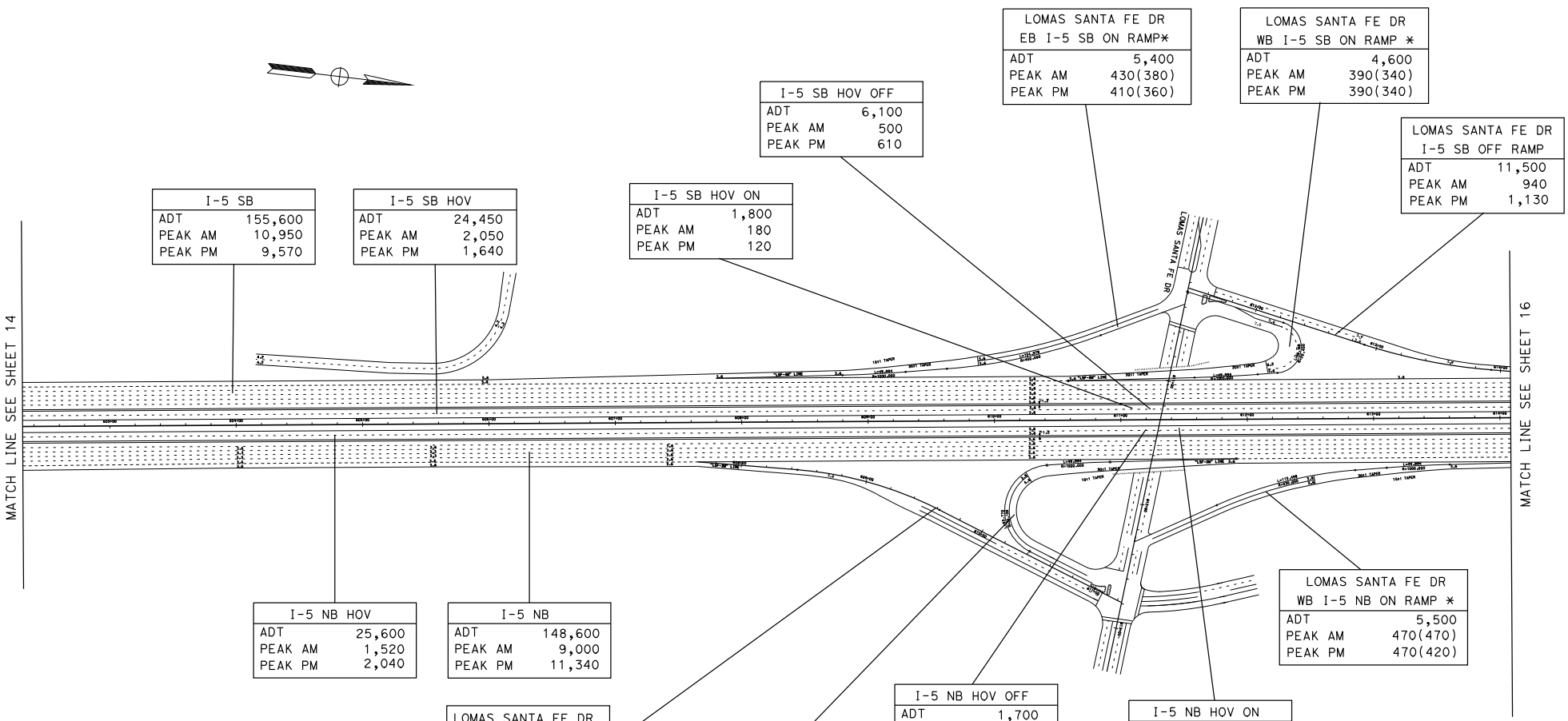


* Note: Possible on-ramp metered rates shown in (parenthesis)

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST
10+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT C

DGN FILE =>2030_14ViaDelaValle.dgn DATE PLOTTED =>12-NOV-2008



I-5 SB	
ADT	155,600
PEAK AM	10,950
PEAK PM	9,570

I-5 SB HOV	
ADT	24,450
PEAK AM	2,050
PEAK PM	1,640

I-5 SB HOV ON	
ADT	1,800
PEAK AM	180
PEAK PM	120

I-5 SB HOV OFF	
ADT	6,100
PEAK AM	500
PEAK PM	610

LOMAS SANTA FE DR EB I-5 SB ON RAMP*	
ADT	5,400
PEAK AM	430(380)
PEAK PM	410(360)

LOMAS SANTA FE DR WB I-5 SB ON RAMP *	
ADT	4,600
PEAK AM	390(340)
PEAK PM	390(340)

LOMAS SANTA FE DR I-5 SB OFF RAMP	
ADT	11,500
PEAK AM	940
PEAK PM	1,130

I-5 NB HOV	
ADT	25,600
PEAK AM	1,520
PEAK PM	2,040

I-5 NB	
ADT	148,600
PEAK AM	9,000
PEAK PM	11,340

LOMAS SANTA FE DR I-5 NB OFF RAMP	
ADT	9,700
PEAK AM	780
PEAK PM	820

LOMAS SANTA FE DR EB I-5 NB ON RAMP *	
ADT	6,500
PEAK AM	490(490)
PEAK PM	550(500)

I-5 NB HOV OFF	
ADT	1,700
PEAK AM	120
PEAK PM	170

I-5 NB HOV ON	
ADT	7,200
PEAK AM	600
PEAK PM	570

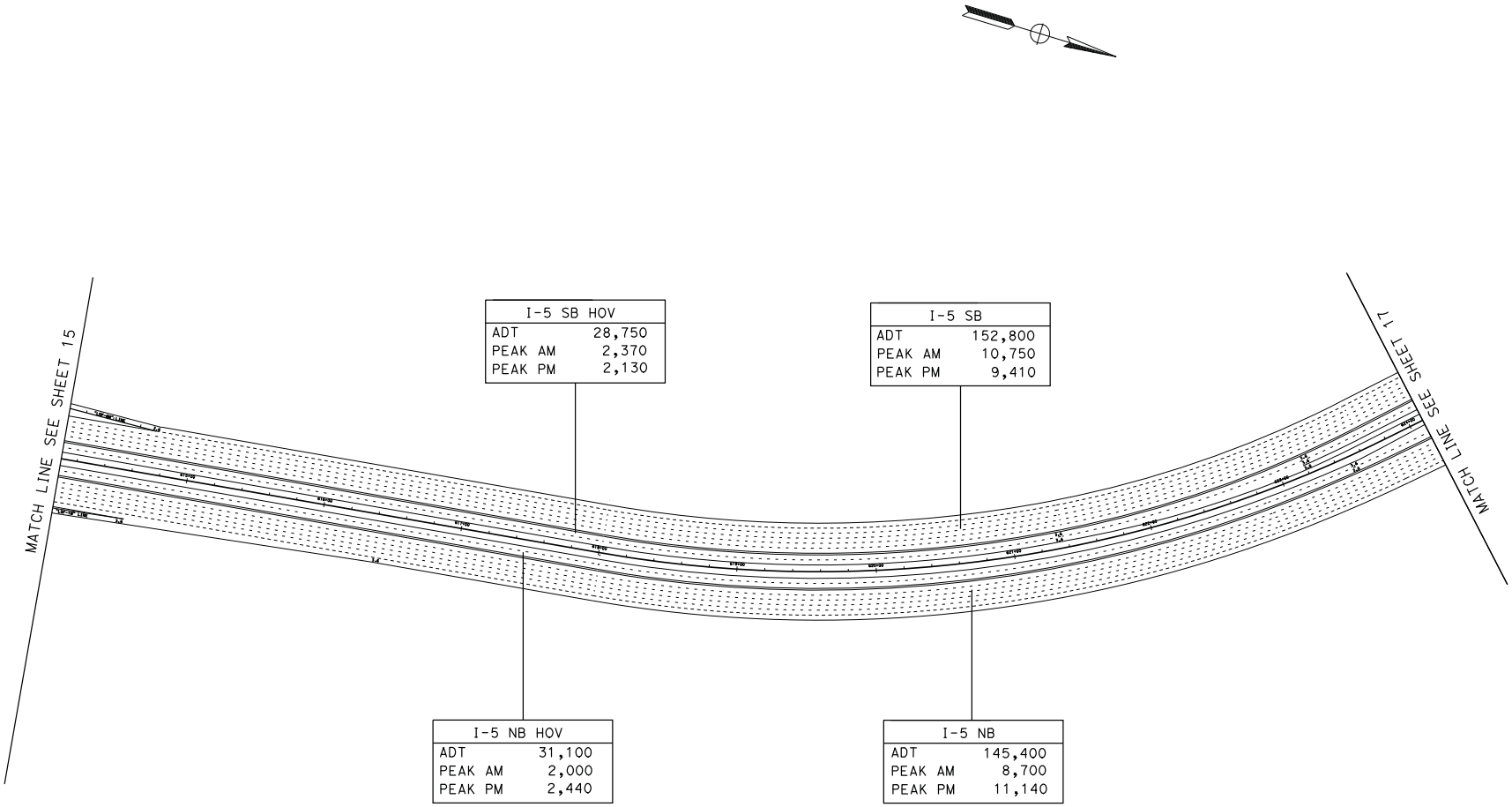
LOMAS SANTA FE DR WB I-5 NB ON RAMP *	
ADT	5,500
PEAK AM	470(470)
PEAK PM	470(420)

* Note: Possible on-ramp metered rates shown in (paranthesis)

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST
10+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT C

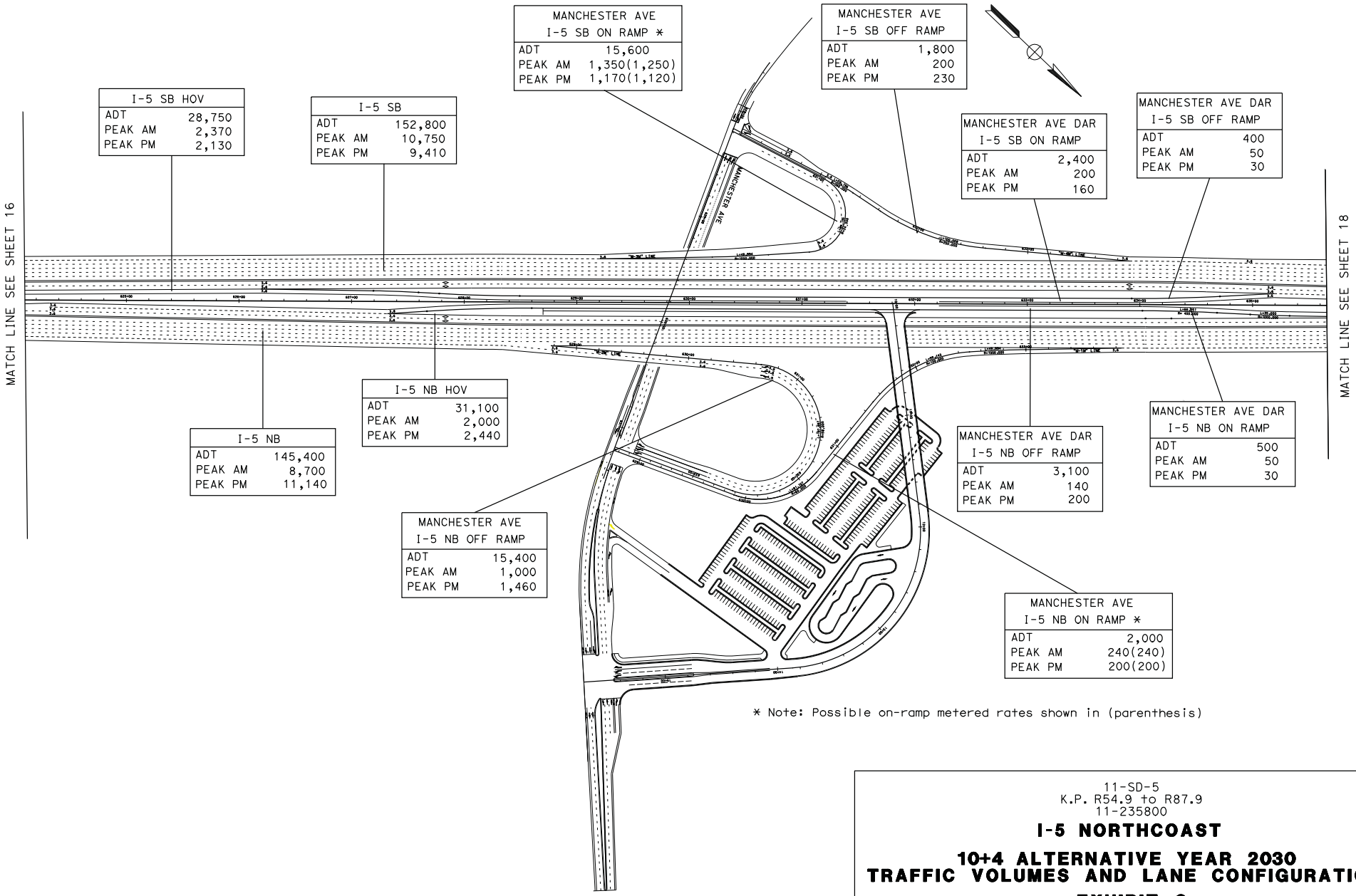
DGN FILE => 2030_15LomasSfeFe.dgn DATE PLOTTED => 12-NOV-2008



11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST
10+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT C

DGN FILE =>2030_16toManchester.dgn DATE PLOTTED =>12-NOV-2008



* Note: Possible on-ramp metered rates shown in (parenthesis)

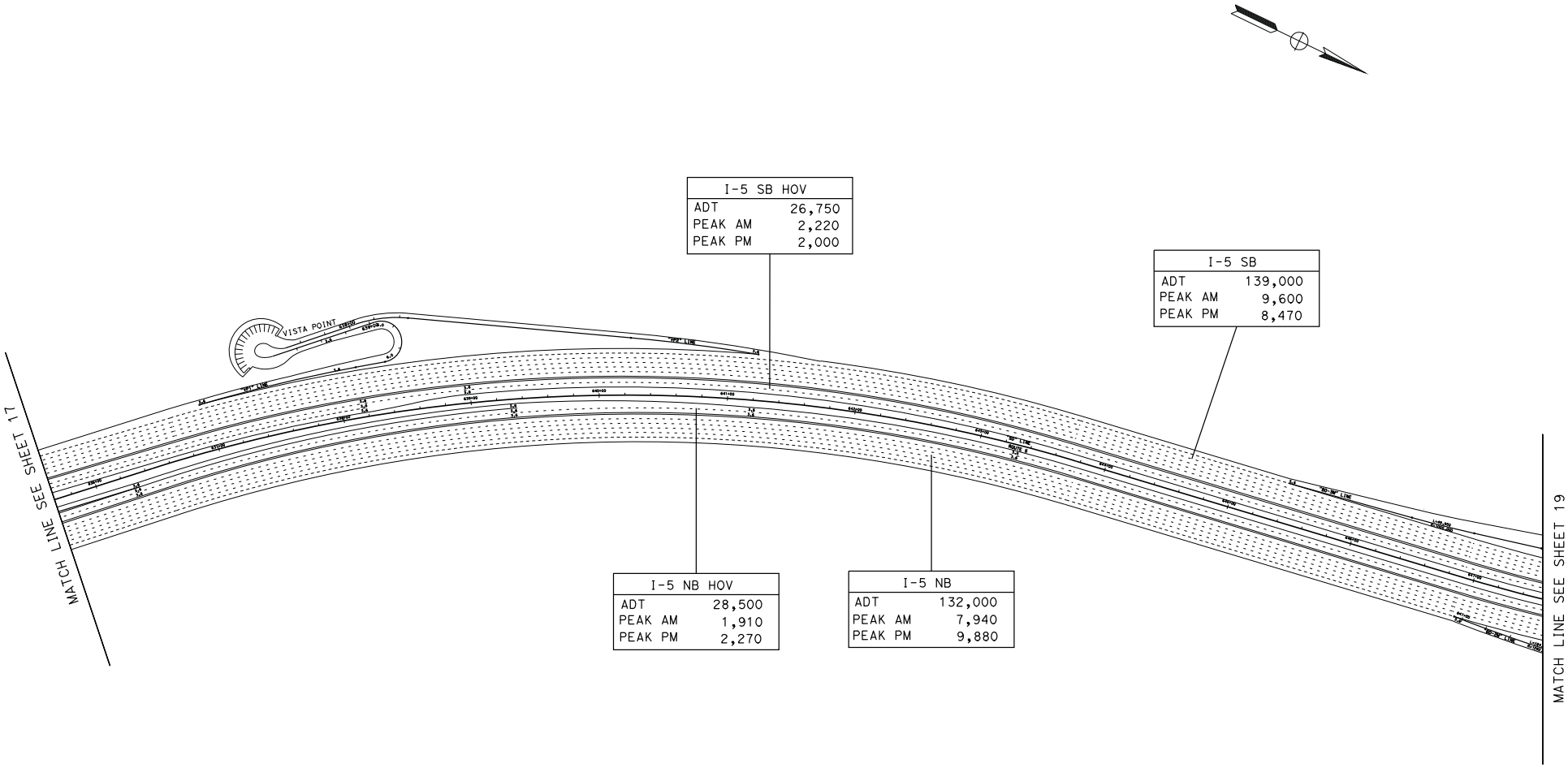
11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

10+4 ALTERNATIVE YEAR 2030 TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXHIBIT C

DGN FILE =>2030_17Manchester.dgn DATE PLOTTED =>12-NOV-2008



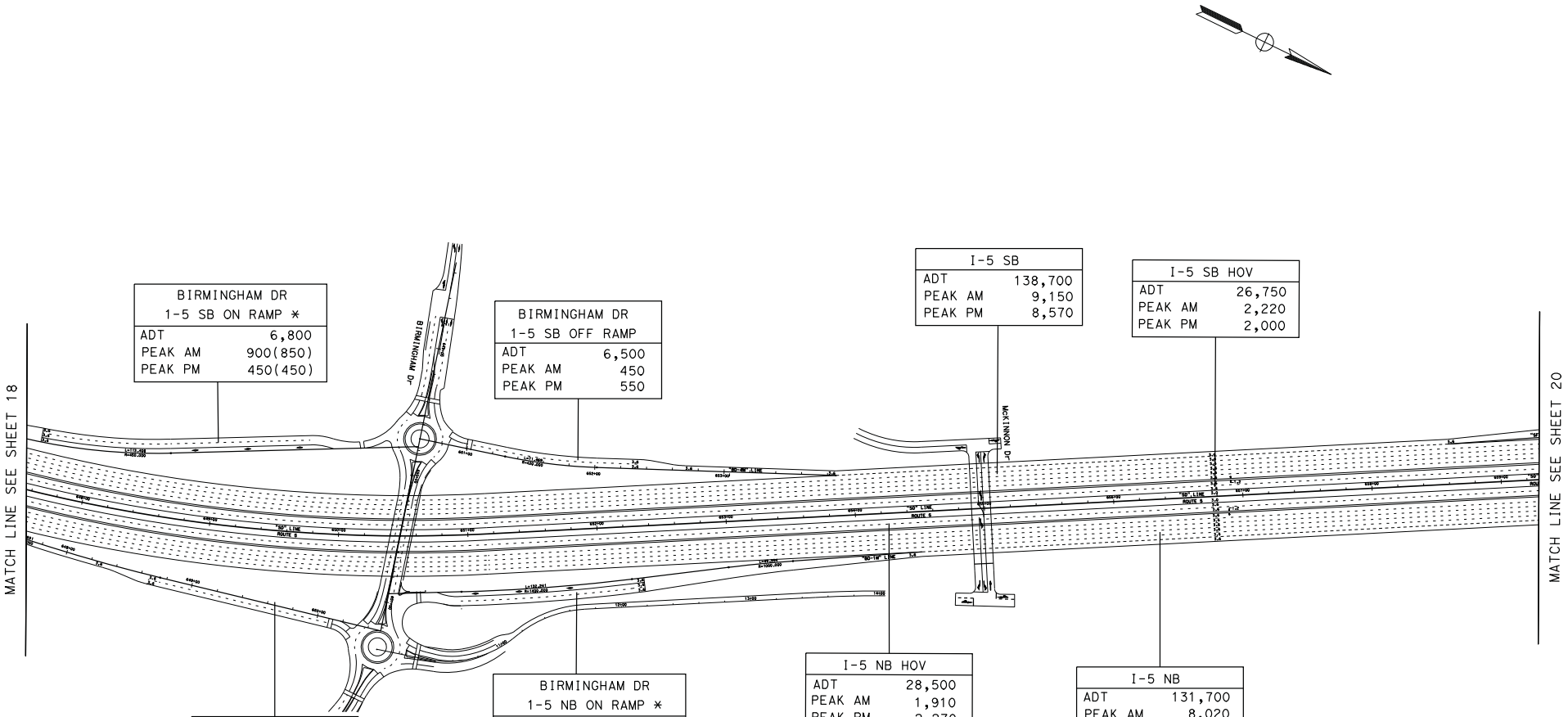
11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

10+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXHIBIT C

DGN FILE =>2030_18to81mingham.dgn DATE PLOTTED =>12-NOV-2008



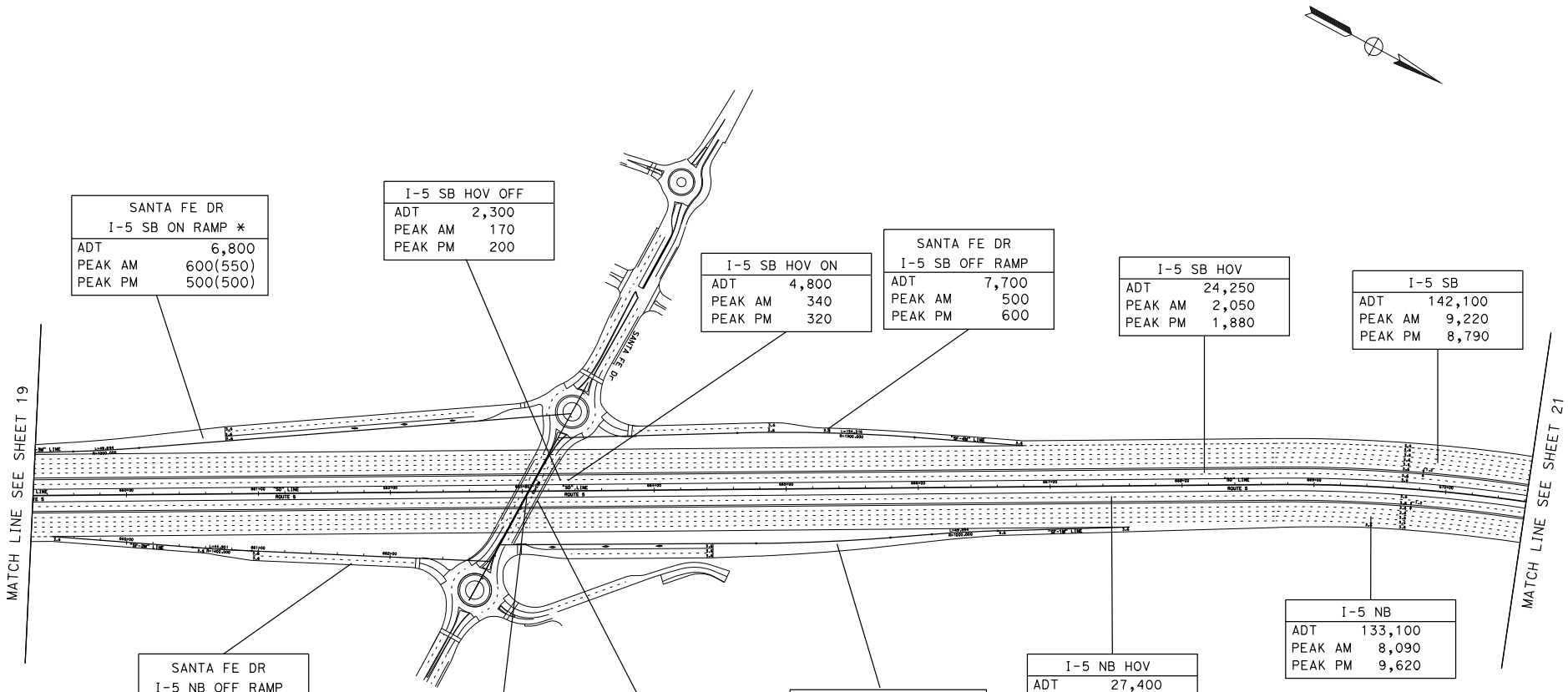
* Note: Possible on-ramp metered rates shown in (parenthesis)

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST
10+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXHIBIT C

DGN FILE =>2030_198birmingham.dgn DATE PLOTTED =>12-NOV-2008



SANTA FE DR I-5 SB ON RAMP *	
ADT	6,800
PEAK AM	600(550)
PEAK PM	500(500)

I-5 SB HOV OFF	
ADT	2,300
PEAK AM	170
PEAK PM	200

I-5 SB HOV ON	
ADT	4,800
PEAK AM	340
PEAK PM	320

SANTA FE DR I-5 SB OFF RAMP	
ADT	7,700
PEAK AM	500
PEAK PM	600

I-5 SB HOV	
ADT	24,250
PEAK AM	2,050
PEAK PM	1,880

I-5 SB	
ADT	142,100
PEAK AM	9,220
PEAK PM	8,790

SANTA FE DR I-5 NB OFF RAMP	
ADT	7,500
PEAK AM	530
PEAK PM	600

I-5 NB HOV ON	
ADT	2,200
PEAK AM	180
PEAK PM	200

I-5 NB HOV OFF	
ADT	3,300
PEAK AM	190
PEAK PM	200

SANTA FE DR I-5 NB ON RAMP *	
ADT	7,800
PEAK AM	590(590)
PEAK PM	700(650)

I-5 NB HOV	
ADT	27,400
PEAK AM	1,990
PEAK PM	2,270

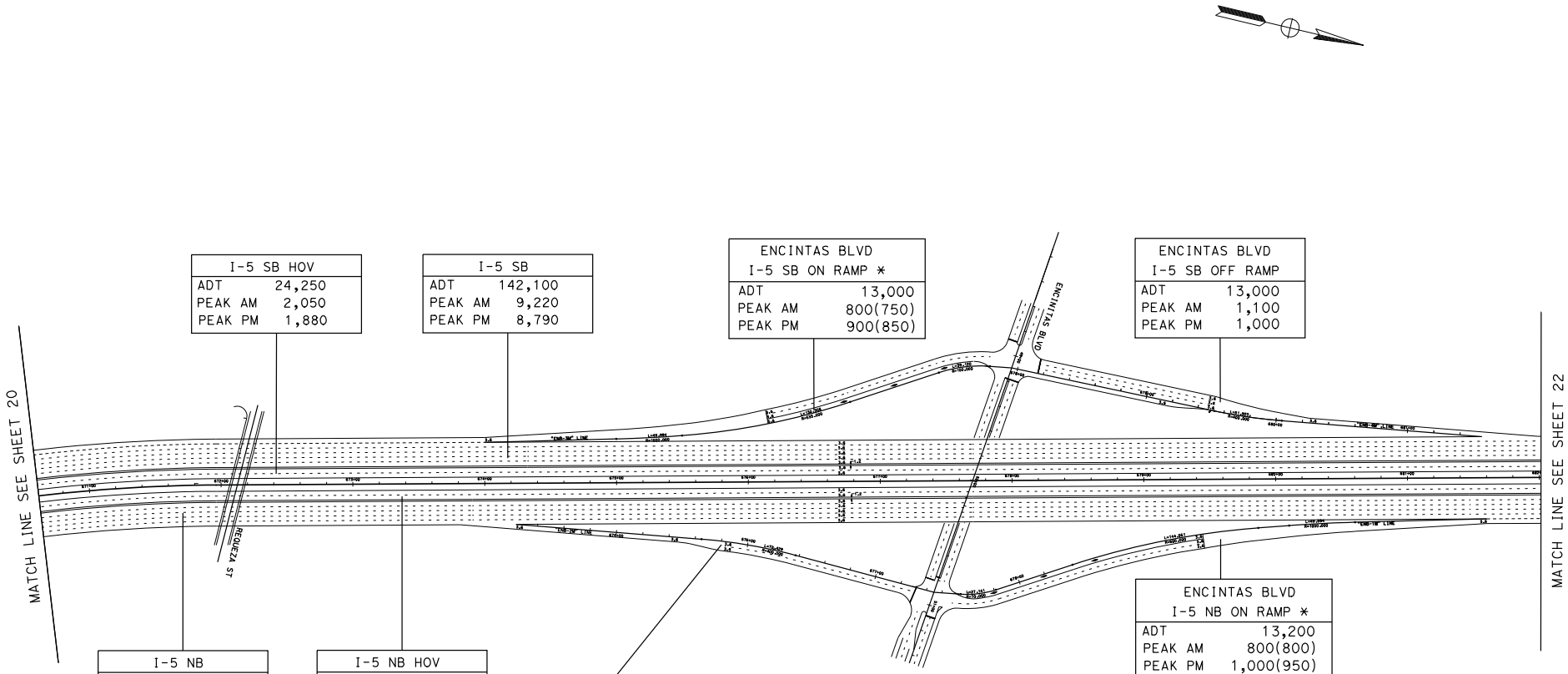
I-5 NB	
ADT	133,100
PEAK AM	8,090
PEAK PM	9,620

* Note: Possible on-ramp metered rates shown in (parenthesis)

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST
10+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT C

DGN FILE =>2030_20SantaFeDr.cgn
DATE PLOTTED =>12-NOV-2008



* Note: Possible on-ramp metered rates shown in (parenthesis)

11-SD-5
K.P. R54.9 to R87.9
11-235800

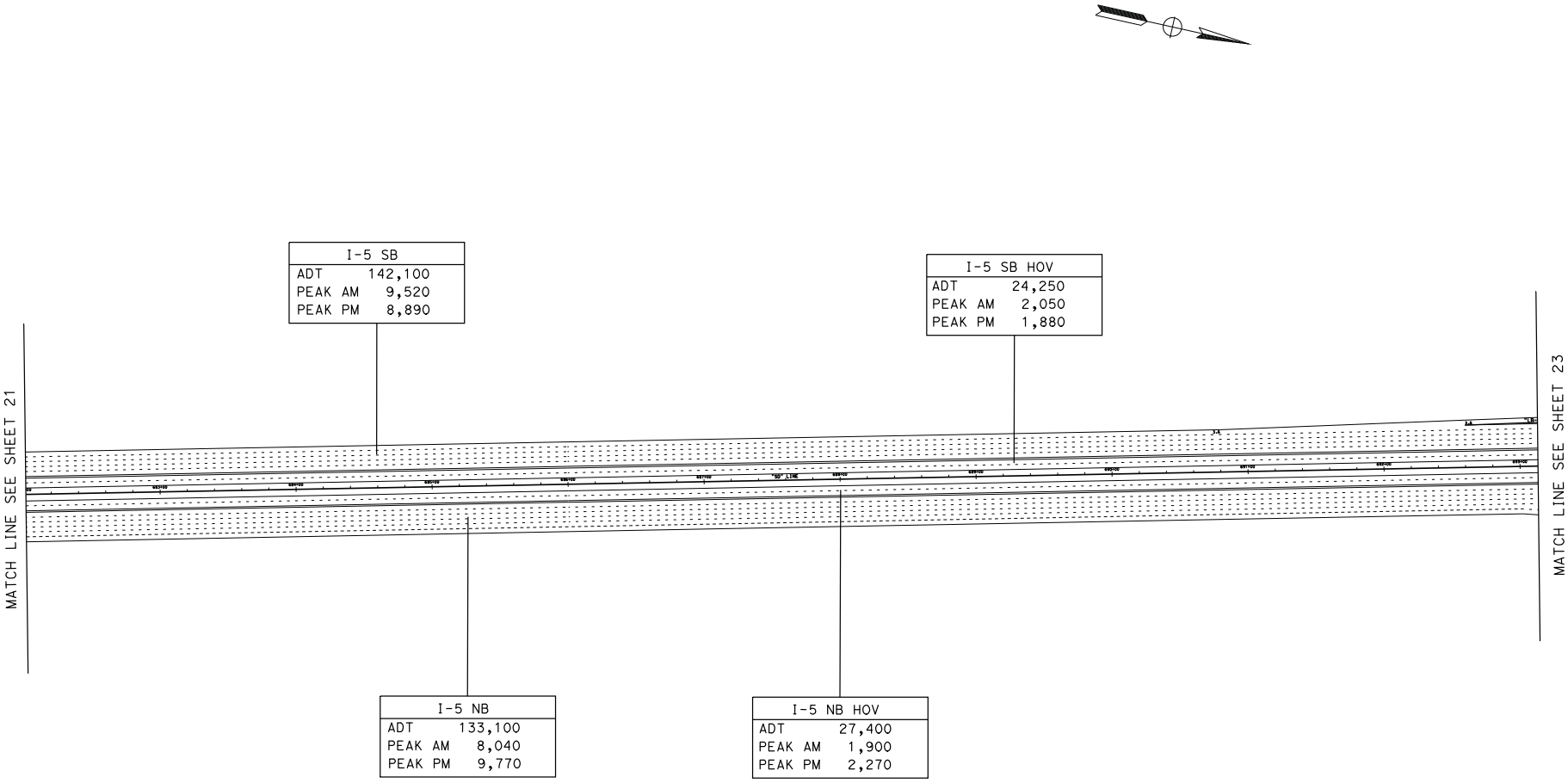
I-5 NORTHCOAST

10+4 ALTERNATIVE YEAR 2030

TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXHIBIT C

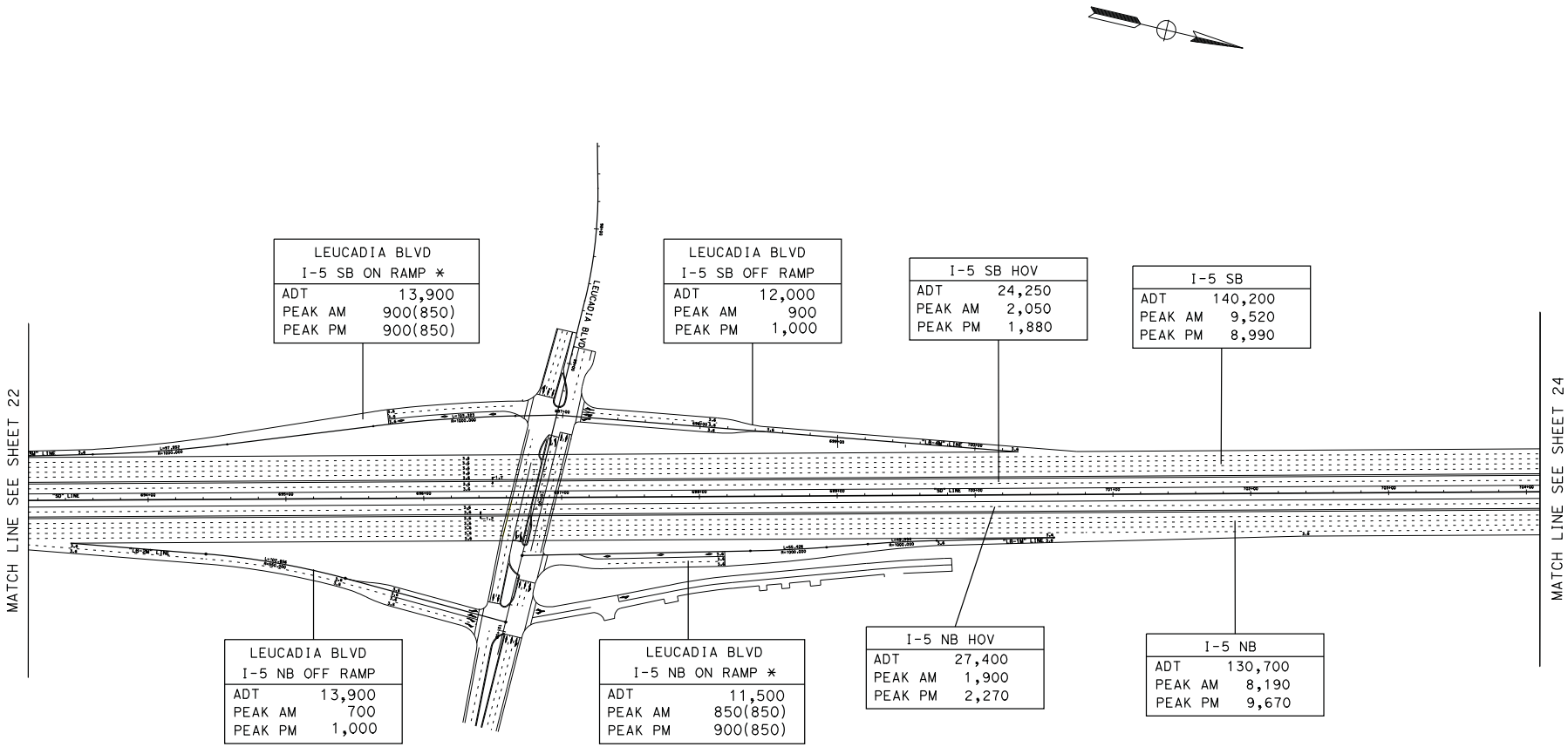
DGN FILE => 2030_21Encinitas.dgn
DATE PLOTTED => 12-NOV-2008



11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST
10+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT C

DGN FILE => 2030_22toLeucadia.dgn DATE PLOTTED => 12-NOV-2008



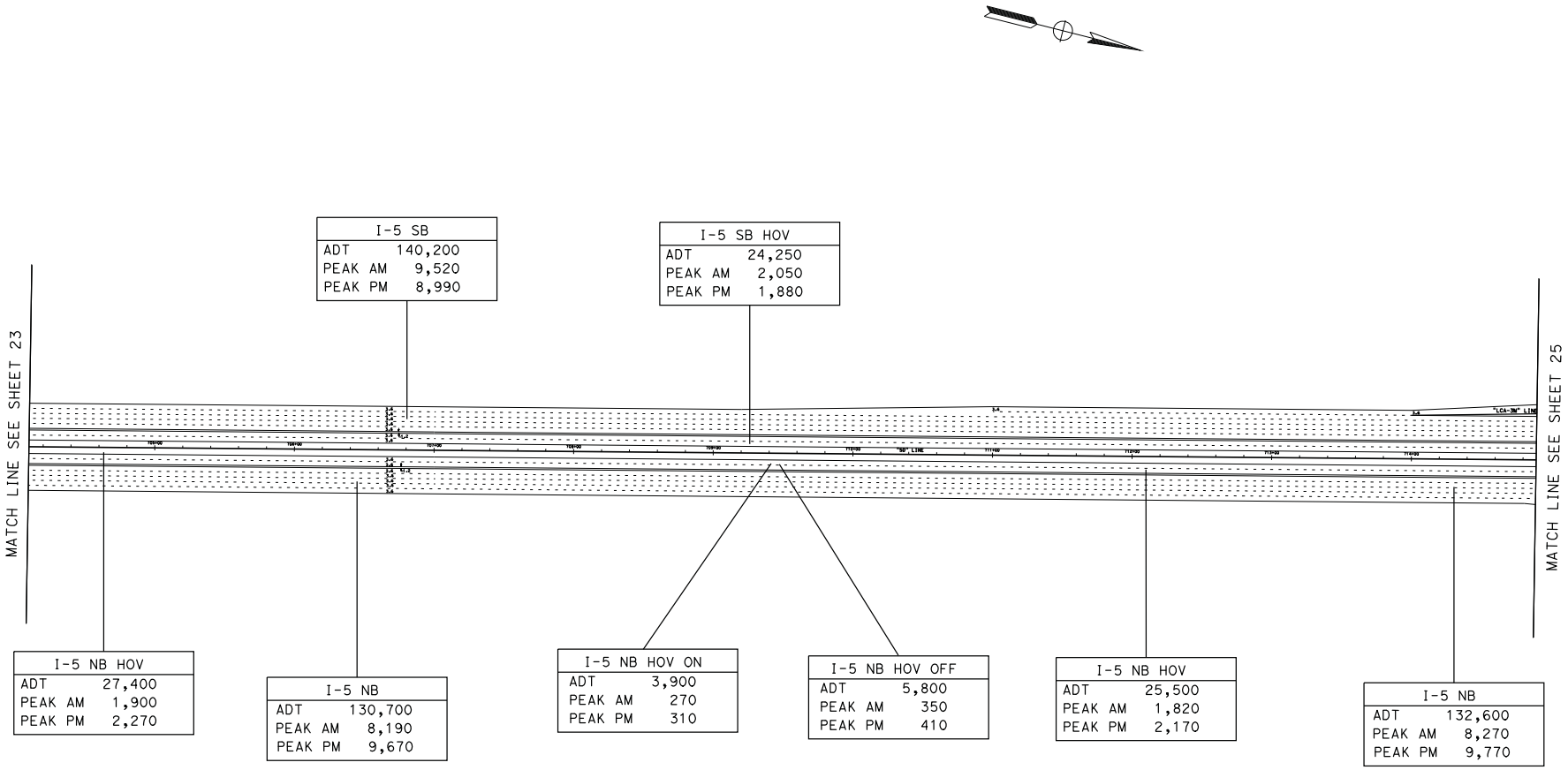
* Note: Possible on-ramp metered rates shown in (parenthesis)

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

10+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT C

DGN FILE =>2030_23Leucadia.dgn DATE PLOTTED =>12-NOV-2008



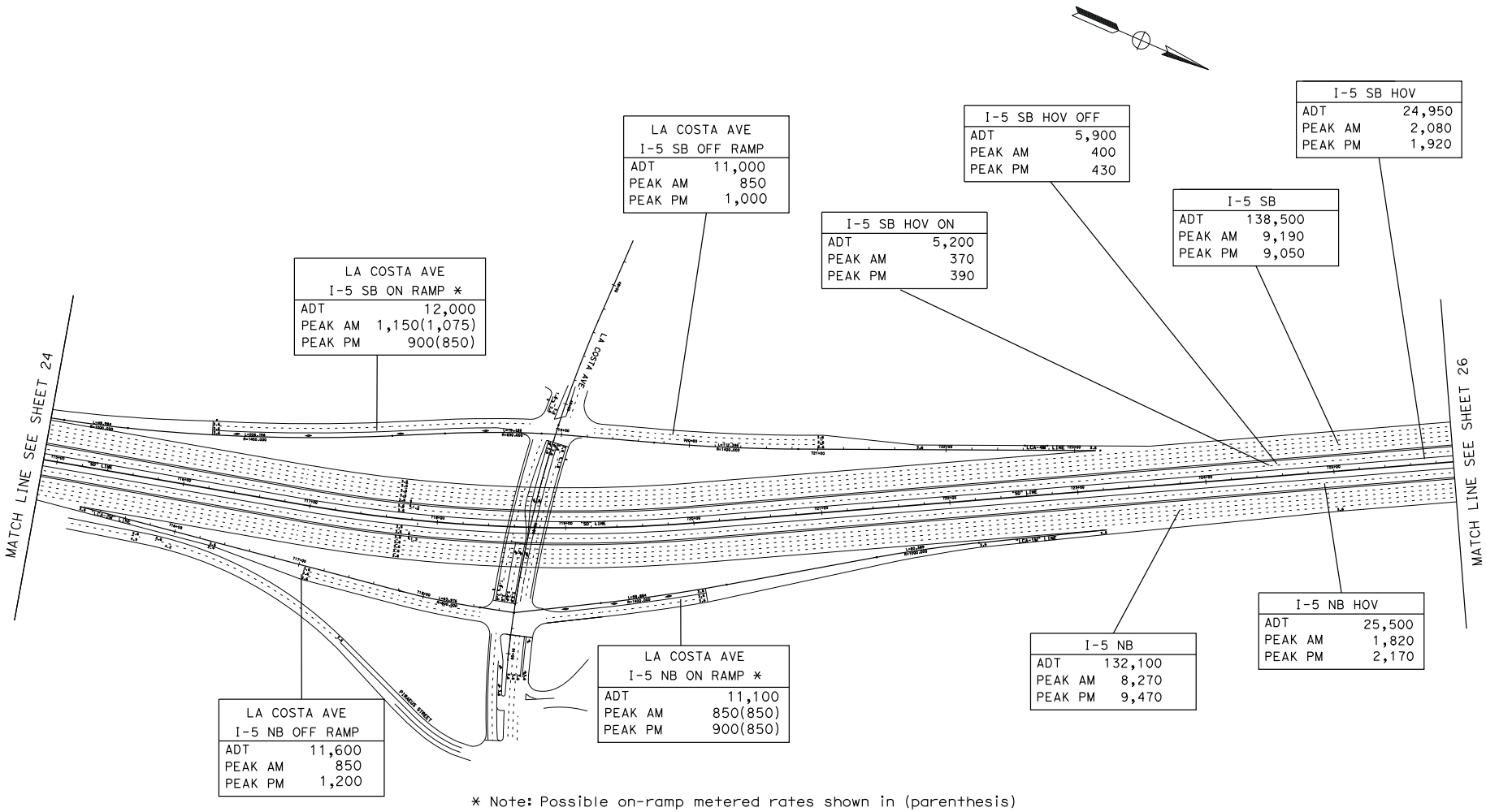
11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

10+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXHIBIT C

DGN FILE => 2030_24toLaCosta.dgn
DATE PLOTTED => 12-NOV-2008



* Note: Possible on-ramp metered rates shown in (parenthesis)

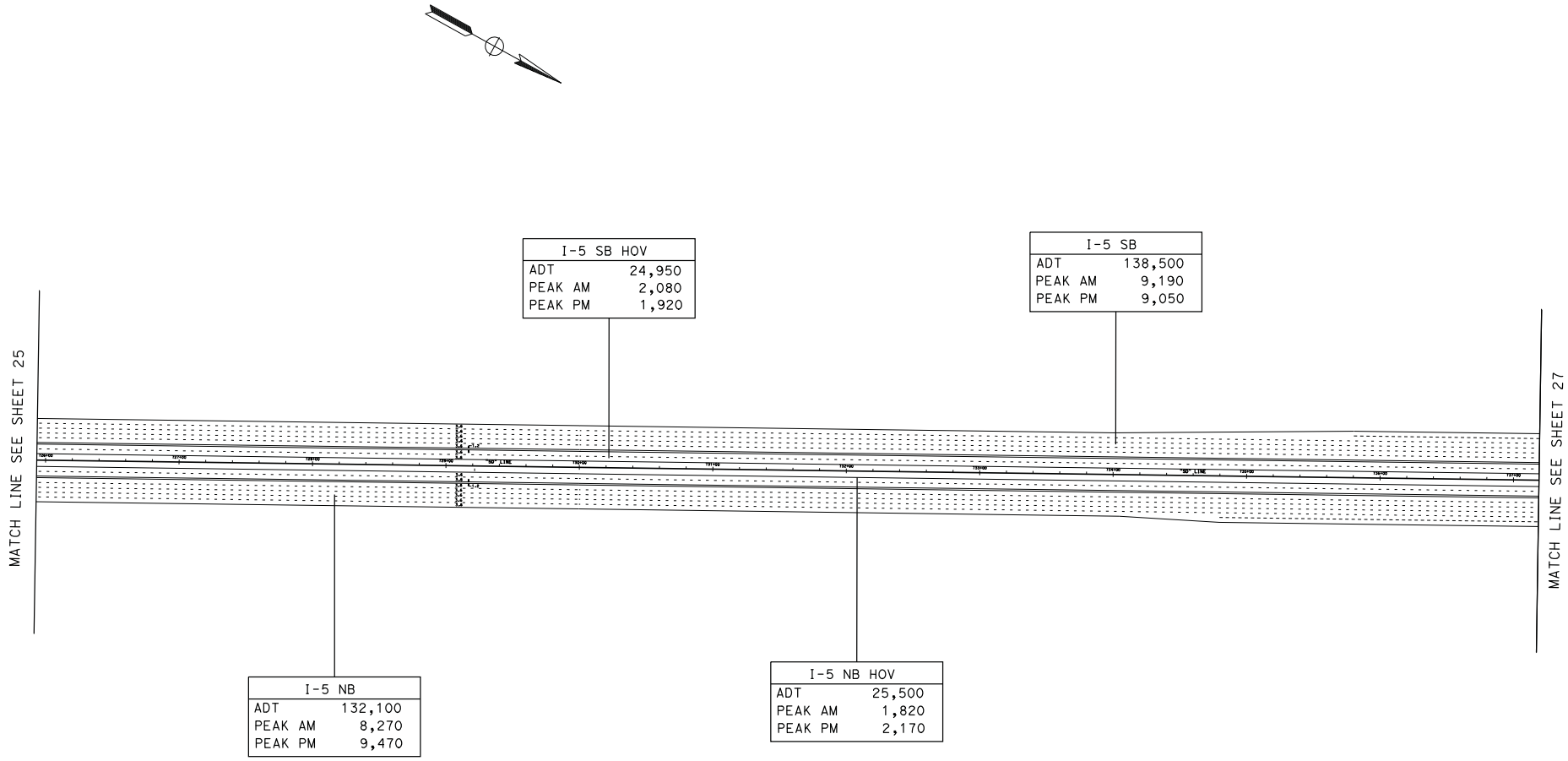
11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

10+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXHIBIT C

DGN FILE => 2030_25LaCosta.dgn
DATE PLOTTED => 12-NOV-2008

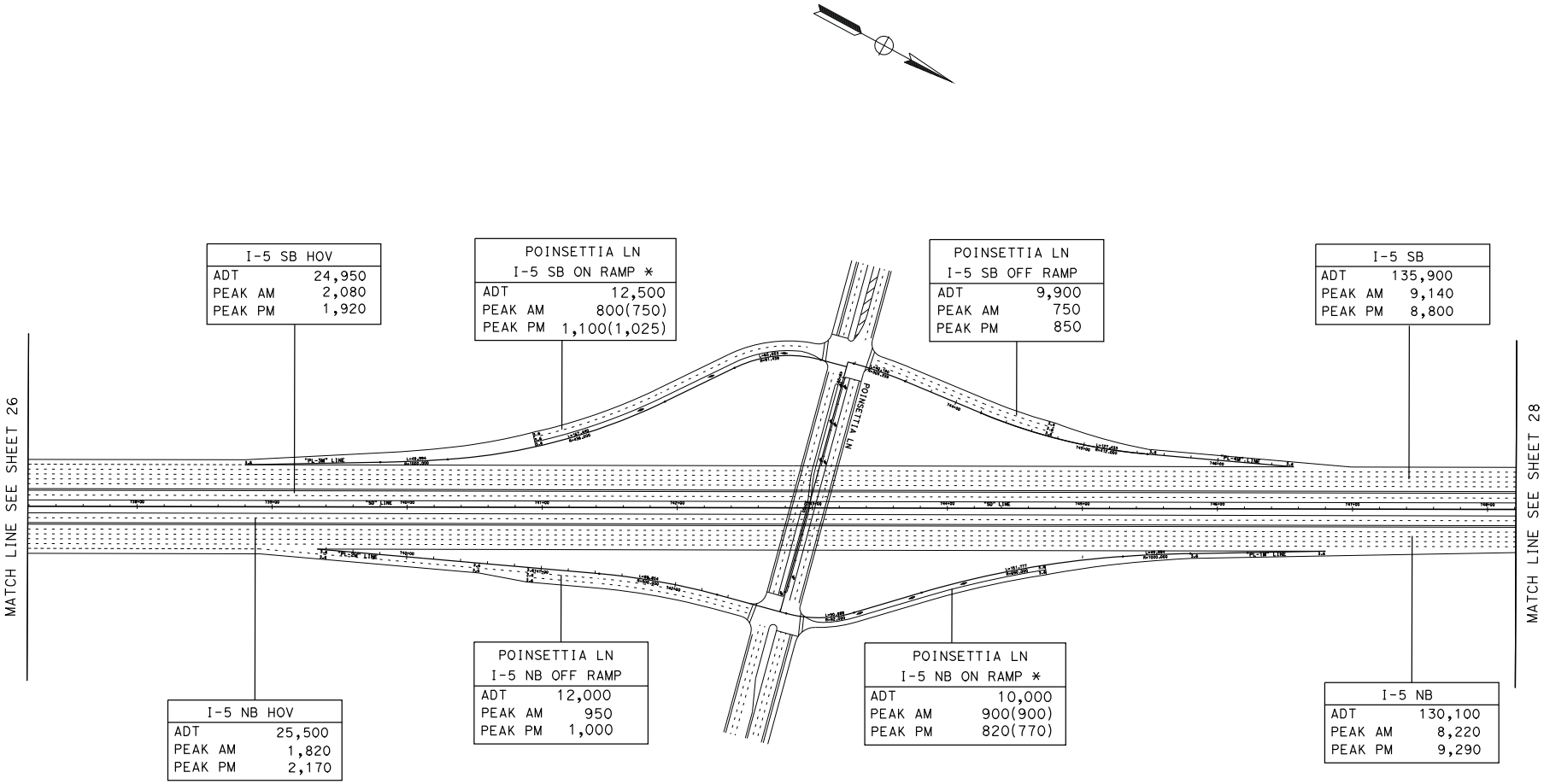


11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

10+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT C

DGN FILE =>2030_26toPolnset1a.dgn DATE PLOTTED =>12-NOV-2008



* Note: Possible on-ramp metered rates shown in (parenthesis)

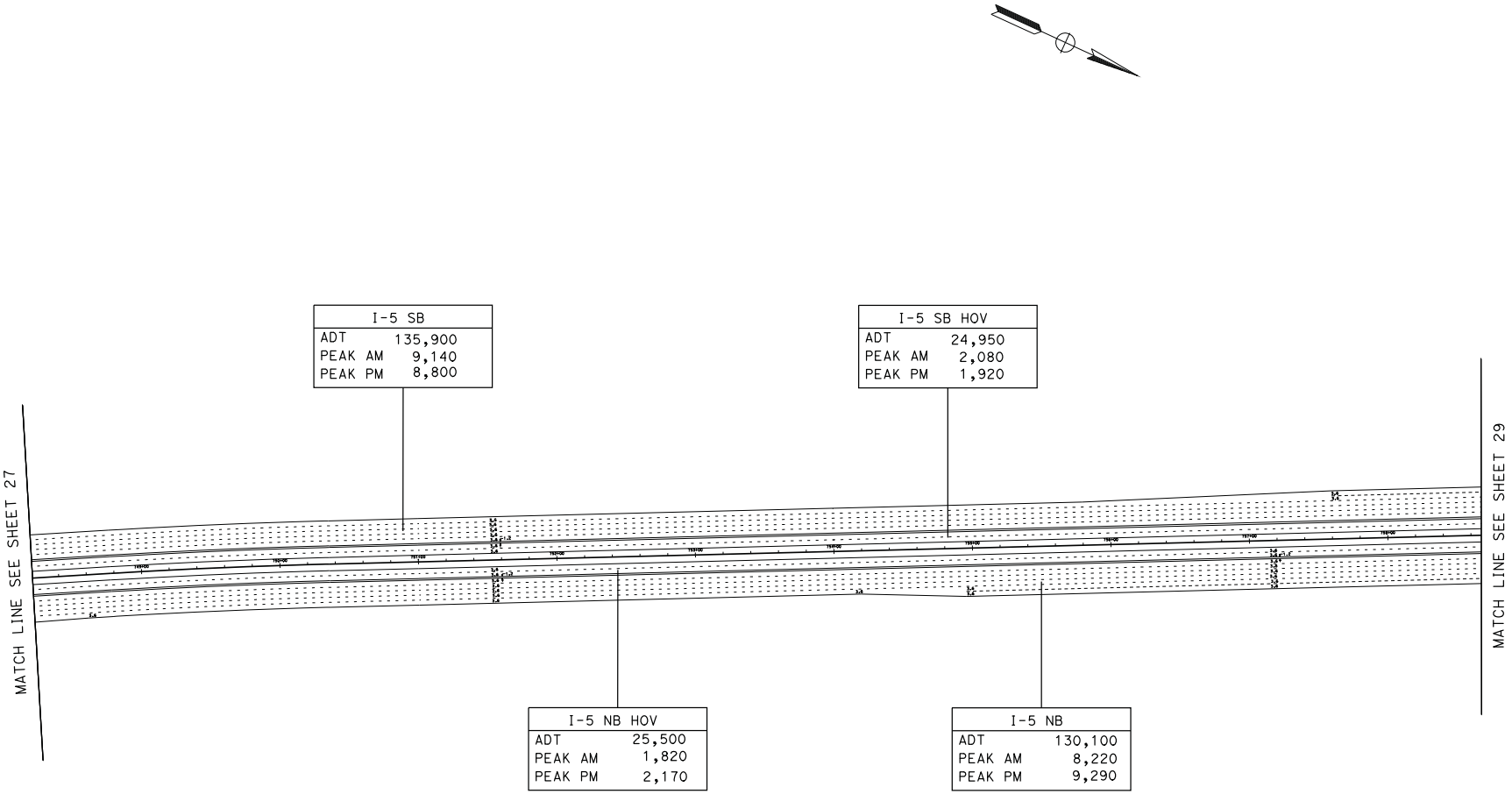
11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

10+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXHIBIT C

DGN FILE => 2030_27Poinsettia.dgn
DATE PLOTTED => 12-NOV-2008

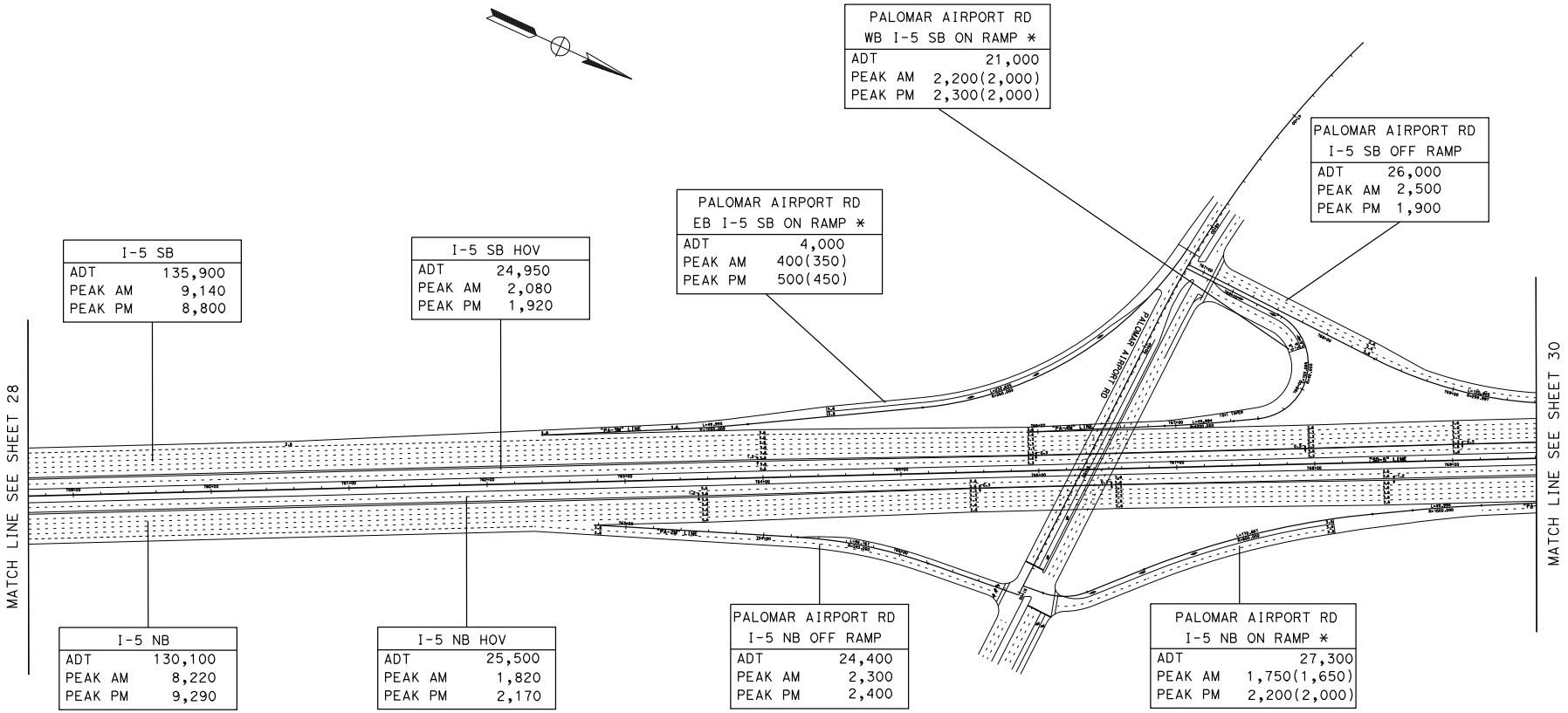


11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

10+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT C

DGN FILE => 2030_28toPalmrAptRd.dgn DATE PLOTTED => 12-NOV-2008



* Note: Possible on-ramp metered rates shown in (parenthesis)

11-SD-5
K.P. R54.9 to R87.9
11-235800

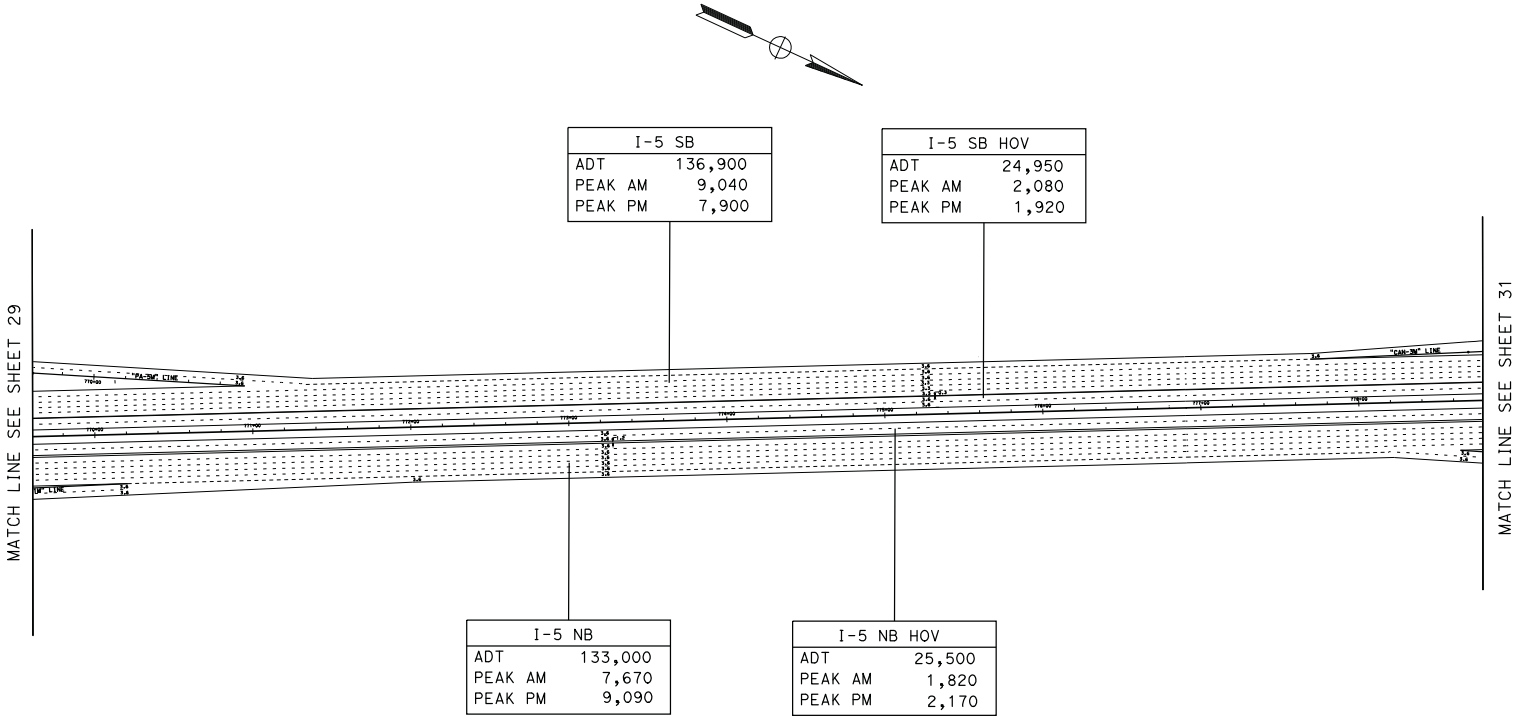
I-5 NORTHCOAST

10+4 ALTERNATIVE YEAR 2030

TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXHIBIT C

DGN FILE =>2030_29PalmrAptRd.dgn
DATE PLOTTED =>12-NOV-2008

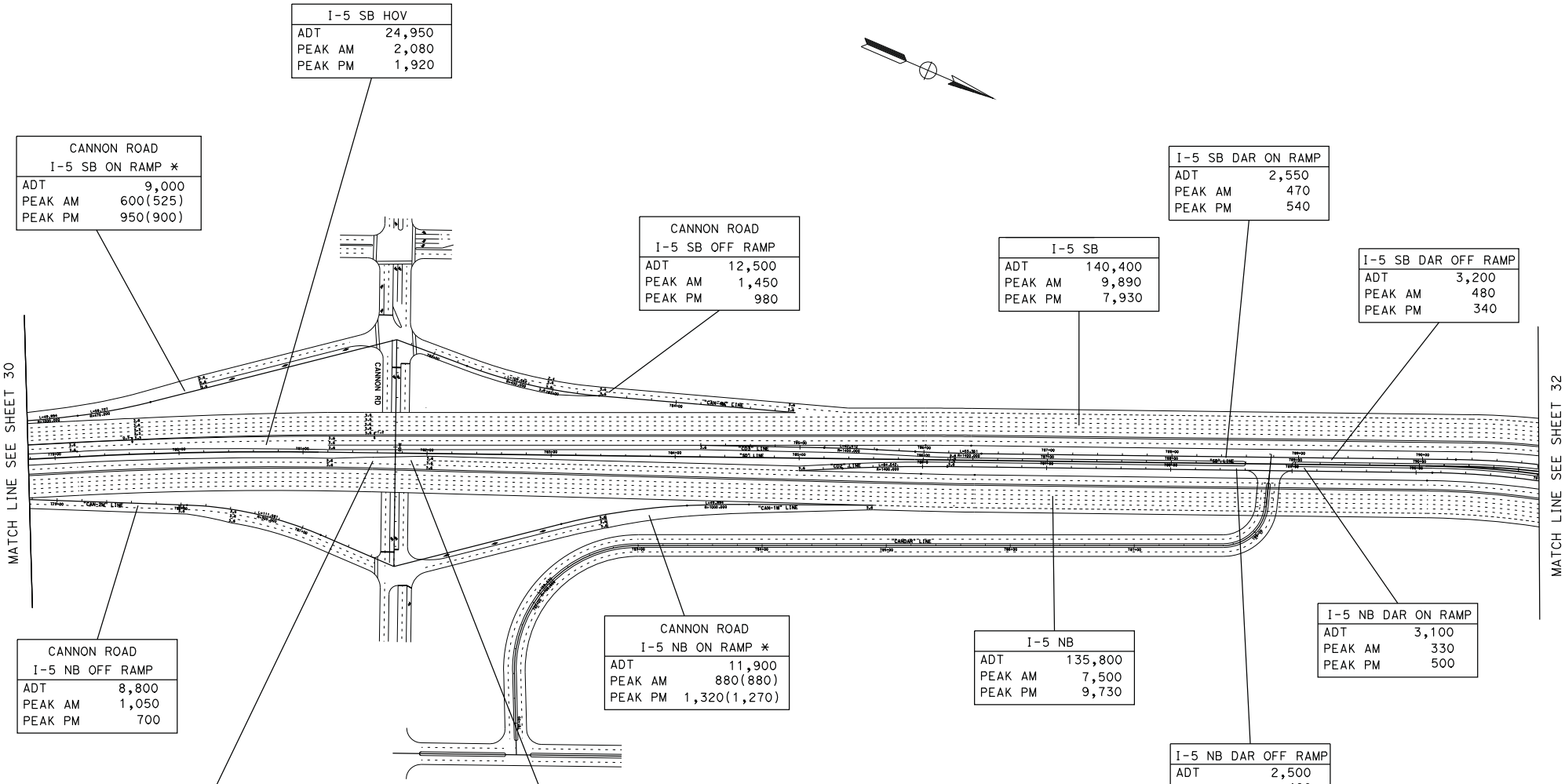


11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

10+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT C

DGN FILE => 2030_3otoCannon.dgn
DATE PLOTTED => 12-NOV-2008



I-5 SB HOV	
ADT	24,950
PEAK AM	2,080
PEAK PM	1,920

CANNON ROAD I-5 SB ON RAMP *	
ADT	9,000
PEAK AM	600(525)
PEAK PM	950(900)

CANNON ROAD I-5 SB OFF RAMP	
ADT	12,500
PEAK AM	1,450
PEAK PM	980

I-5 SB	
ADT	140,400
PEAK AM	9,890
PEAK PM	7,930

I-5 SB DAR ON RAMP	
ADT	2,550
PEAK AM	470
PEAK PM	540

I-5 SB DAR OFF RAMP	
ADT	3,200
PEAK AM	480
PEAK PM	340

CANNON ROAD I-5 NB OFF RAMP	
ADT	8,800
PEAK AM	1,050
PEAK PM	700

CANNON ROAD I-5 NB ON RAMP *	
ADT	11,900
PEAK AM	880(880)
PEAK PM	1,320(1,270)

I-5 NB	
ADT	135,800
PEAK AM	7,500
PEAK PM	9,730

I-5 NB DAR ON RAMP	
ADT	3,100
PEAK AM	330
PEAK PM	500

I-5 NB DAR OFF RAMP	
ADT	2,500
PEAK AM	480
PEAK PM	450

I-5 NB HOV ON	
ADT	4,300
PEAK AM	320
PEAK PM	400

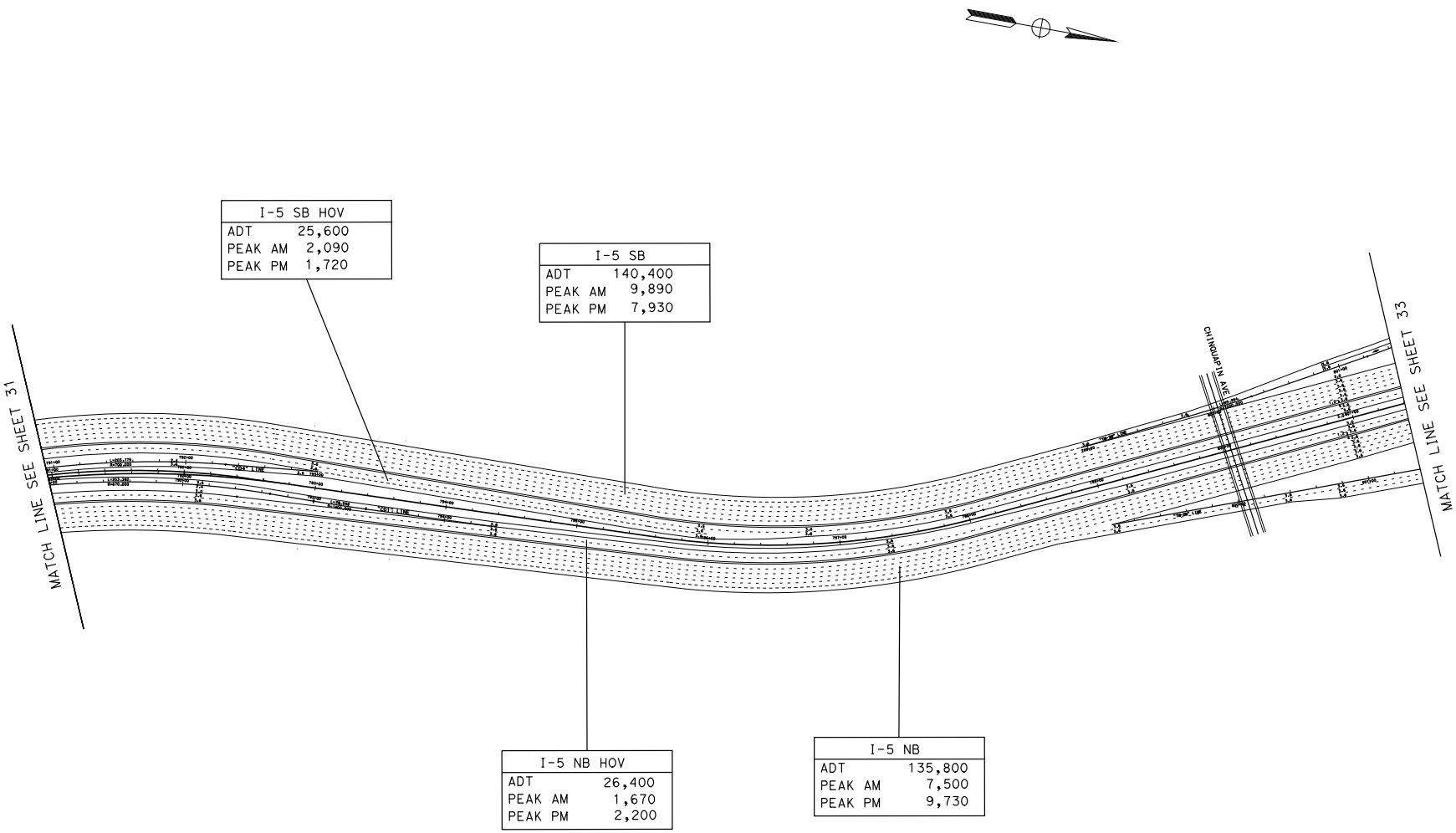
I-5 NB HOV OFF	
ADT	4,000
PEAK AM	320
PEAK PM	420

* Note: Possible on-ramp metered rates shown in (parenthesis)

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST
10+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT C

DATE PLOTTED =>12-NOV-2008
DGN FILE =>2030_31Cannon.dgn

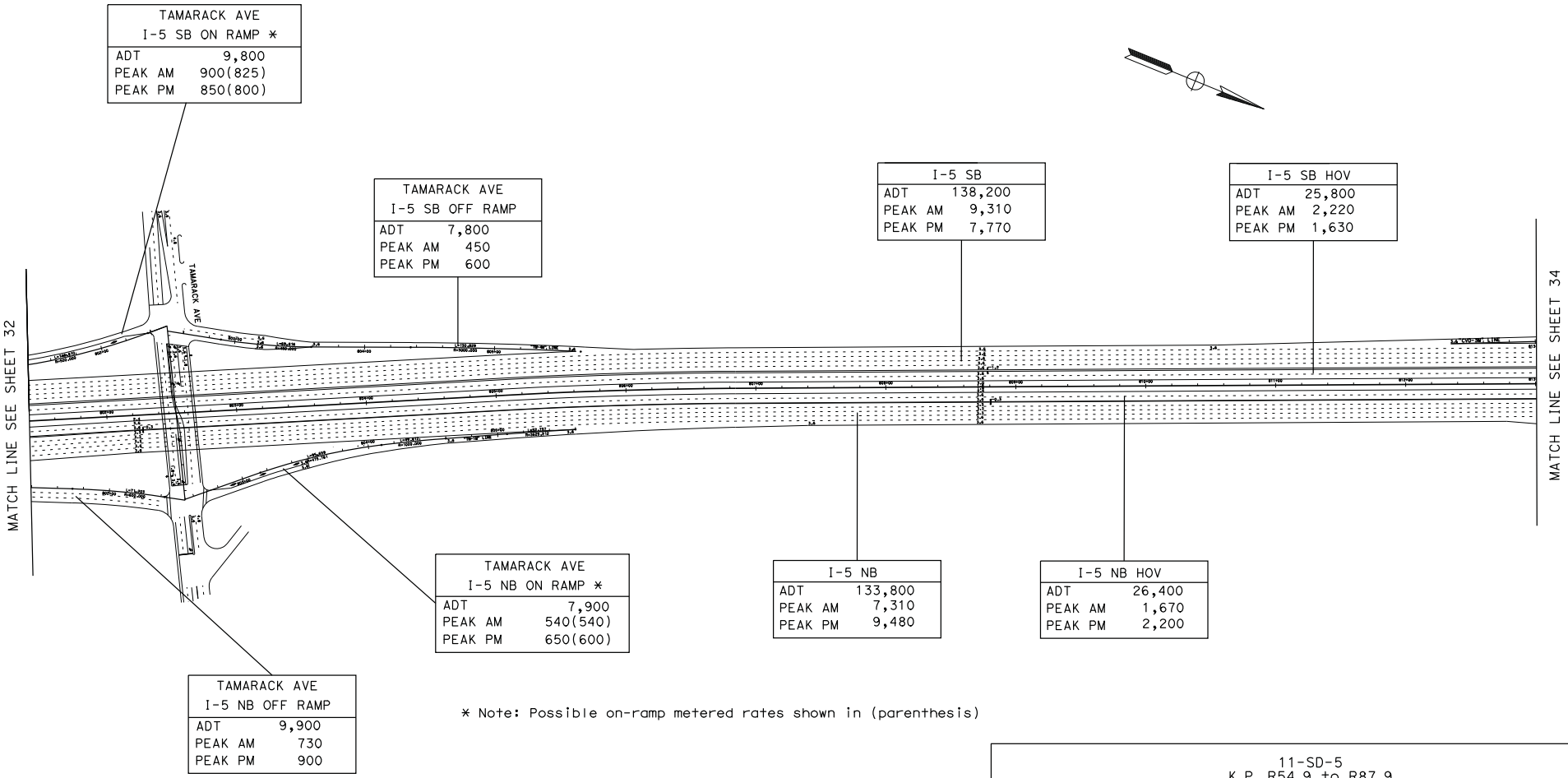


11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

10+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT C

DGN FILE => 2030_32toTamarack.dgn
DATE PLOTTED => 12-NOV-2008

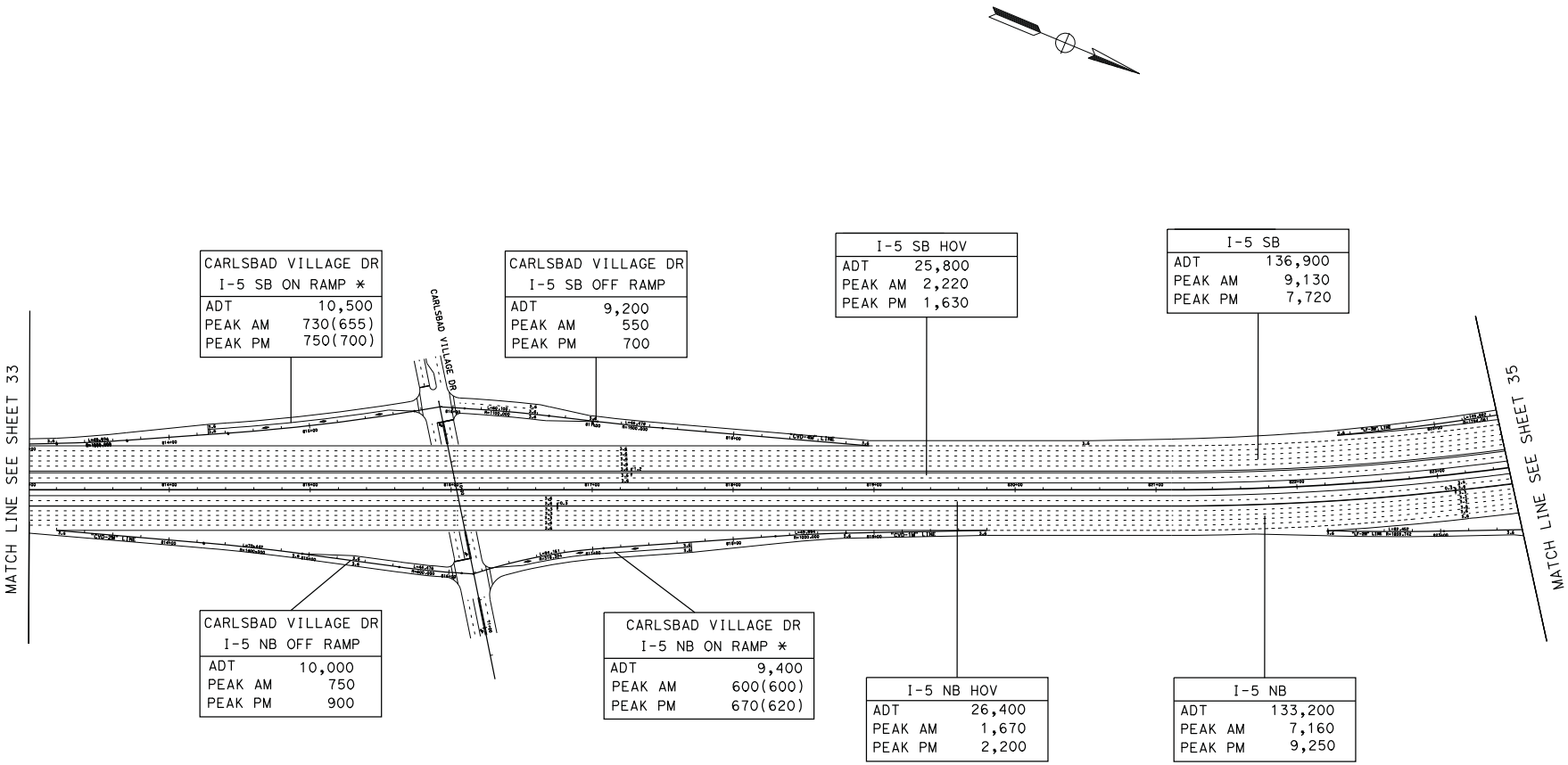


* Note: Possible on-ramp metered rates shown in (parenthesis)

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST
10+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT C

DGN FILE =>2030_33Tamarack.dgn
DATE PLOTTED =>12-NOV-2008



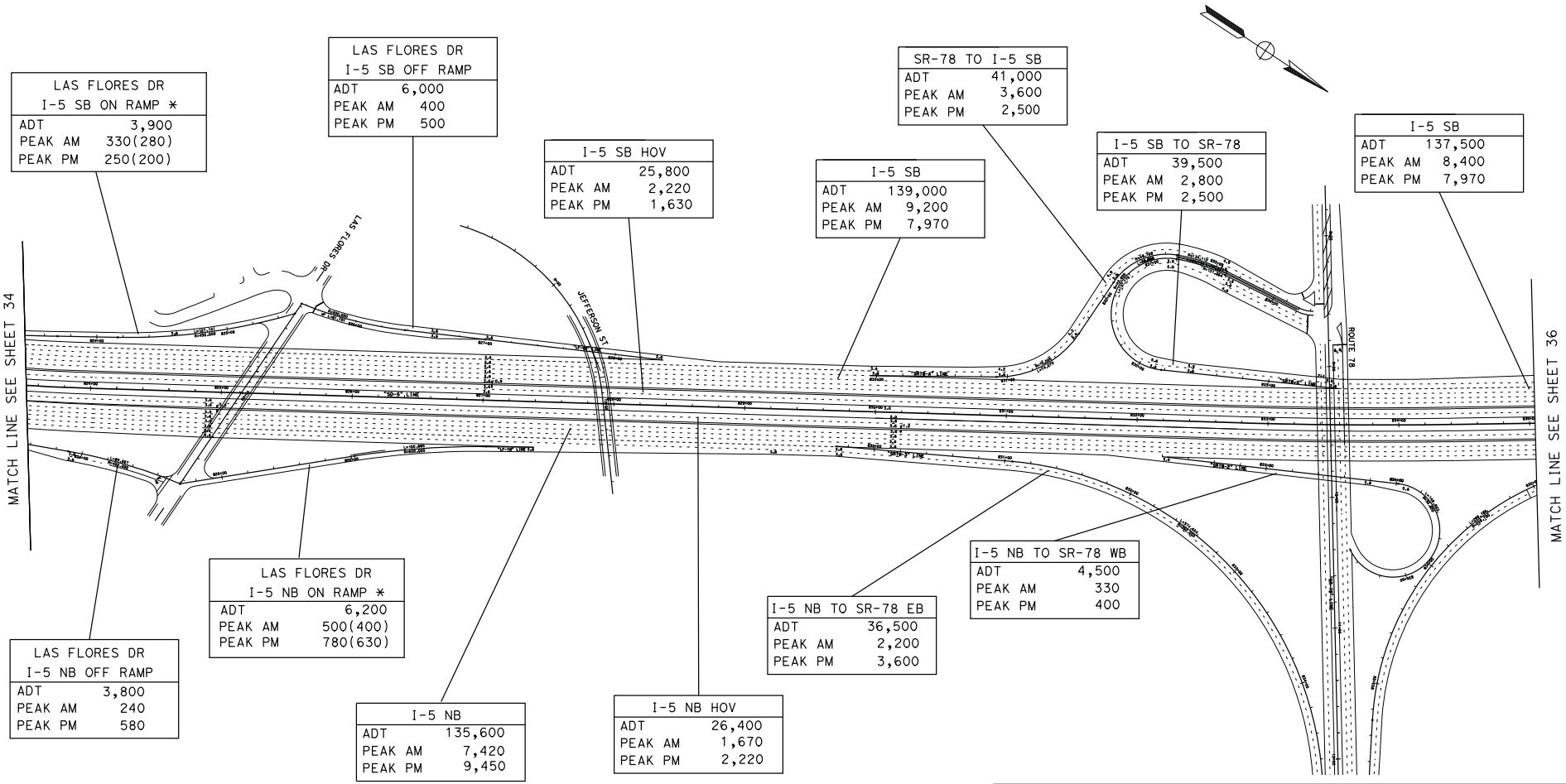
* Note: Possible on-ramp metered rates shown in (parenthesis)

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

10+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT C

DGN FILE => 2030_34CarlsbadVD.dgn DATE PLOTTED => 12-NOV-2008



LAS FLORES DR I-5 SB ON RAMP *	
ADT	3,900
PEAK AM	330(280)
PEAK PM	250(200)

LAS FLORES DR I-5 SB OFF RAMP	
ADT	6,000
PEAK AM	400
PEAK PM	500

I-5 SB HOV	
ADT	25,800
PEAK AM	2,220
PEAK PM	1,630

I-5 SB	
ADT	139,000
PEAK AM	9,200
PEAK PM	7,970

SR-78 TO I-5 SB	
ADT	41,000
PEAK AM	3,600
PEAK PM	2,500

I-5 SB TO SR-78	
ADT	39,500
PEAK AM	2,800
PEAK PM	2,500

I-5 SB	
ADT	137,500
PEAK AM	8,400
PEAK PM	7,970

LAS FLORES DR I-5 NB ON RAMP *	
ADT	6,200
PEAK AM	500(400)
PEAK PM	780(630)

LAS FLORES DR I-5 NB OFF RAMP	
ADT	3,800
PEAK AM	240
PEAK PM	580

I-5 NB	
ADT	135,600
PEAK AM	7,420
PEAK PM	9,450

I-5 NB HOV	
ADT	26,400
PEAK AM	1,670
PEAK PM	2,220

I-5 NB TO SR-78 EB	
ADT	36,500
PEAK AM	2,200
PEAK PM	3,600

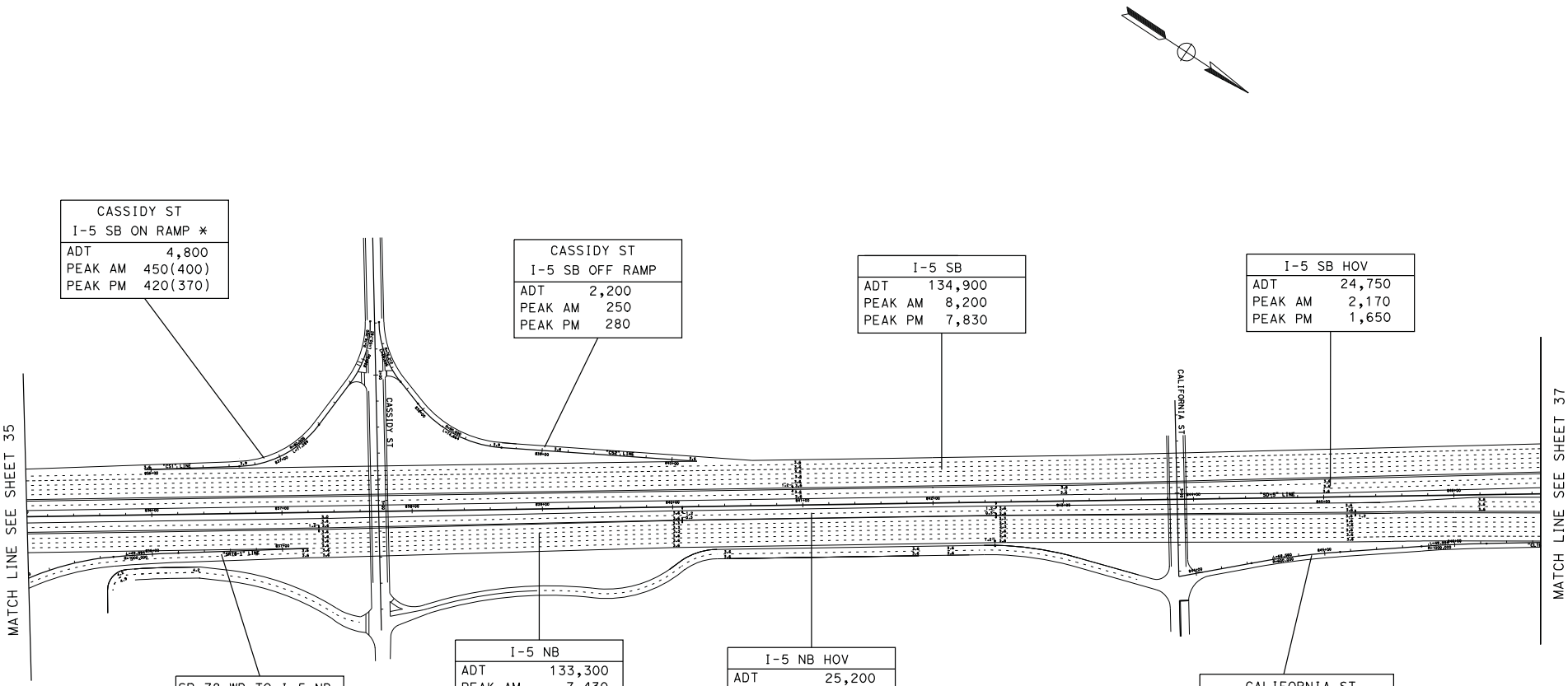
I-5 NB TO SR-78 WB	
ADT	4,500
PEAK AM	330
PEAK PM	400

* Note: Possible on-ramp metered rates shown in (parenthesis)

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST
10+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT C

DGN FILE => 2030_35LasFlores78.dgn
DATE PLOTTED => 12-NOV-2008

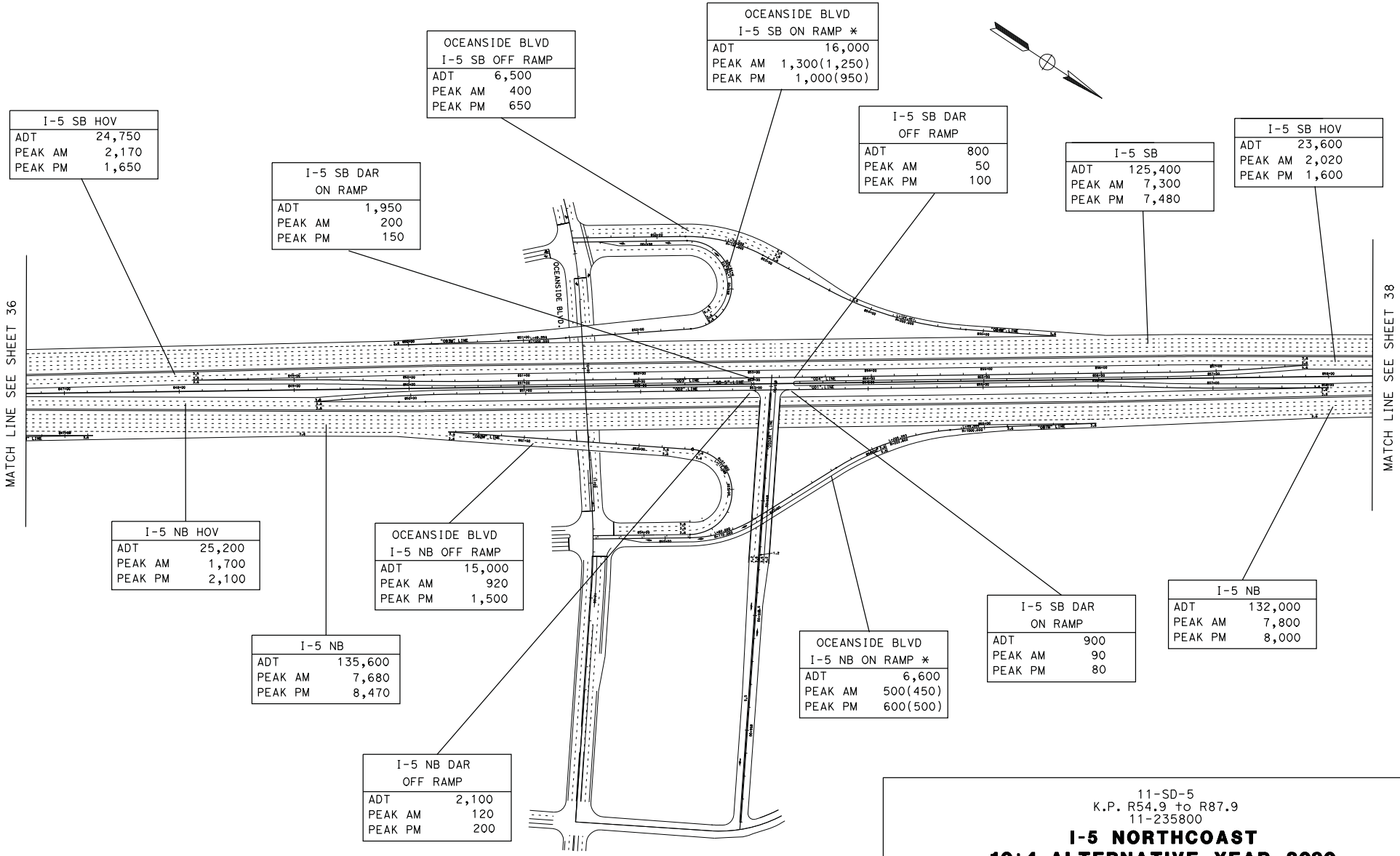


* Note: Possible on-ramp metered rates shown in (parenthesis)

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST
10+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT C

DGN FILE => 2030_36CassidyCA.dgn
DATE PLOTTED => 12-NOV-2008

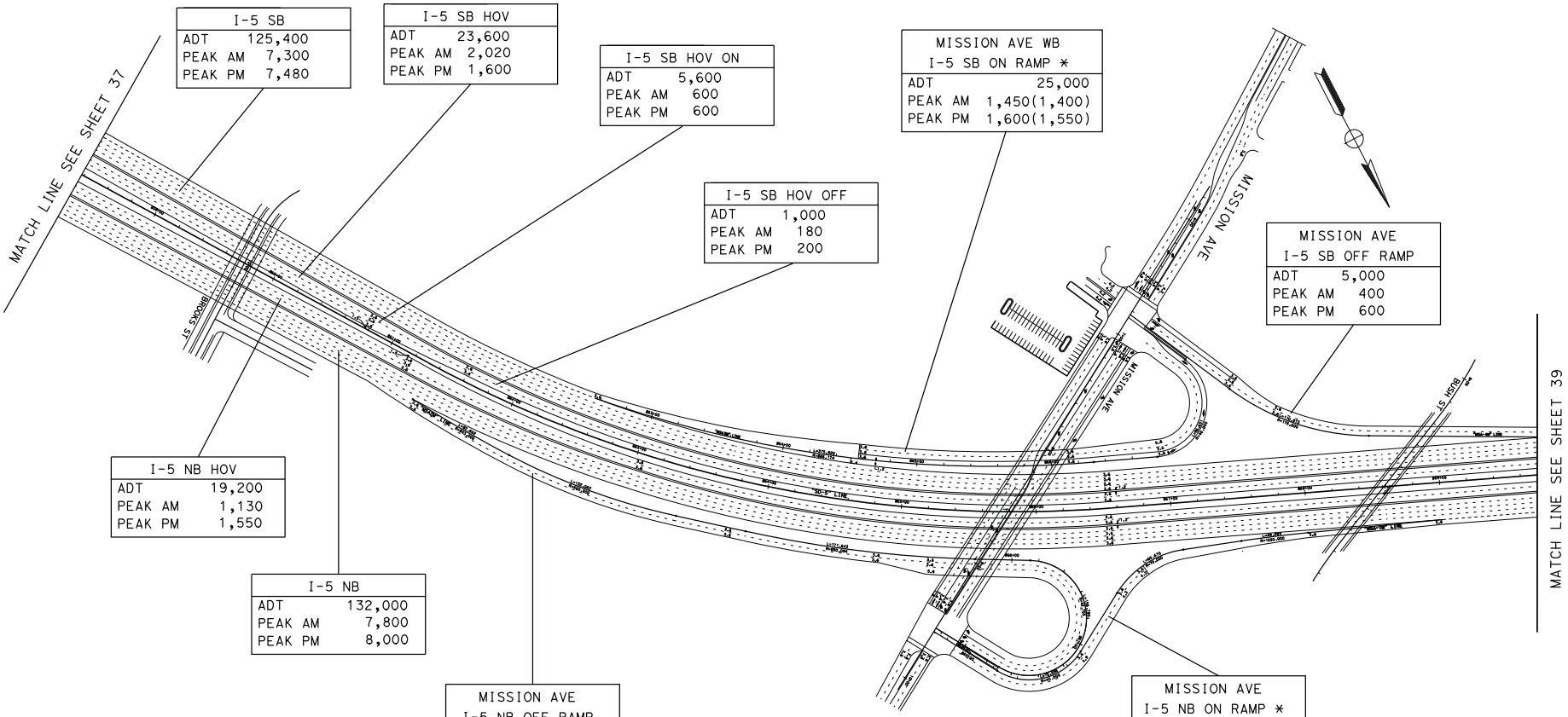


* Note: Possible on-ramp metered rates shown in (parenthesis)

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST
10+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT C

DGN FILE => 2030_370Oceanside.dgn
DATE PLOTTED => 12-NOV-2008



I-5 SB	
ADT	125,400
PEAK AM	7,300
PEAK PM	7,480

I-5 SB HOV	
ADT	23,600
PEAK AM	2,020
PEAK PM	1,600

I-5 SB HOV ON	
ADT	5,600
PEAK AM	600
PEAK PM	600

MISSION AVE WB I-5 SB ON RAMP *	
ADT	25,000
PEAK AM	1,450(1,400)
PEAK PM	1,600(1,550)

I-5 SB HOV OFF	
ADT	1,000
PEAK AM	180
PEAK PM	200

MISSION AVE I-5 SB OFF RAMP	
ADT	5,000
PEAK AM	400
PEAK PM	600

I-5 NB HOV	
ADT	19,200
PEAK AM	1,130
PEAK PM	1,550

I-5 NB	
ADT	132,000
PEAK AM	7,800
PEAK PM	8,000

MISSION AVE I-5 NB OFF RAMP	
ADT	26,000
PEAK AM	1,420
PEAK PM	2,050

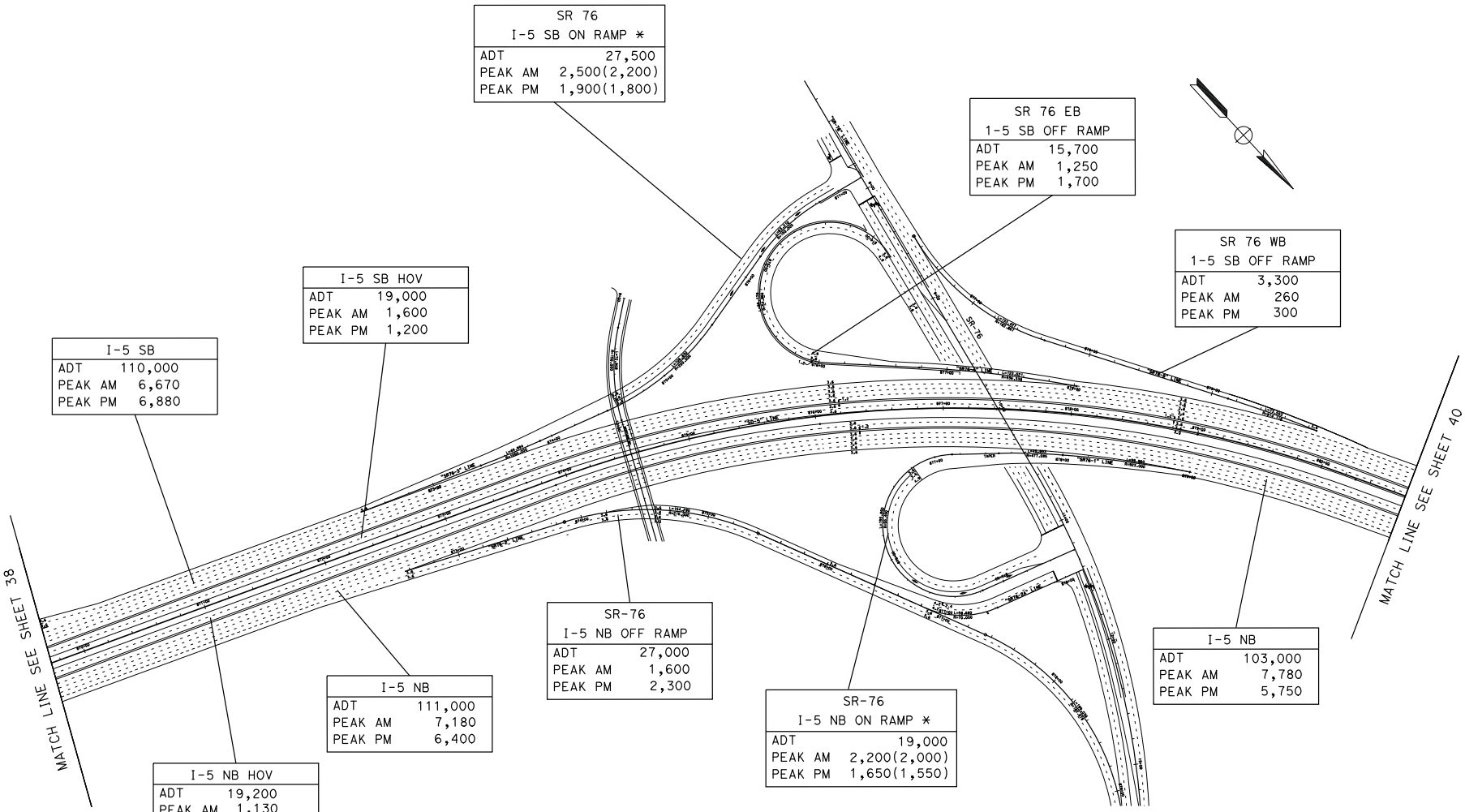
MISSION AVE I-5 NB ON RAMP *	
ADT	5,000
PEAK AM	800(750)
PEAK PM	450(400)

* Note: Possible on-ramp metered rates shown in (parenthesis)

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST
10+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT C

DATE PLOTTED => 12-NOV-2008
DGN FILE => 2030_38Mission.dgn

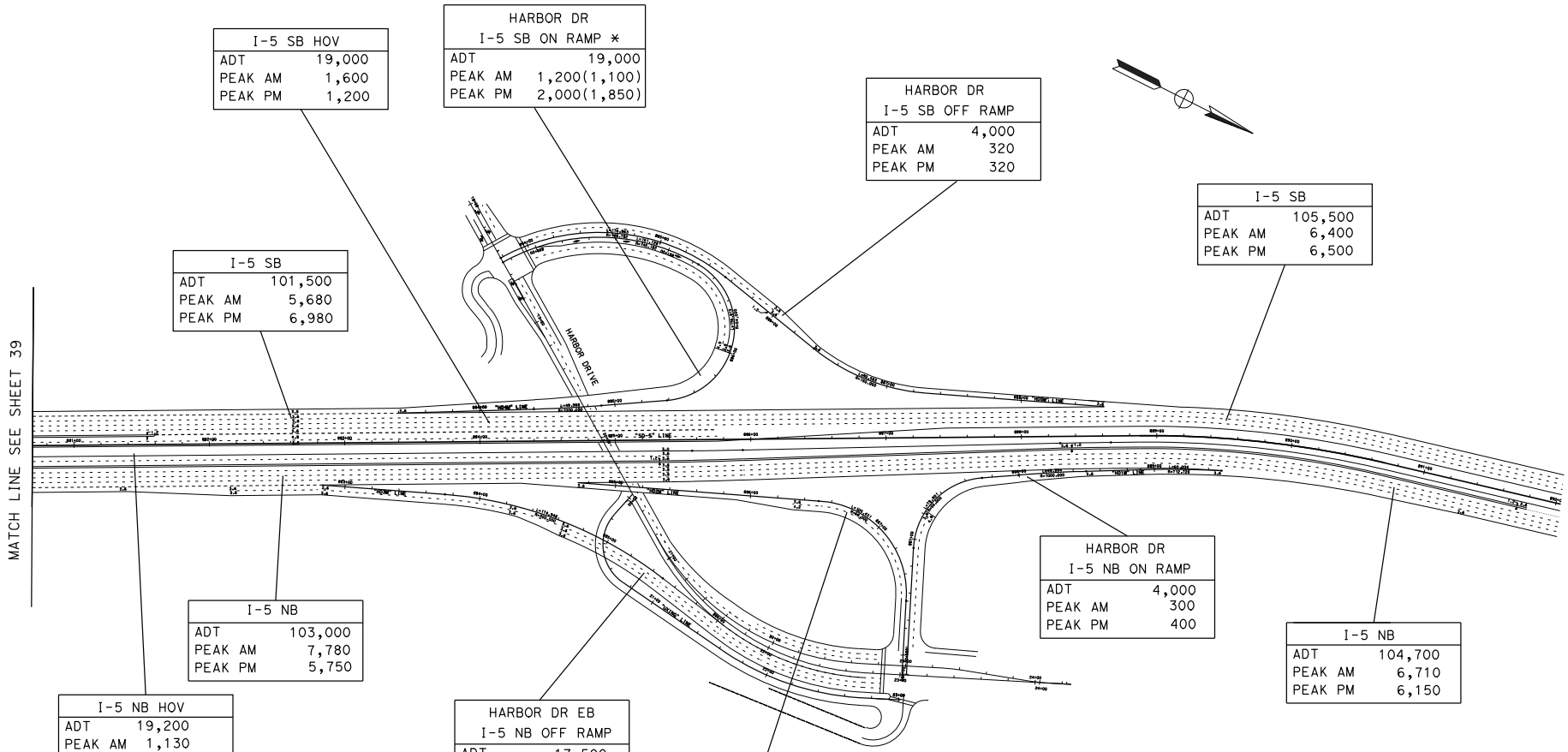


* Note: Possible on-ramp metered rates shown in (parenthesis)

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST
10+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS
EXHIBIT C

DGN FILE =>2030_39Rte76.dgn
DATE PLOTTED =>12-NOV-2008



* Note: Possible on-ramp metered rates shown in (parenthesis)

11-SD-5
K.P. R54.9 to R87.9
11-235800

I-5 NORTHCOAST

10+4 ALTERNATIVE YEAR 2030
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

EXHIBIT C

DGN FILE => 2030_40HarborDr.dgn
DATE PLOTTED => 12-NOV-2008

APPENDIX A
Level of Service Analysis

I-5 NB Existing - Basic Fwy LOS

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Birmingham / Santa Fe
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	6850	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1903	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	2.44	%
Segment length	0.76	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1941	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1941	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	102.9	km/h
Number of lanes, N	4	
Density, D	18.9	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: California St / Oceanside Blvd
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	6490	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1803	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.30	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1471	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1471	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	110.0	km/h
Number of lanes, N	5	
Density, D	13.4	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Cannon / Tamarack
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	6160	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1711	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	0.35	%
Segment length	1.26	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1745	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1745	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	106.5	km/h
Number of lanes, N	4	
Density, D	16.4	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Carlsbad Village Dr/Las Flores
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	6090	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1692	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1726	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1726	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	106.7	km/h
Number of lanes, N	4	
Density, D	16.2	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Carmel Valley / Del Mar Height
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	7530	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2092	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.10	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1707	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1707	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	109.0	km/h
Number of lanes, N	5	
Density, D	15.7	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Del Mar Height/Via de la Valle
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	7370	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2047	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	0.46	%
Segment length	2.80	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1671	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1671	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	109.3	km/h
Number of lanes, N	5	
Density, D	15.3	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Encinitas / Leucadia
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	6840	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1900	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1938	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1938	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	103.0	km/h
Number of lanes, N	4	
Density, D	18.8	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Genesee / Sorrento Valley
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	6570	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1825	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1862	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1862	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	104.7	km/h
Number of lanes, N	4	
Density, D	17.8	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: La Costa / Poinsettia Lane
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	6940	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1928	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1966	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1966	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	102.2	km/h
Number of lanes, N	4	
Density, D	19.2	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Las Flores / SR-78
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	6300	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1750	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.60	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1785	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1785	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	106.0	km/h
Number of lanes, N	4	
Density, D	16.8	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Leucadia / La Costa
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	6900	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1917	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1955	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1955	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	102.5	km/h
Number of lanes, N	4	
Density, D	19.1	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: LJVD / Genesee
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	7700	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2139	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.21	km
Trucks and buses PCE, ET	2.0	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2224	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2224	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	91.0	km/h
Number of lanes, N	4	
Density, D	24.4	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Lomas Santa Fe / Manchester
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	7210	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2003	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-3.78	%
Segment length	1.51	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	2043	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2043	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	99.6	km/h
Number of lanes, N	4	
Density, D	20.5	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Manchester / Birmingham
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	6570	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1825	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	1.30	%
Segment length	1.49	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1862	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1862	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	104.7	km/h
Number of lanes, N	4	
Density, D	17.8	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: merge / Carmel Valley
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	6570	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1825	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-1.00	%
Segment length	2.58	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1489	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1489	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	110.0	km/h
Number of lanes, N	5	
Density, D	13.5	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Mission Ave / SR-76
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	5540	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1539	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1570	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1570	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.5	km/h
Number of lanes, N	4	
Density, D	14.6	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Oceanside Blvd / Mission Ave
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	6140	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1706	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	0.61	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1740	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1740	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	106.6	km/h
Number of lanes, N	4	
Density, D	16.3	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Palomar / Cannon
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	6040	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1678	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1711	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1711	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	106.8	km/h
Number of lanes, N	4	
Density, D	16.0+	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Poinsettia / Palomar
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	6740	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1872	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1910	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1910	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	103.7	km/h
Number of lanes, N	4	
Density, D	18.4	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Santa Fe / Encinitas
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	6880	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1911	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1949	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1949	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	102.7	km/h
Number of lanes, N	4	
Density, D	19.0	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Sorrento Valley-bypass / merge
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	3370	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	936	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	2.04	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	955	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	955	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.6	km/h
Number of lanes, N	4	
Density, D	8.9	pc/km/ln
Level of service, LOS	B	

Overall results are not computed when free-flow speed is less than 90 km/h.

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E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: SR-76 / Harbor
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	6390	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1775	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1811	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1811	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	105.6	km/h
Number of lanes, N	4	
Density, D	17.1	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: SR-78 / California St
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	6290	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1747	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.12	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1426	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1426	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	110.0	km/h
Number of lanes, N	5	
Density, D	13.0	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Tamarack / Carlsbad Village Dr
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	6180	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1717	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	1.77	%
Segment length	0.67	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1751	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1751	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	106.4	km/h
Number of lanes, N	4	
Density, D	16.5	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Via de la Valle/Lomas Santa Fe
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	7210	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2003	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	1.47	%
Segment length	1.10	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	2043	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2043	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	99.6	km/h
Number of lanes, N	4	
Density, D	20.5	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Birmingham / Santa Fe
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	8110	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2253	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	2.44	%
Segment length	0.76	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	2298	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2298	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	86.3	km/h
Number of lanes, N	4	
Density, D	26.6	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: California St / Oceanside Blvd
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	7510	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2086	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.30	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1702	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1702	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	109.0	km/h
Number of lanes, N	5	
Density, D	15.6	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Cannon / Tamarack
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	8960	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2489	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	0.35	%
Segment length	1.26	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	2539	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2539	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Carlsbad Village Dr/Las Flores
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	8420	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2339	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	2386	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2386	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Carmel Valley / Del Mar Height
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	8850	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2458	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.10	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	2006	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2006	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	102.5	km/h
Number of lanes, N	5	
Density, D	19.6	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Del Mar Height/Via de la Valle
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	9140	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2539	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	0.46	%
Segment length	2.80	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	2072	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2072	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	100.0	km/h
Number of lanes, N	5	
Density, D	20.7	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Encinitas / Leucadia
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	8380	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2328	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	2374	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2374	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Genesee / Sorrento Valley
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	6870	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1908	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1947	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1947	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	102.7	km/h
Number of lanes, N	4	
Density, D	19.0	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: La Costa / Poinsettia Lane
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	8290	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2303	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	2349	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2349	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D	-	pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Las Flores / SR-78
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	8580	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2383	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.60	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	2431	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2431	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Leucadia / La Costa
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	8430	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2342	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	2389	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2389	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: LJVD / Genesee
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	5470	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1519	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.21	km
Trucks and buses PCE, ET	2.0	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1580	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1580	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.5	km/h
Number of lanes, N	4	
Density, D	14.7	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Lomas Santa Fe / Manchester
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	9290	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2581	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-3.78	%
Segment length	1.51	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	2632	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2632	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Manchester / Birmingham
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	8110	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2253	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	1.30	%
Segment length	1.49	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	2298	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2298	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	86.3	km/h
Number of lanes, N	4	
Density, D	26.6	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: merge / Carmel Valley
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	6470	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1797	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-1.00	%
Segment length	2.58	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1467	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1467	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	110.0	km/h
Number of lanes, N	5	
Density, D	13.3	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Mission Ave / SR-76
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	5850	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1625	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1658	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1658	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.2	km/h
Number of lanes, N	4	
Density, D	15.5	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Oceanside Blvd / Mission Ave
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	6750	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1875	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	0.61	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1913	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1913	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	103.6	km/h
Number of lanes, N	4	
Density, D	18.5	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Palomar / Cannon
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	7970	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2214	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	2258	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2258	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	88.9	km/h
Number of lanes, N	4	
Density, D	25.4	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Poinsettia / Palomar
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	7960	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2211	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	2255	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2255	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	89.1	km/h
Number of lanes, N	4	
Density, D	25.3	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Santa Fe / Encinitas
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	8150	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2264	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	2309	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2309	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	85.6	km/h
Number of lanes, N	4	
Density, D	27.0	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Sorrento Valley-Bypass/Merge
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	2870	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	797	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	2.04	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	813	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	813	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.6	km/h
Number of lanes, N	4	
Density, D	7.6	pc/km/ln
Level of service, LOS	B	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: SR-76 / Harbor
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	5400	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1500	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1530	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1530	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.6	km/h
Number of lanes, N	4	
Density, D	14.2	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: SR-78 / California St
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	7300	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2028	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.12	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1655	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1655	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	109.4	km/h
Number of lanes, N	5	
Density, D	15.1	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Tamarack / Carlsbad Village Dr
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	8570	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2381	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	1.77	%
Segment length	0.67	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	2428	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2428	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/28/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Via de la Valle/Lomas Santa Fe
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	8740	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2428	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	1.47	%
Segment length	1.10	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	2476	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2476	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

I-5 NB 2030 No Build - Basic Fwy LOS

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/07
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Birmingham / Santa Fe
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	8010	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2225	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	2.44	%
Segment length	0.76	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2314	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2314	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	85.2	km/h
Number of lanes, N	4	
Density, D	27.2	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: California St / Oceanside Blvd
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	8030	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2231	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.30	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2320	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2320	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	84.8	km/h
Number of lanes, N	4	
Density, D	27.4	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Cannon / Tamarack
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	7460	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2072	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	0.35	%
Segment length	1.26	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2155	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2155	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	94.7	km/h
Number of lanes, N	4	
Density, D	22.7	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Carlsbad Village Dr/Las Flores
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	7210	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2003	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2083	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2083	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	98.0	km/h
Number of lanes, N	4	
Density, D	21.2	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Carmel Valley / Del Mar Height
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	5720	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1589	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.10	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1652	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1652	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.3	km/h
Number of lanes, N	4	
Density, D	15.4	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Del Mar Height/Via de la Valle
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	8580	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2383	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	0.46	%
Segment length	2.80	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2479	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2479	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Encinitas / Leucadia
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	8000	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2222	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2311	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2311	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	85.4	km/h
Number of lanes, N	4	
Density, D	27.0	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Genesee / Sorrento Valley
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	6050	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1681	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1748	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1748	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	106.5	km/h
Number of lanes, N	4	
Density, D	16.4	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: La Costa / Poinsettia Lane
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	8270	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2297	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2389	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2389	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Las Flores / SR-78
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	7470	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2075	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.60	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2158	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2158	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	94.6	km/h
Number of lanes, N	4	
Density, D	22.8	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Leucadia / La Costa
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	8190	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2275	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2366	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2366	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: LJVD / Genesee
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	7860	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2183	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.21	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2271	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2271	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	88.1	km/h
Number of lanes, N	4	
Density, D	25.8	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Lomas Santa Fe / Manchester
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	7560	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2100	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-3.78	%
Segment length	1.51	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2184	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2184	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	93.2	km/h
Number of lanes, N	4	
Density, D	23.4	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Manchester / Birmingham
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	7910	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2197	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	1.30	%
Segment length	1.49	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2285	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2285	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	87.2	km/h
Number of lanes, N	4	
Density, D	26.2	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: merge / Carmel Valley
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	6480	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1800	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-1.00	%
Segment length	2.58	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1498	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1498	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	110.0	km/h
Number of lanes, N	5	
Density, D	13.6	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Mission Ave / SR-76
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	7020	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1950	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2028	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2028	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	100.2	km/h
Number of lanes, N	4	
Density, D	20.2	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Oceanside Blvd / Mission Ave
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	7620	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2117	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	0.61	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2201	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2201	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	92.3	km/h
Number of lanes, N	4	
Density, D	23.8	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Palomar / Cannon
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	7640	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2122	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2207	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2207	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	92.0	km/h
Number of lanes, N	4	
Density, D	24.0	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Poinsettia / Palomar
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	8150	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2264	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2354	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2354	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Santa Fe / Encinitas
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	8050	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2236	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2326	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2326	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	84.4	km/h
Number of lanes, N	4	
Density, D	27.6	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Sorrento Valley / merge
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	3000	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	833	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	2.04	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	867	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	867	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.6	km/h
Number of lanes, N	4	
Density, D	8.1	pc/km/ln
Level of service, LOS	B	

Overall results are not computed when free-flow speed is less than 90 km/h.

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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: SR-76 / Harbor
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	7570	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2103	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2187	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2187	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	93.1	km/h
Number of lanes, N	4	
Density, D	23.5	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: SR-78 / California St
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	7790	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2164	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.12	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1800	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1800	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	107.8	km/h
Number of lanes, N	5	
Density, D	16.7	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Tamarack / Carlsbad Village Dr
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	7330	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2036	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	1.77	%
Segment length	0.67	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2118	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2118	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	96.5	km/h
Number of lanes, N	4	
Density, D	21.9	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Via de la Valle/Lomas Santa Fe
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	7960	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2211	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	1.47	%
Segment length	1.10	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2300	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2300	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	86.2	km/h
Number of lanes, N	4	
Density, D	26.7	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Birmingham / Santa Fe
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	7930	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2203	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	2.44	%
Segment length	0.76	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2291	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2291	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	86.8	km/h
Number of lanes, N	4	
Density, D	26.4	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: California St / Oceanside Blvd
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	7880	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2189	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.30	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2276	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2276	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	87.8	km/h
Number of lanes, N	4	
Density, D	25.9	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Cannon / Tamarack
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	8730	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2425	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	0.35	%
Segment length	1.26	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2522	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2522	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Carlsbad Village Dr/Las Flores
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	8290	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2303	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2395	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2395	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Carmel Valley / Del Mar Height
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	6100	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1694	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.10	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1762	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1762	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	106.3	km/h
Number of lanes, N	4	
Density, D	16.6	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Del Mar Height/Via de la Valle
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	10150	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2819	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	0.46	%
Segment length	2.80	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2932	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2932	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Encinitas / Leucadia
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	8260	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2294	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2386	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2386	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Genesee / Sorrento Valley
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	5790	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1608	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1673	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1673	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.1	km/h
Number of lanes, N	4	
Density, D	15.6	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: La Costa / Poinsettia Lane
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	8150	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2264	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2354	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2354	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Las Flores / SR-78
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	8480	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2356	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.60	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2450	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2450	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Leucadia / La Costa
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	8210	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2281	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2372	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2372	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: LJVD / Genesee
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	6510	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1808	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.21	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1881	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1881	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	104.3	km/h
Number of lanes, N	4	
Density, D	18.0	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Lomas Santa Fe / Manchester
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	9410	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2614	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-3.78	%
Segment length	1.51	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2718	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2718	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Manchester / Birmingham
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	8130	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2258	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	1.30	%
Segment length	1.49	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2349	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2349	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D	-	pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: merge / Carmel Valley
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	6920	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1922	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-1.00	%
Segment length	2.58	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1599	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1599	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	109.8	km/h
Number of lanes, N	5	
Density, D	14.6	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Mission Ave / SR-76
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	5730	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1592	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1655	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1655	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.2	km/h
Number of lanes, N	4	
Density, D	15.4	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Oceanside Blvd / Mission Ave
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	7090	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1969	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	0.61	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2048	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2048	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	99.4	km/h
Number of lanes, N	4	
Density, D	20.6	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Palomar / Cannon
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	7970	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2214	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2302	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2302	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	86.1	km/h
Number of lanes, N	4	
Density, D	26.7	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Poinsettia / Palomar
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	7980	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2217	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2305	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2305	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	85.9	km/h
Number of lanes, N	4	
Density, D	26.8	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Santa Fe / Encinitas
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	8060	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2239	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2328	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2328	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	84.2	km/h
Number of lanes, N	4	
Density, D	27.6	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Sorrento Valley / merge
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	2990	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	831	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	2.04	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	864	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	864	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.6	km/h
Number of lanes, N	4	
Density, D	8.0	pc/km/ln
Level of service, LOS	B	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: SR-76 / Harbor
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	5430	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1508	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1569	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1569	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.5	km/h
Number of lanes, N	4	
Density, D	14.6	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: SR-78 / California St
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	7630	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2119	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.12	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1763	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1763	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	108.3	km/h
Number of lanes, N	5	
Density, D	16.3	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Tamarack / Carlsbad Village Dr
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	8470	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2353	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	1.77	%
Segment length	0.67	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2447	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2447	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Via de la Valle/Lomas Santa Fe
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project

Flow Inputs and Adjustments

Volume, V	9690	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2692	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	1.47	%
Segment length	1.10	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2799	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2799	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

I-5 NB 2030 8+4 - Basic Fwy LOS

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/22/07
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Birmingham / Santa Fe
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	6590	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1831	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	2.44	%
Segment length	0.76	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1904	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1904	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	103.8	km/h
Number of lanes, N	4	
Density, D	18.3	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/22/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: California St / Oceanside Blvd
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	6550	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1819	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.30	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1892	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1892	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	104.1	km/h
Number of lanes, N	4	
Density, D	18.2	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/22/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Cannon / Tamarack
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	6160	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1711	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	0.35	%
Segment length	1.26	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1780	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1780	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	106.1	km/h
Number of lanes, N	4	
Density, D	16.8	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/2/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Carlsbad Village Dr/Las Flores
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	5870	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1631	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1696	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1696	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.0	km/h
Number of lanes, N	4	
Density, D	15.9	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 6/11/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Carmel Valley/Del Mar Heights
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	8750	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2431	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.10	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2022	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2022	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	102.0	km/h
Number of lanes, N	5	
Density, D	19.8	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/22/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Del Mar Height/Via de la Valle
Jurisdiction: composite grade version
Analysis Year: 2030 8+4
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	8200	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2278	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	0.46	%
Segment length	2.80	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1895	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1895	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	105.8	km/h
Number of lanes, N	5	
Density, D	17.9	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/22/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Encinitas / Leucadia
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	6600	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1833	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1907	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1907	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	103.7	km/h
Number of lanes, N	4	
Density, D	18.4	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 6/11/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Genesee bridge/sorrento valley
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	5630	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1564	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.51	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1626	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1626	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.4	km/h
Number of lanes, N	4	
Density, D	15.1	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/22/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: La Costa / Poinsettia Lane
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	6860	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1906	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1982	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1982	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	101.7	km/h
Number of lanes, N	4	
Density, D	19.5	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/22/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Las Flores / SR-78
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	6130	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1703	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.60	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1771	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1771	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	106.2	km/h
Number of lanes, N	4	
Density, D	16.7	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/22/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Leucadia / La Costa
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	6730	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1869	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1944	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1944	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	102.8	km/h
Number of lanes, N	4	
Density, D	18.9	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

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Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/22/2006
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: LJVD / Genesee
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	7900	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2194	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.25	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2282	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2282	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	87.4	km/h
Number of lanes, N	4	
Density, D	26.1	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

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Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/22/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Lomas Santa Fe / Manchester
Jurisdiction:
Analysis Year: 2030 8+4
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	7280	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2022	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-3.78	%
Segment length	1.51	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2103	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2103	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	97.2	km/h
Number of lanes, N	4	
Density, D	21.6	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

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Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/22/2006
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Manchester / Birmingham
Jurisdiction:
Analysis Year: 2030 8+4
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	6530	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1814	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	1.30	%
Segment length	1.49	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1886	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1886	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	104.2	km/h
Number of lanes, N	4	
Density, D	18.1	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 6/11/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: merge/carmel valley
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	5720	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1589	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-0.64	%
Segment length	2.72	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1322	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1322	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	110.0	km/h
Number of lanes, N	5	
Density, D	12.0	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

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Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/22/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Mission Ave / SR-76
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	6180	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1717	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1785	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1785	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	106.0	km/h
Number of lanes, N	4	
Density, D	16.8	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/22/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Oceanside Blvd / Mission Ave
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	6790	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1886	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	0.60	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1962	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1962	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	102.3	km/h
Number of lanes, N	4	
Density, D	19.2	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/22/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Palomar / Cannon
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	6220	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1728	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1797	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1797	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	105.8	km/h
Number of lanes, N	4	
Density, D	17.0	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/22/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Poinsettia / Palomar
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	6790	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1886	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1962	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1962	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	102.3	km/h
Number of lanes, N	4	
Density, D	19.2	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/22/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Santa Fe / Encinitas
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	6640	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1844	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1918	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1918	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	103.5	km/h
Number of lanes, N	4	
Density, D	18.5	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/23/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: SR-76 / Harbor Drive
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	6760	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1878	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1953	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1953	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	102.6	km/h
Number of lanes, N	4	
Density, D	19.0	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/22/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: SR-78 / California St
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	6300	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1750	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.12	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1820	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1820	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	105.5	km/h
Number of lanes, N	4	
Density, D	17.3	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 6/11/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: sorrento valley/bypass
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	2130	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	592	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.33	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	820	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	3	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	4.8	km/h
Free-flow speed, FFS	105.2	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	820	pc/h/ln
Free-flow speed, FFS	105.2	km/h
Average passenger-car speed, S	105.2	km/h
Number of lanes, N	3	
Density, D	7.8	pc/km/ln
Level of service, LOS	B	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/22/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Tamarack / Carlsbad Village Dr
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	5980	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1661	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	1.77	%
Segment length	0.67	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1728	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1728	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	106.7	km/h
Number of lanes, N	4	
Density, D	16.2	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/22/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Via de la Valle/Lomas Santa Fe
Jurisdiction:
Analysis Year: 2030 8+4
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	7610	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2114	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	1.47	%
Segment length	1.10	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2198	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2198	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	92.5	km/h
Number of lanes, N	4	
Density, D	23.8	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/22/2006
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Birmingham / Santa Fe
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	8230	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2286	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	2.44	%
Segment length	0.76	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2378	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2378	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/22/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: California St / Oceanside Blvd
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	7510	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2086	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.30	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2170	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2170	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	94.0	km/h
Number of lanes, N	4	
Density, D	23.1	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/22/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Cannon / Tamarack
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	8800	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2444	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	0.35	%
Segment length	1.26	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2542	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2542	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/22/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Carlsbad Village Dr/Las Flores
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	8380	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2328	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2421	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2421	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 6/11/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Carmel Valley/Del Mar Heights
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	10840	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	3011	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.10	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2505	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2505	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	5	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/22/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Del Mar Height/Via de la Valle
Jurisdiction: composite grade version
Analysis Year: 2030 8+4
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	10620	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2950	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	0.46	%
Segment length	2.80	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2454	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2454	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	5	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/22/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Encinitas / Leucadia
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	8480	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2356	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2450	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2450	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 6/11/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Genesee bridge/sorrento valley
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	6000	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1667	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.51	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1733	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1733	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	106.6	km/h
Number of lanes, N	4	
Density, D	16.3	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/22/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: La Costa / Poinsettia Lane
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	8470	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2353	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2447	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2447	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/22/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Las Flores / SR-78
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	8570	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2381	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.60	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2476	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2476	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/22/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Leucadia / La Costa
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	8400	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2333	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2427	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2427	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/22/2006
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: LJVD / Genesee
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	6730	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1869	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.25	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1944	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1944	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	102.8	km/h
Number of lanes, N	4	
Density, D	18.9	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/22/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Lomas Santa Fe / Manchester
Jurisdiction:
Analysis Year: 2030 8+4
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	9800	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2722	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-3.78	%
Segment length	1.51	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2831	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2831	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/22/2006
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Manchester / Birmingham
Jurisdiction:
Analysis Year: 2030 8+4
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	8560	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2378	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	1.30	%
Segment length	1.49	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2473	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2473	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 6/11/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: merge/carmel valley
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	7050	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1958	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-0.64	%
Segment length	2.72	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1629	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1629	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	109.6	km/h
Number of lanes, N	5	
Density, D	14.9	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/22/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Mission Ave / SR-76
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	5390	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1497	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1557	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1557	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.6	km/h
Number of lanes, N	4	
Density, D	14.5	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/22/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Oceanside Blvd / Mission Ave
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	6930	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1925	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	0.60	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2002	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2002	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	101.1	km/h
Number of lanes, N	4	
Density, D	19.8	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

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Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/22/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Palomar / Cannon
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	8160	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2267	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2357	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2357	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 22/3/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Poinsettia / Palomar
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	8290	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2303	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2395	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2395	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/22/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Santa Fe / Encinitas
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	8320	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2311	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2404	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2404	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/23/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: SR-76 / Harbor Drive
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	4830	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1342	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1395	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1395	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.6	km/h
Number of lanes, N	4	
Density, D	13.0	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/22/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: SR-78 / California St
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	7230	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2008	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.12	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2089	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2089	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	97.8	km/h
Number of lanes, N	4	
Density, D	21.4	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: sorrento valley/bypass
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	3050	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	847	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.33	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1175	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	3	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	4.8	km/h
Free-flow speed, FFS	105.2	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1175	pc/h/ln
Free-flow speed, FFS	105.2	km/h
Average passenger-car speed, S	105.2	km/h
Number of lanes, N	3	
Density, D	11.2	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/22/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Tamarack / Carlsbad Village Dr
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	8560	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2378	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	1.77	%
Segment length	0.67	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2473	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2473	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/22/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Via de la Valle/Lomas Santa Fe
Jurisdiction:
Analysis Year: 2030 8+4
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	10130	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2814	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	1.47	%
Segment length	1.10	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2926	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2926	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

I-5 NB 2030 10+4 - Basic Fwy LOS

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/23/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: bypass entrance/merge
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	3400	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	944	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	1.90	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	982	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	982	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.6	km/h
Number of lanes, N	4	
Density, D	9.1	pc/km/ln
Level of service, LOS	B	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Birmingham / Santa Fe
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8020	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2228	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	2.44	%
Segment length	0.76	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1854	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1854	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	106.8	km/h
Number of lanes, N	5	
Density, D	17.4	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: California St / Oceanside Blvd
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7680	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2133	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.30	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2219	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2219	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	91.3	km/h
Number of lanes, N	4	
Density, D	24.3	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Cannon / Tamarack
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7500	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2083	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	0.35	%
Segment length	1.26	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1733	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1733	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	108.7	km/h
Number of lanes, N	5	
Density, D	15.9	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Carlsbad Village Dr/Las Flores
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7160	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1989	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1655	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1655	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	109.4	km/h
Number of lanes, N	5	
Density, D	15.1	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Carmel Valley/Del Mar Heights
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	9980	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2772	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.10	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1922	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	6	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1922	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	105.1	km/h
Number of lanes, N	6	
Density, D	18.3	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Del Mar Height/Via de la Valle
Jurisdiction: composite grade version
Analysis Year: 2030 10+4
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	9580	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2661	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	0.46	%
Segment length	2.80	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2214	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2214	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	93.0	km/h
Number of lanes, N	5	
Density, D	23.8	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Del Mar Height/Via de la Valle
Jurisdiction: -3% grade section
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	9580	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2661	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	2.10	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2214	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2214	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	93.0	km/h
Number of lanes, N	5	
Density, D	23.8	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Del Mar Height/Via de la Valle
Jurisdiction: level terrain section
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	9580	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2661	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-3.00	%
Segment length	2.10	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1845	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	6	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1845	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	106.9	km/h
Number of lanes, N	6	
Density, D	17.3	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Encinitas / Leucadia
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8040	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2233	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1858	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1858	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	106.7	km/h
Number of lanes, N	5	
Density, D	17.4	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Genesee bridge/sorrento valley
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6840	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1900	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.51	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1976	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1976	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	101.9	km/h
Number of lanes, N	4	
Density, D	19.4	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: La Costa / Poinsettia Lane
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8270	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2297	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1911	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1911	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	105.4	km/h
Number of lanes, N	5	
Density, D	18.1	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Las Flores / SR-78
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7420	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2061	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.60	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2144	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2144	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	95.3	km/h
Number of lanes, N	4	
Density, D	22.5	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Leucadia / La Costa
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8270	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2297	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1911	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1911	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	105.4	km/h
Number of lanes, N	5	
Density, D	18.1	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: LJVD / Genesee
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	9110	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2531	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.24	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2632	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2632	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Lomas Santa Fe / Manchester
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8700	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2417	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-3.78	%
Segment length	1.51	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2011	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2011	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	102.4	km/h
Number of lanes, N	5	
Density, D	19.6	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Manchester / Birmingham
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7940	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2206	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	1.30	%
Segment length	1.49	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1835	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1835	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	107.1	km/h
Number of lanes, N	5	
Density, D	17.1	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: merge/carmel valley
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6400	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1778	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-0.64	%
Segment length	2.72	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1479	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1479	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	110.0	km/h
Number of lanes, N	5	
Density, D	13.4	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Mission Ave / SR-76
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7180	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1994	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2074	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2074	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	98.4	km/h
Number of lanes, N	4	
Density, D	21.1	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Oceanside Blvd / Mission Ave
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7800	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2167	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	0.61	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2253	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2253	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	89.3	km/h
Number of lanes, N	4	
Density, D	25.2	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Palomar / Cannon
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7670	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2131	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1773	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1773	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	108.2	km/h
Number of lanes, N	5	
Density, D	16.4	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Poinsettia / Palomar
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8220	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2283	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1900	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1900	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	105.7	km/h
Number of lanes, N	5	
Density, D	18.0	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Santa Fe / Encinitas
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8090	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2247	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1870	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1870	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	106.4	km/h
Number of lanes, N	5	
Density, D	17.6	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: SR-76 / Harbor
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7780	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2161	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2248	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2248	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	89.6	km/h
Number of lanes, N	4	
Density, D	25.1	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: SR-78 / California St
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7430	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2064	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.12	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2146	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2146	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	95.2	km/h
Number of lanes, N	4	
Density, D	22.5	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Genesee / merge
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	2800	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	778	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1079	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	3	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	4.8	km/h
Free-flow speed, FFS	105.2	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1079	pc/h/ln
Free-flow speed, FFS	105.2	km/h
Average passenger-car speed, S	105.2	km/h
Number of lanes, N	3	
Density, D	10.3	pc/km/ln
Level of service, LOS	B	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Tamarack / Carlsbad Village Dr
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7310	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2031	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	1.77	%
Segment length	0.67	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1689	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1689	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	109.2	km/h
Number of lanes, N	5	
Density, D	15.5	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Via de la Valle/Lomas Santa Fe
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	9000	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2500	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	1.47	%
Segment length	1.10	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2080	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2080	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	99.7	km/h
Number of lanes, N	5	
Density, D	20.9	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: bypass entrance/merge
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	4330	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1203	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	1.90	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1251	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1251	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.6	km/h
Number of lanes, N	4	
Density, D	11.6	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Birmingham / Santa Fe
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	9520	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2644	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	2.44	%
Segment length	0.76	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2200	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2200	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	93.8	km/h
Number of lanes, N	5	
Density, D	23.5	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: California St / Oceanside Blvd
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8470	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2353	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.30	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2447	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2447	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Cannon / Tamarack
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	9730	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2703	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	0.35	%
Segment length	1.26	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2249	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2249	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	90.9	km/h
Number of lanes, N	5	
Density, D	24.8	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Carlsbad Village Dr/Las Flores
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	9250	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2569	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2138	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2138	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	97.0	km/h
Number of lanes, N	5	
Density, D	22.0+	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Carmel Valley/Del Mar Heights
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	12090	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	3358	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.10	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2328	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	6	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2328	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	85.6	km/h
Number of lanes, N	6	
Density, D	27.2	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Del Mar Height/Via de la Valle
Jurisdiction: composite grade version
Analysis Year: 2030 10+4
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	11880	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	3300	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	0.46	%
Segment length	2.80	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2746	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2746	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	5	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Del Mar Height/Via de la Valle
Jurisdiction: -3% grade section
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	11880	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	3300	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	2.10	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2746	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2746	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	5	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Del Mar Height/Via de la Valle
Jurisdiction: level terrain section
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	11880	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	3300	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2746	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2746	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	5	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Encinitas / Leucadia
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	9770	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2714	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2258	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2258	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	90.3	km/h
Number of lanes, N	5	
Density, D	25.0	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Genesee bridge/sorrento valley
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7280	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2022	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.51	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2103	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2103	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	97.2	km/h
Number of lanes, N	4	
Density, D	21.6	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: La Costa / Poinsettia Lane
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	9470	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2631	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2189	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2189	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	94.4	km/h
Number of lanes, N	5	
Density, D	23.2	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Las Flores / SR-78
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	9450	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2625	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.60	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2730	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2730	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Leucadia / La Costa
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	9770	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2714	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2258	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2258	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	90.3	km/h
Number of lanes, N	5	
Density, D	25.0	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: LJVD / Genesee
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7450	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2069	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.24	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2152	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2152	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	94.9	km/h
Number of lanes, N	4	
Density, D	22.7	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

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E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Lomas Santa Fe / Manchester
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	11140	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	3094	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-3.78	%
Segment length	1.51	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2575	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2575	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	5	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Manchester / Birmingham
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	9880	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2744	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	1.30	%
Segment length	1.49	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2283	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2283	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	88.7	km/h
Number of lanes, N	5	
Density, D	25.7	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: merge/carmel valley
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8330	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2314	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-0.64	%
Segment length	2.72	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1925	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1925	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	105.1	km/h
Number of lanes, N	5	
Density, D	18.3	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Mission Ave / SR-76
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6400	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1778	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1849	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1849	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	105.0	km/h
Number of lanes, N	4	
Density, D	17.6	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Oceanside Blvd / Mission Ave
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8000	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2222	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	0.61	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2311	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2311	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	85.4	km/h
Number of lanes, N	4	
Density, D	27.0	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Palomar / Cannon
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	9090	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2525	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2101	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2101	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	98.8	km/h
Number of lanes, N	5	
Density, D	21.3	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Poinsettia / Palomar
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	9290	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2581	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2147	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2147	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	96.6	km/h
Number of lanes, N	5	
Density, D	22.2	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Santa Fe / Encinitas
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	9620	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2672	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2223	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2223	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	92.4	km/h
Number of lanes, N	5	
Density, D	24.0	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: SR-76 / Harbor
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	5750	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1597	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1661	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1661	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.2	km/h
Number of lanes, N	4	
Density, D	15.5	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: SR-78 / California St
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8170	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2269	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.12	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2360	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2360	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 1/13/2006
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Genesee / merge
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	4330	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1203	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1668	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	3	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	4.8	km/h
Free-flow speed, FFS	105.2	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1668	pc/h/ln
Free-flow speed, FFS	105.2	km/h
Average passenger-car speed, S	104.9	km/h
Number of lanes, N	3	
Density, D	15.9	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Tamarack / Carlsbad Village Dr
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	9480	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2633	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	1.77	%
Segment length	0.67	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2191	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2191	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	94.3	km/h
Number of lanes, N	5	
Density, D	23.2	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Via de la Valle/Lomas Santa Fe
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	11340	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	3150	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	1.47	%
Segment length	1.10	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2621	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2621	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	5	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

I-5 NB 2015 10+4 - Basic Fwy LOS

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: bypass entrance/merge
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	2650	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	736	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	1.90	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	766	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	766	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.6	km/h
Number of lanes, N	4	
Density, D	7.1	pc/km/ln
Level of service, LOS	B	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Birmingham / Santa Fe
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6600	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1833	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	2.44	%
Segment length	0.76	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1525	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1525	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	110.0	km/h
Number of lanes, N	5	
Density, D	13.9	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: California St / Oceanside Blvd
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6250	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1736	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.30	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1806	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1806	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	105.7	km/h
Number of lanes, N	4	
Density, D	17.1	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Cannon / Tamarack
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	5960	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1656	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	0.35	%
Segment length	1.26	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1377	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1377	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	110.0	km/h
Number of lanes, N	5	
Density, D	12.5	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Carlsbad Village Dr/Las Flores
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	5620	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1561	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1299	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1299	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	110.0	km/h
Number of lanes, N	5	
Density, D	11.8	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Carmel Valley/Del Mar Heights
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	5330	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1481	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.10	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1232	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1232	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	110.0	km/h
Number of lanes, N	5	
Density, D	11.2	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Del Mar Height/Via de la Valle
Jurisdiction: composite grade version
Analysis Year: 2015 10+4
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8150	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2264	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	0.46	%
Segment length	2.80	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1884	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1884	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	106.1	km/h
Number of lanes, N	5	
Density, D	17.8	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Del Mar Height/Via de la Valle
Jurisdiction: -3% grade section
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8150	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2264	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	2.10	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1884	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1884	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	106.1	km/h
Number of lanes, N	5	
Density, D	17.8	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Del Mar Height/Via de la Valle
Jurisdiction: level terrain section
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8150	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2264	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-3.00	%
Segment length	2.10	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1570	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	6	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1570	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	109.9	km/h
Number of lanes, N	6	
Density, D	14.3	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Encinitas / Leucadia
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6620	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1839	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1530	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1530	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	110.0	km/h
Number of lanes, N	5	
Density, D	13.9	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Genesee bridge/sorrento valley
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	5820	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1617	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.51	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1681	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1681	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.1	km/h
Number of lanes, N	4	
Density, D	15.7	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Genesee / merge
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	2650	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	736	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	766	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	766	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.6	km/h
Number of lanes, N	4	
Density, D	7.1	pc/km/ln
Level of service, LOS	B	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: La Costa / Poinsettia Lane
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6770	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1881	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1565	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1565	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	109.9	km/h
Number of lanes, N	5	
Density, D	14.2	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Las Flores / SR-78
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	5850	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1625	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.60	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1690	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1690	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.0	km/h
Number of lanes, N	4	
Density, D	15.8	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Leucadia / La Costa
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6740	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1872	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1558	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1558	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	109.9	km/h
Number of lanes, N	5	
Density, D	14.2	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: LJVD / Genesee
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7890	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2192	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.24	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2279	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2279	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	87.6	km/h
Number of lanes, N	4	
Density, D	26.0	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Lomas Santa Fe / Manchester
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7270	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2019	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-3.78	%
Segment length	1.51	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1680	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1680	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	109.2	km/h
Number of lanes, N	5	
Density, D	15.4	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Manchester / Birmingham
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6540	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1817	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	1.30	%
Segment length	1.49	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1511	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1511	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	110.0	km/h
Number of lanes, N	5	
Density, D	13.7	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: merge/carmel valley
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6050	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1681	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-0.64	%
Segment length	2.72	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1398	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1398	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	110.0	km/h
Number of lanes, N	5	
Density, D	12.7	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Mission Ave / SR-76
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	5710	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1586	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1650	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1650	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.3	km/h
Number of lanes, N	4	
Density, D	15.4	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Oceanside Blvd / Mission Ave
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6270	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1742	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	0.61	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1811	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1811	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	105.6	km/h
Number of lanes, N	4	
Density, D	17.1	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Palomar / Cannon
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6150	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1708	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1421	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1421	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	110.0	km/h
Number of lanes, N	5	
Density, D	12.9	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Poinsettia / Palomar
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6670	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1853	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1542	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1542	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	109.9	km/h
Number of lanes, N	5	
Density, D	14.0	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Santa Fe / Encinitas
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6660	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1850	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1539	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1539	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	109.9	km/h
Number of lanes, N	5	
Density, D	14.0	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: SR-76 / Harbor
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6200	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1722	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1791	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1791	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	105.9	km/h
Number of lanes, N	4	
Density, D	16.9	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: SR-78 / California St
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6010	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1669	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.12	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1736	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1736	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	106.6	km/h
Number of lanes, N	4	
Density, D	16.3	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: sorrento valley/bypass
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	2650	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	736	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.33	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1021	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	3	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	4.8	km/h
Free-flow speed, FFS	105.2	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1021	pc/h/ln
Free-flow speed, FFS	105.2	km/h
Average passenger-car speed, S	105.2	km/h
Number of lanes, N	3	
Density, D	9.7	pc/km/ln
Level of service, LOS	B	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Tamarack / Carlsbad Village Dr
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	5780	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1606	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	1.77	%
Segment length	0.67	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1336	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1336	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	110.0	km/h
Number of lanes, N	5	
Density, D	12.1	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 NB
From/To: Via de la Valle/Lomas Santa Fe
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7550	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2097	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	1.47	%
Segment length	1.10	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1745	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1745	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	108.6	km/h
Number of lanes, N	5	
Density, D	16.1	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: bypass entrance/merge
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	3740	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1039	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	1.90	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1080	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1080	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.6	km/h
Number of lanes, N	4	
Density, D	10.0	pc/km/ln
Level of service, LOS	B	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Birmingham / Santa Fe
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8360	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2322	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	2.44	%
Segment length	0.76	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1932	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1932	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	104.9	km/h
Number of lanes, N	5	
Density, D	18.4	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: California St / Oceanside Blvd
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7220	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2006	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.30	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2086	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2086	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	97.9	km/h
Number of lanes, N	4	
Density, D	21.3	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Cannon / Tamarack
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8420	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2339	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	0.35	%
Segment length	1.26	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1946	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1946	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	104.5	km/h
Number of lanes, N	5	
Density, D	18.6	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Carlsbad Village Dr/Las Flores
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7920	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2200	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1830	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1830	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	107.2	km/h
Number of lanes, N	5	
Density, D	17.1	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Carmel Valley/Del Mar Heights
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6720	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1867	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.10	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1553	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1553	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	109.9	km/h
Number of lanes, N	5	
Density, D	14.1	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Del Mar Height/Via de la Valle
Jurisdiction: composite grade version
Analysis Year: 2015 10+4
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	10580	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2939	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	0.46	%
Segment length	2.80	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2038	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	6	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2038	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	101.4	km/h
Number of lanes, N	6	
Density, D	20.1	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Del Mar Height/Via de la Valle
Jurisdiction: -3% grade section
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	10580	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2939	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	2.10	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2445	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2445	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	5	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Del Mar Height/Via de la Valle
Jurisdiction: level terrain section
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	10580	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2939	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-3.00	%
Segment length	2.10	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2445	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2445	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	5	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Encinitas / Leucadia
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8610	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2392	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1990	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1990	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	103.1	km/h
Number of lanes, N	5	
Density, D	19.3	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Genesee bridge/sorrento valley
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6390	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1775	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.51	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1846	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1846	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	105.0	km/h
Number of lanes, N	4	
Density, D	17.6	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Genesee / merge
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	3740	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1039	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1080	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1080	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.6	km/h
Number of lanes, N	4	
Density, D	10.0	pc/km/ln
Level of service, LOS	B	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: La Costa / Poinsettia Lane
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8260	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2294	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1909	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1909	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	105.5	km/h
Number of lanes, N	5	
Density, D	18.1	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Las Flores / SR-78
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8110	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2253	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.60	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2343	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2343	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Leucadia / La Costa
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8500	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2361	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1964	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1964	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	103.9	km/h
Number of lanes, N	5	
Density, D	18.9	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: LJVD / Genesee
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7080	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1967	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.24	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2045	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2045	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	99.5	km/h
Number of lanes, N	4	
Density, D	20.5	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Lomas Santa Fe / Manchester
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	9870	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2742	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-3.78	%
Segment length	1.51	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2281	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2281	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	88.8	km/h
Number of lanes, N	5	
Density, D	25.7	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Manchester / Birmingham
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8640	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2400	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	1.30	%
Segment length	1.49	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1997	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1997	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	102.9	km/h
Number of lanes, N	5	
Density, D	19.4	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: merge/carmel valley
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7520	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2089	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-0.64	%
Segment length	2.72	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1738	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1738	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	108.7	km/h
Number of lanes, N	5	
Density, D	16.0-	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Mission Ave / SR-76
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	5260	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1461	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1520	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1520	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.6	km/h
Number of lanes, N	4	
Density, D	14.1	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Oceanside Blvd / Mission Ave
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6700	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1861	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	0.61	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1936	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1936	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	103.0	km/h
Number of lanes, N	4	
Density, D	18.8	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Palomar / Cannon
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7870	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2186	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1819	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1819	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	107.4	km/h
Number of lanes, N	5	
Density, D	16.9	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Poinsettia / Palomar
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8060	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2239	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1863	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1863	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	106.6	km/h
Number of lanes, N	5	
Density, D	17.5	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Santa Fe / Encinitas
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8450	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2347	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1953	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1953	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	104.3	km/h
Number of lanes, N	5	
Density, D	18.7	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: SR-76 / Harbor
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	4680	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1300	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1352	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1352	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.6	km/h
Number of lanes, N	4	
Density, D	12.6	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: SR-78 / California St
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6950	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1931	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.12	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2008	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2008	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	100.9	km/h
Number of lanes, N	4	
Density, D	19.9	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: sorrento valley/bypass
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	3740	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1039	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.33	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1441	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	3	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	4.8	km/h
Free-flow speed, FFS	105.2	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1441	pc/h/ln
Free-flow speed, FFS	105.2	km/h
Average passenger-car speed, S	105.2	km/h
Number of lanes, N	3	
Density, D	13.7	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Tamarack / Carlsbad Village Dr
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8130	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2258	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	1.77	%
Segment length	0.67	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1879	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1879	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	106.2	km/h
Number of lanes, N	5	
Density, D	17.7	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 NB
From/To: Via de la Valle/Lomas Santa Fe
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	10080	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2800	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	1.47	%
Segment length	1.10	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2330	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2330	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	85.4	km/h
Number of lanes, N	5	
Density, D	27.3	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

I-5 SB Existing - Basic Fwy LOS

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Birmingham / Manchester
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8300	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2306	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-1.89	%
Segment length	1.31	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	2352	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2352	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Cannon / Palomar
Jurisdiction:
Analysis Year: existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6770	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1881	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1918	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1918	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	103.5	km/h
Number of lanes, N	4	
Density, D	18.5	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/15/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Carlsbad Village Dr / Tamarack
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7050	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1958	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-0.68	%
Segment length	0.67	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1998	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1998	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	101.2	km/h
Number of lanes, N	4	
Density, D	19.7	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 9/20/2006
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Carmel Valley/split
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6180	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1717	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Mountainous	
Grade	%	
Segment length	3.14	km
Trucks and buses PCE, ET	1.5*	
Recreational vehicle PCE, ER	1.2*	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1751	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1751	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	106.4	km/h
Number of lanes, N	4	
Density, D	16.5	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Cassidy St / SR-78
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6520	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1811	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.32	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1847	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1847	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	105.0	km/h
Number of lanes, N	4	
Density, D	17.6	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Del Mar Heights/Carmel Valley
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8630	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2397	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	1.50	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1956	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1956	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	104.2	km/h
Number of lanes, N	5	
Density, D	18.8	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Encinitas / Santa Fe
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7800	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2167	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	2210	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2210	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	91.8	km/h
Number of lanes, N	4	
Density, D	24.1	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Genesee / La Jolla Village Dr
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	5430	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1508	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.10	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1539	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1539	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.6	km/h
Number of lanes, N	4	
Density, D	14.3	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: La Costa / Leucadia
Jurisdiction:
Analysis Year: existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7900	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2194	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	2238	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2238	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	90.2	km/h
Number of lanes, N	4	
Density, D	24.8	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Las Flores/Carsbad Village Dr
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6960	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1933	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	%	
Segment length	km	
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1972	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1972	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	102.0	km/h
Number of lanes, N	4	
Density, D	19.3	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Leucadia / Encinitas
Jurisdiction:
Analysis Year: existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8300	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2306	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	2352	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2352	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: LomasSantaFe/Villa de la Valle
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8400	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2333	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	0.33	%
Segment length	1.19	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	2380	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2380	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Manchester / Lomas Santa Fe
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8300	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2306	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	2.14	%
Segment length	1.43	km
Trucks and buses PCE, ET	2.0	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2398	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2398	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Mission Ave / Oceanside Blvd
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	5510	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1531	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	1.06	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1561	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1561	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.6	km/h
Number of lanes, N	4	
Density, D	14.5	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Oceanside Blvd / Cassidy St
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6300	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1750	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.17	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1785	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1785	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	106.0	km/h
Number of lanes, N	4	
Density, D	16.8	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Palomar / Poinsettia
Jurisdiction:
Analysis Year: existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7700	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2139	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	2182	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2182	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	93.4	km/h
Number of lanes, N	4	
Density, D	23.4	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Poinsettia Lane / La Costa
Jurisdiction:
Analysis Year: existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7700	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2139	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	2182	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2182	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	93.4	km/h
Number of lanes, N	4	
Density, D	23.4	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Roselle / Genesee
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6480	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1800	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	0.76	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1836	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1836	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	105.2	km/h
Number of lanes, N	4	
Density, D	17.4	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

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E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Santa Fe / Birmingham
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7800	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2167	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-1.75	%
Segment length	0.73	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	2210	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2210	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	91.8	km/h
Number of lanes, N	4	
Density, D	24.1	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Split / Bypass enterance
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	3480	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	967	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.10	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1315	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	3	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	4.8	km/h
Free-flow speed, FFS	105.2	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1315	pc/h/ln
Free-flow speed, FFS	105.2	km/h
Average passenger-car speed, S	105.2	km/h
Number of lanes, N	3	
Density, D	12.5	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: SR-76 / Mission Ave
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	4540	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1261	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1286	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1286	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.6	km/h
Number of lanes, N	4	
Density, D	12.0	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: SR-78 / Las Flores
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7030	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1953	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	3.00	%
Segment length	0.24	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1992	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1992	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	101.4	km/h
Number of lanes, N	4	
Density, D	19.6	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Tamarack / Cannon
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7550	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2097	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	3.42	%
Segment length	1.26	km
Trucks and buses PCE, ET	3.0	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.926	
Driver population factor, vp	1.00	
Flow rate, vp	2265	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2265	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	88.5	km/h
Number of lanes, N	4	
Density, D	25.6	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Vandergrift / SR-76
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	3980	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1106	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1128	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1128	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.6	km/h
Number of lanes, N	4	
Density, D	10.5	pc/km/ln
Level of service, LOS	B	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Villa de la Valle/DelMarHeight
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	9380	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2606	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	3.00	%
Segment length	2.80	km
Trucks and buses PCE, ET	3.0	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.926	
Driver population factor, vp	1.00	
Flow rate, vp	2251	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2251	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	90.7	km/h
Number of lanes, N	5	
Density, D	24.8	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Birmingham / Manchester
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7230	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2008	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-1.89	%
Segment length	1.31	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	2049	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2049	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	99.4	km/h
Number of lanes, N	4	
Density, D	20.6	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Cannon / Palomar
Jurisdiction:
Analysis Year: existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6000	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1667	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1700	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1700	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	106.9	km/h
Number of lanes, N	4	
Density, D	15.9	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Carlsbad Village Dr / Tamarack
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	5790	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1608	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-0.68	%
Segment length	0.67	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1641	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1641	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.3	km/h
Number of lanes, N	4	
Density, D	15.3	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 9/20/2006
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Carmel Valley/split
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6600	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1833	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade		%
Segment length	3.14	km
Trucks and buses PCE, ET	1.5*	
Recreational vehicle PCE, ER		
Heavy vehicle adjustment, fHV		
Driver population factor, vp	1.00	
Flow rate, vp		pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp		pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	5	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Cassidy St / SR-78
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	5120	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1422	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.32	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1451	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1451	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.6	km/h
Number of lanes, N	4	
Density, D	13.5	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Del Mar Heights/Carmel Valley
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8600	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2389	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	1.50	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1949	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1949	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	104.4	km/h
Number of lanes, N	5	
Density, D	18.7	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Encinitas / Santa Fe
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6970	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1936	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1975	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1975	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	101.9	km/h
Number of lanes, N	4	
Density, D	19.4	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Genesee / La Jolla Village Dr
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7400	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2056	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.10	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	2097	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2097	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	97.4	km/h
Number of lanes, N	4	
Density, D	21.5	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: La Costa / Leucadia
Jurisdiction:
Analysis Year: existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6900	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1917	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1955	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1955	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	102.5	km/h
Number of lanes, N	4	
Density, D	19.1	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Las Flores/Carsbad Village Dr
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	5740	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1594	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade		%
Segment length		km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1626	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1626	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.4	km/h
Number of lanes, N	4	
Density, D	15.1	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Leucadia / Encinitas
Jurisdiction:
Analysis Year: existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6850	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1903	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1941	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1941	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	102.9	km/h
Number of lanes, N	4	
Density, D	18.9	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: LomasSantaFe/Villa de la Valle
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8070	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2242	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	0.33	%
Segment length	1.19	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	2287	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2287	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	87.1	km/h
Number of lanes, N	4	
Density, D	26.3	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Manchester / Lomas Santa Fe
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8080	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2244	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	2.14	%
Segment length	1.43	km
Trucks and buses PCE, ET	2.0	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2334	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2334	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	83.8	km/h
Number of lanes, N	4	
Density, D	27.9	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Mission Ave / Oceanside Blvd
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	4700	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1306	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	1.06	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1332	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1332	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.6	km/h
Number of lanes, N	4	
Density, D	12.4	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Oceanside Blvd / Cassidy St
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	5030	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1397	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.17	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1425	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1425	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.6	km/h
Number of lanes, N	4	
Density, D	13.2	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Palomar / Poinsettia
Jurisdiction:
Analysis Year: existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6490	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1803	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1839	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1839	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	105.2	km/h
Number of lanes, N	4	
Density, D	17.5	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Poinsettia Lane / La Costa
Jurisdiction:
Analysis Year: existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6630	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1842	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1879	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1879	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	104.4	km/h
Number of lanes, N	4	
Density, D	18.0	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Roselle / Genesee
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6920	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1922	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	0.76	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1961	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1961	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	102.3	km/h
Number of lanes, N	4	
Density, D	19.2	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Santa Fe / Birmingham
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7090	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1969	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-1.75	%
Segment length	0.73	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	2009	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2009	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	100.8	km/h
Number of lanes, N	4	
Density, D	19.9	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 9/20/2006
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Split / Bypass enterance
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	4980	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1383	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.10	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1411	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1411	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.6	km/h
Number of lanes, N	4	
Density, D	13.1	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: SR-76 / Mission Ave
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	4040	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1122	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1145	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1145	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.6	km/h
Number of lanes, N	4	
Density, D	10.6	pc/km/ln
Level of service, LOS	B	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: SR-78 / Las Flores
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	5830	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1619	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	3.00	%
Segment length	0.24	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1652	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1652	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.3	km/h
Number of lanes, N	4	
Density, D	15.4	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Tamarack / Cannon
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	5900	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1639	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	3.42	%
Segment length	1.26	km
Trucks and buses PCE, ET	3.0	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.926	
Driver population factor, vp	1.00	
Flow rate, vp	1770	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1770	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	106.2	km/h
Number of lanes, N	4	
Density, D	16.7	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Vandergrift / SR-76
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	4310	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1197	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.980	
Driver population factor, vp	1.00	
Flow rate, vp	1221	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1221	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.6	km/h
Number of lanes, N	4	
Density, D	11.3	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 7/16/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Villa de la Valle/DelMarHeight
Jurisdiction:
Analysis Year: Existing
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8850	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2458	v
Trucks and buses	4	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	3.00	%
Segment length	2.80	km
Trucks and buses PCE, ET	3.0	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.926	
Driver population factor, vp	1.00	
Flow rate, vp	2124	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2124	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	97.7	km/h
Number of lanes, N	5	
Density, D	21.7	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

I-5 SB 2030 No Build - Basic Fwy LOS

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/8/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Birmingham / Manchester
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8480	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2356	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-1.89	%
Segment length	1.31	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2450	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2450	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/8/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Bypass enterance / Roselle St
Jurisdiction:
Analysis Year: No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	4415	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1226	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	0.38	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1701	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	3	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	4.8	km/h
Free-flow speed, FFS	105.2	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1701	pc/h/ln
Free-flow speed, FFS	105.2	km/h
Average passenger-car speed, S	104.8	km/h
Number of lanes, N	3	
Density, D	16.2	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/8/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Cannon / Palomar
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8370	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2325	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2418	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2418	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/8/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Carlsbad Village Dr / Tamarack
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8810	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2447	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-0.68	%
Segment length	0.67	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2545	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2545	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/8/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Carmel Valley/split
Jurisdiction:
Analysis Year: No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	9920	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2756	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	%	
Segment length	3.14	km
Trucks and buses PCE, ET	1.5*	
Recreational vehicle PCE, ER	1.2*	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2866	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2866	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/8/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Cassidy St / SR-78
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8450	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2347	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.32	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2441	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2441	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/8/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Del Mar Heights/Carmel Valley
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	12360	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	3433	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	1.50	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	3571	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	3571	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/8/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Encinitas / Santa Fe
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8000	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2222	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2311	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2311	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	85.4	km/h
Number of lanes, N	4	
Density, D	27.0	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/8/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Genesee / La Jolla Village Dr
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	5430	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1508	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.10	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1569	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1569	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.5	km/h
Number of lanes, N	4	
Density, D	14.6	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/8/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Harbor / SR-76
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	5900	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1639	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1704	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1704	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	106.9	km/h
Number of lanes, N	4	
Density, D	15.9	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/8/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: La Costa / Leucadia
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8380	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2328	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2421	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2421	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/8/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Las Flores/Carsbad Village Dr
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8660	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2406	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	%	
Segment length	km	
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2502	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2502	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/8/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Leucadia / Encinitas
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8230	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2286	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2378	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2378	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/8/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: LomasSantaFe/Villa de la Valle
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8850	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2458	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	0.33	%
Segment length	1.19	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2557	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2557	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/8/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Manchester / Lomas Santa Fe
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8550	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2375	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	2.14	%
Segment length	1.43	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2470	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2470	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/8/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Mission Ave / Oceanside Blvd
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7440	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2067	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	1.06	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2149	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2149	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	95.0	km/h
Number of lanes, N	4	
Density, D	22.6	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/8/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Oceanside Blvd / Cassidy St
Jurisdiction:
Analysis Year: No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8270	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2297	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.17	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2389	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2389	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/8/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Palomar / Poinsettia
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8290	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2303	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2395	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2395	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/8/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Poinsettia Lane / La Costa
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8240	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2289	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2380	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2380	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/8/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Roselle / Genesee
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7564	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2101	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	0.76	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2185	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2185	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	93.2	km/h
Number of lanes, N	4	
Density, D	23.4	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/8/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Santa Fe / Birmingham
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8010	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2225	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-1.75	%
Segment length	0.73	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2314	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2314	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	85.2	km/h
Number of lanes, N	4	
Density, D	27.2	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/8/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Split / Bypass enterance
Jurisdiction:
Analysis Year: No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	2720	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	756	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.10	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1048	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	3	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	4.8	km/h
Free-flow speed, FFS	105.2	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1048	pc/h/ln
Free-flow speed, FFS	105.2	km/h
Average passenger-car speed, S	105.2	km/h
Number of lanes, N	3	
Density, D	10.0	pc/km/ln
Level of service, LOS	B	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/8/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: SR-76 / Mission Ave
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6450	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1792	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1863	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1863	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	104.7	km/h
Number of lanes, N	4	
Density, D	17.8	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/8/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: SR-78 / Las Flores
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8760	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2433	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	3.00	%
Segment length	0.24	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2531	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2531	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/8/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Tamarack / Cannon
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	9270	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2575	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	3.42	%
Segment length	1.26	km
Trucks and buses PCE, ET	2.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.893	
Driver population factor, vp	1.00	
Flow rate, vp	2884	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2884	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/8/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Villa de la Valle/DelMarHeight
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	9540	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2650	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	3.00	%
Segment length	2.80	km
Trucks and buses PCE, ET	2.0	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.926	
Driver population factor, vp	1.00	
Flow rate, vp	2290	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2290	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	88.2	km/h
Number of lanes, N	5	
Density, D	26.0	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Birmingham / Manchester
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8250	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2292	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-1.89	%
Segment length	1.31	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2383	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2383	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/22/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Bypass enterance / Roselle St
Jurisdiction:
Analysis Year: No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	2925	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	813	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	0.38	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1127	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	3	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	4.8	km/h
Free-flow speed, FFS	105.2	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1127	pc/h/ln
Free-flow speed, FFS	105.2	km/h
Average passenger-car speed, S	105.2	km/h
Number of lanes, N	3	
Density, D	10.7	pc/km/ln
Level of service, LOS	B	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Cannon / Palomar
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8010	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2225	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2314	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2314	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	85.2	km/h
Number of lanes, N	4	
Density, D	27.2	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Carlsbad Village Dr / Tamarack
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7840	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2178	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-0.68	%
Segment length	0.67	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2265	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2265	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	88.5	km/h
Number of lanes, N	4	
Density, D	25.6	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/8/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Carmel Valley/split
Jurisdiction:
Analysis Year: No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7720	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2144	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	%	
Segment length	3.14	km
Trucks and buses PCE, ET	1.5*	
Recreational vehicle PCE, ER	1.2*	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2230	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2230	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	90.7	km/h
Number of lanes, N	4	
Density, D	24.6	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Cassidy St / SR-78
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8260	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2294	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.32	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2386	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2386	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/8/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Del Mar Heights/Carmel Valley
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	10160	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2822	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	1.50	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2935	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2935	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Encinitas / Santa Fe
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8410	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2336	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2430	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2430	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/22/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Genesee / La Jolla Village Dr
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8750	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2431	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.10	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2528	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2528	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Harbor / SR-76
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7280	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2022	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2103	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2103	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	97.2	km/h
Number of lanes, N	4	
Density, D	21.6	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: La Costa / Leucadia
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8650	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2403	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2499	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2499	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Las Flores/Carsbad Village Dr
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7820	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2172	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	%	
Segment length	km	
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2259	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2259	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	88.9	km/h
Number of lanes, N	4	
Density, D	25.4	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Leucadia / Encinitas
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8500	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2361	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2456	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2456	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/8/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: LomasSantaFe/Villa de la Valle
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8490	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2358	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	0.33	%
Segment length	1.19	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2453	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2453	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/8/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Manchester / Lomas Santa Fe
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8290	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2303	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	2.14	%
Segment length	1.43	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2395	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2395	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Mission Ave / Oceanside Blvd
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7900	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2194	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	1.06	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2282	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2282	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	87.4	km/h
Number of lanes, N	4	
Density, D	26.1	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Oceanside Blvd / Cassidy St
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8180	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2272	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.17	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2363	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2363	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Palomar / Poinsettia
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8710	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2419	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2516	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2516	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Poinsettia Lane / La Costa
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8810	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2447	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2545	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2545	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/22/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Roselle / Genesee
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6610	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1836	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	0.76	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1910	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1910	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	103.7	km/h
Number of lanes, N	4	
Density, D	18.4	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Santa Fe / Birmingham
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8300	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2306	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-1.75	%
Segment length	0.73	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2398	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2398	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/8/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Split / Bypass enterance
Jurisdiction:
Analysis Year: No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	2670	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	742	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.10	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1028	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	3	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	4.8	km/h
Free-flow speed, FFS	105.2	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1028	pc/h/ln
Free-flow speed, FFS	105.2	km/h
Average passenger-car speed, S	105.2	km/h
Number of lanes, N	3	
Density, D	9.8	pc/km/ln
Level of service, LOS	B	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: SR-76 / Mission Ave
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6940	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1928	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2005	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2005	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	101.0	km/h
Number of lanes, N	4	
Density, D	19.9	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: SR-78 / Las Flores
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8100	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2250	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	3.00	%
Segment length	0.24	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2340	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2340	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/4/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Tamarack / Cannon
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8000	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2222	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	3.42	%
Segment length	1.26	km
Trucks and buses PCE, ET	2.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.893	
Driver population factor, vp	1.00	
Flow rate, vp	2489	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2489	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/8/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Villa de la Valle/DelMarHeight
Jurisdiction:
Analysis Year: 2030 No Build
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8990	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2497	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	3.00	%
Segment length	2.80	km
Trucks and buses PCE, ET	2.0	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.926	
Driver population factor, vp	1.00	
Flow rate, vp	2158	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2158	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	96.0	km/h
Number of lanes, N	5	
Density, D	22.5	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

I-5 SB 2030 8+4 - Basic Fwy LOS

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/23/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Birmingham / Manchester
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	8190	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2275	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-1.89	%
Segment length	1.31	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2366	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2366	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 6/11/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Bypass / Roselle
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	2967	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	824	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	0.76	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1143	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	3	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	4.8	km/h
Free-flow speed, FFS	105.2	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1143	pc/h/ln
Free-flow speed, FFS	105.2	km/h
Average passenger-car speed, S	105.2	km/h
Number of lanes, N	3	
Density, D	10.9	pc/km/ln
Level of service, LOS	B	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/23/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Cannon / Palomar
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	7700	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2139	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2224	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2224	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	91.0	km/h
Number of lanes, N	4	
Density, D	24.4	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/23/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Carlsbad Village Dr / Tamarack
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	8070	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2242	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-0.68	%
Segment length	0.67	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2331	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2331	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	84.0	km/h
Number of lanes, N	4	
Density, D	27.7	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 6/11/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Carmel Valley/split
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	8020	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2228	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	1.20	%
Segment length	3.30	km
Trucks and buses PCE, ET	1.5*	
Recreational vehicle PCE, ER	1.2*	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2317	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2317	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	85.0	km/h
Number of lanes, N	4	
Density, D	27.3	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/23/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Cassidy St / SR-78
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	7380	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2050	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.35	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2132	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2132	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	95.9	km/h
Number of lanes, N	4	
Density, D	22.2	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 6/11/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Del Mar Heights/Carmel Valley
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	10970	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	3047	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	1.50	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2535	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2535	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	5	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/23/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Encinitas / Santa Fe
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	7840	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2178	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2265	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2265	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	88.5	km/h
Number of lanes, N	4	
Density, D	25.6	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/23/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Genesee / La Jolla Village Dr
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	6600	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1833	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	0.33	%
Segment length	0.93	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1907	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1907	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	103.7	km/h
Number of lanes, N	4	
Density, D	18.4	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/23/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Harbor Drive/ SR-76
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	4980	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1383	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1439	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1439	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.6	km/h
Number of lanes, N	4	
Density, D	13.4	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/23/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: La Costa / Leucadia
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	8120	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2256	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2346	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2346	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/23/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Las Flores/Carsbad Village Dr
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	7950	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2208	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade		%
Segment length		km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2297	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2297	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	86.4	km/h
Number of lanes, N	4	
Density, D	26.6	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/23/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Leucadia / Encinitas
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	8140	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2261	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2352	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2352	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/23/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: LomasSantaFe/Villa de la Valle
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	9560	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2656	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	0.33	%
Segment length	1.19	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2762	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2762	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/23/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Manchester / Lomas Santa Fe
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	9300	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2583	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	2.14	%
Segment length	1.43	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2687	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2687	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/23/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Mission Ave / Oceanside Blvd
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	6370	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1769	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.80	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1840	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1840	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	105.1	km/h
Number of lanes, N	4	
Density, D	17.5	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/23/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Oceanside Blvd / Cassidy St
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	7200	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2000	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.20	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1664	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1664	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	109.4	km/h
Number of lanes, N	5	
Density, D	15.2	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/23/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Palomar / Poinsettia
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	7840	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2178	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2265	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2265	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	88.5	km/h
Number of lanes, N	4	
Density, D	25.6	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/23/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Poinsettia Lane / La Costa
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	7910	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2197	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2285	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2285	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	87.2	km/h
Number of lanes, N	4	
Density, D	26.2	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 6/11/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Roselle / Genesee
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	6120	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1700	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	0.89	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1768	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1768	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	106.2	km/h
Number of lanes, N	4	
Density, D	16.6	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/23/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Santa Fe / Birmingham
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	7750	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2153	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-1.75	%
Segment length	0.73	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2239	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2239	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	90.1	km/h
Number of lanes, N	4	
Density, D	24.8	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

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E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/23/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: SR-76 / Mission Ave
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	5870	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1631	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1696	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1696	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.0	km/h
Number of lanes, N	4	
Density, D	15.9	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/23/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: SR-78 / Las Flores
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	8030	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2231	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	3.00	%
Segment length	0.24	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2320	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2320	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	84.8	km/h
Number of lanes, N	4	
Density, D	27.4	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/23/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Tamarack / Cannon
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	8590	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2386	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	3.42	%
Segment length	1.26	km
Trucks and buses PCE, ET	2.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.893	
Driver population factor, vp	1.00	
Flow rate, vp	2672	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2672	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/23/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Villa de la Valle/DelMarHeight
Jurisdiction: level terrain
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	10280	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2856	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	3.00	%
Segment length	2.80	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2376	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2376	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	5	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/23/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Birmingham / Manchester
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	7370	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2047	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-1.89	%
Segment length	1.31	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2129	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2129	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	96.0	km/h
Number of lanes, N	4	
Density, D	22.2	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 6/11/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Bypass / Roselle
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	2446	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	679	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	0.76	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	942	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	3	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	4.8	km/h
Free-flow speed, FFS	105.2	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	942	pc/h/ln
Free-flow speed, FFS	105.2	km/h
Average passenger-car speed, S	105.2	km/h
Number of lanes, N	3	
Density, D	9.0	pc/km/ln
Level of service, LOS	B	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/23/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Cannon / Palomar
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	6860	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1906	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1982	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1982	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	101.7	km/h
Number of lanes, N	4	
Density, D	19.5	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

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Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/23/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Carlsbad Village Dr / Tamarack
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	6840	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1900	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-0.68	%
Segment length	0.67	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1976	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1976	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	101.9	km/h
Number of lanes, N	4	
Density, D	19.4	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

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E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 6/11/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Carmel Valley/split
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	6610	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1836	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	1.20	%
Segment length	3.30	km
Trucks and buses PCE, ET	1.5*	
Recreational vehicle PCE, ER	1.2*	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1910	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1910	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	103.7	km/h
Number of lanes, N	4	
Density, D	18.4	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/23/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Cassidy St / SR-78
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	7130	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1981	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.35	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2060	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2060	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	99.0	km/h
Number of lanes, N	4	
Density, D	20.8	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

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Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 6/11/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Del Mar Heights/Carmel Valley
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	9190	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2553	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	1.50	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2124	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2124	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	97.7	km/h
Number of lanes, N	5	
Density, D	21.7	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

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Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/23/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Encinitas / Santa Fe
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	7690	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2136	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2222	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2222	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	91.1	km/h
Number of lanes, N	4	
Density, D	24.4	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

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E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/23/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Genesee / La Jolla Village Dr
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	8950	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2486	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	0.33	%
Segment length	0.93	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2586	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2586	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

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Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/23/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Harbor Drive/ SR-76
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	6380	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1772	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1843	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1843	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	105.1	km/h
Number of lanes, N	4	
Density, D	17.5	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

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Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/23/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: La Costa / Leucadia
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	7920	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2200	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2288	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2288	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	87.0	km/h
Number of lanes, N	4	
Density, D	26.3	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

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Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/23/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Las Flores/Carsbad Village Dr
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	6800	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1889	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade		%
Segment length		km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1964	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1964	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	102.2	km/h
Number of lanes, N	4	
Density, D	19.2	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/23/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Leucadia / Encinitas
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	7800	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2167	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2253	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2253	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	89.3	km/h
Number of lanes, N	4	
Density, D	25.2	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/23/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: LomasSantaFe/Villa de la Valle
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	8580	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2383	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	0.33	%
Segment length	1.19	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2479	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2479	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/23/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Manchester / Lomas Santa Fe
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	8280	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2300	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	2.14	%
Segment length	1.43	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2392	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2392	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/23/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Mission Ave / Oceanside Blvd
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	6690	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1858	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.80	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1933	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1933	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	103.1	km/h
Number of lanes, N	4	
Density, D	18.7	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/23/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Oceanside Blvd / Cassidy St
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	7010	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1947	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.20	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1620	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1620	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	109.7	km/h
Number of lanes, N	5	
Density, D	14.8	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/23/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Palomar / Poinsettia
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	7770	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2158	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2245	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2245	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	89.8	km/h
Number of lanes, N	4	
Density, D	25.0	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/23/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Poinsettia Lane / La Costa
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	8020	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2228	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2317	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2317	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	85.0	km/h
Number of lanes, N	4	
Density, D	27.3	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 6/11/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Roselle / Genesee
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	6850	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1903	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	0.89	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1979	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1979	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	101.8	km/h
Number of lanes, N	4	
Density, D	19.4	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/23/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Santa Fe / Birmingham
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	7450	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2069	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-1.75	%
Segment length	0.73	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2152	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2152	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	94.9	km/h
Number of lanes, N	4	
Density, D	22.7	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/23/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: SR-76 / Mission Ave
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	6200	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1722	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1791	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1791	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	105.9	km/h
Number of lanes, N	4	
Density, D	16.9	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/23/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: SR-78 / Las Flores
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	7060	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1961	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	3.00	%
Segment length	0.24	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2040	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2040	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	99.7	km/h
Number of lanes, N	4	
Density, D	20.5	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/23/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Tamarack / Cannon
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	6960	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1933	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	3.42	%
Segment length	1.26	km
Trucks and buses PCE, ET	2.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.893	
Driver population factor, vp	1.00	
Flow rate, vp	2165	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2165	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	94.2	km/h
Number of lanes, N	4	
Density, D	23.0	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Pedro Maria-Sanchez
Agency or Company: Caltrans District 11
Date Performed: 3/23/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Villa de la Valle/DelMarHeight
Jurisdiction: level terrain section
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 8+4 Alternative

Flow Inputs and Adjustments

Volume, V	9110	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2531	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	3.00	%
Segment length	2.10	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2105	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2105	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	98.6	km/h
Number of lanes, N	5	
Density, D	21.4	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

I-5 SB 2030 10+4 - Basic Fwy LOS

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Birmingham / Manchester
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	9600	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2667	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-1.89	%
Segment length	1.31	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2219	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2219	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	92.7	km/h
Number of lanes, N	5	
Density, D	23.9	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Bypass / Roselle
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	4415	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1226	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	0.76	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1701	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	3	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	4.8	km/h
Free-flow speed, FFS	105.2	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1701	pc/h/ln
Free-flow speed, FFS	105.2	km/h
Average passenger-car speed, S	104.8	km/h
Number of lanes, N	3	
Density, D	16.2	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Cannon / Palomar
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	9040	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2511	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2089	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2089	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	99.3	km/h
Number of lanes, N	5	
Density, D	21.0	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Carlsbad Village Dr / Tamarack
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	9310	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2586	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-0.68	%
Segment length	0.67	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2152	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2152	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	96.3	km/h
Number of lanes, N	5	
Density, D	22.3	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Carmel Valley/split
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8330	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2314	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	1.20	%
Segment length	3.30	km
Trucks and buses PCE, ET	1.5*	
Recreational vehicle PCE, ER	1.2*	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2406	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2406	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Cassidy St / SR-78
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8400	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2333	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.32	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2427	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2427	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Del Mar Heights/Carmel Valley
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	12300	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	3417	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	1.50	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2843	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2843	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	5	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Encinitas / Santa Fe
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	9220	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2561	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2131	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2131	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	97.4	km/h
Number of lanes, N	5	
Density, D	21.9	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Genesee / La Jolla Village Dr
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8704	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2418	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	0.33	%
Segment length	0.93	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2514	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2514	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Harbor / SR-76
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	5680	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1578	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1641	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1641	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.3	km/h
Number of lanes, N	4	
Density, D	15.3	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: La Costa / Leucadia
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	9520	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2644	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2200	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2200	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	93.8	km/h
Number of lanes, N	5	
Density, D	23.5	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Las Flores/Carsbad Village Dr
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	9130	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2536	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	%	
Segment length	km	
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2110	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2110	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	98.4	km/h
Number of lanes, N	5	
Density, D	21.5	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Leucadia / Encinitas
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	9520	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2644	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2200	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2200	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	93.8	km/h
Number of lanes, N	5	
Density, D	23.5	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: LomasSantaFe/Villa de la Valle
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	10950	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	3042	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	0.33	%
Segment length	1.19	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2531	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2531	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	5	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Manchester / Lomas Santa Fe
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	10750	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2986	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	2.14	%
Segment length	1.43	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2484	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2484	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	5	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Mission Ave / Oceanside Blvd
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7300	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2028	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	1.06	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2109	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2109	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	96.9	km/h
Number of lanes, N	4	
Density, D	21.8	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Oceanside Blvd / Cassidy St
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8200	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2278	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.17	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1895	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1895	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	105.8	km/h
Number of lanes, N	5	
Density, D	17.9	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Palomar / Poinsettia
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	9140	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2539	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2112	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2112	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	98.3	km/h
Number of lanes, N	5	
Density, D	21.5	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Poinsettia Lane / La Costa
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	9190	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2553	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2124	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2124	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	97.7	km/h
Number of lanes, N	5	
Density, D	21.7	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Roselle / Genesee
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7564	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2101	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	0.89	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2185	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2185	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	93.2	km/h
Number of lanes, N	4	
Density, D	23.4	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Santa Fe / Birmingham
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	9150	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2542	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-1.75	%
Segment length	0.73	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2115	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2115	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	98.1	km/h
Number of lanes, N	5	
Density, D	21.6	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Split / Bypass enterance
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	3680	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1022	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	0.52	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1417	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	3	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	4.8	km/h
Free-flow speed, FFS	105.2	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1417	pc/h/ln
Free-flow speed, FFS	105.2	km/h
Average passenger-car speed, S	105.2	km/h
Number of lanes, N	3	
Density, D	13.5	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: SR-76 / Mission Ave
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6670	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1853	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1927	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1927	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	103.3	km/h
Number of lanes, N	4	
Density, D	18.7	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: SR-78 / Las Flores
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	9200	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2556	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	3.00	%
Segment length	0.24	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2126	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2126	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	97.6	km/h
Number of lanes, N	5	
Density, D	21.8	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Tamarack / Cannon
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	9890	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2747	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	3.42	%
Segment length	1.26	km
Trucks and buses PCE, ET	2.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.893	
Driver population factor, vp	1.00	
Flow rate, vp	2462	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2462	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	5	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Villa de la Valle/DelMarHeight
Jurisdiction: level terrain
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	11630	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	3231	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	3.00	%
Segment length	2.80	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2688	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2688	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	5	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Villa de la Valle/DelMarHeight
Jurisdiction: grade section
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	11630	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	3231	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	2.10	km
Trucks and buses PCE, ET	2.0	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.926	
Driver population factor, vp	1.00	
Flow rate, vp	2791	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2791	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	5	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Birmingham / Manchester
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8470	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2353	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-1.89	%
Segment length	1.31	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1958	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1958	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	104.1	km/h
Number of lanes, N	5	
Density, D	18.8	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Bypass / Roselle
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	2925	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	813	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	0.76	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1127	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	3	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	4.8	km/h
Free-flow speed, FFS	105.2	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1127	pc/h/ln
Free-flow speed, FFS	105.2	km/h
Average passenger-car speed, S	105.2	km/h
Number of lanes, N	3	
Density, D	10.7	pc/km/ln
Level of service, LOS	B	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Cannon / Palomar
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7900	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2194	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1826	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1826	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	107.3	km/h
Number of lanes, N	5	
Density, D	17.0	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Carlsbad Village Dr / Tamarack
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7770	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2158	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-0.68	%
Segment length	0.67	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1796	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1796	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	107.8	km/h
Number of lanes, N	5	
Density, D	16.7	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Carmel Valley/split
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6499	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1805	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	1.20	%
Segment length	3.30	km
Trucks and buses PCE, ET	1.5*	
Recreational vehicle PCE, ER	1.2*	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1877	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1877	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	104.4	km/h
Number of lanes, N	4	
Density, D	18.0	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Cassidy St / SR-78
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7970	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2214	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.32	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2302	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2302	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	86.1	km/h
Number of lanes, N	4	
Density, D	26.7	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Del Mar Heights/Carmel Valley
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	10160	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2822	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	1.50	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2348	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2348	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	84.1	km/h
Number of lanes, N	5	
Density, D	27.9	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Encinitas / Santa Fe
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8790	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2442	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2031	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2031	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	101.6	km/h
Number of lanes, N	5	
Density, D	20.0	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/21/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Genesee / La Jolla Village Dr
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	9933	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2759	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	0.33	%
Segment length	0.93	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2870	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2870	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	4	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Harbor / SR-76
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6980	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1939	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2016	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2016	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	100.6	km/h
Number of lanes, N	4	
Density, D	20.0	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: La Costa / Leucadia
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8990	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2497	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2078	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2078	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	99.8	km/h
Number of lanes, N	5	
Density, D	20.8	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Las Flores/Carsbad Village Dr
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7720	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2144	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	%	
Segment length	km	
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1784	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1784	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	108.0	km/h
Number of lanes, N	5	
Density, D	16.5	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Leucadia / Encinitas
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8890	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2469	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2055	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2055	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	100.7	km/h
Number of lanes, N	5	
Density, D	20.4	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: LomasSantaFe/Villa de la Valle
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	9570	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2658	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	0.33	%
Segment length	1.19	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2212	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2212	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	93.1	km/h
Number of lanes, N	5	
Density, D	23.8	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Manchester / Lomas Santa Fe
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	9410	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2614	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	2.14	%
Segment length	1.43	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2175	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2175	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	95.1	km/h
Number of lanes, N	5	
Density, D	22.9	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Mission Ave / Oceanside Blvd
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7480	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2078	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	1.06	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2161	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2161	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	94.4	km/h
Number of lanes, N	4	
Density, D	22.9	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Oceanside Blvd / Cassidy St
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7830	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2175	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.17	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1810	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1810	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	107.6	km/h
Number of lanes, N	5	
Density, D	16.8	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Palomar / Poinsettia
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8800	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2444	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2034	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2034	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	101.5	km/h
Number of lanes, N	5	
Density, D	20.0	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Poinsettia Lane / La Costa
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	9050	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2514	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2092	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2092	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	99.2	km/h
Number of lanes, N	5	
Density, D	21.1	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/21/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Roselle / Genesee
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6753	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1876	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	0.89	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1951	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1951	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	102.6	km/h
Number of lanes, N	4	
Density, D	19.0	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Santa Fe / Birmingham
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8570	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2381	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-1.75	%
Segment length	0.73	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1981	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1981	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	103.4	km/h
Number of lanes, N	5	
Density, D	19.2	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Split / Bypass enterance
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	2870	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	797	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	0.52	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1105	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	3	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	4.8	km/h
Free-flow speed, FFS	105.2	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1105	pc/h/ln
Free-flow speed, FFS	105.2	km/h
Average passenger-car speed, S	105.2	km/h
Number of lanes, N	3	
Density, D	10.5	pc/km/ln
Level of service, LOS	B	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: SR-76 / Mission Ave
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6880	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1911	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1988	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1988	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	101.5	km/h
Number of lanes, N	4	
Density, D	19.6	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: SR-78 / Las Flores
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7970	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2214	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	3.00	%
Segment length	0.24	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1842	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1842	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	107.0	km/h
Number of lanes, N	5	
Density, D	17.2	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Tamarack / Cannon
Jurisdiction:
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7930	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2203	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	0.40	%
Segment length	1.26	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1833	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1833	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	107.2	km/h
Number of lanes, N	5	
Density, D	17.1	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Villa de la Valle/DelMarHeight
Jurisdiction: level terrain section
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	10040	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2789	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	3.00	%
Segment length	2.10	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2320	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2320	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	86.1	km/h
Number of lanes, N	5	
Density, D	26.9	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/1/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Villa de la Valle/DelMarHeight
Jurisdiction: grade section
Analysis Year: 2030
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	10040	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2789	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	3.00	%
Segment length	2.10	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2320	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2320	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	86.1	km/h
Number of lanes, N	5	
Density, D	26.9	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

I-5 SB 2015 10+4 - Basic Fwy LOS

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Birmingham / Manchester
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8180	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2272	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-1.89	%
Segment length	1.31	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1890	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1890	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	105.9	km/h
Number of lanes, N	5	
Density, D	17.8	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

HCS2000: Basic Freeway Segments Release 4.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Bypass / Roselle
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	5230	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1453	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	0.76	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2015	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	3	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	4.8	km/h
Free-flow speed, FFS	105.2	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	2015	pc/h/ln
Free-flow speed, FFS	105.2	km/h
Average passenger-car speed, S	99.0	km/h
Number of lanes, N	3	
Density, D	20.4	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

HCS2000: Basic Freeway Segments Release 4.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Cannon / Palomar
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7580	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2106	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1752	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1752	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	108.5	km/h
Number of lanes, N	5	
Density, D	16.2	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Carlsbad Village Dr / Tamarack
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7750	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2153	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-0.68	%
Segment length	0.67	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1791	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1791	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	107.9	km/h
Number of lanes, N	5	
Density, D	16.6	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Carmel Valley/split
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6960	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1933	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	1.20	%
Segment length	3.30	km
Trucks and buses PCE, ET	1.5*	
Recreational vehicle PCE, ER	1.2*	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2011	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2011	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	100.8	km/h
Number of lanes, N	4	
Density, D	20.0	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

HCS2000: Basic Freeway Segments Release 4.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Cassidy St / SR-78
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6970	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1936	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.32	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2014	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2014	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	100.7	km/h
Number of lanes, N	4	
Density, D	20.0	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

HCS2000: Basic Freeway Segments Release 4.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Del Mar Heights/Carmel Valley
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6070	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1686	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	1.50	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1403	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1403	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	110.0	km/h
Number of lanes, N	5	
Density, D	12.8	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

HCS2000: Basic Freeway Segments Release 4.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Encinitas / Santa Fe
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7840	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2178	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1812	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1812	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	107.6	km/h
Number of lanes, N	5	
Density, D	16.8	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

HCS2000: Basic Freeway Segments Release 4.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Genesee / La Jolla Village Dr
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6950	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1931	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	0.33	%
Segment length	0.93	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2008	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2008	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	100.9	km/h
Number of lanes, N	4	
Density, D	19.9	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Harbor / SR-76
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	4610	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1281	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1332	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1332	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.6	km/h
Number of lanes, N	4	
Density, D	12.4	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

HCS2000: Basic Freeway Segments Release 4.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: La Costa / Leucadia
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8080	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2244	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1867	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1867	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	106.5	km/h
Number of lanes, N	5	
Density, D	17.5	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

HCS2000: Basic Freeway Segments Release 4.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Las Flores/Carsbad Village Dr
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7600	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2111	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade		%
Segment length		km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1756	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1756	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	108.4	km/h
Number of lanes, N	5	
Density, D	16.2	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Leucadia / Encinitas
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8070	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2242	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1865	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1865	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	106.5	km/h
Number of lanes, N	5	
Density, D	17.5	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

HCS2000: Basic Freeway Segments Release 4.1

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E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: LomasSantaFe/Villa de la Valle
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	9440	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2622	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	0.33	%
Segment length	1.19	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2182	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2182	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	94.8	km/h
Number of lanes, N	5	
Density, D	23.0	pc/km/ln
Level of service, LOS	E	

Overall results are not computed when free-flow speed is less than 90 km/h.

HCS2000: Basic Freeway Segments Release 4.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Manchester / Lomas Santa Fe
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	9240	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2567	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	2.14	%
Segment length	1.43	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2135	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2135	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	97.2	km/h
Number of lanes, N	5	
Density, D	22.0-	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

HCS2000: Basic Freeway Segments Release 4.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Mission Ave / Oceanside Blvd
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6020	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1672	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	1.06	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1739	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1739	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	106.6	km/h
Number of lanes, N	4	
Density, D	16.3	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

HCS2000: Basic Freeway Segments Release 4.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Oceanside Blvd / Cassidy St
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6810	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1892	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.17	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1574	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1574	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	109.8	km/h
Number of lanes, N	5	
Density, D	14.3	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

HCS2000: Basic Freeway Segments Release 4.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Palomar / Poinsettia
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7670	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2131	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1773	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1773	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	108.2	km/h
Number of lanes, N	5	
Density, D	16.4	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

HCS2000: Basic Freeway Segments Release 4.1

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Poinsettia Lane / La Costa
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7770	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2158	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1796	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h
	Urban Freeway	

LOS and Performance Measures

Flow rate, vp	1796	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	107.8	km/h
Number of lanes, N	5	
Density, D	16.7	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

HCS2000: Basic Freeway Segments Release 4.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Roselle / Genesee
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6450	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1792	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	0.89	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1863	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1863	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	104.7	km/h
Number of lanes, N	4	
Density, D	17.8	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

HCS2000: Basic Freeway Segments Release 4.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Santa Fe / Birmingham
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7790	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2164	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-1.75	%
Segment length	0.73	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1800	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1800	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	107.8	km/h
Number of lanes, N	5	
Density, D	16.7	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

HCS2000: Basic Freeway Segments Release 4.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Split / Bypass enterance
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	3260	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	906	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	0.52	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1256	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	3	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	4.8	km/h
Free-flow speed, FFS	105.2	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1256	pc/h/ln
Free-flow speed, FFS	105.2	km/h
Average passenger-car speed, S	105.2	km/h
Number of lanes, N	3	
Density, D	11.9	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

HCS2000: Basic Freeway Segments Release 4.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: SR-76 / Mission Ave
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	5480	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1522	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1583	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1583	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.5	km/h
Number of lanes, N	4	
Density, D	14.7	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

HCS2000: Basic Freeway Segments Release 4.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: SR-78 / Las Flores
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7690	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2136	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	3.00	%
Segment length	0.24	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1777	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1777	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	108.1	km/h
Number of lanes, N	5	
Density, D	16.4	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Tamarack / Cannon
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8330	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2314	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	3.42	%
Segment length	1.26	km
Trucks and buses PCE, ET	2.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.893	
Driver population factor, vp	1.00	
Flow rate, vp	2073	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2073	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	100.0	km/h
Number of lanes, N	5	
Density, D	20.7	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

HCS2000: Basic Freeway Segments Release 4.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Villa de la Valle/DelMarHeight
Jurisdiction: level terrain
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	10200	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2833	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	3.00	%
Segment length	2.80	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2357	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2357	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	5	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

HCS2000: Basic Freeway Segments Release 4.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: AM Peak
Freeway/Direction: I-5 SB
From/To: Villa de la Valle/DelMarHeight
Jurisdiction: grade section
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	10200	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2833	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	2.10	km
Trucks and buses PCE, ET	2.0	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.926	
Driver population factor, vp	1.00	
Flow rate, vp	2448	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2448	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S		km/h
Number of lanes, N	5	
Density, D		pc/km/ln
Level of service, LOS		

Overall results are not computed when free-flow speed is less than 90 km/h.

HCS2000: Basic Freeway Segments Release 4.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Birmingham / Manchester
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7170	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1992	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-1.89	%
Segment length	1.31	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1657	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1657	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	109.4	km/h
Number of lanes, N	5	
Density, D	15.1	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/22/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Bypass / Roselle
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	4930	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1369	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	0.76	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1899	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	3	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	4.8	km/h
Free-flow speed, FFS	105.2	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1899	pc/h/ln
Free-flow speed, FFS	105.2	km/h
Average passenger-car speed, S	102.1	km/h
Number of lanes, N	3	
Density, D	18.6	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Cannon / Palomar
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6510	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1808	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1505	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1505	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	110.0	km/h
Number of lanes, N	5	
Density, D	13.7	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

HCS2000: Basic Freeway Segments Release 4.1

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction:
From/To: Carlsbad Village Dr / Tamarack
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6360	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1767	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-0.68	%
Segment length	0.67	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1470	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1470	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	110.0	km/h
Number of lanes, N	5	
Density, D	13.4	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Carmel Valley/split
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	5520	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1533	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	1.20	%
Segment length	3.30	km
Trucks and buses PCE, ET	1.5*	
Recreational vehicle PCE, ER	1.2*	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1276	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1276	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	110.0	km/h
Number of lanes, N	5	
Density, D	11.6	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

HCS2000: Basic Freeway Segments Release 4.1

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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Cassidy St / SR-78
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6570	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1825	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	0.32	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1898	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1898	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	104.0	km/h
Number of lanes, N	4	
Density, D	18.3	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

HCS2000: Basic Freeway Segments Release 4.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Del Mar Heights/Carmel Valley
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	4940	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1372	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	1.50	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1142	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1142	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	110.0	km/h
Number of lanes, N	5	
Density, D	10.4	pc/km/ln
Level of service, LOS	B	

Overall results are not computed when free-flow speed is less than 90 km/h.

HCS2000: Basic Freeway Segments Release 4.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Encinitas / Santa Fe
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7410	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2058	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1713	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1713	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	108.9	km/h
Number of lanes, N	5	
Density, D	15.7	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

HCS2000: Basic Freeway Segments Release 4.1

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/22/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Genesee / La Jolla Village Dr
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V 8500 veh/h
Peak-hour factor, PHF 0.90
Peak 15-min volume, v15 2361 v
Trucks and buses 8 %
Recreational vehicles 0 %
Terrain type: Composite
Grade 0.33 %
Segment length 0.93 km
Trucks and buses PCE, ET 1.5
Recreational vehicle PCE, ER 1.2
Heavy vehicle adjustment, fHV 0.962
Driver population factor, vp 1.00
Flow rate, vp 2456 pc/h

Speed Inputs and Adjustments

Lane width 3.6 m
Right-shoulder lateral clearance 1.8 m
Interchange density 0.30 interchange/km
Number of lanes, N 4
Free-flow speed: Ideal
FFS or BFFS 110.0 km/h
Lane width adjustment, fLW 0.0 km/h
Lateral clearance adjustment, fLC 0.0 km/h
Interchange density adjustment, fID 0.0 km/h
Number of lanes adjustment, fN 2.4 km/h
Free-flow speed, FFS 107.6 km/h
Urban Freeway

LOS and Performance Measures

Flow rate, vp 2456 pc/h/ln
Free-flow speed, FFS 107.6 km/h
Average passenger-car speed, S km/h
Number of lanes, N 4
Density, D pc/km/ln
Level of service, LOS

Overall results are not computed when free-flow speed is less than 90 km/h.

HCS2000: Basic Freeway Segments Release 4.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Harbor / SR-76
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	5760	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1600	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1664	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1664	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.2	km/h
Number of lanes, N	4	
Density, D	15.5	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: La Costa / Leucadia
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7570	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2103	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1750	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1750	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	108.5	km/h
Number of lanes, N	5	
Density, D	16.1	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

HCS2000: Basic Freeway Segments Release 4.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Las Flores/Carsbad Village Dr
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6320	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1756	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade		%
Segment length		km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1461	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1461	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	110.0	km/h
Number of lanes, N	5	
Density, D	13.3	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Leucadia / Encinitas
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7460	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2072	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1724	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1724	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	108.8	km/h
Number of lanes, N	5	
Density, D	15.8	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

HCS2000: Basic Freeway Segments Release 4.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: LomasSantaFe/Villa de la Valle
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8190	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2275	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	0.33	%
Segment length	1.19	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1893	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1893	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	105.9	km/h
Number of lanes, N	5	
Density, D	17.9	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Manchester / Lomas Santa Fe
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8040	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2233	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	2.14	%
Segment length	1.43	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1858	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1858	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	106.7	km/h
Number of lanes, N	5	
Density, D	17.4	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

HCS2000: Basic Freeway Segments Release 4.1

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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Mission Ave / Oceanside Blvd
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6210	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1725	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	-3.00	%
Segment length	1.06	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1794	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1794	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	105.9	km/h
Number of lanes, N	4	
Density, D	16.9	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Oceanside Blvd / Cassidy St
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6460	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1794	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	1.17	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1493	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1493	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	110.0	km/h
Number of lanes, N	5	
Density, D	13.6	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

HCS2000: Basic Freeway Segments Release 4.1

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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Palomar / Poinsettia
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7320	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2033	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1692	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1692	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	109.1	km/h
Number of lanes, N	5	
Density, D	15.5	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

HCS2000: Basic Freeway Segments Release 4.1

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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Poinsettia Lane / La Costa
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7610	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2114	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1759	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1759	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	108.4	km/h
Number of lanes, N	5	
Density, D	16.2	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

HCS2000: Basic Freeway Segments Release 4.1

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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Roselle / Genesee
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6580	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1828	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	0.89	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1901	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1901	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	103.9	km/h
Number of lanes, N	4	
Density, D	18.3	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

HCS2000: Basic Freeway Segments Release 4.1

Phone: Fax:
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Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Santa Fe / Birmingham
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	7200	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2000	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	-1.75	%
Segment length	0.73	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1664	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1664	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	109.4	km/h
Number of lanes, N	5	
Density, D	15.2	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

HCS2000: Basic Freeway Segments Release 4.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Split / Bypass enterance
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	2240	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	622	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	0.52	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	863	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	3	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	4.8	km/h
Free-flow speed, FFS	105.2	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	863	pc/h/ln
Free-flow speed, FFS	105.2	km/h
Average passenger-car speed, S	105.2	km/h
Number of lanes, N	3	
Density, D	8.2	pc/km/ln
Level of service, LOS	B	

Overall results are not computed when free-flow speed is less than 90 km/h.

HCS2000: Basic Freeway Segments Release 4.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: SR-76 / Mission Ave
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	5680	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1578	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	0.00	%
Segment length	0.00	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1641	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	4	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	2.4	km/h
Free-flow speed, FFS	107.6	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1641	pc/h/ln
Free-flow speed, FFS	107.6	km/h
Average passenger-car speed, S	107.3	km/h
Number of lanes, N	4	
Density, D	15.3	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

HCS2000: Basic Freeway Segments Release 4.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: SR-78 / Las Flores
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6570	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1825	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	3.00	%
Segment length	0.24	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	1518	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1518	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	110.0	km/h
Number of lanes, N	5	
Density, D	13.8	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

HCS2000: Basic Freeway Segments Release 4.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Tamarack / Cannon
Jurisdiction:
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	6510	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1808	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Composite	
Grade	3.42	%
Segment length	1.26	km
Trucks and buses PCE, ET	2.5	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.893	
Driver population factor, vp	1.00	
Flow rate, vp	1620	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	1620	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	109.7	km/h
Number of lanes, N	5	
Density, D	14.8	pc/km/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 90 km/h.

HCS2000: Basic Freeway Segments Release 4.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Villa de la Valle/DelMarHeight
Jurisdiction: level terrain
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8750	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2431	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	3.00	%
Segment length	2.80	km
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.962	
Driver population factor, vp	1.00	
Flow rate, vp	2022	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2022	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	102.0	km/h
Number of lanes, N	5	
Density, D	19.8	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

HCS2000: Basic Freeway Segments Release 4.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst: Bryan Ott
Agency or Company: Caltrans District 11
Date Performed: 6/7/2007
Analysis Time Period: PM Peak
Freeway/Direction: I-5 SB
From/To: Villa de la Valle/DelMarHeight
Jurisdiction: grade section
Analysis Year: 2015
Description: North Coast I-5 Corridor Project 10+4 Alternative

Flow Inputs and Adjustments

Volume, V	8750	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	2431	v
Trucks and buses	8	%
Recreational vehicles	0	%
Terrain type:	Grade	
Grade	3.00	%
Segment length	2.10	km
Trucks and buses PCE, ET	2.0	
Recreational vehicle PCE, ER	3.0	
Heavy vehicle adjustment, fHV	0.926	
Driver population factor, vp	1.00	
Flow rate, vp	2100	pc/h

Speed Inputs and Adjustments

Lane width	3.6	m
Right-shoulder lateral clearance	1.8	m
Interchange density	0.30	interchange/km
Number of lanes, N	5	
Free-flow speed:	Ideal	
FFS or BFFS	110.0	km/h
Lane width adjustment, fLW	0.0	km/h
Lateral clearance adjustment, fLC	0.0	km/h
Interchange density adjustment, fID	0.0	km/h
Number of lanes adjustment, fN	0.0	km/h
Free-flow speed, FFS	110.0	km/h

Urban Freeway

LOS and Performance Measures

Flow rate, vp	2100	pc/h/ln
Free-flow speed, FFS	110.0	km/h
Average passenger-car speed, S	98.8	km/h
Number of lanes, N	5	
Density, D	21.3	pc/km/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 90 km/h.

APPENDIX B
Weaving Analysis

NB Existing Traffic Analysis
June 2007

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Del Mar Heights Road to Via de la Valle
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	2750
volume on (veh/hr)	1040
volume off (veh/hr)	1300
segment volume (veh/hr)	7370

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1424	1424
Lane 2	1424	1424
Lane 3	1424	1424
Lane 4	1424	1424
Lane 5	633	1673
	6330	7370

Segment Lengths

merge length (m)	300
fwy segment length (m)	1850
diverge length (m)	600

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1518	1518
Lane 2	1518	1518
Lane 3	1518	1518
Lane 4	1518	1518
Lane 5	1300	1300

NOTES

Lane 5 not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment
Lane 5 is dropped at off ramp in diverge segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Del Mar Heights Road to Via de la Valle
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	2750
volume on (veh/hr)	1640
volume off (veh/hr)	1400
segment volume (veh/hr)	9140

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1688	1688
Lane 2	1688	1688
Lane 3	1688	1688
Lane 4	1688	1688
Lane 5	750	2390
	7500	9140

Segment Lengths

merge length (m)	300
fwy segment length (m)	1850
diverge length (m)	600

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1935	1935
Lane 2	1935	1935
Lane 3	1935	1935
Lane 4	1935	1935
Lane 5	1400	1400

NOTES

Lane 5 not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment
Lane 5 is dropped at off ramp in diverge segment

for weaving off ramp traffic only

Percentage of Traffic Exiting (in lane 5) per distance from on ramp

distance (m)	0	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
900	29	34.7	40.3	46	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0
850	34.7	40.3	46	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0	
800	40.3	46	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0		
750	46	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0			
700	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0				
650	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0					
600	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0						
550	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0							
500	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0								
450	79	84.3	89.6	95	96.7	98.3	100	100	100	0									
400	84.3	89.6	95	96.7	98.3	100	100	100	0										
350	89.6	95	96.7	98.3	100	100	100	0											
300	95	96.7	98.3	100	100	100	0												

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	La Jolla Village Dr to Genesee Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

data entry volumes from file:
I-5 NC 2005 Existing Traffic - Draft Version 6-25-07.xls

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1200
EB volume on (veh/hr)	740
WB volume on (veh/hr)	460
volume off (veh/hr)	2250
segment volume (veh/hr)	7700

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	200 m	300 m	450 m
Lane 1	1950	1999	1999	1999
Lane 2	1950	1999	1999	1999
Lane 3	1950	1999	1999	1999
Lane 4	650	1242	1242	1702
Acc lane	740	0	0	0
	7240	7240	7240	7700

Segment Lengths

merge length (m)	450
fwy segment length (m)	600
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1560	1560
Lane 2	1560	1560
Lane 3	1560	1560
Lane 4	3020	770
	7700	5450

NOTES

Lane 4 and Acceleration Lane not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2200 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	La Jolla Village Dr to Genesee Ave
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1200
EB volume on (veh/hr)	950
WB volume on (veh/hr)	370
volume off (veh/hr)	450
segment volume (veh/hr)	5470

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	200 m	300 m	450 m
Lane 1	1245	1308	1308	1308
Lane 2	1245	1308	1308	1308
Lane 3	1245	1308	1308	1308
Lane 4	415	1175	1175	1545
Acc lane	950	0	0	0
	5100	5100	5100	5470

Segment Lengths

merge length (m)	450
fwy segment length (m)	600
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1491	1491
Lane 2	1491	1491
Lane 3	1491	1491
Lane 4	997	547
	5470	5020

NOTES

Lane 4 and Acceleration Lane not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2200 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	La Jolla Village Dr to Genesee Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)						
	0	200	300	450	450 -1050*	1050	1200
1	1950	1999	1999	1999	1925	1560	1560
2	1950	1999	1999	1999	1925	1560	1560
3	1950	1999	1999	1999	1925	1560	1560
4	650	1242	1242	1702	1925	**3020**	770

740

740
EB on ramp traffic volume

460
WB on ramp traffic volume

2250
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	La Jolla Village Dr to Genesee Ave
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)						
	0	200	300	450	450 -1050*	1050	1200
1	1245	1308	1308	1308	1368	1491	1491
2	1245	1308	1308	1308	1368	1491	1491
3	1245	1308	1308	1308	1368	1491	1491
4	415	1175	1175	1545	**1368**	**997**	547

950

950
EB on ramp traffic volume

370
WB on ramp traffic volume

450
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to Bypass
Time Duration	AM peak
Analysis Type	weave analysis

redo design

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	600
Genesee on (veh/hr)	1120
Sorrento Valley off (veh/hr)	1750
I-5 to Bypass (veh/hr)	1450
segment volume (veh/hr)	4820

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m
Lane 1	801	708	764	846	887
Lane 2	801	708	764	846	887
Lane 3	801	708	764	846	887
Lane 4	1298	2698	2530	2281	408
Acc Lane	1120	0	0	0	0
	4820	4820	4820	4820	3070

Calculated Data

Thru Volume (lane 4)	Value
10%	195

NOTES

Lane 4 and Acceleration Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to Bypass
Time Duration	PM peak
Analysis Type	weave analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	600
Genesee on (veh/hr)	1850
Sorrento Valley off (veh/hr)	1100
I-5 to Bypass (veh/hr)	2900
segment volume (veh/hr)	6870

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m
Lane 1	-12	1253	1441	1608	1676
Lane 2	-12	1253	1441	1608	1676
Lane 3	-12	1253	1441	1608	1676
Lane 4	1085	3111	2547	2047	744
Acc Lane	1850	0	0	0	0
	2900	6870	6870	6870	5770

Calculated Data

Thru Volume (lane 4)	Value
10%	392

NOTES

Lane 4 and Acceleration Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to Roselle St
Time Duration	AM peak
Analysis Type	weave analysis

Version 2 - updated existing conditions: with bypass

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	600
volume on (veh/hr)	1120
volume off (veh/hr)	1750
segment volume (veh/hr)	5740

Calculated Data

Thru Volume (lane 4)	Value
10%	195

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m
Lane 1	801	708	764	846	887
Lane 2	801	708	764	846	887
Lane 3	801	708	764	846	887
Lane 4	1298	2698	2530	2281	408
Lane 5	1120				
Lane 6	0				

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to Roselle St
Time Duration	AM peak
Analysis Type	weave analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)				
	0	150	300	450	600
1	801	708	764	846	887
2	801	708	764	846	887
3	801	708	764	846	887
4	1298	**2698**	**2530**	**2281**	408
	1120				

1120
on ramp traffic volume

1750
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to Roselle St
Time Duration	PM peak
Analysis Type	weave analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)				
	0	150	300	450	600
1	-12	1253	1441	1608	1676
2	-12	1253	1441	1608	1676
3	-12	1253	1441	1608	1676
4	1085	**3111**	**2547**	**2047**	744
	1850				

1850
on ramp traffic volume

1100
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	I-5: Genesee to Carmel Valley
Time Duration	AM peak
Analysis Type	

Data Entry

Parameter	Input Value
I-5	7700
Genesee off	2250
I-5	5450
Genesee on	1120
I-5	6570
Sorrento Valley off	1750
I-5 to Bypass	1450
I-5	3370
I-805 to I-5	3200
I-5 / I-805 junction	6570
I-5 (HOV in/out)	6570
Carmel Valley off	1000
I-5	5570

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	I-5: Genesee to Carmel Valley
Time Duration	PM peak
Analysis Type	

Data Entry

Parameter	Input Value
I-5	5470
Genesee off	450
I-5	5020
Genesee on	1850
I-5	6870
Sorrento Valley off	1100
I-5 to Bypass	2900
I-5	2870
I-805 to I-5	3600
I-5 / I-805 junction	6470
I-5 (HOV in/out)	6470
Carmel Valley off	700
I-5	5770

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Bypass
Time Duration	AM peak
Analysis Type	

Data Entry

Parameter	Input Value
I-5 to Bypass	1450
I-805 to Bypass	1400
Bypass	2850
Carmel Mountain off	450
Carmel Mountain on	350
Bypass	2750
SR-56 EB off	1950
Bypass to I-5	800

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Bypass
Time Duration	PM peak
Analysis Type	

Data Entry

Parameter	Input Value
I-5 to Bypass	2900
I-805 to Bypass	2150
Bypass	5050
Carmel Mountain off	650
Carmel Mountain on	400
Bypass	4800
SR-56 EB off	2800
Bypass to I-5	2000

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Carmel Valley Rd to Del Mar Heights Rd
Time Duration	AM peak
Analysis Type	weave analysis with auxiliary lane

use this version

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1350
Carmel Valley on (veh/hr)	1160
Bypass on (veh/hr)	800
volume off (veh/hr)	1200
segment volume (veh/hr)	7530

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	900 m	1050 m	1200 m	1350 m
Lane 1	1393	1433	1346	1296	1245	1285	1306	1314	1325	1339
Lane 2	1393	1433	1346	1296	1245	1285	1306	1314	1325	1339
Lane 3	1393	1433	1346	1296	1245	1285	1306	1314	1325	1339
Lane 4	1393	1433	1346	1296	1245	1285	1306	1314	1325	1339
Lane 5	440	400	829	1225	1631	1585	1433	1294	1093	973
Aux Lane	360	240	1316	1120	918	806	871	982	1139	1200
	6370	6370	7530	7530	7530	7530	7530	7530	7530	7530

NOTES

Lane 5 and Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)
Bypass begins at 0 meter mark as Lane 5 and Auxiliary Lane

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Carmel Valley Rd to Del Mar Heights Rd
Time Duration	PM peak
Analysis Type	weave analysis with auxiliary lane

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1350
volume on (veh/hr)	1080
Bypass on (veh/hr)	2000
volume off (veh/hr)	1350
segment volume (veh/hr)	8850

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	900 m	1050 m	1200 m	1350 m
Lane 1	1443	1543	1650	1600	1542	1573	1584	1582	1589	1602
Lane 2	1443	1543	1650	1600	1542	1573	1584	1582	1589	1602
Lane 3	1443	1543	1650	1600	1542	1573	1584	1582	1589	1602
Lane 4	1443	1543	1650	1600	1542	1573	1584	1582	1589	1602
Lane 5	1100	1000	993	1371	1752	1706	1563	1433	1220	1090
Aux Lane	900	600	1256	1080	932	851	950	1091	1274	1350
	7770	7770	8850	8850	8850	8850	8850	8850	8850	8850

NOTES

Lane 5 and Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Carmel Valley Rd to Del Mar Heights Rd
Time Duration	AM peak
Analysis Type	weave analysis with auxiliary lane

prior to bypass
(don't use this version)

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1350
volume on (veh/hr)	1160
Bypass on (veh/hr)	800
volume off (veh/hr)	1200
segment volume (veh/hr)	7530

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	900 m	1050 m	1200 m	1350 m
Lane 1	1593	1483	1346	1296	1245	1285	1306	1314	1325	1339
Lane 2	1593	1483	1346	1296	1245	1285	1306	1314	1325	1339
Lane 3	1593	1483	1346	1296	1245	1285	1306	1314	1325	1339
Lane 4	1593	1483	1346	1296	1245	1285	1306	1314	1325	1339
Lane 5	0	319	829	1225	1631	1585	1433	1294	1093	973
Aux Lane	0	120	1316	1120	918	806	871	982	1139	1200
	6370	6370	7530	7530	7530	7530	7530	7530	7530	7530

NOTES

Lane 5 and Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Carmel Valley Rd to Del Mar Heights Rd
Time Duration	PM peak
Analysis Type	weave analysis with auxiliary lane

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1350
volume on (veh/hr)	1080
Bypass on (veh/hr)	2000
volume off (veh/hr)	1350
segment volume (veh/hr)	8850

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	900 m	1050 m	1200 m	1350 m
Lane 1	1943	1812	1650	1600	1542	1573	1584	1582	1589	1602
Lane 2	1943	1812	1650	1600	1542	1573	1584	1582	1589	1602
Lane 3	1943	1812	1650	1600	1542	1573	1584	1582	1589	1602
Lane 4	1943	1812	1650	1600	1542	1573	1584	1582	1589	1602
Lane 5	0	389	993	1371	1752	1706	1563	1433	1220	1090
Aux Lane	0	135	1256	1080	932	851	950	1091	1274	1350
	7770	7770	8850	8850	8850	8850	8850	8850	8850	8850

NOTES

Lane 5 and Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Carmel Valley Rd to Del Mar Heights Rd
Time Duration	AM peak
Analysis Type	weave analysis with auxiliary lane

this links with CV-DMH 2 spreadsheet

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)									
	0	150	300	450	600	750	900	1050	1200	1350
1	1593	1483	1346	1296	1245	1285	1306	1314	1325	1339
2	1593	1483	1346	1296	1245	1285	1306	1314	1325	1339
3	1593	1483	1346	1296	1245	1285	1306	1314	1325	1339
4	1593	1483	1346	1296	1245	1285	1306	1314	1325	1339
5		319	829	1225	1631	1585	1433	1294	1093	973
6		120	1316	1120	918	806	871	982	1139	1200

1160
on ramp traffic volume

1200
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Carmel Valley Rd to Del Mar Heights Rd
Time Duration	PM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)									
	0	150	300	450	600	750	900	1050	1200	1350
1	1943	1812	1650	1600	1542	1573	1584	1582	1589	1602
2	1943	1812	1650	1600	1542	1573	1584	1582	1589	1602
3	1943	1812	1650	1600	1542	1573	1584	1582	1589	1602
4	1943	1812	1650	1600	1542	1573	1584	1582	1589	1602
5		389	993	1371	1752	1706	1563	1433	1220	1090
6		135	1256	1080	932	851	950	1091	1274	1350

1080
on ramp traffic volume

1350
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Del Mar Heights Rd to Via de la Valle
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

diagram incorrect

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)								
Number	0	150	300	300-2150*	2150	2300	2450	2600	2750
1	1424	1424	0	1474	1518	1518	0	0	0
2	1424	1424	0	1474	1518	1518	0	0	0
3	1424	1424	0	1474	1518	1518	0	0	0
4	1424	1424	0	1474	1518	1518	0	0	0
5	633	1673	0	1474	1300	1300	0	0	0
	6330	7370				0	0	0	0

1040
on ramp traffic volume

1300
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Del Mar Heights Rd to Via de la Valle
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)								
Number	0	150	300	300-2150*	2150	2300	2450	2600	2750
1	1688	1688	0	1828	1935	1935	0	0	0
2	1688	1688	0	1828	1935	1935	0	0	0
3	1688	1688	0	1828	1935	1935	0	0	0
4	1688	1688	0	1828	1935	1935	0	0	0
5	750	**2390**	**0**	**1828**	**1400**	**1400**	**0**	0	0
	7500	9140				0	0	0	0

1640
on ramp traffic volume

1400
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Via de la Valle to Lomas Santa Fe
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

incorrect design (see below)
(microstation is wrong)

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1600
volume on EB (veh/hr)	250
volume on WB (veh/hr)	340
volume off (veh/hr)	660
segment volume (veh/hr)	6500
approach volume (veh/hr)	5910

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	550 m	700 m	850 m
Lane 1	1330	1404	1490	1540	1540	1540	1576
Lane 2	1330	1404	1490	1540	1540	1540	1576
Lane 3	1330	1404	1490	1540	1540	1540	1576
Lane 4	1330	1404	1690	1540	1540	1812	1771
Aux Lane	591	546	0	0	340	68	0
	5910	6160	6160	6160	6500	6500	6500

Segment Lengths

merge length (m)	850
fwy segment length (m)	600
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1625	1625
Lane 2	1625	1625
Lane 3	1625	1625
Lane 4	1625	965
	6500	5840

NOTES

Lane 4 and Aux Lane not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 3 not to exceed 2200 veh/hr for Merge/Diverge segment
Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2200 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Via de la Valle to Lomas Santa Fe
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1600
volume on EB (veh/hr)	600
volume on WB (veh/hr)	450
volume off (veh/hr)	700
segment volume (veh/hr)	9670
approach volume (veh/hr)	8620

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	550 m	700 m	850 m
Lane 1	1940	2047	2185	2305	2305	2305	2353
Lane 2	1940	2047	2185	2305	2305	2305	2353
Lane 3	1940	2047	2185	2305	2305	2305	2353
Lane 4	1940	2047	2665	2305	2305	2665	2611
Aux Lane	862	1031	0	0	450	90	0
	8620	9220	9220	9220	9670	9670	9670

Segment Lengths

merge length (m)	850
fwy segment length (m)	600
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	2418	2418
Lane 2	2418	2418
Lane 3	2418	2418
Lane 4	2418	1718
	9670	8970

NOTES

Lane 4 and Aux Lane not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 3 not to exceed 2200 veh/hr for Merge/Diverge segment
Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2200 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Via de la Valle to Lomas Santa Fe
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

correct existing design
(microstation is wrong)

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1600
volume on EB (veh/hr)	320
volume on WB (veh/hr)	470
volume off (veh/hr)	700
segment volume (veh/hr)	7210
approach volume (veh/hr)	6420

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	550 m	700 m	850 m
Lane 1	1605	1605	1645	1685	1685	1685	1735
Lane 2	1605	1605	1645	1685	1685	1685	1735
Lane 3	1605	1605	1645	1685	1685	1685	1735
Lane 4	1605	1925	1805	1685	1685	2061	2005
Aux Lane	320	0	0	0	470	94	0
	6740	6740	6740	6740	7210	7210	7210

Segment Lengths

merge length (m)	850
fwy segment length (m)	600
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1803	1803
Lane 2	1803	1803
Lane 3	1803	1803
Lane 4	1803	1103
	7210	6510

NOTES

Lane 4 and Aux Lane not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 3 not to exceed 2200 veh/hr for Merge/Diverge segment
Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2200 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Via de la Valle to Lomas Santa Fe
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1600
volume on EB (veh/hr)	600
volume on WB (veh/hr)	400
volume off (veh/hr)	400
segment volume (veh/hr)	8740
approach volume (veh/hr)	7740

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	550 m	700 m	850 m
Lane 1	1935	1935	2010	2085	2085	2085	2128
Lane 2	1935	1935	2010	2085	2085	2085	2128
Lane 3	1935	1935	2010	2085	2085	2085	2128
Lane 4	1935	2535	2310	2085	2085	2405	2357
Aux Lane	600	0	0	0	400	80	0
	8340	8340	8340	8340	8740	8740	8740

Segment Lengths

merge length (m)	850
fwy segment length (m)	600
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	2185	2185
Lane 2	2185	2185
Lane 3	2185	2185
Lane 4	2185	1785
	8740	8340

NOTES

Lane 4 and Aux Lane not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 3 not to exceed 2200 veh/hr for Merge/Diverge segment
Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2200 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing with Aux Lane Extension
Freeway & Direction	I-5 Northbound
Freeway Segment	Via de la Valle to Lomas Santa Fe
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Design with Aux lane for entire segment
(design for Majid)

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1600
volume on EB (veh/hr)	250
volume on WB (veh/hr)	340
volume off (veh/hr)	660
segment volume (veh/hr)	6500
approach volume (veh/hr)	5910

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	550 m
Lane 1	1478	1482	1495	1498	1492
Lane 2	1478	1482	1495	1498	1492
Lane 3	1478	1482	1495	1498	1492
Lane 4	1478	1482	1495	1498	1492
Aux Lane	250	233	179	168	531
	6160	6160	6160	6160	6500

Segment Lengths

merge length (m)	550
fwy segment length (m)	900
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1460	1460
Lane 2	1460	1460
Lane 3	1460	1460
Lane 4	1460	1460
Aux Lane	660	660
	6500	6500

NOTES

Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 4 not to exceed 2200 veh/hr for Merge/Diverge segment
Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2200 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing with Aux Lane Extension
Freeway & Direction	I-5 Northbound
Freeway Segment	Via de la Valle to Lomas Santa Fe
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Design with Aux lane for entire segment
(design for Majid)

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1600
volume on EB (veh/hr)	600
volume on WB (veh/hr)	450
volume off (veh/hr)	700
segment volume (veh/hr)	9670
approach volume (veh/hr)	8620

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	550 m
Lane 1	2155	2176	2220	2240	2244
Lane 2	2155	2176	2220	2240	2244
Lane 3	2155	2176	2220	2240	2244
Lane 4	2155	2176	2220	2240	2244
Aux Lane	600	515	340	262	696
	9220	9220	9220	9220	9670

Segment Lengths

merge length (m)	550
fwy segment length (m)	900
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	2243	2243
Lane 2	2243	2243
Lane 3	2243	2243
Lane 4	2243	2243
Aux Lane	700	700
	9670	9670

NOTES

Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 4 not to exceed 2200 veh/hr for Merge/Diverge segment
Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2200 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Via de la Valle to Lomas Santa Fe
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

incorrect design

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	550	700	850	850-1450*	1450	1600
1	1330	1404	1490	1540	1540	1540	1576	1625	1625	1625
2	1330	1404	1490	1540	1540	1540	1576	1625	1625	1625
3	1330	1404	1490	1540	1540	1540	1576	1625	1625	1625
4	1330	1404	1690	1540	1540	**1812**	1771	1625	1625	965
5	591	546			340	68				

250 EB on ramp traffic volume; 340 WB on ramp traffic volume; 660 off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Via de la Valle to Lomas Santa Fe
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	550	700	850	850-1450*	1450	1600
1	1940	2047	2185	**2305**	**2305**	**2305**	**2353**	**2418**	**2418**	**2418**
2	1940	2047	2185	**2305**	**2305**	**2305**	**2353**	**2418**	**2418**	**2418**
3	1940	2047	2185	**2305**	**2305**	**2305**	**2353**	**2418**	**2418**	**2418**
4	**1940**	**2047**	**2665**	**2305**	**2305**	**2665**	**2611**	**2418**	**2418**	1718
5	862	1031			450	90				

600 EB on ramp traffic volume; 450 WB on ramp traffic volume; 700 off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Via de la Valle to Lomas Santa Fe
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

correct design

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	550	700	850	850-1450*	1450	1600
1	1605	1605	1645	1685	1685	1685	1735	1803	1803	1803
2	1605	1605	1645	1685	1685	1685	1735	1803	1803	1803
3	1605	1605	1645	1685	1685	1685	1735	1803	1803	1803
4	1605	1925	1805	1685	1685	**2061**	2005	1803	1803	1103
Aux Lane	320				470	94				

320 EB on ramp traffic volume; 470 WB on ramp traffic volume; 700 off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Via de la Valle to Lomas Santa Fe
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	550	700	850	850-1450*	1450	1600
1	1935	1935	**2010**	**2085**	**2085**	**2085**	**2128**	**2185**	**2185**	**2185**
2	1935	1935	**2010**	**2085**	**2085**	**2085**	**2128**	**2185**	**2185**	**2185**
3	1935	1935	**2010**	**2085**	**2085**	**2085**	**2128**	**2185**	**2185**	**2185**
4	1935	**2538**	**2310**	**2085**	**2085**	**2405**	**2357**	**2185**	**2185**	1785
Aux Lane	600				400	80				

600 EB on ramp traffic volume; 400 WB on ramp traffic volume; 400 off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing with Aux Lane Extension
Freeway & Direction	I-5 Northbound
Freeway Segment	Via de la Valle to Lomas Santa Fe
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

aux lane design (does not exist)

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	550	550-1450*	1450	1600
1	1478	1482	1495	1498	1492	1543	1460	1460
2	1478	1482	1495	1498	1492	1543	1460	1460
3	1478	1482	1495	1498	1492	1543	1460	1460
4	1478	1482	1495	1498	1492	1543	1460	1460
Aux Lane	250	233	179	168	531	330	660	660

250 EB on ramp traffic volume; 340 WB on ramp traffic volume; 660 off ramp traffic volume

Design Year	Existing with Aux Lane Extension
Freeway & Direction	I-5 Northbound
Freeway Segment	Via de la Valle to Lomas Santa Fe
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	550	550-1450*	1450	1600
1	2155	2176	**2220**	**2240**	**2244**	**2330**	**2243**	**2243**
2	2155	2176	**2220**	**2240**	**2244**	**2330**	**2243**	**2243**
3	2155	2176	**2220**	**2240**	**2244**	**2330**	**2243**	**2243**
4	2155	2176	**2220**	**2240**	**2244**	**2330**	**2243**	**2243**
Aux Lane	600	515	340	262	696	350	700	700

600 EB on ramp traffic volume; 450 WB on ramp traffic volume; 700 off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Lomas Santa Fe to Manchester Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1700
volume on (veh/hr)	700
volume off (veh/hr)	800
segment volume (veh/hr)	7210
approach volume (veh/hr)	6510

Segment Lengths

merge length (m)	150
fwy segment length (m)	1400
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1953	1953
Lane 2	1953	1953
Lane 3	1953	1953
Lane 4	651	1351
	6510	7210

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1803	1803
Lane 2	1803	1803
Lane 3	1803	1803
Lane 4	1803	1003
	7210	6410

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Lomas Santa Fe to Manchester Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1700
volume on (veh/hr)	950
volume off (veh/hr)	1350
segment volume (veh/hr)	9290
approach volume (veh/hr)	8340

Segment Lengths

merge length (m)	150
fwy segment length (m)	1400
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	2502	2502
Lane 2	2502	2502
Lane 3	2502	2502
Lane 4	834	1784
	8340	9290

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	2323	2323
Lane 2	2323	2323
Lane 3	2323	2323
Lane 4	2323	973
	9290	7940

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Lomas Santa Fe to Manchester Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)				
Number	0	150	150-1550*	1550	1700
1	1953	1953	1803	1803	1803
2	1953	1953	1803	1803	1803
3	1953	1953	1803	1803	1803
4	651	1351	1803	1803	1003

700
on ramp traffic volume

800
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Lomas Santa Fe to Manchester Ave
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)				
Number	0	150	150-1550*	1550	1700
1	**2502**	**2502**	**2323**	**2323**	**2323**
2	**2502**	**2502**	**2323**	**2323**	**2323**
3	**2502**	**2502**	**2323**	**2323**	**2323**
4	834	**1784**	**2323**	**2323**	973

950
on ramp traffic volume

1350
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Manchester Ave to Birmingham Dr
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1300
volume on (veh/hr)	160
volume off (veh/hr)	300
segment volume (veh/hr)	6570
approach volume (veh/hr)	6410

Segment Lengths

merge length (m)	150
fwy segment length (m)	1000
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1923	1923
Lane 2	1923	1923
Lane 3	1923	1923
Lane 4	641	801
	6410	6570

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1643	1643
Lane 2	1643	1643
Lane 3	1643	1643
Lane 4	1643	1343
	6570	6270

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Manchester Ave to Birmingham Dr
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1300
volume on (veh/hr)	170
volume off (veh/hr)	450
segment volume (veh/hr)	8110
approach volume (veh/hr)	7940

Segment Lengths

merge length (m)	150
fwy segment length (m)	1000
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	2382	2382
Lane 2	2382	2382
Lane 3	2382	2382
Lane 4	794	964
	7940	8110

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	2028	2028
Lane 2	2028	2028
Lane 3	2028	2028
Lane 4	2028	1578
	8110	7660

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Manchester Ave to Birmingham Dr
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)				
	0	150	150-1150*	1150	1300
1	1923	1923	1643	1643	1643
2	1923	1923	1643	1643	1643
3	1923	1923	1643	1643	1643
4	641	801	1643	1643	1343

160
on ramp traffic volume

300
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Manchester Ave to Birmingham Dr
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)				
	0	150	150-1150*	1150	1300
1	**2382**	**2382**	**2028**	**2028**	**2028**
2	**2382**	**2382**	**2028**	**2028**	**2028**
3	**2382**	**2382**	**2028**	**2028**	**2028**
4	794	964	**2028**	**2028**	1578

170
on ramp traffic volume

450
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Birmingham Dr to Santa Fe Dr
Time Duration	AM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	600
volume on (veh/hr)	580
volume off (veh/hr)	450
segment volume (veh/hr)	6850

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m
Lane 1	1802	1778	1831	1881	1903
Lane 2	1802	1778	1831	1881	1903
Lane 3	1802	1778	1831	1881	1903
Lane 4	866	1518	1358	1206	692
	6270	6850	6850	6850	6400

Calculated Data

Thru Volume (lane 4)	Value
10%	582

NOTES

Lane 4 not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Birmingham Dr to Santa Fe Dr
Time Duration	PM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	600
volume on (veh/hr)	450
volume off (veh/hr)	550
segment volume (veh/hr)	8110

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m
Lane 1	2201	2172	2202	2238	2255
Lane 2	2201	2172	2202	2238	2255
Lane 3	2201	2172	2202	2238	2255
Lane 4	1058	1596	1504	1396	797
	7660	8110	8110	8110	7560

Calculated Data

Thru Volume (lane 4)	Value
10%	711

NOTES

Lane 4 not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Birmingham Dr to Santa Fe Dr
Time Duration	AM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)				
	0	150	300	450	600
1	1802	1778	1831	1881	1903
2	1802	1778	1831	1881	1903
3	1802	1778	1831	1881	1903
4	866	1518	1358	1206	692

580
on ramp traffic volume

450
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Birmingham Dr to Santa Fe Dr
Time Duration	PM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)				
	0	150	300	450	600
1	**2201**	**2172**	**2202**	**2238**	**2255**
2	**2201**	**2172**	**2202**	**2238**	**2255**
3	**2201**	**2172**	**2202**	**2238**	**2255**
4	1058	1596	1504	1396	797

450
on ramp traffic volume

550
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Santa Fe Dr to Encinitas Blvd
Time Duration	AM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	800
volume on (veh/hr)	480
volume off (veh/hr)	680
segment volume (veh/hr)	6880

Calculated Data

Thru Volume (lane 4)	Value
10%	572

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	800 m
Lane 1	1851	1813	1840	1852	1849	1854	1855
Lane 2	1851	1813	1840	1852	1849	1854	1855
Lane 3	1851	1813	1840	1852	1849	1854	1855
Lane 4	846	1442	1360	1325	1332	1319	634
	6400	6880	6880	6880	6880	6880	6200

NOTES

Lane 4 not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Santa Fe Dr to Encinitas Blvd
Time Duration	PM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	800
volume on (veh/hr)	590
volume off (veh/hr)	650
segment volume (veh/hr)	8150

Calculated Data

Thru Volume (lane 4)	Value
10%	691

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	800 m
Lane 1	2202	2166	2209	2233	2236	2242	2244
Lane 2	2202	2166	2209	2233	2236	2242	2244
Lane 3	2202	2166	2209	2233	2236	2242	2244
Lane 4	953	1653	1523	1450	1442	1424	768
	7560	8150	8150	8150	8150	8150	7500

NOTES

Lane 4 not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Santa Fe Dr to Encinitas Blvd
Time Duration	AM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	750	800
1	1851	1813	1840	1852	1849	1854	1855
2	1851	1813	1840	1852	1849	1854	1855
3	1851	1813	1840	1852	1849	1854	1855
4	846	1442	1360	1325	1332	1319	634

480
on ramp traffic volume

680
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Santa Fe Dr to Encinitas Blvd
Time Duration	PM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	750	800
1	**2202**	**2166**	**2209**	**2233**	**2236**	**2242**	**2244**
2	**2202**	**2166**	**2209**	**2233**	**2236**	**2242**	**2244**
3	**2202**	**2166**	**2209**	**2233**	**2236**	**2242**	**2244**
4	953	1653	1523	1450	1442	1424	768

590
on ramp traffic volume

650
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Encinitas Blvd to Leucadia Blvd
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1300
volume on (veh/hr)	640
volume off (veh/hr)	500
segment volume (veh/hr)	6840
approach volume (veh/hr)	6200

Segment Lengths

merge length (m)	150
fwy segment length (m)	1000
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1860	1860
Lane 2	1860	1860
Lane 3	1860	1860
Lane 4	620	1260
	6200	6840

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1710	1710
Lane 2	1710	1710
Lane 3	1710	1710
Lane 4	1710	1210
	6840	6340

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Encinitas Blvd to Leucadia Blvd
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1300
volume on (veh/hr)	880
volume off (veh/hr)	600
segment volume (veh/hr)	8380
approach volume (veh/hr)	7500

Segment Lengths

merge length (m)	150
fwy segment length (m)	1000
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	2250	2250
Lane 2	2250	2250
Lane 3	2250	2250
Lane 4	750	1630
	7500	8380

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	2095	2095
Lane 2	2095	2095
Lane 3	2095	2095
Lane 4	2095	1495
	8380	7780

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Encinitas Blvd to Leucadia Blvd
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)				
Number	0	150	150-1150*	1150	1300
1	1860	1860	1710	1710	1710
2	1860	1860	1710	1710	1710
3	1860	1860	1710	1710	1710
4	620	1260	1710	1710	1210

640
on ramp traffic volume

500
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Encinitas Blvd to Leucadia Blvd
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)				
Number	0	150	150-1150*	1150	1300
1	**2250**	**2250**	**2095**	**2095**	**2095**
2	**2250**	**2250**	**2095**	**2095**	**2095**
3	**2250**	**2250**	**2095**	**2095**	**2095**
4	750	1630	**2095**	**2095**	1495

880
on ramp traffic volume

600
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Leucadia Blvd to La Costa Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1550
volume on (veh/hr)	560
volume off (veh/hr)	620
segment volume (veh/hr)	6900
approach volume (veh/hr)	6340

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1902	1902
Lane 2	1902	1902
Lane 3	1902	1902
Lane 4	634	1194
	6340	6900

Segment Lengths

merge length (m)	150
fwy segment length (m)	1250
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1725	1725
Lane 2	1725	1725
Lane 3	1725	1725
Lane 4	1725	1105
	6900	6280

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Leucadia Blvd to La Costa Ave
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1550
volume on (veh/hr)	650
volume off (veh/hr)	800
segment volume (veh/hr)	8430
approach volume (veh/hr)	7780

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	2312	2312
Lane 2	2312	2312
Lane 3	2312	2312
Lane 4	843	1493
	7780	8430

Segment Lengths

merge length (m)	150
fwy segment length (m)	1250
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	2108	2108
Lane 2	2108	2108
Lane 3	2108	2108
Lane 4	2108	1308
	8430	7630

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Leucadia Blvd to La Costa Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)				
Number	0	150	150-1400*	1400	1550
1	1902	1902	1725	1725	1725
2	1902	1902	1725	1725	1725
3	1902	1902	1725	1725	1725
4	634	1194	1725	1725	1105

560
on ramp traffic volume

620
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Leucadia Blvd to La Costa Ave
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)				
Number	0	150	150-1400*	1400	1550
1	**2312**	**2312**	2108	2108	2108
2	**2312**	**2312**	2108	2108	2108
3	**2312**	**2312**	2108	2108	2108
4	843	1493	**2108**	**2108**	1308

650
on ramp traffic volume

800
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	La Costa Ave to Poinsettia Lane
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1700
volume on (veh/hr)	660
volume off (veh/hr)	680
segment volume (veh/hr)	6940
approach volume (veh/hr)	6280

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1884	1884
Lane 2	1884	1884
Lane 3	1884	1884
Lane 4	628	1288
	6280	6940

Segment Lengths

merge length (m)	150
fwy segment length (m)	1100
diverge length (m)	450

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	450 m	300 m	150 m	0 m
Lane 1	1601	1574	1565	1565
Lane 2	1601	1574	1565	1565
Lane 3	1601	1574	1565	1565
Lane 4	2138	1791	1619	1565
Aux lane	0	428	626	680
	6940	6940	6940	6940

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	La Costa Ave to Poinsettia Lane
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1700
volume on (veh/hr)	660
volume off (veh/hr)	750
segment volume (veh/hr)	8290
approach volume (veh/hr)	7630

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	2289	2289
Lane 2	2289	2289
Lane 3	2289	2289
Lane 4	763	1423
	7630	8290

Segment Lengths

merge length (m)	150
fwy segment length (m)	1100
diverge length (m)	450

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	450 m	300 m	150 m	0 m
Lane 1	1924	1894	1885	1885
Lane 2	1924	1894	1885	1885
Lane 3	1924	1894	1885	1885
Lane 4	2517	2134	1945	1885
Aux lane	0	473	690	750
	8290	8290	8290	8290

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	La Costa Ave to Poinsettia Lane
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)						
Number	0	150	150-1250*	1250	1400	1550	1700
1	1884	1884	1735	1601	1574	1565	1565
2	1884	1884	1735	1601	1574	1565	1565
3	1884	1884	1735	1601	1574	1565	1565
4	628	1288	1735	**2138**	1791	1619	1565
					428	626	680

660
on ramp traffic volume

680
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	La Costa Ave to Poinsettia Lane
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)						
Number	0	150	150-1250*	1250	1400	1550	1700
1	**2289**	**2289**	2073	1924	1894	1885	1885
2	**2289**	**2289**	2073	1924	1894	1885	1885
3	**2289**	**2289**	2073	1924	1894	1885	1885
4	763	1423	**2073**	**2517**	**2134**	**1945**	**1885**
					473	690	750

660
on ramp traffic volume

750
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Poinsettia Lane to Palomar Airport Road
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1700
volume on (veh/hr)	480
volume off (veh/hr)	1800
segment volume (veh/hr)	6740
approach volume (veh/hr)	6260

Segment Lengths

merge length (m)	150
fwy segment length (m)	1400
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1878	1878
Lane 2	1878	1878
Lane 3	1878	1878
Lane 4	626	1106
	6260	6740

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1422	1422
Lane 2	1422	1422
Lane 3	1422	1422
Lane 4	2474	674
	6740	4940

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Poinsettia Lane to Palomar Airport Road
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1700
volume on (veh/hr)	420
volume off (veh/hr)	1250
segment volume (veh/hr)	7960
approach volume (veh/hr)	7540

Calculated Data

Thru Volume (lane 4)	Value
10%	796

Segment Lengths

merge length (m)	150
fwy segment length (m)	1400
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	2262	2262
Lane 2	2262	2262
Lane 3	2262	2262
Lane 4	754	1174
	7540	7960

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1971	1971
Lane 2	1971	1971
Lane 3	1971	1971
Lane 4	2046	796
	7960	6710

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Poinsettia Lane to Palomar Airport Road
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1550*	1550	1700
1	1878	1878	1685	1422	1422
2	1878	1878	1685	1422	1422
3	1878	1878	1685	1422	1422
4	626	1106	1685	**2474**	674

480
on ramp traffic volume

1800
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Poinsettia Lane to Palomar Airport Road
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1550*	1550	1700
1	**2262**	**2262**	1990	1971	1971
2	**2262**	**2262**	1990	1971	1971
3	**2262**	**2262**	1990	1971	1971
4	754	1174	**1990**	**2046**	796

420
on ramp traffic volume

1250
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Palomar Airport Road to Cannon Road
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	900
volume on (veh/hr)	1100
volume off (veh/hr)	580
total volume (veh/hr)	6040

Calculated Data

Thru Volume (lane 4)	Value
10%	436

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	900 m
Lane 1	1445	1412	1416	1477	1527	1572	1601
Lane 2	1445	1412	1416	1477	1527	1572	1601
Lane 3	1445	1412	1416	1477	1527	1572	1601
Lane 4	604	844	1190	1096	942	757	656
Aux lane	1100	958	601	513	518	567	580
	6040	6040	6040	6040	6040	6040	6040

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Palomar Airport Road to Cannon Road
Time Duration	PM peak
Analysis Type	Weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	900
volume on (veh/hr)	1800
volume off (veh/hr)	600
total volume (veh/hr)	8510

Calculated Data

Thru Volume (lane 4)	Value
10%	611

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	900 m
Lane 1	1975	1941	1967	2085	2185	2265	2313
Lane 2	1975	1941	1967	2085	2185	2265	2313
Lane 3	1975	1941	1967	2085	2185	2265	2313
Lane 4	785	1199	1775	1625	1373	1109	971
Aux lane	1800	1488	834	630	582	606	600
	8510	8510	8510	8510	8510	8510	8510

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Palomar Airport Road to Cannon Road
Time Duration	AM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)						
	0	150	300	450	600	750	900
1	1445	1412	1416	1477	1527	1572	1601
2	1445	1412	1416	1477	1527	1572	1601
3	1445	1412	1416	1477	1527	1572	1601
4	604	844	1190	1096	942	757	656
	1100	958	601	513	518	567	580

1100
on ramp traffic volume

580
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Palomar Airport Road to Cannon Road
Time Duration	PM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)						
	0	150	300	450	600	750	900
1	1975	1941	1967	**2085**	**2185**	**2265**	**2313**
2	1975	1941	1967	**2085**	**2185**	**2265**	**2313**
3	1975	1941	1967	**2085**	**2185**	**2265**	**2313**
4	785	1199	1775	1625	1373	1109	971
	1800	1488	834	630	582	606	600

1800
on ramp traffic volume

600
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Cannon Road to Tamarack Avenue
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1450
volume on (veh/hr)	700
volume off (veh/hr)	500
segment volume (veh/hr)	6160
approach volume (veh/hr)	5460

Segment Lengths

merge length (m)	450
fwy segment length (m)	850
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m
Lane 1	1638	1638	1699	1771
Lane 2	1638	1638	1699	1771
Lane 3	1638	1638	1699	1771
Lane 4	546	1001	1015	847
Acc lane	700	245	49	0
	6160	6160	6160	6160

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1540	1540
Lane 2	1540	1540
Lane 3	1540	1540
Lane 4	1540	1040
	6160	5660

NOTES

Lane 4 and Acceleration Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Cannon Road to Tamarack Avenue
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1450
volume on (veh/hr)	1050
volume off (veh/hr)	800
segment volume (veh/hr)	8960
approach volume (veh/hr)	7910

Segment Lengths

merge length (m)	450
fwy segment length (m)	850
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m
Lane 1	2373	2373	2464	2573
Lane 2	2373	2373	2464	2573
Lane 3	2373	2373	2464	2573
Lane 4	791	1474	1495	1243
Acc lane	1050	368	74	0
	8960	8960	8960	8960

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	2240	2240
Lane 2	2240	2240
Lane 3	2240	2240
Lane 4	2240	1440
	8960	8160

NOTES

Lane 4 and Acceleration Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Cannon Road to Tamarack Avenue
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)						
	0	150	300	450	450-1300*	1300	1450
1	1638	1638	1699	1771	1540	1540	1540
2	1638	1638	1699	1771	1540	1540	1540
3	1638	1638	1699	1771	1540	1540	1540
4	546	1001	1015	847	1540	1540	1040
	700	245	49				

700
on ramp traffic volume

500
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Cannon Road to Tamarack Avenue
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)						
	0	150	300	450	450-1300*	1300	1450
1	**2373**	**2373**	**2464**	**2573**	**2240**	**2240**	**2240**
2	**2373**	**2373**	**2464**	**2573**	**2240**	**2240**	**2240**
3	**2373**	**2373**	**2464**	**2573**	**2240**	**2240**	**2240**
4	791	1474	1495	1243	**2240**	**2240**	1440
	1050	368	74				

1050
on ramp traffic volume

800
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Tamarack Avenue to Carlsbad Village Drive
Time Duration	AM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	850
volume on (veh/hr)	520
volume off (veh/hr)	570
total volume (veh/hr)	6180

Calculated Data

Thru Volume (lane 4)	Value
10%	509

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	850 m
Lane 1	1651	1619	1657	1678	1674	1676	1680
Lane 2	1651	1619	1657	1678	1674	1676	1680
Lane 3	1651	1619	1657	1678	1674	1676	1680
Lane 4	707	1324	1210	1146	1159	1152	571
	5660	6180	6180	6180	6180	6180	5610

NOTES

Lane 4 not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Tamarack Avenue to Carlsbad Village Drive
Time Duration	PM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	850
volume on (veh/hr)	410
volume off (veh/hr)	700
total volume (veh/hr)	8570

Calculated Data

Thru Volume (lane 4)	Value
10%	746

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	850 m
Lane 1	2390	2351	2367	2370	2356	2356	2358
Lane 2	2390	2351	2367	2370	2356	2356	2358
Lane 3	2390	2351	2367	2370	2356	2356	2358
Lane 4	989	1518	1470	1459	1501	1503	795
	8160	8570	8570	8570	8570	8570	7870

NOTES

Lane 4 not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Tamarack Ave to Carlsbad Village Dr
Time Duration	AM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)						
	0	150	300	450	600	750	850
1	1651	1619	1657	1678	1674	1676	1680
2	1651	1619	1657	1678	1674	1676	1680
3	1651	1619	1657	1678	1674	1676	1680
4	707	1324	1210	1146	1159	1152	571

520
on ramp traffic volume

570
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Tamarack Ave to Carlsbad Village Dr
Time Duration	PM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)						
	0	150	300	450	600	750	850
1	**2390**	**2351**	**2367**	**2370**	**2356**	**2356**	**2358**
2	**2390**	**2351**	**2367**	**2370**	**2356**	**2356**	**2358**
3	**2390**	**2351**	**2367**	**2370**	**2356**	**2356**	**2358**
4	989	1518	1470	1459	1501	1503	795

410
on ramp traffic volume

700
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Carlsbad Village Drive to Las Flores Drive
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	350
volume on (veh/hr)	480
volume off (veh/hr)	160
total volume (veh/hr)	6090

Calculated Data

Thru Volume (lane 4)	Value
10%	545

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	350 m
Lane 1	1638	1636	1662	1699
Lane 2	1638	1636	1662	1699
Lane 3	1638	1636	1662	1699
Lane 4	697	948	875	833
Aux lane	480	235	229	160
	6090	6090	6090	6090

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Carlsbad Village Drive to Las Flores Drive
Time Duration	PM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	350
volume on (veh/hr)	550
volume off (veh/hr)	450
total volume (veh/hr)	8420

Calculated Data

Thru Volume (lane 4)	Value
10%	742

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	350 m
Lane 1	2234	2228	2257	2299
Lane 2	2234	2228	2257	2299
Lane 3	2234	2228	2257	2299
Lane 4	1170	1276	1133	1072
Aux lane	550	462	516	450
	8420	8420	8420	8420

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Carlsbad Village Drive to Las Flores Drive
Time Duration	AM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	350
1	1638	1636	1662	1699
2	1638	1636	1662	1699
3	1638	1636	1662	1699
4	697	948	875	833
	480	235	229	160

480 on ramp traffic volume

160 off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Carlsbad Village Drive to Las Flores Drive
Time Duration	PM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	350
1	**2234**	**2228**	**2257**	**2299**
2	**2234**	**2228**	**2257**	**2299**
3	**2234**	**2228**	**2257**	**2299**
4	1170	1276	1133	1072
	550	462	516	450

550 on ramp traffic volume

450 off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Las Flores Dr to SR-78
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	300
volume on (veh/hr)	370
volume off EB (veh/hr)	1700
total volume (veh/hr)	6300

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m
Lane 1	1297	1269	1290
Lane 2	1297	1269	1290
Lane 3	1297	1269	1290
Lane 4	2038	1109	671
Lane 5	370	1385	59
	6300	6300	4600

Calculated Data

Thru Volume	Value
10%	423

NOTES

Lane 5 not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Las Flores Dr to SR-78
Time Duration	PM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	300
volume on (veh/hr)	610
volume off EB (veh/hr)	2800
total volume (veh/hr)	8580

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m
Lane 1	1598	1551	1586
Lane 2	1598	1551	1586
Lane 3	1598	1551	1586
Lane 4	3177	1647	926
Lane 5	610	2281	98
	8580	8580	5780

Calculated Data

Thru Volume	Value
10%	517

NOTES

Lane 5 not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Las Flores Dr to SR-78
Time Duration	AM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300
1	1297	1269	1290
2	1297	1269	1290
3	1297	1269	1290
4	2038	1109	671
5	370	1385	59

370
on ramp traffic volume

1700
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Las Flores Dr to SR-78
Time Duration	PM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300
1	1598	1551	1586
2	1598	1551	1586
3	1598	1551	1586
4	**3177**	1647	926
5	610	**2281**	98

610
on ramp traffic volume

2800
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	SR-78 to California Street
Time Duration	AM peak
Analysis Type	

Data Entry

Parameter	Input Value
number of lanes	6 to 4
segment length (m)	1500
SR-78 EB volume on (veh/hr)	20
SR-78 WB volume off (veh/hr)	130
SR-78 WB on (veh/hr)	1800
total volume (veh/hr)	6290

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	100 m	300 m	450 m	650 m	1150 m	1500 m
Lane 1	964	964	1123	1123	1225	1642	1573
Lane 2	964	964	1123	1123	1225	1642	1573
Lane 3	964	964	1123	1123	1225	1642	1573
Lane 4	964	964	1123	1123	1393	1363	1573
Lane 5	744	634	0	900	1224	0	0
Aux lane	20	130	0	900	0	0	0
	4620	4620	4490	6290	6290	6290	6290

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	SR-78 to California Street
Time Duration	PM peak
Analysis Type	

Data Entry

Parameter	Input Value
number of lanes	6 to 4
segment length (m)	1500
SR-78 EB volume on (veh/hr)	50
SR-78 WB volume off (veh/hr)	300
SR-78 WB on (veh/hr)	1800
total volume (veh/hr)	7330

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	100 m	300 m	450 m	650 m	1150 m	1500 m
Lane 1	1196	1196	1383	1383	1485	1954	1833
Lane 2	1196	1196	1383	1383	1485	1954	1833
Lane 3	1196	1196	1383	1383	1485	1954	1833
Lane 4	1196	1196	1383	1383	1653	1467	1833
Lane 5	998	748	0	900	1224	0	0
Aux lane	50	300	0	900	0	0	0
	5830	5830	5530	7330	7330	7330	7330

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	SR-78 to California Street
Time Duration	AM peak
Analysis Type	

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	100	300	450	650	1150	1500
1	964	964	1123	1123	1225	1642	1573
2	964	964	1123	1123	1225	1642	1573
3	964	964	1123	1123	1225	1642	1573
4	964	964	1123	1123	1393	1363	1573
5	744	634		900	1224		
	20	130		900			

20 SR-78 EB on ramp traffic volume

130 SR-78 WB off ramp traffic volume

1800 SR-78 WB on ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	California Street to Oceanside Blvd
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
segment length (m)	450
volume on (veh/hr)	200
volume off (veh/hr)	800
total volume (veh/hr)	6490

Distance	0 m	150 m	300 m	450 m
Lane 1	1703	1660	1664	1685
Lane 2	1703	1660	1664	1685
Lane 3	1703	1660	1664	1685
Lane 4	1181	935	747	635
Aux Lane	200	574	750	800
	6490	6490	6490	6490

Calculated Data

Thru Volume	Value
10%	549

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	California Street to Oceanside Blvd
Time Duration	PM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
segment length (m)	450
volume on (veh/hr)	180
volume off (veh/hr)	1200
total volume (veh/hr)	7510

Distance	0 m	150 m	300 m	450 m
Lane 1	1923	1859	1855	1873
Lane 2	1923	1859	1855	1873
Lane 3	1923	1859	1855	1873
Lane 4	1561	1114	830	690
Aux Lane	180	819	1117	1200
	7510	7510	7510	7510

Calculated Data

Thru Volume	Value
10%	613

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	California Street to Oceanside Blvd
Time Duration	AM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450
1	1703	1660	1664	1685
2	1703	1660	1664	1685
3	1703	1660	1664	1685
4	1181	935	747	635
	200	574	750	800

200
on ramp traffic volume

800
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	California Street to Oceanside Blvd
Time Duration	PM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450
1	**1923**	1859	1855	1873
2	**1923**	1859	1855	1873
3	**1923**	1859	1855	1873
4	1561	1114	830	690
	180	819	1117	1200

180
on ramp traffic volume

1200
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Oceanside Blvd to Mission Ave
Time Duration	AM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	4
segment length (m)	550
volume on (veh/hr)	450
volume off (veh/hr)	1000
total volume (veh/hr)	6140

Distance	0 m	200 m	300 m	450 m	550 m
Lane 1	1510	1464	1484	1512	1529
Lane 2	1510	1464	1484	1512	1529
Lane 3	1510	1464	1484	1512	1529
Lane 4	1159	1749	1689	1604	555
	5690	6140	6140	6140	5140

Calculated Data

Thru Volume	Value
10%	469

NOTES

Lane 4 not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Oceanside Blvd to Mission Ave
Time Duration	PM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	4
segment length (m)	550
volume on (veh/hr)	440
volume off (veh/hr)	1200
total volume (veh/hr)	6750

Distance	0 m	200 m	300 m	450 m	550 m
Lane 1	1657	1601	1612	1636	1652
Lane 2	1657	1601	1612	1636	1652
Lane 3	1657	1601	1612	1636	1652
Lane 4	1339	1947	1915	1843	595
	6310	6750	6750	6750	5550

Calculated Data

Thru Volume	Value
10%	511

NOTES

Lane 4 not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Oceanside Blvd to Mission Ave
Time Duration	AM peak
Analysis Type	weave analysis without aux lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)				
	0	200	300	450	550
1	1510	1464	1484	1512	1529
2	1510	1464	1484	1512	1529
3	1510	1464	1484	1512	1529
4	1159	1749	1689	1604	555

450
on ramp traffic volume

1000
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Oceanside Blvd to Mission Ave
Time Duration	PM peak
Analysis Type	weave analysis without aux lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)				
	0	200	300	450	550
1	1657	1601	1612	1636	1652
2	1657	1601	1612	1636	1652
3	1657	1601	1612	1636	1652
4	1339	**1947**	**1915**	**1843**	595

440
on ramp traffic volume

1200
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Mission Ave to SR-76
Time Duration	AM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	4
segment length (m)	500
volume on (veh/hr)	400
volume off (veh/hr)	750
total volume (veh/hr)	5540

Distance	0 m	200 m	300 m	450 m	500
Lane 1	1395	1360	1383	1410	1425
Lane 2	1395	1360	1383	1410	1425
Lane 3	1395	1360	1383	1410	1425
Lane 4	957	1462	1392	1309	515
	5140	5540	5540	5540	4790

Calculated Data

Thru Volume	Value
10%	439

NOTES

Lane 4 not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Mission Ave to SR-76
Time Duration	PM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	4
segment length (m)	500
volume on (veh/hr)	300
volume off (veh/hr)	1400
total volume (veh/hr)	5850

Distance	0 m	200 m	300 m	450 m	500
Lane 1	1390	1324	1308	1315	1326
Lane 2	1390	1324	1308	1315	1326
Lane 3	1390	1324	1308	1315	1326
Lane 4	1381	1877	1925	1905	472
	5550	5850	5850	5850	4450

Calculated Data

Thru Volume	Value
10%	415

NOTES

Lane 4 not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Mission Ave to SR-76
Time Duration	AM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)				
	0	200	300	450	500
1	1395	1360	1383	1410	1425
2	1395	1360	1383	1410	1425
3	1395	1360	1383	1410	1425
4	957	1462	1392	1309	515

400
on ramp traffic volume

750
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Mission Ave to SR-76
Time Duration	PM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)				
	0	200	300	450	500
1	1390	1324	1308	1315	1326
2	1390	1324	1308	1315	1326
3	1390	1324	1308	1315	1326
4	1381	**1877**	**1925**	**1905**	472

300
on ramp traffic volume

1400
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	SR-76 to Harbor
Time Duration	AM peak
Analysis Type	weave analysis

Data Entry

Parameter	Input Value
number of lanes	4
segment length (m)	750
volume on (veh/hr)	1600
EB volume off (veh/hr)	1900
WB volume off (veh/hr)	300
total volume (veh/hr)	6390

Calculated Data

Thru Volume	Value
10%	289

Distance	0 m	150 m	300 m	350 m	450 m	600 m	750 m
Lane 1	930	867	1027	1080	1123	1123	1123
Lane 2	930	867	1027	1080	1123	1123	1123
Lane 3	930	867	1027	1080	1123	1123	1123
Lane 4	1999	1869	1418	1249	1123	1123	823
Aux Lane	1600	1920	1891	1900	0	0	0
	6390	6390	6390	6390	4490	4490	4190

NOTES

Lane 4 and Aux Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	SR-76 to Harbor
Time Duration	PM peak
Analysis Type	weave analysis

Data Entry

Parameter	Input Value
number of lanes	4
segment length (m)	750
volume on (veh/hr)	950
EB volume off (veh/hr)	850
WB volume off (veh/hr)	250
total volume (veh/hr)	5400

Calculated Data

Thru Volume	Value
10%	360

Distance	0 m	150 m	300 m	350 m	450 m	600 m	750 m
Lane 1	1108	1080	1175	1207	1138	1138	1138
Lane 2	1108	1080	1175	1207	1138	1138	1138
Lane 3	1108	1080	1175	1207	1138	1138	1138
Lane 4	1125	1243	1022	930	1138	1138	888
Aux Lane	950	918	853	850	0	0	0
	5400	5400	5400	5400	4550	4550	4300

NOTES

Lane 4 and Aux Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	SR-76 to Harbor
Time Duration	AM peak
Analysis Type	weave analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	350	350-750	750
1	930	867	1027	1080	1123	1123
2	930	867	1027	1080	1123	1123
3	930	867	1027	1080	1123	1123
4	1999	1869	1418	1249	1123	823
	1600	**1920**	**1891**	**1900**		

1600 on ramp traffic volume

1900 EB off ramp traffic volume

300 WB off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	SR-76 to Harbor
Time Duration	PM peak
Analysis Type	weave analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	350	350-750	750
1	1108	1080	1175	1207	1138	1138
2	1108	1080	1175	1207	1138	1138
3	1108	1080	1175	1207	1138	1138
4	1125	1243	1022	930	1138	888
	950	918	853	850		

950 on ramp traffic volume

850 EB off ramp traffic volume

250 WB off ramp traffic volume

SB Existing Traffic Analysis
June 2007

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Roselle St to Genesee Ave
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	750
volume on (veh/hr)	1150
volume off (veh/hr)	2000
segment volume (veh/hr)	6480

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m
Lane 1	1359	1246	1197	1193	1258	1294
Lane 2	1359	1246	1197	1193	1258	1294
Lane 3	1359	1246	1197	1193	1258	1294
Lane 4	1253	1290	1426	1277	833	598
Aux Lane	1150	1453	1465	1624	1875	2000
	6480	6480	6480	6480	6480	6480

Calculated Data

Thru Volume (lane 4)	Value
10%	333

*"real world" existing conditions has auxiliary lane; MS design shows 300 meter acceleration lane

NOTES

Lane 4 and Acceleration Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Roselle St. to Genesee Ave
Time Duration	PM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	750
volume on (veh/hr)	1780
volume off (veh/hr)	650
segment volume (veh/hr)	6920

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m
Lane 1	1464	1427	1482	1607	1731	1804
Lane 2	1464	1427	1482	1607	1731	1804
Lane 3	1464	1427	1482	1607	1731	1804
Lane 4	748	1294	1676	1445	1075	858
Aux Lane	1780	1344	799	654	651	650
	6920	6920	6920	6920	6920	6920

Calculated Data

Thru Volume (lane 4)	Value
10%	449

NOTES

Lane 4 and Acceleration Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

(off ramp traffic percentage in weave lane)

Percentage of Traffic Exiting (in lane 5) per distance from on ramp

distance (m)	0	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
900	29	34.7	40.3	46	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0
850	34.7	40.3	46	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0	
800	40.3	46	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0		
750	46	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0			
700	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0				
650	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0					
600	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0						
550	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0							
500	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0								
450	79	84.3	89.6	95	96.7	98.3	100	100	100	0									
400	84.3	89.6	95	96.7	98.3	100	100	100	0										
350	89.6	95	96.7	98.3	100	100	100	0											
300	95	96.7	98.3	100	100	100	0												

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Harbor to SR-76
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

data entry volumes from file:
I-5 NC 2005 Existing Traffic - Draft Version 6-25-07.xls

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	800
volume on (veh/hr)	930
volume off WB (veh/hr)	180
volume off EB (veh/hr)	820
total volume (veh/hr)	3980

Calculated Data

Thru Volume	Value
10%	205

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	550 m	650 m	800 m
Lane 1	763	901	954	868	889	950	950
Lane 2	763	901	954	868	889	950	950
Lane 3	763	901	954	868	889	950	950
Lane 4	763	722	853	1168	1132	950	130
Aux lane	930	555	265	208	180	0	0
	3980	3980	3980	3980	3980	3800	2980

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Harbor to SR-76
Time Duration	PM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	800
volume on (veh/hr)	1600
volume off WB (veh/hr)	150
volume off EB (veh/hr)	850
total volume (veh/hr)	4130

Calculated Data

Thru Volume	Value
10%	153

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	550 m	650 m	800 m
Lane 1	633	753	852	825	892	995	995
Lane 2	633	753	852	825	892	995	995
Lane 3	633	753	852	825	892	995	995
Lane 4	633	997	1238	1457	1305	995	145
Aux lane	1600	875	337	198	150	0	0
	4130	4130	4130	4130	4130	3980	3130

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Vandergrift to SR-76
Time Duration	AM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	550	650	800
1	763	901	954	868	889	950	950
2	763	901	954	868	889	950	950
3	763	901	954	868	889	950	950
4	763	722	853	1168	1132	950	130
	930	555	265	208	180		

930 on ramp traffic volume

180 WB off ramp traffic volume

820 EB off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Vandergrift to SR-76
Time Duration	PM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	550	650	800
1	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0
	0	0	0	0	0		

0 on ramp traffic volume

0 WB off ramp traffic volume

0 EB off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	SR-76 to Mission Avenue
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	350
volume on (veh/hr)	1560
volume off (veh/hr)	250
total volume (veh/hr)	4540

Calculated Data

Thru Volume	Value
10%	273

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	350 m
Lane 1	827	817	861	1027
Lane 2	827	817	861	1027
Lane 3	827	817	861	1027
Lane 4	498	1511	1506	1209
Aux lane	1560	580	452	250
	4540	4540	4540	4540

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	SR-76 to Mission Avenue
Time Duration	PM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	350
volume on (veh/hr)	910
volume off (veh/hr)	500
total volume (veh/hr)	4040

Calculated Data

Thru Volume	Value
10%	263

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	350 m
Lane 1	806	784	813	910
Lane 2	806	784	813	910
Lane 3	806	784	813	910
Lane 4	713	1081	1050	809
Aux lane	910	608	551	500
	4040	4040	4040	4040

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	SR-76 to Mission Ave
Time Duration	AM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	350
1	827	817	861	1027
2	827	817	861	1027
3	827	817	861	1027
4	498	**1511**	**1506**	1209
	1560	580	452	250

1560
on ramp traffic volume

250
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	SR-76 to Mission Ave
Time Duration	PM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	350
1	806	784	813	910
2	806	784	813	910
3	806	784	813	910
4	713	1081	1050	809
	910	608	551	500

910
on ramp traffic volume

500
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Mission Ave to Oceanside Blvd
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1050
volume on WB (veh/hr)	850
volume on EB (veh/hr)	370
volume off (veh/hr)	360
total volume (veh/hr)	5510

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	500 m	600 m
Lane 1	1246	1246	1285	1285	1285	1285
Lane 2	1246	1246	1285	1285	1285	1285
Lane 3	1246	1246	1285	1285	1285	1285
Lane 4	551	1401	1285	1285	1285	1655
Acc lane	0	0	0	0	370	0
	4290	5140	5140	5140	5510	5510

Segment Lengths

merge length (m)	600
fwy segment length (m)	300
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1378	1378
Lane 2	1378	1378
Lane 3	1378	1378
Lane 4	1378	1018
	5510	5150

NOTES

Lane 4 and Acceleration Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Mission Ave to Oceanside Blvd
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1050
volume on WB (veh/hr)	710
volume on EB (veh/hr)	450
volume off (veh/hr)	500
total volume (veh/hr)	4700

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	500 m	600 m
Lane 1	1023	1023	1063	1063	1063	1063
Lane 2	1023	1023	1063	1063	1063	1063
Lane 3	1023	1023	1063	1063	1063	1063
Lane 4	470	1180	1063	1063	1063	1513
Acc lane	0	0	0	0	450	0
	3540	4250	4250	4250	4700	4700

Segment Lengths

merge length (m)	600
fwy segment length (m)	300
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1175	1175
Lane 2	1175	1175
Lane 3	1175	1175
Lane 4	1175	675
	4700	4200

NOTES

Lane 4 and Acceleration Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Mission to Oceanside Blvd
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)								
	0	150	300	450	500	600	600-900*	900	1050
1	1246	1246	1285	1285	1285	1285	1377.5	1378	1378
2	1246	1246	1285	1285	1285	1285	1377.5	1378	1378
3	1246	1246	1285	1285	1285	1285	1377.5	1378	1378
4	551	1401	1285	1285	1285	**1655**	1377.5	1378	1018

850
WB on ramp traffic volume

370
EB on ramp traffic volume

360
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Mission to Oceanside Blvd
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)								
	0	150	300	450	500	600	600-900*	900	1050
1	1023	1023	1063	1063	1063	1063	1175	1175	1175
2	1023	1023	1063	1063	1063	1063	1175	1175	1175
3	1023	1023	1063	1063	1063	1063	1175	1175	1175
4	470	1180	1063	1063	1063	**1513**	**1175**	**1175**	675

710
WB on ramp traffic volume

450
EB on ramp traffic volume

500
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Oceanside Blvd to Cassidy Street
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1100
volume on (veh/hr)	1150
volume off (veh/hr)	150
total volume (veh/hr)	6300

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	250 m
Lane 1	1507	1507	1629
Lane 2	1507	1507	1629
Lane 3	1507	1507	1629
Lane 4	630	1550	1412
Acc lane	1150	230	0
	6300	6300	6300

Segment Lengths

merge length (m)	250
fwy segment length (m)	700
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance f	150 m	0 m
Lane 1	1575	1575
Lane 2	1575	1575
Lane 3	1575	1575
Lane 4	1575	1425
	6300	6150

NOTES

Lane 4 and Acceleration Lane not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Oceanside Blvd to Cassidy Street
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1100
volume on (veh/hr)	830
volume off (veh/hr)	200
total volume (veh/hr)	5030

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	250 m
Lane 1	1232	1232	1321
Lane 2	1232	1232	1321
Lane 3	1232	1232	1321
Lane 4	503	1167	1067
Acc lane	830	166	0
	5030	5030	5030

Segment Lengths

merge length (m)	250
fwy segment length (m)	700
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance f	150 m	0 m
Lane 1	1258	1258
Lane 2	1258	1258
Lane 3	1258	1258
Lane 4	1258	1058
	5030	4830

NOTES

Lane 4 and Acceleration Lane not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Oceanside Blvd to Cassidy Street
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)					
	0	150	250	250-950*	950	1100
1	1507	1507	1629	1575	1575	1575
2	1507	1507	1629	1575	1575	1575
3	1507	1507	1629	1575	1575	1575
4	630	1550	1412	**1575**	**1575**	1425
	1150	230				

1150
on ramp traffic volume

150
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Oceanside Blvd to Cassidy Street
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)					
	0	150	250	250-950*	950	1100
1	1232	1232	1321	1258	1258	1258
2	1232	1232	1321	1258	1258	1258
3	1232	1232	1321	1258	1258	1258
4	503	1167	1067	**1258**	**1258**	1058
	830	166				

830
on ramp traffic volume

200
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Cassidy Street to SR-78
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

4 lanes + aux or 5 thru lanes with lane 5 created at cassidy st on ramp?

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	350
volume on (veh/hr)	370
volume off (veh/hr)	2000
total volume (veh/hr)	6520

Calculated Data

Thru Volume	Value
10%	415

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	350 m
Lane 1	1312	1225	1255	1294
Lane 2	1312	1225	1255	1294
Lane 3	1312	1225	1255	1294
Lane 4	2215	1233	1076	637
Aux lane	370	1613	1679	2000
	6520	6520	6520	6520

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Cassidy Street to SR-78
Time Duration	PM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	350
volume on (veh/hr)	290
volume off (veh/hr)	1650
total volume (veh/hr)	5120

Calculated Data

Thru Volume	Value
10%	318

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	350 m
Lane 1	1009	938	962	993
Lane 2	1009	938	962	993
Lane 3	1009	938	962	993
Lane 4	1803	981	852	492
Aux lane	290	1327	1383	1650
	5120	5120	5120	5120

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Cassidy Street to SR-78
Time Duration	AM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)			
	0	150	300	350
1	1312	1225	1255	1294
2	1312	1225	1255	1294
3	1312	1225	1255	1294
4	**2215**	1233	1076	637
	370	1613	1679	**2000**

370
on ramp traffic volume

2000
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Cassidy Street to SR-78
Time Duration	PM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)			
	0	150	300	350
1	1009	938	962	993
2	1009	938	962	993
3	1009	938	962	993
4	**1803**	981	852	492
	290	**1327**	**1383**	**1650**

290
on ramp traffic volume

1650
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	SR-78 to Las Flores
Time Duration	AM peak
Analysis Type	weave analysis

5 thru lanes? Lane 5 not created at on ramp?

Data Entry

Parameter	Input Value
number of lanes	5
weave length (m)	250
volume on (veh/hr)	2150
volume off (veh/hr)	300
total volume (veh/hr)	7030

Calculated Data

Thru Volume	Value
10%	458

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	250 m
Lane 1	1379	1374	1496
Lane 2	1379	1374	1496
Lane 3	1379	1374	1496
Lane 4	743	2143	1899
Lane 5	2150	766	344
	7030	7030	6730

NOTES

Lane 5 not to exceed 1800 veh/hr

Lanes 1 through 4 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes

Lane 5 created at on ramp

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	SR-78 to Las Flores
Time Duration	PM peak
Analysis Type	weave analysis

Data Entry

Parameter	Input Value
number of lanes	5
weave length (m)	250
volume on (veh/hr)	2360
volume off (veh/hr)	270
total volume (veh/hr)	5830

Calculated Data

Thru Volume	Value
10%	320

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	250 m
Lane 1	965	960	1094
Lane 2	965	960	1094
Lane 3	965	960	1094
Lane 4	577	2155	1901
Lane 5	2360	795	378
	5830	5830	5560

NOTES

Lane 5 not to exceed 1800 veh/hr

Lanes 1 through 4 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes

Lane 5 created at on ramp

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	SR-78 to Las Flores Dr
Time Duration	AM peak
Analysis Type	weave analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)		
	0	150	250
1			
2			
3			
4			
5	2150		

2150
on ramp traffic volume

300
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Las Flores Dr to Carlsbad Village Dr
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	350
volume on (veh/hr)	230
volume off (veh/hr)	480
total volume (veh/hr)	6960

Calculated Data

Thru Volume	Value
10%	625

Traffic Volume Distribution (vehicles per hour)

Distance	**0 m**	**150 m**	**300 m**	**350 m**
Lane 1	1883	1877	1888	1906
Lane 2	1883	1877	1888	1906
Lane 3	1883	1877	1888	1906
Lane 4	1081	927	803	763
Aux lane	230	403	493	480
	6960	6960	6960	6960

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Las Flores Dr to Carlsbad Village Dr
Time Duration	PM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	350
volume on (veh/hr)	180
volume off (veh/hr)	570
total volume (veh/hr)	5740

Calculated Data

Thru Volume	Value
10%	499

Traffic Volume Distribution (vehicles per hour)

Distance	**0 m**	**150 m**	**300 m**	**350 m**
Lane 1	1507	1499	1507	1521
Lane 2	1507	1499	1507	1521
Lane 3	1507	1499	1507	1521
Lane 4	1041	788	648	607
Aux lane	180	455	570	570
	5740	5740	5740	5740

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Las Flores Drive to Carlsbad Village Drive
Time Duration	AM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	350
1	1883	1877	1888	1906
2	1883	1877	1888	1906
3	1883	1877	1888	1906
4	1081	927	803	763
	230	403	493	480

230 on ramp traffic volume

480 off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Las Flores Drive to Carlsbad Village Drive
Time Duration	PM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	350
1	1507	1499	1507	1521
2	1507	1499	1507	1521
3	1507	1499	1507	1521
4	1041	788	648	607
	180	455	570	570

180 on ramp traffic volume

570 off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Carlsbad Village Dr to Tamarack Ave
Time Duration	AM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	700
volume on (veh/hr)	570
volume off (veh/hr)	350
total volume (veh/hr)	7050

Calculated Data

Thru Volume	Value
10%	613

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	700 m
Lane 1	1895	1876	1933	1976	1993	2002
Lane 2	1895	1876	1933	1976	1993	2002
Lane 3	1895	1876	1933	1976	1993	2002
Lane 4	794	1422	1250	1122	1071	693
	6480	7050	7050	7050	7050	6700

NOTES

Lane 4 not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Carlsbad Village Dr to Tamarack Ave
Time Duration	PM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	700
volume on (veh/hr)	620
volume off (veh/hr)	450
total volume (veh/hr)	5790

Calculated Data

Thru Volume	Value
10%	472

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	700 m
Lane 1	1488	1464	1522	1566	1583	1594
Lane 2	1488	1464	1522	1566	1583	1594
Lane 3	1488	1464	1522	1566	1583	1594
Lane 4	705	1399	1223	1093	1040	559
	5170	5790	5790	5790	5790	5340

NOTES

Lane 4 not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Carlsbad Village Dr to Tamarack Ave
Time Duration	AM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	700
1	1895	1876	**1933**	**1976**	**1993**	**2002**
2	1895	1876	**1933**	**1976**	**1993**	**2002**
3	1895	1876	**1933**	**1976**	**1993**	**2002**
4	794	1422	1250	1122	1071	693

570
on ramp traffic volume

350
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Carlsbad Village Dr to Tamarack Ave
Time Duration	PM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	700
1	1488	1464	1522	1566	1583	1594
2	1488	1464	1522	1566	1583	1594
3	1488	1464	1522	1566	1583	1594
4	705	1399	1223	1093	1040	559

620
on ramp traffic volume

450
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Tamarack Avenue to Cannon Road
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1550
volume on (veh/hr)	850
volume off (veh/hr)	1100
segment volume (veh/hr)	7750
approach volume (veh/hr)	6900

Segment Lengths

merge length (m)	150
fwy segment length (m)	1250
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	2070	2070
Lane 2	2070	2070
Lane 3	2070	2070
Lane 4	690	1540
	6900	7750

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1958	1958
Lane 2	1958	1958
Lane 3	1958	1958
Lane 4	1875	775
	7750	6650

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Tamarack Avenue to Cannon Road
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1600
volume on (veh/hr)	560
volume off (veh/hr)	500
segment volume (veh/hr)	5900
approach volume (veh/hr)	5340

Segment Lengths

merge length (m)	150
fwy segment length (m)	1300
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1602	1602
Lane 2	1602	1602
Lane 3	1602	1602
Lane 4	534	1094
	5340	5900

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1603	1603
Lane 2	1603	1603
Lane 3	1603	1603
Lane 4	1090	590
	5900	5400

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Tamarack Avenue to Cannon Road
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)				
Number	0	150	150-1400*	1400	1550
1	**2070**	**2070**	1938	1958	1958
2	**2070**	**2070**	1938	1958	1958
3	**2070**	**2070**	1938	1958	1958
4	690	1540	**1938**	**1875**	775

850
on ramp traffic volume

1100
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Tamarack Avenue to Cannon Road
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)				
Number	0	150	150-1400*	1400	1550
1	1602	1602	1475	1603	1603
2	1602	1602	1475	1603	1603
3	1602	1602	1475	1603	1603
4	534	1094	1475	1090	590

560
on ramp traffic volume

500
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Cannon Road to Palomar Airport Road
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	5
weave length (m)	700
volume on (veh/hr)	320
volume off (veh/hr)	2000
total volume (veh/hr)	6770

Calculated Data

Thru Volume	Value
10%	445

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	700 m
Lane 1	1655	1548	1489	1412	1361	1414
Lane 2	1655	1548	1489	1412	1361	1414
Lane 3	1655	1548	1489	1412	1361	1414
Lane 4	1485	1119	1031	985	969	528
Aux lane	320	1006	1274	1549	1719	2000
	6770	6770	6770	6770	6770	6770

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Cannon Road to Palomar Airport Road
Time Duration	PM peak
Analysis Type	Weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	5
weave length (m)	700
volume on (veh/hr)	600
volume off (veh/hr)	850
total volume (veh/hr)	6000

Calculated Data

Thru Volume	Value
10%	455

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	700 m
Lane 1	1501	1504	1460	1461	1452	1513
Lane 2	1501	1504	1460	1461	1452	1513
Lane 3	1501	1504	1460	1461	1452	1513
Lane 4	897	896	973	917	887	611
Aux lane	600	593	648	700	759	850
	6000	6000	6000	6000	6000	6000

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Cannon Road to Palomar Airport Road
Time Duration	AM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)					
	0	150	300	450	600	700
1	1655	1548	1489	1412	1361	1414
2	1655	1548	1489	1412	1361	1414
3	1655	1548	1489	1412	1361	1414
4	1485	1119	1031	985	969	528
	320	1006	1274	1549	**1719**	**2000**

320
on ramp traffic volume

2000
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Cannon Road to Palomar Airport Road
Time Duration	PM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)					
	0	150	300	450	600	700
1	1501	1504	1460	1461	1452	1513
2	1501	1504	1460	1461	1452	1513
3	1501	1504	1460	1461	1452	1513
4	897	896	973	917	887	611
	600	593	648	700	759	850

600
on ramp traffic volume

850
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Palomar Airport Road to Poinsettia Lane
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	2050
volume on WB (veh/hr)	750
volume on EB (veh/hr)	280
volume off (veh/hr)	550
segment volume (veh/hr)	7700
approach volume (veh/hr)	6670

Segment Lengths

merge length (m)	600
fwy segment length (m)	1300
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m
Lane 1	2001	2001	2101	2176	2204
Lane 2	2001	2001	2101	2176	2204
Lane 3	2001	2001	2101	2176	2204
Lane 4	667	1417	1117	892	1090
	6670	7420	7420	7420	7700

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1925	1925
Lane 2	1925	1925
Lane 3	1925	1925
Lane 4	1925	1375
	7700	7150

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln
Assume equal distribution of traffic volume in main lanes prior to diverge

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Palomar Airport Road to Poinsettia Lane
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	2050
volume on WB (veh/hr)	1000
volume on EB (veh/hr)	340
volume off (veh/hr)	550
segment volume (veh/hr)	6490
approach volume (veh/hr)	5150

Segment Lengths

merge length (m)	600
fwy segment length (m)	1300
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m
Lane 1	1545	1545	1678	1778	1815
Lane 2	1545	1545	1678	1778	1815
Lane 3	1545	1545	1678	1778	1815
Lane 4	515	1515	1115	815	1045
	5150	6150	6150	6150	6490

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1623	1623
Lane 2	1623	1623
Lane 3	1623	1623
Lane 4	1623	1073
	6490	5940

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln
Assume equal distribution of traffic volume in main lanes prior to diverge

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Palomar Airport Road to Poinsettia Lane
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)							
	0	150	300	450	600	600-1900*	1900	2050
1	2001	2001	2101	2176	2204	1925	1925	1925
2	2001	2001	2101	2176	2204	1925	1925	1925
3	2001	2001	2101	2176	2204	1925	1925	1925
4	667	**1417**	1117	892	1090	1925	1925	1375

750
WB on ramp traffic volume

280
EB on ramp traffic volume

550
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Palomar Airport Road to Poinsettia Lane
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)							
	0	150	300	450	600	600-1900*	1900	2050
1	1545	1545	1678	1778	1815	1623	1623	1623
2	1545	1545	1678	1778	1815	1623	1623	1623
3	1545	1545	1678	1778	1815	1623	1623	1623
4	515	**1515**	1115	815	1045	1623	1623	1073

1000
WB on ramp traffic volume

340
EB on ramp traffic volume

550
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Poinsettia Lane to La Costa Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1700
volume on (veh/hr)	620
volume off (veh/hr)	600
segment volume (veh/hr)	7700
approach volume (veh/hr)	7080

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	650 m
Lane 1	2124	2124	2161	2221	2260	2273
Lane 2	2124	2124	2161	2221	2260	2273
Lane 3	2124	2124	2161	2221	2260	2273
Lane 4	708	993	1111	1006	900	882
Acc lane	620	335	105	31	19	0
	7700	7700	7700	7700	7700	7700

Segment Lengths

merge length (m)	650
fwy segment length (m)	900
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1925	1925
Lane 2	1925	1925
Lane 3	1925	1925
Lane 4	1925	1325
	7700	7100

NOTES

Lane 4 and Acceleration Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assume equal distribution of traffic volume in main lanes prior to diverge

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Poinsettia Lane to La Costa Ave
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1700
volume on (veh/hr)	690
volume off (veh/hr)	450
segment volume (veh/hr)	6630
approach volume (veh/hr)	5940

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	650 m
Lane 1	1782	1782	1823	1890	1934	1948
Lane 2	1782	1782	1823	1890	1934	1948
Lane 3	1782	1782	1823	1890	1934	1948
Lane 4	594	911	1043	925	808	787
Acc lane	690	373	117	35	21	0
	6630	6630	6630	6630	6630	6630

Segment Lengths

merge length (m)	650
fwy segment length (m)	900
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1658	1658
Lane 2	1658	1658
Lane 3	1658	1658
Lane 4	1658	1208
	6630	6180

NOTES

Lane 4 and Acceleration Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assume equal distribution of traffic volume in main lanes prior to diverge

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Poinsettia Lane to La Costa Avenue
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	650	650-1550*	1550	1700
1	2124	2124	2161	2221	2260	2273	1925	1925	1925
2	2124	2124	2161	2221	2260	2273	1925	1925	1925
3	2124	2124	2161	2221	2260	2273	1925	1925	1925
4	708	993	1111	1006	900	882	**1925**	**1925**	1325
	620	335	105	31	19				

620
on ramp traffic volume

600
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Poinsettia Lane to La Costa Avenue
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	650	650-1550*	1550	1700
1	1782	1782	1823	1890	1934	1948	1658	1658	1658
2	1782	1782	1823	1890	1934	1948	1658	1658	1658
3	1782	1782	1823	1890	1934	1948	1658	1658	1658
4	594	911	1043	925	808	787	1658	1658	1208
	690	373	117	35	21				

690
on ramp traffic volume

450
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	La Costa Ave to Leucadia Blvd
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1550
volume on (veh/hr)	890
volume off (veh/hr)	700
segment volume (veh/hr)	7900
approach volume (veh/hr)	7010

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	2103	2103
Lane 2	2103	2103
Lane 3	2103	2103
Lane 4	701	1591
	7010	7900

Segment Lengths

merge length (m)	150
fwy segment length (m)	1250
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1975	1975
Lane 2	1975	1975
Lane 3	1975	1975
Lane 4	1975	1275
	7900	7200

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln
Assume equal distribution of traffic volume in main lanes prior to diverge

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	La Costa Ave to Leucadia Blvd
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1550
volume on (veh/hr)	720
volume off (veh/hr)	570
segment volume (veh/hr)	6900
approach volume (veh/hr)	6180

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1854	1854
Lane 2	1854	1854
Lane 3	1854	1854
Lane 4	618	1338
	6180	6900

Segment Lengths

merge length (m)	150
fwy segment length (m)	1250
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1725	1725
Lane 2	1725	1725
Lane 3	1725	1725
Lane 4	1725	1155
	6900	6330

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln
Assume equal distribution of traffic volume in main lanes prior to diverge

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	La Costa Ave to Leucadia Blvd
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)				
Number	0	150	150-1400*	1400	1550
1	2103	2103	1975	1975	1975
2	2103	2103	1975	1975	1975
3	2103	2103	1975	1975	1975
4	701	1591	**1975**	**1975**	1275

890
on ramp traffic volume

700
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	La Costa Ave to Leucadia Blvd
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)				
Number	0	150	150-1400*	1400	1550
1	1854	1854	1725	1725	1725
2	1854	1854	1725	1725	1725
3	1854	1854	1725	1725	1725
4	618	1338	1725	1725	1155

720
on ramp traffic volume

570
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Leucadia Blvd to Encinitas Blvd
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1150
volume on (veh/hr)	580
volume off (veh/hr)	650
segment volume (veh/hr)	8300
approach volume (veh/hr)	7720

Segment Lengths

merge length (m)	150
fwy segment length (m)	850
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance f	0 m	150 m
Lane 1	2316	2316
Lane 2	2316	2316
Lane 3	2316	2316
Lane 4	772	1352
	7720	8300

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance f	150 m	0 m
Lane 1	2075	2075
Lane 2	2075	2075
Lane 3	2075	2075
Lane 4	2075	1425
	8300	7650

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assume equal distribution of traffic volume in main lanes prior to diverge

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Leucadia Blvd to Encinitas Blvd
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1150
volume on (veh/hr)	520
volume off (veh/hr)	600
segment volume (veh/hr)	6850
approach volume (veh/hr)	6330

Segment Lengths

merge length (m)	150
fwy segment length (m)	850
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance f	0 m	150 m
Lane 1	1899	1899
Lane 2	1899	1899
Lane 3	1899	1899
Lane 4	633	1153
	6330	6850

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance f	150 m	0 m
Lane 1	1713	1713
Lane 2	1713	1713
Lane 3	1713	1713
Lane 4	1713	1113
	6850	6250

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assume equal distribution of traffic volume in main lanes prior to diverge

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Leucadia Blvd to Encinitas Blvd
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1000*	1000	1150
1	2316	2316	2075	2075	2075
2	2316	2316	2075	2075	2075
3	2316	2316	2075	2075	2075
4	772	1352	2075	2075	1425

580
on ramp traffic volume

650
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Leucadia Blvd to Encinitas Blvd
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1000*	1000	1150
1	1899	1899	1713	1713	1713
2	1899	1899	1713	1713	1713
3	1899	1899	1713	1713	1713
4	633	1153	1713	1713	1113

520
on ramp traffic volume

600
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Encinitas Blvd to Santa Fe Dr
Time Duration	AM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	850
volume on (veh/hr)	680
volume off (veh/hr)	430
segment volume (veh/hr)	7800

Calculated Data

Thru Volume (lane 4)	Value
10%	669

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	850 m
Lane 1	2101	2076	2143	2188	2195	2202	2206
Lane 2	2101	2076	2143	2188	2195	2202	2206
Lane 3	2101	2076	2143	2188	2195	2202	2206
Lane 4	818	1571	1371	1235	1214	1194	751
	7120	7800	7800	7800	7800	7800	7370

NOTES

Lane 4 not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Encinitas Blvd to Santa Fe Dr
Time Duration	PM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	850
volume on (veh/hr)	720
volume off (veh/hr)	300
segment volume (veh/hr)	6970

Calculated Data

Thru Volume (lane 4)	Value
10%	595

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	850 m
Lane 1	1850	1833	1913	1969	1983	1991	1996
Lane 2	1850	1833	1913	1969	1983	1991	1996
Lane 3	1850	1833	1913	1969	1983	1991	1996
Lane 4	699	1470	1232	1064	1022	996	681
	6250	6970	6970	6970	6970	6970	6670

NOTES

Lane 4 not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Encinitas Blvd to Santa Fe Drive
Time Duration	AM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)						
	0	150	300	450	600	750	850
1	2101	2076	2143	2188	2195	2202	2206
2	2101	2076	2143	2188	2195	2202	2206
3	2101	2076	2143	2188	2195	2202	2206
4	818	1571	1371	1235	1214	1194	751

680
on ramp traffic volume

430
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Encinitas Blvd to Santa Fe Drive
Time Duration	PM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)						
	0	150	300	450	600	750	850
1	1850	1833	1913	1969	1983	1991	1996
2	1850	1833	1913	1969	1983	1991	1996
3	1850	1833	1913	1969	1983	1991	1996
4	699	1470	1232	1064	1022	996	681

720
on ramp traffic volume

300
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Santa Fe Dr to Birmingham Dr
Time Duration	AM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	600
volume on (veh/hr)	460
volume off (veh/hr)	100
segment volume (veh/hr)	7800

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m
Lane 1	2184	2179	2235	2279	2296
Lane 2	2184	2179	2235	2279	2296
Lane 3	2184	2179	2235	2279	2296
Lane 4	787	1263	1095	962	811
	7340	7800	7800	7800	7700

Calculated Data

Thru Volume (lane 4)	Value
10%	724

NOTES

Lane 4 not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Santa Fe Dr to Birmingham Dr
Time Duration	PM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	600
volume on (veh/hr)	420
volume off (veh/hr)	300
segment volume (veh/hr)	7090

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m
Lane 1	1948	1932	1972	2009	2024
Lane 2	1948	1932	1972	2009	2024
Lane 3	1948	1932	1972	2009	2024
Lane 4	826	1294	1174	1063	717
	6670	7090	7090	7090	6790

Calculated Data

Thru Volume (lane 4)	Value
10%	637

NOTES

Lane 4 not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Santa Fe Dr to Birmingham Dr
Time Duration	AM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600
1	2184	2179	2235	2188	2296
2	2184	2179	2235	2188	2296
3	2184	2179	2235	2188	2296
4	787	1263	1095	1235	811

460
on ramp traffic volume

100
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Santa Fe Dr to Birmingham Dr
Time Duration	PM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600
1	1948	1932	1972	2009	2024
2	1948	1932	1972	2009	2024
3	1948	1932	1972	2009	2024
4	826	1294	1174	1063	717

420
on ramp traffic volume

300
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Birmingham Dr to Manchester Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1250
volume on (veh/hr)	1000
volume off (veh/hr)	50
segment volume (veh/hr)	8300

Segment Lengths

merge length (m)	150
fwy segment length (m)	950
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	2157	2157
Lane 2	2157	2157
Lane 3	2157	2157
Lane 4	830	1830
	7300	8300

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	2075	2075
Lane 2	2075	2075
Lane 3	2075	2075
Lane 4	2075	2025
	8300	8250

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln
Assume equal distribution of traffic volume in main lanes prior to diverge

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Birmingham Dr to Manchester Ave
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1250
volume on (veh/hr)	440
volume off (veh/hr)	200
segment volume (veh/hr)	7230

Segment Lengths

merge length (m)	150
fwy segment length (m)	950
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	2022	2022
Lane 2	2022	2022
Lane 3	2022	2022
Lane 4	723	1163
	6790	7230

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1808	1808
Lane 2	1808	1808
Lane 3	1808	1808
Lane 4	1808	1608
	7230	7030

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln
Assume equal distribution of traffic volume in main lanes prior to diverge

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Birmingham Dr to Manchester Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1450*	1450	1600
1	2157	2157	2075	2075	2075
2	2157	2157	2075	2075	2075
3	2157	2157	2075	2075	2075
4	830	**1830**	**2075**	**2075**	**2025**

1000
on ramp traffic volume

50
off ramp traffic volume

*Freeway segment analysis done with HCS2000 program; Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Birmingham Dr to Manchester Ave
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1450*	1450	1600
1	2022	2022	1808	1808	1808
2	2022	2022	1808	1808	1808
3	2022	2022	1808	1808	1808
4	723	1163	1808	1808	1608

440
on ramp traffic volume

200
off ramp traffic volume

*Freeway segment analysis done with HCS2000 program; Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Manchester Ave to Lomas Santa Fe
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1600
volume on (veh/hr)	1200
volume off (veh/hr)	550
segment volume (veh/hr)	8300

Segment Lengths

merge length (m)	150
fwy segment length (m)	1300
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	2090	2090
Lane 2	2090	2090
Lane 3	2090	2090
Lane 4	830	2030
	7100	8300

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	2075	2075
Lane 2	2075	2075
Lane 3	2075	2075
Lane 4	2075	1525
	8300	7750

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assume equal distribution of traffic volume in main lanes prior to diverge

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Manchester Ave to Lomas Santa Fe
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1600
volume on (veh/hr)	1050
volume off (veh/hr)	700
segment volume (veh/hr)	8080

Segment Lengths

merge length (m)	150
fwy segment length (m)	1300
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	2074	2074
Lane 2	2074	2074
Lane 3	2074	2074
Lane 4	808	1858
	7030	8080

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	2020	2020
Lane 2	2020	2020
Lane 3	2020	2020
Lane 4	2020	1320
	8080	7380

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assume equal distribution of traffic volume in main lanes prior to diverge

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Manchester Ave to Lomas Santa Fe
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1450*	1450	1600
1	**2090**	**2090**	2075	2075	2075
2	**2090**	**2090**	2075	2075	2075
3	**2090**	**2090**	2075	2075	2075
4	830	**2030**	**2075**	**2075**	1525

1200
on ramp traffic volume

550
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Manchester Ave to Lomas Santa Fe
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1450*	1450	1600
1	2074	2074	2020	2020	2020
2	2074	2074	2020	2020	2020
3	2074	2074	2020	2020	2020
4	808	**1858**	**2020**	**2020**	1320

1050
on ramp traffic volume

700
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Lomas Santa Fe to Via de la Valle
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1200
volume on (veh/hr)	700
volume off (veh/hr)	500
segment volume (veh/hr)	8400

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	2287	2287
Lane 2	2287	2287
Lane 3	2287	2287
Lane 4	840	1540
	7700	8400

Segment Lengths

merge length (m)	150
fwy segment length (m)	900
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	2100	2100
Lane 2	2100	2100
Lane 3	2100	2100
Lane 4	2100	1600
	8400	7900

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assume equal distribution of traffic volume in main lanes prior to diverge

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Lomas Santa Fe to Via de la Valle
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1200
volume on (veh/hr)	690
volume off (veh/hr)	500
segment volume (veh/hr)	8070

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	2191	2191
Lane 2	2191	2191
Lane 3	2191	2191
Lane 4	807	1497
	7380	8070

Segment Lengths

merge length (m)	150
fwy segment length (m)	900
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	2018	2018
Lane 2	2018	2018
Lane 3	2018	2018
Lane 4	2018	1518
	8070	7570

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assume equal distribution of traffic volume in main lanes prior to diverge

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Lomas Santa Fe to Via de la Valle
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1050*	1050	1200
1	**2287**	**2287**	2100	2100	2100
2	**2287**	**2287**	2100	2100	2100
3	**2287**	**2287**	2100	2100	2100
4	840	1540	**2100**	**2100**	1600

700
on ramp traffic volume

500
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Lomas Santa Fe to Via de la Valle
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1050*	1050	1200
1	2191	2191	2018	2018	2018
2	2191	2191	2018	2018	2018
3	2191	2191	2018	2018	2018
4	807	1497	**2018**	**2018**	1518

690
on ramp traffic volume

500
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Via de la Valle to Del Mar Heights Road
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	3050
volume on WB (veh/hr)	670
volume on EB (veh/hr)	910
volume off (veh/hr)	1000
segment volume (veh/hr)	9380

Segment Lengths

merge length (m)	150
fwy segment length (m)	2750
diverge length (m)	150

Lane 5 created at EB on ramp

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m
Lane 1	2340	2340	2429
Lane 2	2340	2340	2429
Lane 3	2340	2340	2429
Lane 4	780	1450	1182
Lane 5	0	0	910
	7800	8470	9380

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1861	1861
Lane 2	1861	1861
Lane 3	1861	1861
Lane 4	1861	1861
Lane 5	1938	938
	9380	8380

NOTES

Merge: Lanes 4 & 5 not to exceed 1800 veh/hr; lanes 1-3 not to exceed 2000 veh/hr

Diverge: Lane 5 not to exceed 1800 veh/hr; lanes 1-4 not to exceed 2000 veh/hr

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assume equal distribution of traffic volume in main lanes prior to diverge

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Via de la Valle to Del Mar Heights Road
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	3050
volume on WB (veh/hr)	520
volume on EB (veh/hr)	760
volume off (veh/hr)	1050
segment volume (veh/hr)	8850

Segment Lengths

merge length (m)	150
fwy segment length (m)	2750
diverge length (m)	150

Lane 5 created at EB on ramp

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m
Lane 1	2271	2271	2340
Lane 2	2271	2271	2340
Lane 3	2271	2271	2340
Lane 4	757	1277	1069
Lane 5	0	0	760
	7570	8090	8850

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1729	1729
Lane 2	1729	1729
Lane 3	1729	1729
Lane 4	1729	1729
Lane 5	1935	885
	8850	7800

NOTES

Merge: Lanes 4 & 5 not to exceed 1800 veh/hr; lanes 1-3 not to exceed 2000 veh/hr

Diverge: Lane 5 not to exceed 1800 veh/hr; lanes 1-4 not to exceed 2000 veh/hr

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assume equal distribution of traffic volume in main lanes prior to diverge

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Via de la Valle to Del Mar Heights Road
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)					
Number	0	150	300	300-2900*	2900	3050
1	**2340**	**2340**	**2429**	1876	1861	1861
2	**2340**	**2340**	**2429**	1876	1861	1861
3	**2340**	**2340**	**2429**	1876	1861	1861
4	780	1450	1182	1876	1861	1861
			910	**1876**	**1938**	938

670
WB on ramp traffic volume

910
EB on ramp traffic volume

1000
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Via de la Valle to Del Mar Heights Road
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)					
Number	0	150	300	300-2900*	2900	3050
1	2271	2271	2340	1770	1729	1729
2	2271	2271	2340	1770	1729	1729
3	2271	2271	2340	1770	1729	1729
4	757	1277	1069	1770	1729	1729
			760	1770	1935	885

520
WB on ramp traffic volume

760
EB on ramp traffic volume

1050
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Del Mar Heights Road to Carmel Valley
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

need to fill in AM and PM bypass volume

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1550
DMH on WB (veh/hr)	900
DMH on EB (veh/hr)	630
Carmel Valley off (veh/hr)	1300
Bypass off (veh/hr)	
segment volume (veh/hr)	9910

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m
Lane 1	1781	1781	1826	1871
Lane 2	1781	1781	1826	1871
Lane 3	1781	1781	1826	1871
Lane 4	1781	1781	1826	1871
Lane 5	1257	1437	1437	1437
Lane 6	900	720	540	990
	9280	9280	9280	9910

Segment Lengths

merge length (m)	750
fwy segment length (m)	650
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	300 m	150 m	0 m
Lane 1	2153	2153	2153
Lane 2	2153	2153	2153
Lane 3	2153	2153	2153
Lane 4	2153	2153	2153
Lane 5	0	0	0
Lane 6	1300	1300	0
	9910	9910	8610

NOTES

Lanes 5 & 6 not to exceed 1800 veh/hr; lanes 1-4 not to exceed 2000 veh/hr

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assume equal distribution of traffic volume in main lanes prior to diverge

Lanes 5 and 6 exit to Bypass (Diverge 0 m point)

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Del Mar Heights Road to Carmel Valley
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1550
DMH on WB (veh/hr)	600
DMH on EB (veh/hr)	540
Carmel Valley off (veh/hr)	1200
Bypass off (veh/hr)	
segment volume (veh/hr)	8940

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m
Lane 1	1658	1658	1688	1718
Lane 2	1658	1658	1688	1718
Lane 3	1658	1658	1688	1718
Lane 4	1658	1658	1688	1718
Lane 5	1170	1290	1290	1290
Lane 6	600	480	360	780
	8400	8400	8400	8940

Segment Lengths

merge length (m)	150
fwy segment length (m)	1250
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	300 m	150 m	0 m
Lane 1	1935	1935	1935
Lane 2	1935	1935	1935
Lane 3	1935	1935	1935
Lane 4	1935	1935	1935
Lane 5	0	0	0
Lane 6	1200	1200	0
	8940	8940	7740

NOTES

Lanes 5 & 6 not to exceed 1800 veh/hr; lanes 1-4 not to exceed 2000 veh/hr

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assume equal distribution of traffic volume in main lanes prior to diverge

Lanes 5 and 6 exit to Bypass (Diverge 0 m point)

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Del Mar Heights Road to Carmel Valley
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

exhibit needs to be updated:
no aux lane; add CV exit and BP exit

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	750	750-1400*	1400	1550
1	1781	1781	1826	1871	0	0	1982	2153	2153
2	1781	1781	1826	1871	0	0	1982	2153	2153
3	1781	1781	1826	1871	0	0	1982	2153	2153
4	1781	1781	1826	1871	0	0	1982	2153	2153
5	1257	1437	1437	1437	0	0	**1982**	**0**	0
6	900	720	540	990	0				

900
WB on ramp traffic volume

630
EB on ramp traffic volume

1300
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Del Mar Heights Road to Carmel Valley
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	750	750-1400*	1400	1550
1	1658	1658	1688	1718	0	0	1788	1935	1935
2	1658	1658	1688	1718	0	0	1788	1935	1935
3	1658	1658	1688	1718	0	0	1788	1935	1935
4	1658	1658	1688	1718	0	0	1788	1935	1935
5	1170	1290	1290	1290	0	0	1788	0	0
6	600	480	360	780	0				

600
WB on ramp traffic volume

540
EB on ramp traffic volume

1200
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Roselle Street to Genesee Ave
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)					
	0	150	300	450	600	750
1	1359	1246	1197	1193	1258	1294
2	1359	1246	1197	1193	1258	1294
3	1359	1246	1197	1193	1258	1294
4	1253	1290	1426	1277	833	598
	1150	1453	1465	**1624**	**1875**	**2000**

1150
on ramp traffic volume

2000
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Roselle Street to Genesee Ave
Time Duration	PM peak
Analysis Type	weave analysis with aux lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)					
	0	150	300	450	600	750
1	1464	1427	1482	1607	1731	1804
2	1464	1427	1482	1607	1731	1804
3	1464	1427	1482	1607	1731	1804
4	748	1294	1676	1445	1075	858
	1780	1344	799	654	651	650

1780
on ramp traffic volume

650
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Genesee Ave to La Jolla Village Dr
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1100
volume on (veh/hr)	600
volume off (veh/hr)	1500
segment volume (veh/hr)	5080

Segment Lengths

merge length (m)	250
fwy segment length (m)	700
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	250 m
Lane 1	1324	1324	1388
Lane 2	1324	1324	1388
Lane 3	1324	1324	1388
Lane 4	508	988	916
Acc Lane	600	120	0
	5080	5080	5080

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1024	1024
Lane 2	1024	1024
Lane 3	1024	1024
Lane 4	2008	508
	5080	3580

NOTES

Lane 4 and Acceleration Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assume equal distribution of traffic volume in main lanes prior to diverge

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Genesee Ave to La Jolla Village Dr
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1100
volume on (veh/hr)	1700
volume off (veh/hr)	1250
segment volume (veh/hr)	7970

Segment Lengths

merge length (m)	250
fwy segment length (m)	700
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	250 m
Lane 1	1824	1824	2006
Lane 2	1824	1824	2006
Lane 3	1824	1824	2006
Lane 4	797	2157	1953
Acc Lane	1700	340	0
	7970	7970	7970

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1974	1974
Lane 2	1974	1974
Lane 3	1974	1974
Lane 4	2047	797
	7970	6720

NOTES

Lane 4 and Acceleration Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assume equal distribution of traffic volume in main lanes prior to diverge

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Genesee Ave to La Jolla Village Dr
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)					
Number	0	150	250	250-950*	950	1100
1	1324	1324	1388	1270	1024	1024
2	1324	1324	1388	1270	1024	1024
3	1324	1324	1388	1270	1024	1024
4	508	988	916	1270	**2008**	508
	600	120				

600
on ramp traffic volume

1500
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Genesee Ave to La Jolla Village Dr
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)					
Number	0	150	250	250-950*	950	1100
1	1824	1824	2006	1993	1974	1974
2	1824	1824	2006	1993	1974	1974
3	1824	1824	2006	1993	1974	1974
4	797	**2157**	**1953**	1993	**2047**	797
	1700	340				

1700
on ramp traffic volume

1250
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

NB 2030 No Build Traffic Analysis

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	La Jolla Village Dr to Genesee Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1200
EB volume on (veh/hr)	670
WB volume on (veh/hr)	660
volume off (veh/hr)	2350
segment volume (veh/hr)	7860
segment volume (veh/hr)	8400

Segment Lengths

merge length (m)	450
fwy segment length (m)	600
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	200 m	300 m	450 m
Lane 1	1959	2004	2004	2004
Lane 2	1959	2004	2004	2004
Lane 3	1959	2004	2004	2004
Lane 4	653	1189	1189	1849
Acc lane	670	0	0	0
	7200	7200	7200	7860

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1737	1737
Lane 2	1737	1737
Lane 3	1737	1737
Lane 4	3190	840
	8400	6050

NOTES

Lane 4 and Acceleration Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	La Jolla Village Dr to Genesee Ave
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1200
EB volume on (veh/hr)	1050
WB volume on (veh/hr)	480
volume off (veh/hr)	720
segment volume (veh/hr)	5730
segment volume (veh/hr)	6510

Segment Lengths

merge length (m)	450
fwy segment length (m)	600
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	200 m	300 m	450 m
Lane 1	1260	1330	1330	1330
Lane 2	1260	1330	1330	1330
Lane 3	1260	1330	1330	1330
Lane 4	420	1260	1260	1740
Acc lane	1050	0	0	0
	5250	5250	5250	5730

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1713	1713
Lane 2	1713	1713
Lane 3	1713	1713
Lane 4	1371	651
	6510	5790

NOTES

Lane 4 and Acceleration Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

for weaving off ramp traffic only

Percentage of Traffic Exiting (in lane 5) per distance from on ramp

distance (m)	0	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
900	29	34.7	40.3	46	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0
850	34.7	40.3	46	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0	
800	40.3	46	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0		
750	46	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0			
700	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0				
650	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0					
600	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0						
550	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0							
500	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0								
450	79	84.3	89.6	95	96.7	98.3	100	100	100	0									
400	84.3	89.6	95	96.7	98.3	100	100	100	0										
350	89.6	95	96.7	98.3	100	100	100	0											
300	95	96.7	98.3	100	100	100	0												

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	La Jolla Village Dr to Genesee Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	200	300	450	450 -1050*	1050	1200
1	1959	2004	2004	2004	1965	1737	1737
2	1959	2004	2004	2004	1965	1737	1737
3	1959	2004	2004	2004	1965	1737	1737
4	653	1189	1189	1849	1965	**3190**	840

670

670 EB on ramp traffic volume

660 WB on ramp traffic volume

2350 off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	La Jolla Village Dr to Genesee Ave
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	200	300	450	450 -1050*	1050	1200
1	1260	1330	1330	1330	1433	1713	1713
2	1260	1330	1330	1330	1433	1713	1713
3	1260	1330	1330	1330	1433	1713	1713
4	420	1260	1260	1740	**1433**	**1371**	651

1050

1050 EB on ramp traffic volume

480 WB on ramp traffic volume

720 off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	Del Mar Heights Road to Via de la Valle
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	6
total segment length (m)	2650
volume on (veh/hr)	1270
volume off (veh/hr)	1420
I-5 volume	5720
Bypass volume	1590
segment volume (veh/hr)	8580

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	700 m
Lane 1	1430	1430	1441	1513	1553	1565
Lane 2	1430	1430	1441	1513	1553	1565
Lane 3	1430	1430	1441	1513	1553	1565
Lane 4	1430	1478	1525	1513	1553	1565
Bypass 1	875	875	1017	986	986	1113
Bypass 2	716	922	1017	1223	1255	1207
Acc Lane	1270	1016	699	318	127	0
	8580	8580	8580	8580	8580	8580

Segment Lengths

merge length (m)	700
fwy segment length (m)	1800
diverge length (m)	150

Diverge

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1790	1790
Lane 2	1790	1790
Lane 3	1790	1790
Lane 4	1790	1790
Aux Lane	1420	1420
	8580	8580

NOTES

Bypass Lanes, Acceleration Lane, and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	Del Mar Heights Road to Via de la Valle
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	6
total segment length (m)	2650
volume on (veh/hr)	1310
volume off (veh/hr)	1570
I-5 volume	6100
Bypass volume	2740
segment volume (veh/hr)	10150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	700 m
Lane 1	1525	1002	1020	1254	1301	1321
Lane 2	1525	1002	1020	1254	1301	1321
Lane 3	1525	1002	1020	1254	1301	1321
Lane 4	1525	1607	1689	1254	1301	1321
Bypass 1	1507	1507	1621	1567	1567	1698
Bypass 2	1233	1413	1489	1669	1680	1597
Acc Lane	1310	1048	721	328	131	0
	10150	8580	8580	8580	8580	8580

Segment Lengths

merge length (m)	700
fwy segment length (m)	1800
diverge length (m)	150

Diverge

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	2145	2145
Lane 2	2145	2145
Lane 3	2145	2145
Lane 4	2145	2145
Aux Lane	1570	1570
	10150	10150

NOTES

Bypass Lanes, Acceleration Lane, and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	Del Mar Heights Rd to Via de la Valle
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	700	700-2600*	2600	2750
1	1430	1430	1441	1513	1553	1565	1716	1790	1790
2	1430	1430	1441	1513	1553	1565	1716	1790	1790
3	1430	1430	1441	1513	1553	1565	1716	1790	1790
4	1430	1478	1525	1513	1553	1565	1716	1790	1790
1	875	875	1017	986	986	1113	1716	1420	1420
2	716	922	1017	1223	1255	1207			1420
	1270	1016	699	318	127				

1270
on ramp traffic volume

1420
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	Del Mar Heights Rd to Via de la Valle
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	700	700-2600*	2600	2750
1	1525	1002	1020	1254	1301	1321	2030	2145	2145
2	1525	1002	1020	1254	1301	1321	2030	2145	2145
3	1525	1002	1020	1254	1301	1321	2030	2145	2145
4	1525	1607	1689	1254	1301	1321	2030	2145	2145
1	1507	1507	1621	1567	1567	1698	2030	1570	1570
2	1233	1413	1489	1669	1680	1597			1570
	1310	1048	721	328	131				

1310
on ramp traffic volume

1570
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	Via de la Valle to Lomas Santa Fe
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1450
EB volume on (veh/hr)	380
WB volume on (veh/hr)	420
volume off (veh/hr)	750
segment volume (veh/hr)	7960

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	550 m	700 m
Lane 1	1790	1800	1824	1831	1828	1823
Lane 2	1790	1800	1824	1831	1828	1823
Lane 3	1790	1800	1824	1831	1828	1823
Lane 4	1790	1800	1824	1831	1828	1823
Aux Lane	380	342	246	215	229	668
	7540	7540	7540	7540	7540	7960

Segment Lengths

merge length (m)	700
fwy segment length (m)	600
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1803	1803
Lane 2	1803	1803
Lane 3	1803	1803
Lane 4	1803	1803
Aux Lane	750	750
	7960	7960

NOTES

Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	Via de la Valle to Lomas Santa Fe
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1450
EB volume on (veh/hr)	630
WB volume on (veh/hr)	480
volume off (veh/hr)	800
segment volume (veh/hr)	9690

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	550 m	700 m
Lane 1	2145	2167	2212	2231	2234	2233
Lane 2	2145	2167	2212	2231	2234	2233
Lane 3	2145	2167	2212	2231	2234	2233
Lane 4	2145	2167	2212	2231	2234	2233
Aux Lane	630	544	364	286	274	758
	9210	9210	9210	9210	9210	9690

Segment Lengths

merge length (m)	700
fwy segment length (m)	600
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	2223	2223
Lane 2	2223	2223
Lane 3	2223	2223
Lane 4	2223	2223
Aux Lane	800	800
	9690	9690

NOTES

Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	Via de la Valle to Lomas Santa Fe
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)								
	0	150	300	450	550	700	700-1300*	1300	1450
1	1790	1800	1824	1831	1828	1823		1803	1803
2	1790	1800	1824	1831	1828	1823		1803	1803
3	1790	1800	1824	1831	1828	1823		1803	1803
4	1790	1800	1824	1831	1828	1823		1803	1803
	380	342	246	215	229	668		750	750

380 EB on ramp traffic volume

420 WB on ramp traffic volume

750 off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	Via de la Valle to Lomas Santa Fe
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)								
	0	150	300	450	550	700	700-1300*	1300	1450
1	2145	2167	2212	2231	2234	2233		2223	2223
2	2145	2167	2212	2231	2234	2233		2223	2223
3	2145	2167	2212	2231	2234	2233		2223	2223
4	2145	2167	2212	2231	2234	2233		2223	2223
	630	544	364	286	274	758		800	800

630 EB on ramp traffic volume

480 WB on ramp traffic volume

800 off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	Lomas Santa Fe to Manchester Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1700
volume on EB (veh/hr)	460
volume on WB (veh/hr)	440
volume off (veh/hr)	1000
segment volume (veh/hr)	7560

Segment Lengths

merge length (m)	150
fwy segment length (m)	1400
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	500 m
Lane 1	1887	1887	1895	1925
Lane 2	1887	1887	1895	1925
Lane 3	1887	1887	1895	1925
Lane 4	999	1045	1068	1091
Aux Lane	460	414	368	693
	7120	7120	7120	7560

when does aux lane end?

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1935	1935
Lane 2	1935	1935
Lane 3	1935	1935
Lane 4	1756	756
	7560	6560

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	Lomas Santa Fe to Manchester Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1700
volume on EB (veh/hr)	500
volume on WB (veh/hr)	460
volume off (veh/hr)	1500
segment volume (veh/hr)	9410

Segment Lengths

merge length (m)	150
fwy segment length (m)	1400
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	500 m
Lane 1	2394	2394	2403	2436
Lane 2	2394	2394	2403	2436
Lane 3	2394	2394	2403	2436
Lane 4	1268	1318	1343	1368
Aux Lane	500	450	400	735
	8950	8950	8950	9410

when does aux lane end?

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	2323	2323
Lane 2	2323	2323
Lane 3	2323	2323
Lane 4	2441	941
	9410	7910

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	Lomas Santa Fe to Manchester Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

on ramp design change - now has
2 on ramps - see 2030 10+4 design

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)				
Number	0	150	150-1550*	1550	1700
1	1887	1887	1890	150 m	0 m
2	1887	1887	1890	1935	1935
3	1887	1887	1890	1935	1935
4	#REF!	#REF!	1890	1935	1935

460
on ramp traffic volume

1000
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	Lomas Santa Fe to Manchester Ave
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)				
Number	0	150	150-1550*	1550	1700
1	**2394**	**2394**	**2353**	**150 m**	**0 m**
2	**2394**	**2394**	**2353**	**2323**	**2323**
3	**2394**	**2394**	**2353**	**2323**	**2323**
4	1268	**1318**	**2353**	**2323**	2323

500
on ramp traffic volume

1500
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	Manchester Ave to Birmingham Dr
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1300
volume on (veh/hr)	250
volume off (veh/hr)	400
segment volume (veh/hr)	7910
approach volume (veh/hr)	7660

Segment Lengths

merge length (m)	150
fwy segment length (m)	1000
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	2298	2298
Lane 2	2298	2298
Lane 3	2298	2298
Lane 4	766	1016
	7660	7910

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1978	1978
Lane 2	1978	1978
Lane 3	1978	1978
Lane 4	1978	1578
	7910	7510

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	Manchester Ave to Birmingham Dr
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1300
volume on (veh/hr)	220
volume off (veh/hr)	630
segment volume (veh/hr)	8130
approach volume (veh/hr)	7910

Segment Lengths

merge length (m)	150
fwy segment length (m)	1000
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	2373	2373
Lane 2	2373	2373
Lane 3	2373	2373
Lane 4	791	1011
	7910	8130

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	2033	2033
Lane 2	2033	2033
Lane 3	2033	2033
Lane 4	2033	1403
	8130	7500

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Manchester Ave to Birmingham Dr
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1150*	1150	1300
1	2298	2298	1978	1978	1978
2	2298	2298	1978	1978	1978
3	2298	2298	1978	1978	1978
4	766	1016	1978	1978	1578

250
on ramp traffic volume

400
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Manchester Ave to Birmingham Dr
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1150*	1150	1300
1	**2373**	**2373**	**2033**	**2033**	**2033**
2	**2373**	**2373**	**2033**	**2033**	**2033**
3	**2373**	**2373**	**2033**	**2033**	**2033**
4	791	1011	**2033**	**2033**	1403

220
on ramp traffic volume

630
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	Birmingham Dr to Santa Fe Dr
Time Duration	AM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	600
volume on (veh/hr)	500
volume off (veh/hr)	510
segment volume (veh/hr)	8010

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m
Lane 1	2163	2136	2175	2217	2235
Lane 2	2163	2136	2175	2217	2235
Lane 3	2163	2136	2175	2217	2235
Lane 4	1021	1603	1485	1360	795
	7510	8010	8010	8010	7500

Calculated Data

Thru Volume (lane 4)	Value
10%	700

NOTES

Lane 4 not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	Birmingham Dr to Santa Fe Dr
Time Duration	PM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	600
volume on (veh/hr)	430
volume off (veh/hr)	530
segment volume (veh/hr)	7930

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m
Lane 1	2156	2128	2157	2191	2207
Lane 2	2156	2128	2157	2191	2207
Lane 3	2156	2128	2157	2191	2207
Lane 4	1031	1546	1459	1356	779
	7500	7930	7930	7930	7400

Calculated Data

Thru Volume (lane 4)	Value
10%	697

NOTES

Lane 4 not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Birmingham Dr to Santa Fe Dr
Time Duration	AM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)				
	0	150	300	450	600
1	2163	2136	2175	2217	2235
2	2163	2136	2175	2217	2235
3	2163	2136	2175	2217	2235
4	1021	1603	1485	1360	795

500
on ramp traffic volume

510
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Birmingham Dr to Santa Fe Dr
Time Duration	PM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)				
	0	150	300	450	600
1	2156	2128	2157	2191	2207
2	2156	2128	2157	2191	2207
3	2156	2128	2157	2191	2207
4	1031	1546	1459	1356	779

430
on ramp traffic volume

530
off ramp traffic volume

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	Santa Fe Dr to Encinitas Blvd
Time Duration	AM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	800
volume on (veh/hr)	550
volume off (veh/hr)	800
segment volume (veh/hr)	8050

Calculated Data

Thru Volume (lane 4)	Value
10%	670

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	800 m
Lane 1	2169	2124	2154	2166	2163	2168	2170
Lane 2	2169	2124	2154	2166	2163	2168	2170
Lane 3	2169	2124	2154	2166	2163	2168	2170
Lane 4	992	1678	1589	1552	1561	1547	742
	7500	8050	8050	8050	8050	8050	7250

NOTES

Lane 4 not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	Santa Fe Dr to Encinitas Blvd
Time Duration	PM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	800
volume on (veh/hr)	660
volume off (veh/hr)	750
segment volume (veh/hr)	8060

Calculated Data

Thru Volume (lane 4)	Value
10%	665

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	800 m
Lane 1	2144	2102	2149	2175	2177	2184	2186
Lane 2	2144	2102	2149	2175	2177	2184	2186
Lane 3	2144	2102	2149	2175	2177	2184	2186
Lane 4	967	1755	1613	1535	1528	1507	751
	7400	8060	8060	8060	8060	8060	7310

NOTES

Lane 4 not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Santa Fe Dr to Encinitas Blvd
Time Duration	AM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	750	800
1	2169	2124	2154	2166	2163	2168	2170
2	2169	2124	2154	2166	2163	2168	2170
3	2169	2124	2154	2166	2163	2168	2170
4	992	1678	1589	1552	1561	1547	742

550
on ramp traffic volume

800
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Santa Fe Dr to Encinitas Blvd
Time Duration	PM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	750	800
1	**2144**	**2102**	**2149**	**2175**	**2177**	**2184**	**2186**
2	**2144**	**2102**	**2149**	**2175**	**2177**	**2184**	**2186**
3	**2144**	**2102**	**2149**	**2175**	**2177**	**2184**	**2186**
4	967	1755	1613	1535	1528	1507	751

660
on ramp traffic volume

750
off ramp traffic volume

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	Encinitas Blvd to Leucadia Blvd
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1300
volume on (veh/hr)	750
volume off (veh/hr)	560
segment volume (veh/hr)	8000
approach volume (veh/hr)	7250

Segment Lengths

merge length (m)	150
fwy segment length (m)	1000
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	2175	2175
Lane 2	2175	2175
Lane 3	2175	2175
Lane 4	725	1475
	7250	8000

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	2000	2000
Lane 2	2000	2000
Lane 3	2000	2000
Lane 4	2000	1440
	8000	7440

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	Encinitas Blvd to Leucadia Blvd
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1300
volume on (veh/hr)	950
volume off (veh/hr)	900
segment volume (veh/hr)	8260
approach volume (veh/hr)	7310

Segment Lengths

merge length (m)	150
fwy segment length (m)	1000
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	2193	2193
Lane 2	2193	2193
Lane 3	2193	2193
Lane 4	731	1681
	7310	8260

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	2065	2065
Lane 2	2065	2065
Lane 3	2065	2065
Lane 4	2065	1165
	8260	7360

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Encinitas Blvd to Leucadia Blvd
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)				
Number	0	150	150-1150*	1150	1300
1	2175	2175	2000	2000	2000
2	2175	2175	2000	2000	2000
3	2175	2175	2000	2000	2000
4	725	1475	2000	2000	1440

750
on ramp traffic volume

560
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Encinitas Blvd to Leucadia Blvd
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)				
Number	0	150	150-1150*	1150	1300
1	2193	2193	2065	2065	2065
2	2193	2193	2065	2065	2065
3	2193	2193	2065	2065	2065
4	731	1681	2065	2065	1165

950
on ramp traffic volume

900
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	Leucadia Blvd to La Costa Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1550
volume on (veh/hr)	750
volume off (veh/hr)	690
segment volume (veh/hr)	8190
approach volume (veh/hr)	7440

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	2232	2232
Lane 2	2232	2232
Lane 3	2232	2232
Lane 4	744	1494
	7440	8190

Segment Lengths

merge length (m)	150
fwy segment length (m)	1250
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	2048	2048
Lane 2	2048	2048
Lane 3	2048	2048
Lane 4	2048	1358
	8190	7500

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	Leucadia Blvd to La Costa Ave
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1550
volume on (veh/hr)	850
volume off (veh/hr)	870
segment volume (veh/hr)	8210
approach volume (veh/hr)	7360

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	2180	2180
Lane 2	2180	2180
Lane 3	2180	2180
Lane 4	821	1671
	7360	8210

Segment Lengths

merge length (m)	150
fwy segment length (m)	1250
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	2053	2053
Lane 2	2053	2053
Lane 3	2053	2053
Lane 4	2053	1183
	8210	7340

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Leucadia Blvd to La Costa Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)				
Number	0	150	150-1400*	1400	1550
1	2232	2232	2048	2048	2048
2	2232	2232	2048	2048	2048
3	2232	2232	2048	2048	2048
4	744	1494	2048	2048	1358

750
on ramp traffic volume

690
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Leucadia Blvd to La Costa Ave
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)				
Number	0	150	150-1400*	1400	1550
1	2180	2180	2053	2053	2053
2	2180	2180	2053	2053	2053
3	2180	2180	2053	2053	2053
4	821	1671	2053	2053	1183

850
on ramp traffic volume

870
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	La Costa Ave to Poinsettia Lane
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1700
volume on (veh/hr)	770
volume off (veh/hr)	820
segment volume (veh/hr)	8270
approach volume (veh/hr)	7500

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	2250	2250
Lane 2	2250	2250
Lane 3	2250	2250
Lane 4	750	1520
	7500	8270

Segment Lengths

merge length (m)	150
fwy segment length (m)	1100
diverge length (m)	450

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	450 m	300 m	150 m	0 m
Lane 1	1906	1873	1863	1863
Lane 2	1906	1873	1863	1863
Lane 3	1906	1873	1863	1863
Lane 4	2553	2135	1928	1863
Aux lane	0	517	754	820
	8270	8270	8270	8270

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	La Costa Ave to Poinsettia Lane
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1700
volume on (veh/hr)	810
volume off (veh/hr)	870
segment volume (veh/hr)	8150
approach volume (veh/hr)	7340

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	2202	2202
Lane 2	2202	2202
Lane 3	2202	2202
Lane 4	734	1544
	7340	8150

Segment Lengths

merge length (m)	150
fwy segment length (m)	1100
diverge length (m)	450

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	450 m	300 m	150 m	0 m
Lane 1	1866	1831	1820	1820
Lane 2	1866	1831	1820	1820
Lane 3	1866	1831	1820	1820
Lane 4	2553	2109	1890	1820
Aux lane	0	548	800	870
	8150	8150	8150	8150

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	La Costa Ave to Poinsettia Lane
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)						
Number	0	150	150-1250*	1250	1400	1550	1700
1	2250	2250	2068	1906	1873	1863	1863
2	2250	2250	2068	1906	1873	1863	1863
3	2250	2250	2068	1906	1873	1863	1863
4	750	1520	2068	**2553**	**2135**	1928	1863
					517	754	820

770
on ramp traffic volume

820
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	La Costa Ave to Poinsettia Lane
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)						
Number	0	150	150-1250*	1250	1400	1550	1700
1	2202	2202	2038	1866	1831	1820	1820
2	2202	2202	2038	1866	1831	1820	1820
3	2202	2202	2038	1866	1831	1820	1820
4	734	1544	2038	**2553**	**2109**	1890	1820
					548	800	870

810
on ramp traffic volume

870
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	Poinsettia Lane to Palomar Airport Road
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1700
volume on (veh/hr)	700
volume off (veh/hr)	2290
segment volume (veh/hr)	8150
approach volume (veh/hr)	7450

Segment Lengths

merge length (m)	150
fwy segment length (m)	1400
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	2235	2235
Lane 2	2235	2235
Lane 3	2235	2235
Lane 4	745	1445
	7450	8150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1682	1682
Lane 2	1682	1682
Lane 3	1682	1682
Lane 4	3105	815
	8150	5860

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	Poinsettia Lane to Palomar Airport Road
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1700
volume on (veh/hr)	700
volume off (veh/hr)	2200
segment volume (veh/hr)	7980
approach volume (veh/hr)	7280

Calculated Data

Thru Volume (lane 4)	Value
10%	798

Segment Lengths

merge length (m)	150
fwy segment length (m)	1400
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	2184	2184
Lane 2	2184	2184
Lane 3	2184	2184
Lane 4	728	1428
	7280	7980

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1661	1661
Lane 2	1661	1661
Lane 3	1661	1661
Lane 4	2998	798
	7980	5780

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Poinsettia Lane to Palomar Airport Road
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)				
Number	0	150	150-1550*	1550	1700
1	2235	2235	2038	1682	1682
2	2235	2235	2038	1682	1682
3	2235	2235	2038	1682	1682
4	745	1445	2038	**3105**	815

700
on ramp traffic volume

2290
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Poinsettia Lane to Palomar Airport Road
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)				
Number	0	150	150-1550*	1550	1700
1	2184	2184	1995	1661	1661
2	2184	2184	1995	1661	1661
3	2184	2184	1995	1661	1661
4	728	1428	1995	**2998**	798

700
on ramp traffic volume

2200
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	Palomar Airport Road to Cannon Road
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	900
volume on (veh/hr)	1780
volume off (veh/hr)	1160
total volume (veh/hr)	7640

Calculated Data

Thru Volume (lane 4)	Value
10%	470

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	900 m
Lane 1	1685	1619	1612	1699	1768	1837	1885
Lane 2	1685	1619	1612	1699	1768	1837	1885
Lane 3	1685	1619	1612	1699	1768	1837	1885
Lane 4	806	1182	1734	1580	1331	1008	826
Aux lane	1780	1602	1068	963	1006	1121	1160
	7640	7640	7640	7640	7640	7640	7640

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	Palomar Airport Road to Cannon Road
Time Duration	PM peak
Analysis Type	Weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	900
volume on (veh/hr)	2190
volume off (veh/hr)	660
total volume (veh/hr)	7970

Calculated Data

Thru Volume (lane 4)	Value
10%	512

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	900 m
Lane 1	1692	1655	1690	1838	1963	2062	2120
Lane 2	1692	1655	1690	1838	1963	2062	2120
Lane 3	1692	1655	1690	1838	1963	2062	2120
Lane 4	703	1211	1914	1732	1426	1112	950
Aux lane	2190	1794	985	725	655	673	660
	7970	7970	7970	7970	7970	7970	7970

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Palomar Airport Road to Cannon Road
Time Duration	AM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)						
	0	150	300	450	600	750	900
1	1685	1619	1612	1699	1768	1837	1885
2	1685	1619	1612	1699	1768	1837	1885
3	1685	1619	1612	1699	1768	1837	1885
4	806	1182	1734	1580	1331	1008	826
	1780	1602	1068	963	1006	1121	1160

1780
on ramp traffic volume

1160
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Palomar Airport Road to Cannon Road
Time Duration	PM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)						
	0	150	300	450	600	750	900
1	1692	1655	1690	1838	1963	2062	2120
2	1692	1655	1690	1838	1963	2062	2120
3	1692	1655	1690	1838	1963	2062	2120
4	703	1211	**1914**	**1732**	1426	1112	950
	2190	**1794**	985	725	655	673	660

2190
on ramp traffic volume

660
off ramp traffic volume

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	Cannon Road to Tamarack Avenue
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1450
volume on (veh/hr)	980
volume off (veh/hr)	660
segment volume (veh/hr)	7460
approach volume (veh/hr)	6480

Segment Lengths

merge length (m)	450
fwy segment length (m)	850
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m
Lane 1	1944	1944	2029	2130
Lane 2	1944	1944	2029	2130
Lane 3	1944	1944	2029	2130
Lane 4	648	1285	1305	1069
Acc lane	980	343	69	0
	7460	7460	7460	7460

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1865	1865
Lane 2	1865	1865
Lane 3	1865	1865
Lane 4	1865	1205
	7460	6800

NOTES

Lane 4 and Acceleration Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	Cannon Road to Tamarack Avenue
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1450
volume on (veh/hr)	1420
volume off (veh/hr)	880
segment volume (veh/hr)	8730
approach volume (veh/hr)	7310

Segment Lengths

merge length (m)	450
fwy segment length (m)	850
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m
Lane 1	2193	2193	2316	2463
Lane 2	2193	2193	2316	2463
Lane 3	2193	2193	2316	2463
Lane 4	731	1654	1682	1342
Acc lane	1420	497	99	0
	8730	8730	8730	8730

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	2183	2183
Lane 2	2183	2183
Lane 3	2183	2183
Lane 4	2183	1303
	8730	7850

NOTES

Lane 4 and Acceleration Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Cannon Road to Tamarack Avenue
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	450-1300*	1300	1450
1	1944	1944	2029	2130	1865	1865	1865
2	1944	1944	2029	2130	1865	1865	1865
3	1944	1944	2029	2130	1865	1865	1865
4	648	1285	1305	1069	1865	1865	1205
	980	343	69				

980
on ramp traffic volume

660
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Cannon Road to Tamarack Avenue
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	450-1300*	1300	1450
1	2193	2193	**2316**	**2463**	2183	2183	2183
2	2193	2193	**2316**	**2463**	2183	2183	2183
3	2193	2193	**2316**	**2463**	2183	2183	2183
4	731	1654	1682	1342	**2183**	**2183**	1303
	1420	497	99				

1420
on ramp traffic volume

880
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	Tamarack Avenue to Carlsbad Village Drive
Time Duration	AM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	850
volume on (veh/hr)	530
volume off (veh/hr)	680
total volume (veh/hr)	7330

Calculated Data

Thru Volume (lane 4)	Value
10%	612

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	850 m
Lane 1	1984	1945	1979	1995	1987	1988	1991
Lane 2	1984	1945	1979	1995	1987	1988	1991
Lane 3	1984	1945	1979	1995	1987	1988	1991
Lane 4	848	1494	1394	1344	1370	1366	676
	6800	7330	7330	7330	7330	7330	6650

NOTES

Lane 4 not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	Tamarack Avenue to Carlsbad Village Drive
Time Duration	PM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	850
volume on (veh/hr)	620
volume off (veh/hr)	820
total volume (veh/hr)	8470

Calculated Data

Thru Volume (lane 4)	Value
10%	703

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	850 m
Lane 1	2287	2241	2278	2297	2285	2287	2291
Lane 2	2287	2241	2278	2297	2285	2287	2291
Lane 3	2287	2241	2278	2297	2285	2287	2291
Lane 4	988	1747	1635	1580	1614	1610	777
	7850	8470	8470	8470	8470	8470	7650

NOTES

Lane 4 not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Tamarack Ave to Carlsbad Village Dr
Time Duration	AM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	750	850
1	1984	1945	1979	1995	1987	1988	1991
2	1984	1945	1979	1995	1987	1988	1991
3	1984	1945	1979	1995	1987	1988	1991
4	848	1494	1394	1344	1370	1366	676

530
on ramp traffic volume

680
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Tamarack Ave to Carlsbad Village Dr
Time Duration	PM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	750	850
1	2287	2241	2278	2297	2285	2287	2291
2	2287	2241	2278	2297	2285	2287	2291
3	2287	2241	2278	2297	2285	2287	2291
4	988	1747	1635	1580	1614	1610	777

620
on ramp traffic volume

820
off ramp traffic volume

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	Carlsbad Village Drive to Las Flores Drive
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	350
volume on (veh/hr)	560
volume off (veh/hr)	220
total volume (veh/hr)	7210

Calculated Data

Thru Volume (lane 4)	Value
10%	643

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	350 m
Lane 1	1933	1930	1961	2004
Lane 2	1933	1930	1961	2004
Lane 3	1933	1930	1961	2004
Lane 4	852	1122	1029	979
Aux lane	560	298	299	220
	7210	7210	7210	7210

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	Carlsbad Village Drive to Las Flores Drive
Time Duration	PM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	350
volume on (veh/hr)	640
volume off (veh/hr)	470
total volume (veh/hr)	8290

Calculated Data

Thru Volume (lane 4)	Value
10%	718

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	350 m
Lane 1	2162	2156	2190	2239
Lane 2	2162	2156	2190	2239
Lane 3	2162	2156	2190	2239
Lane 4	1165	1325	1170	1102
Aux lane	640	498	549	470
	8290	8290	8290	8290

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Carlsbad Village Drive to Las Flores Drive
Time Duration	AM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	350
1	1933	1930	1961	2004
2	1933	1930	1961	2004
3	1933	1930	1961	2004
4	852	1122	1029	979
	560	298	299	220

560 on ramp traffic volume

220 off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Carlsbad Village Drive to Las Flores Drive
Time Duration	PM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	350
1	2162	2156	2190	2239
2	2162	2156	2190	2239
3	2162	2156	2190	2239
4	1165	1325	1170	1102
	640	498	549	470

640 on ramp traffic volume

470 off ramp traffic volume

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	Las Flores Dr to SR-78
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	300
volume on (veh/hr)	480
volume off EB (veh/hr)	1930
total volume (veh/hr)	7470

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m
Lane 1	1550	1518	1545
Lane 2	1550	1518	1545
Lane 3	1550	1518	1545
Lane 4	2340	1329	828
Lane 5	480	1587	77
	7470	7470	5540

Calculated Data

Thru Volume	Value
10%	506

NOTES

Lane 5 not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	Las Flores Dr to SR-78
Time Duration	PM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	300
volume on (veh/hr)	660
volume off EB (veh/hr)	3100
total volume (veh/hr)	8480

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m
Lane 1	1468	1416	1453
Lane 2	1468	1416	1453
Lane 3	1468	1416	1453
Lane 4	3417	1711	914
Lane 5	660	2521	106
	8480	8480	5380

Calculated Data

Thru Volume	Value
10%	472

NOTES

Lane 5 not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2200 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Las Flores Dr to SR-78
Time Duration	AM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300
1	1550	1518	1545
2	1550	1518	1545
3	1550	1518	1545
4	2340	1329	828
5	480	1587	77

480
on ramp traffic volume

1930
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Las Flores Dr to SR-78
Time Duration	PM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300
1	1468	1416	1453
2	1468	1416	1453
3	1468	1416	1453
4	**3417**	1711	914
5	660	**2521**	106

660
on ramp traffic volume

3100
off ramp traffic volume

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	SR-78 to California Street
Time Duration	AM peak
Analysis Type	

Data Entry

Parameter	Input Value
number of lanes	6 to 4
segment length (m)	1500
SR-78 EB volume on (veh/hr)	50
SR-78 WB volume off (veh/hr)	300
SR-78 WB on (veh/hr)	2500
total volume (veh/hr)	7790

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	100 m	300 m	450 m	650 m	1150 m	1500 m
Lane 1	1124	1124	1323	1323	1464	1997	1948
Lane 2	1124	1124	1323	1323	1464	1997	1948
Lane 3	1124	1124	1323	1323	1464	1997	1948
Lane 4	1124	1124	1323	1323	1698	1799	1948
Lane 5	1044	794	0	1250	1700	0	0
Aux lane	50	300	0	1250	0	0	0
	5590	5590	5290	7790	7790	7790	7790

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	SR-78 to California Street
Time Duration	PM peak
Analysis Type	

Data Entry

Parameter	Input Value
number of lanes	6 to 4
segment length (m)	1500
SR-78 EB volume on (veh/hr)	80
SR-78 WB volume off (veh/hr)	300
SR-78 WB on (veh/hr)	2470
total volume (veh/hr)	7630

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	100 m	300 m	450 m	650 m	1150 m	1500 m
Lane 1	1089	1089	1290	1290	1430	1953	1908
Lane 2	1089	1089	1290	1290	1430	1953	1908
Lane 3	1089	1089	1290	1290	1430	1953	1908
Lane 4	1089	1089	1290	1290	1661	1771	1908
Lane 5	1025	805	0	1235	1680	0	0
Aux lane	80	300	0	1235	0	0	0
	5460	5460	5160	7630	7630	7630	7630

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	SR-78 to California Street
Time Duration	AM peak
Analysis Type	

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)						
	0	100	300	450	650	1150	1500
1	1124	1124	1323	1323	1464	1997	1947.5
2	1124	1124	1323	1323	1464	1997	1947.5
3	1124	1124	1323	1323	1464	1997	1947.5
4	1124	1124	1323	1323	1698	1799	1947.5
5	1044	794		1250	1700		
	50	300		1250			

50 SR-78 EB on ramp traffic volume

300 SR-78 WB off ramp traffic volume

2500 SR-78 WB on ramp traffic volume

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	California Street to Oceanside Blvd
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
segment length (m)	450
volume on (veh/hr)	240
volume off (veh/hr)	930
total volume (veh/hr)	8030

Distance	0 m	150 m	300 m	450 m
Lane 1	2123	2074	2079	2104
Lane 2	2123	2074	2079	2104
Lane 3	2123	2074	2079	2104
Lane 4	1421	1140	921	789
Aux Lane	240	670	872	930
	8030	8030	8030	8030

Calculated Data

Thru Volume	Value
10%	686

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	California Street to Oceanside Blvd
Time Duration	PM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
segment length (m)	450
volume on (veh/hr)	250
volume off (veh/hr)	1400
total volume (veh/hr)	7880

Distance	0 m	150 m	300 m	450 m
Lane 1	1967	1892	1891	1917
Lane 2	1967	1892	1891	1917
Lane 3	1967	1892	1891	1917
Lane 4	1729	1234	903	731
Aux Lane	250	970	1306	1400
	7880	7880	7880	7880

Calculated Data

Thru Volume	Value
10%	623

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	California Street to Oceanside Blvd
Time Duration	AM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450
1	2123	2074	2079	2104
2	2123	2074	2079	2104
3	2123	2074	2079	2104
4	1421	1140	921	789
	240	670	872	930

240 on ramp traffic volume

930 off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	California Street to Oceanside Blvd
Time Duration	PM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450
1	**1967**	1892	1891	1917
2	**1967**	1892	1891	1917
3	**1967**	1892	1891	1917
4	1729	1234	903	731
	250	970	1306	1400

250 on ramp traffic volume

1400 off ramp traffic volume

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	Oceanside Blvd to Mission Ave
Time Duration	AM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	4
segment length (m)	550
volume on (veh/hr)	520
volume off (veh/hr)	1380
total volume (veh/hr)	7620

Distance	0 m	200 m	300 m	450 m	550 m
Lane 1	1859	1794	1808	1837	1856
Lane 2	1859	1794	1808	1837	1856
Lane 3	1859	1794	1808	1837	1856
Lane 4	1524	2237	2195	2108	671
	7100	7620	7620	7620	6240

Calculated Data

Thru Volume	Value
10%	572

NOTES

Lane 4 not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	Oceanside Blvd to Mission Ave
Time Duration	PM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	4
segment length (m)	550
volume on (veh/hr)	610
volume off (veh/hr)	1800
total volume (veh/hr)	7090

Distance	0 m	200 m	300 m	450 m	550 m
Lane 1	1590	1506	1515	1546	1569
Lane 2	1590	1506	1515	1546	1569
Lane 3	1590	1506	1515	1546	1569
Lane 4	1710	2572	2544	2451	584
	6480	7090	7090	7090	5290

Calculated Data

Thru Volume	Value
10%	468

NOTES

Lane 4 not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Oceanside Blvd to Mission Ave
Time Duration	AM peak
Analysis Type	weave analysis without aux lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	200	300	450	550
1	1859	1794	1808	1837	1856
2	1859	1794	1808	1837	1856
3	1859	1794	1808	1837	1856
4	1524	2237	2195	2108	671

520
on ramp traffic volume

1380
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Oceanside Blvd to Mission Ave
Time Duration	PM peak
Analysis Type	weave analysis without aux lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	200	300	450	550
1	1590	1506	1515	1546	1569
2	1590	1506	1515	1546	1569
3	1590	1506	1515	1546	1569
4	1710	**2572**	**2544**	**2451**	584

610
on ramp traffic volume

1800
off ramp traffic volume

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	Mission Ave to SR-76
Time Duration	AM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	4
segment length (m)	500
volume on (veh/hr)	780
volume off (veh/hr)	1550
total volume (veh/hr)	7020

Distance	0 m	200 m	300 m	450 m	500
Lane 1	1567	1495	1537	1589	1618
Lane 2	1567	1495	1537	1589	1618
Lane 3	1567	1495	1537	1589	1618
Lane 4	1539	2536	2410	2253	617
	6240	7020	7020	7020	5470

Calculated Data

Thru Volume	Value
10%	469

NOTES

Lane 4 not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	Mission Ave to SR-76
Time Duration	PM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	4
segment length (m)	500
volume on (veh/hr)	440
volume off (veh/hr)	1900
total volume (veh/hr)	5730

Distance	0 m	200 m	300 m	450 m	500
Lane 1	1213	1125	1107	1120	1136
Lane 2	1213	1125	1107	1120	1136
Lane 3	1213	1125	1107	1120	1136
Lane 4	1650	2356	2408	2371	423
	5290	5730	5730	5730	3830

Calculated Data

Thru Volume	Value
10%	339

NOTES

Lane 4 not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Mission Ave to SR-76
Time Duration	AM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	200	300	450	500
1	1567	1495	1537	1589	1618
2	1567	1495	1537	1589	1618
3	1567	1495	1537	1589	1618
4	1539	2536	2410	2253	617

780
on ramp traffic volume

1550
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	Mission Ave to SR-76
Time Duration	PM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	200	300	450	500
1	1213	1125	1107	1120	1136
2	1213	1125	1107	1120	1136
3	1213	1125	1107	1120	1136
4	1650	**2356**	**2408**	**2371**	423

440
on ramp traffic volume

1900
off ramp traffic volume

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	SR-76 to Harbor
Time Duration	AM peak
Analysis Type	weave analysis

Data Entry

Parameter	Input Value
number of lanes	4
segment length (m)	750
volume on (veh/hr)	2100
EB volume off (veh/hr)	2060
WB volume off (veh/hr)	380
total volume (veh/hr)	7570

Calculated Data

Thru Volume	Value
10%	341

Distance	0 m	150 m	300 m	350 m	450 m	600 m	750 m
Lane 1	1092	1023	1233	1303	1378	1378	1378
Lane 2	1092	1023	1233	1303	1378	1378	1378
Lane 3	1092	1023	1233	1303	1378	1378	1378
Lane 4	2195	2328	1810	1601	1378	1378	998
Aux Lane	2100	2173	2061	2060	0	0	0
	7570	7570	7570	7570	5510	5510	5130

Design Year	2030 No Build
Freeway & Direction	I-5 Northbound
Freeway Segment	SR-76 to Harbor
Time Duration	PM peak
Analysis Type	weave analysis

Data Entry

Parameter	Input Value
number of lanes	4
segment length (m)	750
volume on (veh/hr)	1600
EB volume off (veh/hr)	1150
WB volume off (veh/hr)	300
total volume (veh/hr)	5430

Calculated Data

Thru Volume	Value
10%	268

Distance	0 m	150 m	300 m	350 m	450 m	600 m	750 m
Lane 1	842	804	964	1017	1070	1070	1070
Lane 2	842	804	964	1017	1070	1070	1070
Lane 3	842	804	964	1017	1070	1070	1070
Lane 4	1303	1698	1375	1228	1070	1070	770
Aux Lane	1600	1320	1164	1150	0	0	0
	5430	5430	5430	5430	4280	4280	3980

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	SR-76 to Vandergrift
Time Duration	AM peak
Analysis Type	weave analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	350	350-750	750
1	1092	1023	1233	1303	1378	1378
2	1092	1023	1233	1303	1378	1378
3	1092	1023	1233	1303	1378	1378
4	2195	2328	1810	1601	1378	998
	2100	**2173**	**2061**	**2060**		

2100
on ramp traffic volume

2060
EB off ramp traffic volume

380
WB off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Northbound
Freeway Segment	SR-76 to Vandergrift
Time Duration	PM peak
Analysis Type	weave analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	350	350-750	750
1	842	804	964	1017	1070	1070
2	842	804	964	1017	1070	1070
3	842	804	964	1017	1070	1070
4	1303	1698	1375	1228	1070	770
	1600	1320	1164	1150		

1600
on ramp traffic volume

1150
EB off ramp traffic volume

300
WB off ramp traffic volume

SB 2030 No Build Traffic Analysis

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Roselle St to Genesee Ave
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

will these ramps be braided in 2030
(if yes, this segment can be omitted)

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	750
volume on (veh/hr)	1250
volume off (veh/hr)	2240
segment volume (veh/hr)	7280

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m
Lane 1	1540	1413	1356	1349	1419	1458
Lane 2	1540	1413	1356	1349	1419	1458
Lane 3	1540	1413	1356	1349	1419	1458
Lane 4	1409	1436	1580	1417	926	667
Aux Lane	1250	1604	1632	1815	2098	2240
	7280	7280	7280	7280	7280	7280

Calculated Data

Thru Volume (lane 4)	Value
10%	379

*"real world" existing conditions has auxiliary lane; MS design shows 300 meter acceleration lane

NOTES

Lane 4 and Acceleration Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Roselle St to Genesee Ave
Time Duration	PM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	750
volume on (veh/hr)	1780
volume off (veh/hr)	1030
segment volume (veh/hr)	6610

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m
Lane 1	1325	1267	1301	1406	1527	1597
Lane 2	1325	1267	1301	1406	1527	1597
Lane 3	1325	1267	1301	1406	1527	1597
Lane 4	854	1324	1679	1448	1029	789
Aux Lane	1780	1485	1027	943	1001	1030
	6610	6610	6610	6610	6610	6610

Calculated Data

Thru Volume (lane 4)	Value
10%	380

NOTES

Lane 4 and Acceleration Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2200 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

(off ramp traffic percentage in weave lane)

Percentage of Traffic Exiting (in lane 5) per distance from on ramp

distance (m)	0	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
900	29	34.7	40.3	46	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0
850	34.7	40.3	46	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0	
800	40.3	46	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0		
750	46	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0			
700	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0				
650	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0					
600	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0						
550	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0							
500	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0								
450	79	84.3	89.6	95	96.7	98.3	100	100	100	0									
400	84.3	89.6	95	96.7	98.3	100	100	100	0										
350	89.6	95	96.7	98.3	100	100	100	0											
300	95	96.7	98.3	100	100	100	0												

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Harbor to SR-76
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	800
volume on (veh/hr)	1000
volume off WB (veh/hr)	250
volume off EB (veh/hr)	1200
total volume (veh/hr)	5900

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	550 m	650 m	800 m
Lane 1	1225	1453	1507	1346	1352	1413	1413
Lane 2	1225	1453	1507	1346	1352	1413	1413
Lane 3	1225	1453	1507	1346	1352	1413	1413
Lane 4	1225	918	1053	1581	1593	1413	213
Aux lane	1000	625	328	280	250	0	0
	5900	5900	5900	5900	5900	5650	4450

Calculated Data

Thru Volume	Value
10%	345

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Harbor to SR-76
Time Duration	PM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	800
volume on (veh/hr)	2000
volume off WB (veh/hr)	300
volume off EB (veh/hr)	1640
total volume (veh/hr)	7280

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	550 m	650 m	800 m
Lane 1	1320	1570	1688	1531	1583	1745	1745
Lane 2	1320	1570	1688	1531	1583	1745	1745
Lane 3	1320	1570	1688	1531	1583	1745	1745
Lane 4	1320	1421	1711	2327	2230	1745	105
Aux lane	2000	1150	505	360	300	0	0
	7280	7280	7280	7280	7280	6980	5340

Calculated Data

Thru Volume	Value
10%	334

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Harbor to SR-76
Time Duration	AM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	550	650	800
1	1225	1453	1507	1346	1352	1413	1413
2	1225	1453	1507	1346	1352	1413	1413
3	1225	1453	1507	1346	1352	1413	1413
4	1225	918	1053	1581	1593	1413	213
	1000	625	328	280	250		

1000 on ramp traffic volume

250 WB off ramp traffic volume

1200 EB off ramp traffic volume

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Harbor to SR-76
Time Duration	PM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	550	650	800
1	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0
	0	0	0	0	0		

0 on ramp traffic volume

0 WB off ramp traffic volume

0 EB off ramp traffic volume

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	SR-76 to Mission Avenue
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	350
volume on (veh/hr)	2000
volume off (veh/hr)	350
total volume (veh/hr)	6450

Calculated Data

Thru Volume	Value
10%	410

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	350 m
Lane 1	1242	1227	1283	1497
Lane 2	1242	1227	1283	1497
Lane 3	1242	1227	1283	1497
Lane 4	725	2005	1997	1610
Aux lane	2000	766	604	350
	6450	6450	6450	6450

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	SR-76 to Mission Avenue
Time Duration	PM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	350
volume on (veh/hr)	1600
volume off (veh/hr)	560
total volume (veh/hr)	6940

Calculated Data

Thru Volume	Value
10%	478

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	350 m
Lane 1	1453	1428	1477	1647
Lane 2	1453	1428	1477	1647
Lane 3	1453	1428	1477	1647
Lane 4	982	1829	1800	1438
Aux lane	1600	826	710	560
	6940	6940	6940	6940

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	SR-76 to Mission Ave
Time Duration	AM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	350
1	1242	1227	1283	1497
2	1242	1227	1283	1497
3	1242	1227	1283	1497
4	725	**2005**	**1997**	1610
	2000	766	604	350

2000
on ramp traffic volume

350
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	SR-76 to Mission Ave
Time Duration	PM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	350
1	1453	1428	1477	1647
2	1453	1428	1477	1647
3	1453	1428	1477	1647
4	982	1829	1800	1438
	1600	826	710	560

1600
on ramp traffic volume

560
off ramp traffic volume

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Mission Ave to Oceanside Blvd
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1050
volume on WB (veh/hr)	890
volume on EB (veh/hr)	450
volume off (veh/hr)	420
total volume (veh/hr)	7440

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	500 m	600 m
Lane 1	1785	1785	1748	1748	1748	1748
Lane 2	1785	1785	1748	1748	1748	1748
Lane 3	1785	1785	1748	1748	1748	1748
Lane 4	744	1634	1748	1748	1748	2198
Acc lane	0	0	0	0	450	0
	6100	6990	6990	6990	7440	7440

Segment Lengths

merge length (m)	600
fwy segment length (m)	300
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1860	1860
Lane 2	1860	1860
Lane 3	1860	1860
Lane 4	1860	1440
	7440	7020

NOTES

Lane 4 and Acceleration Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Mission Ave to Oceanside Blvd
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1050
volume on WB (veh/hr)	820
volume on EB (veh/hr)	700
volume off (veh/hr)	650
total volume (veh/hr)	7900

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	500 m	600 m
Lane 1	1863	1863	1800	1800	1800	1800
Lane 2	1863	1863	1800	1800	1800	1800
Lane 3	1863	1863	1800	1800	1800	1800
Lane 4	790	1610	1800	1800	1800	2500
Acc lane	0	0	0	0	700	0
	6380	7200	7200	7200	7900	7900

Segment Lengths

merge length (m)	600
fwy segment length (m)	300
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1975	1975
Lane 2	1975	1975
Lane 3	1975	1975
Lane 4	1975	1325
	7900	7250

NOTES

Lane 4 and Acceleration Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Mission to Oceanside Blvd
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)								
	0	150	300	450	500	600	600-900*	900	1050
1	1785	1785	1748	1748	1748	1748	1860	1860	1860
2	1785	1785	1748	1748	1748	1748	1860	1860	1860
3	1785	1785	1748	1748	1748	1748	1860	1860	1860
4	744	1634	1748	1748	1748	**2198**	1860	1860	1440

890
WB on ramp traffic volume

450
EB on ramp traffic volume

420
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Mission to Oceanside Blvd
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)								
	0	150	300	450	500	600	600-900*	900	1050
1	1863	1863	1800	1800	1800	1800	1975	1975	1975
2	1863	1863	1800	1800	1800	1800	1975	1975	1975
3	1863	1863	1800	1800	1800	1800	1975	1975	1975
4	790	1610	1800	1800	1800	**2500**	**1975**	**1975**	1325

820
WB on ramp traffic volume

700
EB on ramp traffic volume

650
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Oceanside Blvd to Cassidy Street
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1100
volume on (veh/hr)	1250
volume off (veh/hr)	220
total volume (veh/hr)	8270

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	250 m
Lane 1	2064	2064	2198
Lane 2	2064	2064	2198
Lane 3	2064	2064	2198
Lane 4	827	1827	1677
Acc lane	1250	250	0
	8270	8270	8270

Segment Lengths

merge length (m)	250
fwy segment length (m)	700
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance f	150 m	0 m
Lane 1	2068	2068
Lane 2	2068	2068
Lane 3	2068	2068
Lane 4	2068	1848
	8270	8050

NOTES

Lane 4 and Acceleration Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Oceanside Blvd to Cassidy Street
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1100
volume on (veh/hr)	930
volume off (veh/hr)	250
total volume (veh/hr)	8180

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	250 m
Lane 1	2144	2144	2243
Lane 2	2144	2144	2243
Lane 3	2144	2144	2243
Lane 4	818	1562	1450
Acc lane	930	186	0
	8180	8180	8180

Segment Lengths

merge length (m)	250
fwy segment length (m)	700
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance f	150 m	0 m
Lane 1	2045	2045
Lane 2	2045	2045
Lane 3	2045	2045
Lane 4	2045	1795
	8180	7930

NOTES

Lane 4 and Acceleration Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Oceanside Blvd to Cassidy Street
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	250	250-950*	950	1100
1	2064	2064	2198	2068	2068	2068
2	2064	2064	2198	2068	2068	2068
3	2064	2064	2198	2068	2068	2068
4	827	1827	1677	**2068**	**2068**	1848
	1250	250				

1250
on ramp traffic volume

220
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Oceanside Blvd to Cassidy Street
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	250	250-950*	950	1100
1	2144	2144	2243	2045	2045	2045
2	2144	2144	2243	2045	2045	2045
3	2144	2144	2243	2045	2045	2045
4	818	1562	1450	**2045**	**2045**	1795
	930	186				

930
on ramp traffic volume

250
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Cassidy Street to SR-78
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

4 lanes + aux or 5 thru lanes with lane 5 created at cassidy st on ramp?

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	350
volume on (veh/hr)	400
volume off (veh/hr)	2650
total volume (veh/hr)	8450

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	350 m
Lane 1	1708	1594	1631	1673
Lane 2	1708	1594	1631	1673
Lane 3	1708	1594	1631	1673
Lane 4	2925	1556	1348	780
Aux lane	400	2114	2211	2650
	8450	8450	8450	8450

Calculated Data

Thru Volume	Value
10%	540

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Cassidy Street to SR-78
Time Duration	PM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	350
volume on (veh/hr)	330
volume off (veh/hr)	2380
total volume (veh/hr)	8260

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	350 m
Lane 1	1744	1641	1674	1709
Lane 2	1744	1641	1674	1709
Lane 3	1744	1641	1674	1709
Lane 4	2697	1445	1258	753
Aux lane	330	1891	1981	2380
	8260	8260	8260	8260

Calculated Data

Thru Volume	Value
10%	555

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Cassidy Street to SR-78
Time Duration	AM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)			
	0	150	300	350
1	1708	1594	1631	1673
2	1708	1594	1631	1673
3	1708	1594	1631	1673
4	**2925**	1556	1348	780
	400	2114	2211	**2650**

400
on ramp traffic volume

2650
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Cassidy Street to SR-78
Time Duration	PM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)			
	0	150	300	350
1	1744	1641	1674	1709
2	1744	1641	1674	1709
3	1744	1641	1674	1709
4	**2697**	1445	1258	753
	330	**1891**	**1981**	**2380**

330
on ramp traffic volume

2380
off ramp traffic volume

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	SR-78 to Las Flores
Time Duration	AM peak
Analysis Type	weave analysis

5 thru lanes? Lane 5 not created at on ramp?

Data Entry

Parameter	Input Value
number of lanes	5
weave length (m)	250
volume on (veh/hr)	2960
volume off (veh/hr)	380
total volume (veh/hr)	8760

Calculated Data

Thru Volume	Value
10%	542

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	250 m
Lane 1	1632	1626	1794
Lane 2	1632	1626	1794
Lane 3	1632	1626	1794
Lane 4	903	2853	2525
Lane 5	2960	1029	474
	8760	8760	8380

NOTES

Aux lane not to exceed 1800 veh/hr

Lanes 1 through 4 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes

Lane 5 created at on ramp

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	SR-78 to Las Flores
Time Duration	PM peak
Analysis Type	weave analysis

Data Entry

Parameter	Input Value
number of lanes	5
weave length (m)	250
volume on (veh/hr)	2220
volume off (veh/hr)	470
total volume (veh/hr)	8100

Calculated Data

Thru Volume	Value
10%	541

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	250 m
Lane 1	1631	1623	1749
Lane 2	1631	1623	1749
Lane 3	1631	1623	1749
Lane 4	988	2319	2028
Lane 5	2220	912	355
	8100	8100	7630

NOTES

Aux lane not to exceed 1800 veh/hr

Lanes 1 through 4 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes

Lane 5 created at on ramp

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	SR-78 to Las Flores Dr
Time Duration	AM peak
Analysis Type	weave analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)		
	0	150	250
1			
2			
3			
4			
5	2960		

2960
on ramp traffic volume

380
off ramp traffic volume

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Las Flores Dr to Carlsbad Village Dr
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	350
volume on (veh/hr)	280
volume off (veh/hr)	500
total volume (veh/hr)	8040

Calculated Data

Thru Volume	Value
10%	726

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	350 m
Lane 1	2186	2180	2194	2215
Lane 2	2186	2180	2194	2215
Lane 3	2186	2180	2194	2215
Lane 4	1201	1071	939	894
Aux lane	280	430	520	500
	8040	8040	8040	8040

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Las Flores Dr to Carlsbad Village Dr
Time Duration	PM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	350
volume on (veh/hr)	190
volume off (veh/hr)	700
total volume (veh/hr)	7820

Calculated Data

Thru Volume	Value
10%	693

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	350 m
Lane 1	2091	2081	2090	2104
Lane 2	2091	2081	2090	2104
Lane 3	2091	2081	2090	2104
Lane 4	1358	1025	855	807
Aux lane	190	552	695	700
	7820	7820	7820	7820

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Las Flores Drive to Carlsbad Village Drive
Time Duration	AM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	350
1	2186	2180	2194	2215
2	2186	2180	2194	2215
3	2186	2180	2194	2215
4	1201	1071	939	894
	280	430	520	500

280
on ramp traffic volume

500
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Las Flores Drive to Carlsbad Village Drive
Time Duration	PM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	350
1	2091	2081	2090	2104
2	2091	2081	2090	2104
3	2091	2081	2090	2104
4	1358	1025	855	807
	190	552	695	700

190
on ramp traffic volume

700
off ramp traffic volume

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Carlsbad Village Dr to Tamarack Ave
Time Duration	AM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	700
volume on (veh/hr)	650
volume off (veh/hr)	420
total volume (veh/hr)	8810

Calculated Data

Thru Volume	Value
10%	774

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	700 m
Lane 1	2390	2366	2431	2478	2498	2508
Lane 2	2390	2366	2431	2478	2498	2508
Lane 3	2390	2366	2431	2478	2498	2508
Lane 4	991	1711	1518	1375	1318	865
	8160	8810	8810	8810	8810	8390

NOTES

Lane 4 not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Carlsbad Village Dr to Tamarack Ave
Time Duration	PM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	700
volume on (veh/hr)	720
volume off (veh/hr)	590
total volume (veh/hr)	7840

Calculated Data

Thru Volume	Value
10%	653

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	700 m
Lane 1	2054	2021	2086	2133	2153	2165
Lane 2	2054	2021	2086	2133	2153	2165
Lane 3	2054	2021	2086	2133	2153	2165
Lane 4	958	1776	1582	1440	1380	754
	7120	7840	7840	7840	7840	7250

NOTES

Lane 4 not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Carlsbad Village Dr to Tamarack Ave
Time Duration	AM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	700
1	2390	2366	**2431**	**2478**	**2498**	**2508**
2	2390	2366	**2431**	**2478**	**2498**	**2508**
3	2390	2366	**2431**	**2478**	**2498**	**2508**
4	991	1711	1518	1375	1318	865

650
on ramp traffic volume

420
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Carlsbad Village Dr to Tamarack Ave
Time Duration	PM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	700
1	2054	2021	2086	2133	2153	2165
2	2054	2021	2086	2133	2153	2165
3	2054	2021	2086	2133	2153	2165
4	958	1776	1582	1440	1380	754

720
on ramp traffic volume

590
off ramp traffic volume

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Tamarack Avenue to Cannon Road
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1550
volume on (veh/hr)	880
volume off (veh/hr)	1500
segment volume (veh/hr)	9270
approach volume (veh/hr)	8390

Segment Lengths

merge length (m)	150
fwy segment length (m)	1250
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	2517	2517
Lane 2	2517	2517
Lane 3	2517	2517
Lane 4	839	1719
	8390	9270

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	2281	2281
Lane 2	2281	2281
Lane 3	2281	2281
Lane 4	2427	927
	9270	7770

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Tamarack Avenue to Cannon Road
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1600
volume on (veh/hr)	750
volume off (veh/hr)	940
segment volume (veh/hr)	8000
approach volume (veh/hr)	7250

Segment Lengths

merge length (m)	150
fwy segment length (m)	1300
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	2175	2175
Lane 2	2175	2175
Lane 3	2175	2175
Lane 4	725	1475
	7250	8000

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	2087	2087
Lane 2	2087	2087
Lane 3	2087	2087
Lane 4	1740	800
	8000	7060

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Tamarack Avenue to Cannon Road
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)				
Number	0	150	150-1400*	1400	1550
1	**2517**	**2517**	2318	2281	2281
2	**2517**	**2517**	2318	2281	2281
3	**2517**	**2517**	2318	2281	2281
4	839	1719	**2318**	**2427**	927

880
on ramp traffic volume

1500
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Tamarack Avenue to Cannon Road
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)				
Number	0	150	150-1400*	1400	1550
1	2175	2175	2000	2087	2087
2	2175	2175	2000	2087	2087
3	2175	2175	2000	2087	2087
4	725	1475	2000	1740	800

750
on ramp traffic volume

940
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Cannon Road to Palomar Airport Road
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	5
weave length (m)	700
volume on (veh/hr)	600
volume off (veh/hr)	2330
total volume (veh/hr)	8370

Calculated Data

Thru Volume	Value
10%	544

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	700 m
Lane 1	2005	1881	1825	1753	1699	1780
Lane 2	2005	1881	1825	1753	1699	1780
Lane 3	2005	1881	1825	1753	1699	1780
Lane 4	1756	1425	1358	1287	1257	700
Aux lane	600	1303	1536	1825	2017	2330
	8370	8370	8370	8370	8370	8370

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Cannon Road to Palomar Airport Road
Time Duration	PM peak
Analysis Type	Weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	5
weave length (m)	700
volume on (veh/hr)	950
volume off (veh/hr)	1750
total volume (veh/hr)	8010

Calculated Data

Thru Volume	Value
10%	531

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	700 m
Lane 1	1873	1870	1770	1752	1725	1827
Lane 2	1873	1870	1770	1752	1725	1827
Lane 3	1873	1870	1770	1752	1725	1827
Lane 4	1441	1330	1432	1339	1291	778
Aux lane	950	1072	1269	1416	1545	1750
	8010	8010	8010	8010	8010	8010

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Cannon Road to Palomar Airport Road
Time Duration	AM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)					
	0	150	300	450	600	700
1	2005	1881	1825	1753	1699	1780
2	2005	1881	1825	1753	1699	1780
3	2005	1881	1825	1753	1699	1780
4	1756	1425	1358	1287	1257	700
	600	1303	1536	1825	**2017**	**2330**

600
on ramp traffic volume

2330
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Cannon Road to Palomar Airport Road
Time Duration	PM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)					
	0	150	300	450	600	700
1	1873	1870	1770	1752	1725	1827
2	1873	1870	1770	1752	1725	1827
3	1873	1870	1770	1752	1725	1827
4	1441	1330	1432	1339	1291	778
	950	1072	1269	1416	1545	1750

950
on ramp traffic volume

1750
off ramp traffic volume

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Palomar Airport Road to Poinsettia Lane
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	2050
volume on WB (veh/hr)	1900
volume on EB (veh/hr)	350
volume off (veh/hr)	700
segment volume (veh/hr)	8290
approach volume (veh/hr)	6040

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m
Lane 1	1812	1812	2065	2255	2325
Lane 2	1812	1812	2065	2255	2325
Lane 3	1812	1812	2065	2255	2325
Lane 4	604	2504	1744	1174	1315
	6040	7940	7940	7940	8290

Segment Lengths

merge length (m)	600
fwy segment length (m)	1300
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	2073	2073
Lane 2	2073	2073
Lane 3	2073	2073
Lane 4	2073	1373
	8290	7590

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assume equal distribution of traffic volume in main lanes prior to diverge

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Palomar Airport Road to Poinsettia Lane
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	2050
volume on WB (veh/hr)	2000
volume on EB (veh/hr)	450
volume off (veh/hr)	700
segment volume (veh/hr)	8710
approach volume (veh/hr)	6260

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m
Lane 1	1878	1878	2145	2345	2418
Lane 2	1878	1878	2145	2345	2418
Lane 3	1878	1878	2145	2345	2418
Lane 4	626	2626	1826	1226	1456
	6260	8260	8260	8260	8710

Segment Lengths

merge length (m)	600
fwy segment length (m)	1300
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	2178	2178
Lane 2	2178	2178
Lane 3	2178	2178
Lane 4	2178	1478
	8710	8010

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assume equal distribution of traffic volume in main lanes prior to diverge

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Palomar Airport Road to Poinsettia Lane
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	600-1900*	1900	2050
1	1812	1812	2065	2255	2325	2073	2073	2073
2	1812	1812	2065	2255	2325	2073	2073	2073
3	1812	1812	2065	2255	2325	2073	2073	2073
4	604	**2504**	1744	1174	1315	2073	2073	1373

1900 WB on ramp traffic volume

350 EB on ramp traffic volume

700 off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Palomar Airport Road to Poinsettia Lane
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	600-1900*	1900	2050
1	1878	1878	2145	2345	2418	2178	2178	2178
2	1878	1878	2145	2345	2418	2178	2178	2178
3	1878	1878	2145	2345	2418	2178	2178	2178
4	626	**2626**	1826	1226	1456	2178	2178	1478

2000 WB on ramp traffic volume

450 EB on ramp traffic volume

700 off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Poinsettia Lane to La Costa Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1700
volume on (veh/hr)	650
volume off (veh/hr)	800
segment volume (veh/hr)	8240
approach volume (veh/hr)	7590

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	650 m
Lane 1	2277	2277	2316	2379	2420	2433
Lane 2	2277	2277	2316	2379	2420	2433
Lane 3	2277	2277	2316	2379	2420	2433
Lane 4	759	1058	1182	1071	961	941
Acc lane	650	351	111	33	20	0
	8240	8240	8240	8240	8240	8240

Segment Lengths

merge length (m)	650
fwy segment length (m)	900
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	2060	2060
Lane 2	2060	2060
Lane 3	2060	2060
Lane 4	2060	1260
	8240	7440

NOTES

Lane 4 and Acceleration Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assume equal distribution of traffic volume in main lanes prior to diverge

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Poinsettia Lane to La Costa Ave
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1700
volume on (veh/hr)	800
volume off (veh/hr)	910
segment volume (veh/hr)	8810
approach volume (veh/hr)	8010

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	650 m
Lane 1	2403	2403	2451	2528	2579	2595
Lane 2	2403	2403	2451	2528	2579	2595
Lane 3	2403	2403	2451	2528	2579	2595
Lane 4	801	1169	1321	1185	1049	1025
Acc lane	800	432	136	40	24	0
	8810	8810	8810	8810	8810	8810

Segment Lengths

merge length (m)	650
fwy segment length (m)	900
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	2203	2203
Lane 2	2203	2203
Lane 3	2203	2203
Lane 4	2203	1293
	8810	7900

NOTES

Lane 4 and Acceleration Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assume equal distribution of traffic volume in main lanes prior to diverge

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Poinsettia Lane to La Costa Avenue
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)								
Number	0	150	300	450	600	650	650-1550*	1550	1700
1	2277	2277	2316	2379	2420	2433	2060	2060	2060
2	2277	2277	2316	2379	2420	2433	2060	2060	2060
3	2277	2277	2316	2379	2420	2433	2060	2060	2060
4	759	1058	1182	1071	961	941	**2060**	**2060**	1260
	650	351	111	33	20				

650
on ramp traffic volume

800
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Poinsettia Lane to La Costa Avenue
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)								
Number	0	150	300	450	600	650	650-1550*	1550	1700
1	2403	2403	2451	2528	2579	2595	2203	2203	2203
2	2403	2403	2451	2528	2579	2595	2203	2203	2203
3	2403	2403	2451	2528	2579	2595	2203	2203	2203
4	801	1169	1321	1185	1049	1025	2203	2203	1293
	800	432	136	40	24				

800
on ramp traffic volume

910
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	La Costa Ave to Leucadia Blvd
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1550
volume on (veh/hr)	940
volume off (veh/hr)	800
segment volume (veh/hr)	8380
approach volume (veh/hr)	7440

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	2232	2232
Lane 2	2232	2232
Lane 3	2232	2232
Lane 4	744	1684
	7440	8380

Segment Lengths

merge length (m)	150
fwy segment length (m)	1250
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	2095	2095
Lane 2	2095	2095
Lane 3	2095	2095
Lane 4	2095	1295
	8380	7580

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assume equal distribution of traffic volume in main lanes prior to diverge

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	La Costa Ave to Leucadia Blvd
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1550
volume on (veh/hr)	750
volume off (veh/hr)	800
segment volume (veh/hr)	8650
approach volume (veh/hr)	7900

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	2370	2370
Lane 2	2370	2370
Lane 3	2370	2370
Lane 4	790	1540
	7900	8650

Segment Lengths

merge length (m)	150
fwy segment length (m)	1250
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	2163	2163
Lane 2	2163	2163
Lane 3	2163	2163
Lane 4	2163	1363
	8650	7850

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assume equal distribution of traffic volume in main lanes prior to diverge

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	La Costa Ave to Leucadia Blvd
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1400*	1400	1550
1	2232	2232	2095	2095	2095
2	2232	2232	2095	2095	2095
3	2232	2232	2095	2095	2095
4	744	1684	**2095**	**2095**	1295

940
on ramp traffic volume

800
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	La Costa Ave to Leucadia Blvd
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1400*	1400	1550
1	2370	2370	2163	2163	2163
2	2370	2370	2163	2163	2163
3	2370	2370	2163	2163	2163
4	790	1540	2163	2163	1363

750
on ramp traffic volume

800
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Leucadia Blvd to Encinitas Blvd
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1150
volume on (veh/hr)	650
volume off (veh/hr)	950
segment volume (veh/hr)	8230
approach volume (veh/hr)	7580

Segment Lengths

merge length (m)	150
fwy segment length (m)	850
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance f	0 m	150 m
Lane 1	2274	2274
Lane 2	2274	2274
Lane 3	2274	2274
Lane 4	758	1408
	7580	8230

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance f	150 m	0 m
Lane 1	2058	2058
Lane 2	2058	2058
Lane 3	2058	2058
Lane 4	2058	1108
	8230	7280

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assume equal distribution of traffic volume in main lanes prior to diverge

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Leucadia Blvd to Encinitas Blvd
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1150
volume on (veh/hr)	650
volume off (veh/hr)	850
segment volume (veh/hr)	8500
approach volume (veh/hr)	7850

Segment Lengths

merge length (m)	150
fwy segment length (m)	850
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance f	0 m	150 m
Lane 1	2355	2355
Lane 2	2355	2355
Lane 3	2355	2355
Lane 4	785	1435
	7850	8500

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance f	150 m	0 m
Lane 1	2125	2125
Lane 2	2125	2125
Lane 3	2125	2125
Lane 4	2125	1275
	8500	7650

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assume equal distribution of traffic volume in main lanes prior to diverge

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Leucadia Blvd to Encinitas Blvd
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1000*	1000	1150
1	2274	2274	2058	2058	2058
2	2274	2274	2058	2058	2058
3	2274	2274	2058	2058	2058
4	758	1408	2058	2058	1108

650
on ramp traffic volume

950
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Leucadia Blvd to Encinitas Blvd
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1000*	1000	1150
1	2355	2355	2125	2125	2125
2	2355	2355	2125	2125	2125
3	2355	2355	2125	2125	2125
4	785	1435	2125	2125	1275

650
on ramp traffic volume

850
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Encinitas Blvd to Santa Fe Dr
Time Duration	AM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	850
volume on (veh/hr)	720
volume off (veh/hr)	470
segment volume (veh/hr)	8000

Calculated Data

Thru Volume (lane 4)	Value
10%	681

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	850 m
Lane 1	2145	2119	2189	2236	2243	2249	2254
Lane 2	2145	2119	2189	2236	2243	2249	2254
Lane 3	2145	2119	2189	2236	2243	2249	2254
Lane 4	844	1644	1434	1293	1272	1252	767
	7280	8000	8000	8000	8000	8000	7530

NOTES

Lane 4 not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Encinitas Blvd to Santa Fe Dr
Time Duration	PM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	850
volume on (veh/hr)	760
volume off (veh/hr)	560
segment volume (veh/hr)	8410

Calculated Data

Thru Volume (lane 4)	Value
10%	709

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	850 m
Lane 1	2249	2217	2288	2334	2338	2345	2350
Lane 2	2249	2217	2288	2334	2338	2345	2350
Lane 3	2249	2217	2288	2334	2338	2345	2350
Lane 4	903	1759	1547	1409	1395	1375	800
	7650	8410	8410	8410	8410	8410	7850

NOTES

Lane 4 not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Encinitas Blvd to Santa Fe Drive
Time Duration	AM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	750	850
1	2145	2119	2189	2236	2243	2249	2254
2	2145	2119	2189	2236	2243	2249	2254
3	2145	2119	2189	2236	2243	2249	2254
4	844	1644	1434	1293	1272	1252	767

720
on ramp traffic volume

470
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Encinitas Blvd to Santa Fe Drive
Time Duration	PM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	750	850
1	2249	2217	2288	2334	2338	2345	2350
2	2249	2217	2288	2334	2338	2345	2350
3	2249	2217	2288	2334	2338	2345	2350
4	903	1759	1547	1409	1395	1375	800

760
on ramp traffic volume

560
off ramp traffic volume

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Santa Fe Dr to Birmingham Dr
Time Duration	AM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	600
volume on (veh/hr)	480
volume off (veh/hr)	400
segment volume (veh/hr)	8010

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m
Lane 1	2188	2167	2210	2251	2269
Lane 2	2188	2167	2210	2251	2269
Lane 3	2188	2167	2210	2251	2269
Lane 4	965	1509	1381	1257	804
	7530	8010	8010	8010	7610

Calculated Data

Thru Volume (lane 4)	Value
10%	713

NOTES

Lane 4 not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Santa Fe Dr to Birmingham Dr
Time Duration	PM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	600
volume on (veh/hr)	450
volume off (veh/hr)	500
segment volume (veh/hr)	8300

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m
Lane 1	2267	2240	2273	2310	2327
Lane 2	2267	2240	2273	2310	2327
Lane 3	2267	2240	2273	2310	2327
Lane 4	1050	1580	1480	1370	821
	7850	8300	8300	8300	7800

Calculated Data

Thru Volume (lane 4)	Value
10%	735

NOTES

Lane 4 not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Santa Fe Dr to Birmingham Dr
Time Duration	AM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600
1	2188	2167	2210	2236	2269
2	2188	2167	2210	2236	2269
3	2188	2167	2210	2236	2269
4	965	1509	1381	1293	804

480
on ramp traffic volume

400
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Santa Fe Dr to Birmingham Dr
Time Duration	PM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600
1	2267	2240	2273	2310	2327
2	2267	2240	2273	2310	2327
3	2267	2240	2273	2310	2327
4	1050	1580	1480	1370	821

450
on ramp traffic volume

500
off ramp traffic volume

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Birmingham Dr to Manchester Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1250
volume on (veh/hr)	870
volume off (veh/hr)	230
segment volume (veh/hr)	8480

Segment Lengths

merge length (m)	150
fwy segment length (m)	950
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	2254	2254
Lane 2	2254	2254
Lane 3	2254	2254
Lane 4	848	1718
	7610	8480

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	2120	2120
Lane 2	2120	2120
Lane 3	2120	2120
Lane 4	2120	1890
	8480	8250

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assume equal distribution of traffic volume in main lanes prior to diverge

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Birmingham Dr to Manchester Ave
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1250
volume on (veh/hr)	450
volume off (veh/hr)	240
segment volume (veh/hr)	8250

Segment Lengths

merge length (m)	150
fwy segment length (m)	950
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	2325	2325
Lane 2	2325	2325
Lane 3	2325	2325
Lane 4	825	1275
	7800	8250

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	2063	2063
Lane 2	2063	2063
Lane 3	2063	2063
Lane 4	2063	1823
	8250	8010

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assume equal distribution of traffic volume in main lanes prior to diverge

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Birmingham Dr to Manchester Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1450*	1450	1600
1	2254	2254	2120	2120	2120
2	2254	2254	2120	2120	2120
3	2254	2254	2120	2120	2120
4	848	**1718**	**2120**	**2120**	**1890**

870
on ramp traffic volume

230
off ramp traffic volume

*Freeway segment analysis done with HCS2000 program; Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Birmingham Dr to Manchester Ave
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1450*	1450	1600
1	2325	2325	2063	2063	2063
2	2325	2325	2063	2063	2063
3	2325	2325	2063	2063	2063
4	825	1275	2063	2063	1823

450
on ramp traffic volume

240
off ramp traffic volume

*Freeway segment analysis done with HCS2000 program; Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Manchester Ave to Lomas Santa Fe
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1600
volume on (veh/hr)	1300
volume off (veh/hr)	850
segment volume (veh/hr)	8550

Segment Lengths

merge length (m)	150
fwy segment length (m)	1300
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	2132	2132
Lane 2	2132	2132
Lane 3	2132	2132
Lane 4	855	2155
	7250	8550

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	2138	2138
Lane 2	2138	2138
Lane 3	2138	2138
Lane 4	2138	1288
	8550	7700

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assume equal distribution of traffic volume in main lanes prior to diverge

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Manchester Ave to Lomas Santa Fe
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1600
volume on (veh/hr)	1150
volume off (veh/hr)	970
segment volume (veh/hr)	8290

Segment Lengths

merge length (m)	150
fwy segment length (m)	1300
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	2104	2104
Lane 2	2104	2104
Lane 3	2104	2104
Lane 4	829	1979
	7140	8290

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	2073	2073
Lane 2	2073	2073
Lane 3	2073	2073
Lane 4	2073	1103
	8290	7320

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assume equal distribution of traffic volume in main lanes prior to diverge

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Manchester Ave to Lomas Santa Fe
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1450*	1450	1600
1	**2132**	**2132**	2138	2138	2138
2	**2132**	**2132**	2138	2138	2138
3	**2132**	**2132**	2138	2138	2138
4	855	**2155**	**2138**	**2138**	1288

1300
on ramp traffic volume

850
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Manchester Ave to Lomas Santa Fe
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1450*	1450	1600
1	2104	2104	2073	2073	2073
2	2104	2104	2073	2073	2073
3	2104	2104	2073	2073	2073
4	829	**1979**	**2073**	**2073**	1103

1150
on ramp traffic volume

970
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Lomas Santa Fe to Via de la Valle
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1350
volume on WB (veh/hr)	350
volume on EB (veh/hr)	400
volume off (veh/hr)	960
segment volume (veh/hr)	8850

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	500 m
Lane 1	2295	2295	2301	2324
Lane 2	2295	2295	2301	2324
Lane 3	2295	2295	2301	2324
Lane 4	1215	1250	1268	1285
Aux Lane	350	315	280	593
	8450	8450	8450	8850

Segment Lengths

merge length (m)	150
fwy segment length (m)	1050
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1973	1973
Lane 2	1973	1973
Lane 3	1973	1973
Lane 4	1973	1973
Aux Lane	960	960
	8850	8850

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assume equal distribution of traffic volume in main lanes prior to diverge

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Lomas Santa Fe to Via de la Valle
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1350
volume on WB (veh/hr)	340
volume on EB (veh/hr)	390
volume off (veh/hr)	960
segment volume (veh/hr)	8490

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	500 m
Lane 1	2199	2199	2204	2227
Lane 2	2199	2199	2204	2227
Lane 3	2199	2199	2204	2227
Lane 5	1164	1198	1215	1232
Aux Lane	340	306	272	577
	8100	8100	8100	8490

Segment Lengths

merge length (m)	150
fwy segment length (m)	1050
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1883	1883
Lane 2	1883	1883
Lane 3	1883	1883
Lane 4	1883	1883
Aux Lane	960	960
	8490	8490

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assume equal distribution of traffic volume in main lanes prior to diverge

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Lomas Santa Fe to Via de la Valle
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	500	500-1200*	1200	1350
1	2295	2295	2301	2324		1973	1973
2	2295	2295	2301	2324		1973	1973
3	2295	2295	2301	2324		1973	1973
4	1215	1250	1268	1285		1973	1973
	350	315	280	593		960	960

350 WB on ramp traffic volume

430 EB on ramp traffic volume

960 off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Lomas Santa Fe to Via de la Valle
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	500	500-1200*	1200	1350
1	2199	2199	2204	2227		1883	1883
2	2199	2199	2204	2227		1883	1883
3	2199	2199	2204	2227		1883	1883
4	1164	1198	1215	1232		1883	1883
	340	306	272	577		960	960

340 WB on ramp traffic volume

390 EB on ramp traffic volume

960 off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Via de la Valle to Del Mar Heights Road
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	3050
volume on WB (veh/hr)	700
volume on EB (veh/hr)	950
volume off (veh/hr)	1350
segment volume (veh/hr)	9540

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	550 m	700 m
Lane 1	2236	2222	2211	2217	2199	2183
Lane 2	2236	2222	2211	2217	2199	2183
Lane 3	2236	2222	2211	2217	2199	2183
Lane 4	1184	1294	1356	1383	1459	1521
Lane 5	700	630	601	558	536	1470
	8590	8590	8590	8590	8590	9540

Segment Lengths

merge length (m)	150
fwy segment length (m)	2750
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1638	1638
Lane 2	1638	1638
Lane 3	1638	1638
Lane 4	1638	1638
Lane 5	1638	1638
Aux Lane	1350	1350
	9540	9540

NOTES

Merge: Lanes 4 & 5 not to exceed 1800 veh/hr; lanes 1-3 not to exceed 2000 veh/hr

Diverge: Auxiliary Lane not to exceed 1800 veh/hr; lanes 1-5 not to exceed 2000 veh/hr

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assume equal distribution of traffic volume in main lanes prior to diverge

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Via de la Valle to Del Mar Heights Road
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	3050
volume on WB (veh/hr)	660
volume on EB (veh/hr)	800
volume off (veh/hr)	1270
segment volume (veh/hr)	8990

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	550 m	700 m
Lane 1	2134	2121	2111	2116	2099	2084
Lane 2	2134	2121	2111	2116	2099	2084
Lane 3	2134	2121	2111	2116	2099	2084
Lane 4	1130	1234	1292	1317	1389	1447
Lane 5	660	594	566	526	505	1290
	8190	8190	8190	8190	8190	8990

Segment Lengths

merge length (m)	150
fwy segment length (m)	2750
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1544	1544
Lane 2	1544	1544
Lane 3	1544	1544
Lane 4	1544	1544
Lane 5	1544	1544
Aux Lane	1270	1270
	8990	8990

NOTES

Merge: Lanes 4 & 5 not to exceed 1800 veh/hr; lanes 1-3 not to exceed 2000 veh/hr

Diverge: Auxiliary Lane not to exceed 1800 veh/hr; lanes 1-5 not to exceed 2000 veh/hr

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assume equal distribution of traffic volume in main lanes prior to diverge

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Via de la Valle to Del Mar Heights Road
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

redo figure

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	300-2900*	2900	3050
1	2236	2222	2211	1908	150 m	0 m
2	2236	2222	2211	1908	1638	1638
3	2236	2222	2211	1908	1638	1638
4	#REF!	#REF!	#REF!	1908	1638	1638
			1356	1908	1638	1638

700
WB on ramp traffic volume

950
EB on ramp traffic volume

1350
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Via de la Valle to Del Mar Heights Road
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	300-2900*	2900	3050
1	2134	2121	2111	1798	150 m	0 m
2	2134	2121	2111	1798	1544	1544
3	2134	2121	2111	1798	1544	1544
4	1130	1234	1292	1798	1544	1544
			566	1798	1544	1544

660
WB on ramp traffic volume

800
EB on ramp traffic volume

1270
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Del Mar Heights Road to Carmel Valley
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

will bypass start here in 2030?
if so, design changes since all
on ramp volume enters Bypass

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1550
volume on WB (veh/hr)	790
volume on EB (veh/hr)	1240
volume off (veh/hr)	500
segment volume (veh/hr)	10220

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m
Lane 1	1843	1843	1872	1926	1969	2094
Lane 2	1843	1843	1872	1926	1969	2094
Lane 3	1843	1843	1872	1926	1969	2094
Lane 4	1843	1843	1872	1926	1969	2094
Lane 5	819	1119	1309	1206	2072	1844
Lane 6	790	490	182	1311	272	0
	8980	8980	8980	10220	10220	10220

Segment Lengths

merge length (m)	750
fwy segment length (m)	650
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	2044	2044
Lane 2	2044	2044
Lane 3	2044	2044
Lane 4	2044	2044
Lane 5	2044	1544
	10220	9720

EB on ramp enters at 450 m mark

NOTES

Merge: Lanes 5 & 6 not to exceed 1800 veh/hr; lanes 1-4 not to exceed 2000 veh/hr
Diverge: Lane 5 not to exceed 1800 veh/hr; lanes 1-4 not to exceed 2000 veh/hr
fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln
Assume equal distribution of traffic volume in main lanes prior to diverge

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Del Mar Heights Road to Carmel Valley
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1550
volume on WB (veh/hr)	570
volume on EB (veh/hr)	740
volume off (veh/hr)	320
segment volume (veh/hr)	9030

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m
Lane 1	1737	1737	1758	1797	1828	1906
Lane 2	1737	1737	1758	1797	1828	1906
Lane 3	1737	1737	1758	1797	1828	1906
Lane 4	1737	1737	1758	1797	1828	1906
Lane 5	772	989	1125	1051	1552	1406
Lane 6	570	353	131	791	165	0
	8290	8290	8290	9030	9030	9030

Segment Lengths

merge length (m)	150
fwy segment length (m)	1250
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1806	1806
Lane 2	1806	1806
Lane 3	1806	1806
Lane 4	1806	1806
Lane 5	1806	1486
	9030	8710

NOTES

Merge: Lanes 5 & 6 not to exceed 1800 veh/hr; lanes 1-4 not to exceed 2000 veh/hr
Diverge: Lane 5 not to exceed 1800 veh/hr; lanes 1-4 not to exceed 2000 veh/hr
fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln
Assume equal distribution of traffic volume in main lanes prior to diverge

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Del Mar Heights Road to Carmel Valley
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	750	750-1400*	1400	1550
1	1843	1843	1872	1926	1969	2094	2044	2044	2044
2	1843	1843	1872	1926	1969	2094	2044	2044	2044
3	1843	1843	1872	1926	1969	2094	2044	2044	2044
4	1843	1843	1872	1926	1969	2094	2044	2044	2044
5	819	1119	1309	1206	2072	1844	**2044**	**2044**	1544
6	790	490	182	1311	272				

790
WB on ramp traffic volume

1240
EB on ramp traffic volume

500
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Del Mar Heights Road to Carmel Valley
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	750	750-1400*	1400	1550
1	1737	1737	1758	1797	1828	1906	1806	1806	1806
2	1737	1737	1758	1797	1828	1906	1806	1806	1806
3	1737	1737	1758	1797	1828	1906	1806	1806	1806
4	1737	1737	1758	1797	1828	1906	1806	1806	1806
5	772	989	1125	1051	1552	1406	1806	1806	1486
6	570	353	131	791	165				

570
WB on ramp traffic volume

740
EB on ramp traffic volume

320
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Roselle Street to Genesee Ave
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	750
1	1540	1413	1356	1349	1419	1458
2	1540	1413	1356	1349	1419	1458
3	1540	1413	1356	1349	1419	1458
4	1409	1436	1580	1417	926	667
	1250	1604	1632	**1815**	**2098**	**2240**

1250
on ramp traffic volume

2240
off ramp traffic volume

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Roselle Street to Genesee Ave
Time Duration	PM peak
Analysis Type	weave analysis with aux lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	750
1	1325	1267	1301	1406	1527	1597
2	1325	1267	1301	1406	1527	1597
3	1325	1267	1301	1406	1527	1597
4	854	1324	1679	1448	1029	789
	1780	1485	1027	943	1001	1030

1780
on ramp traffic volume

1030
off ramp traffic volume

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Genesee Ave to La Jolla Village Dr
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1100
volume on (veh/hr)	540
volume off (veh/hr)	1740
segment volume (veh/hr)	5430
segment volume (veh/hr)	4690

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	250 m
Lane 1	1449	1449	1507
Lane 2	1449	1449	1507
Lane 3	1449	1449	1507
Lane 4	543	975	910
Acc Lane	540	108	0
	5430	5430	5430

Segment Lengths

merge length (m)	250
fwy segment length (m)	700
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	827	827
Lane 2	827	827
Lane 3	827	827
Lane 4	2209	469
	4690	2950

NOTES

Lane 4 and Acceleration Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assume equal distribution of traffic volume in main lanes prior to diverge

Design Year	2030 No Build
Freeway & Direction	I-5 Southbound
Freeway Segment	Genesee Ave to La Jolla Village Dr
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1100
volume on (veh/hr)	2140
volume off (veh/hr)	1130
segment volume (veh/hr)	8750
segment volume (veh/hr)	8210

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	250 m
Lane 1	1912	1912	2140
Lane 2	1912	1912	2140
Lane 3	1912	1912	2140
Lane 4	875	2587	2330
Acc Lane	2140	428	0
	8750	8750	8750

Segment Lengths

merge length (m)	250
fwy segment length (m)	700
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	2086	2086
Lane 2	2086	2086
Lane 3	2086	2086
Lane 4	1951	821
	8210	7080

NOTES

Lane 4 and Acceleration Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assume equal distribution of traffic volume in main lanes prior to diverge

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Genesee Ave to La Jolla Village Dr
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	250	250-950*	950	1100
1	1449	1449	1507	1358	827	827
2	1449	1449	1507	1358	827	827
3	1449	1449	1507	1358	827	827
4	543	975	910	1358	**2209**	469
	540	108				

540
on ramp traffic volume

1740
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	Existing
Freeway & Direction	I-5 Southbound
Freeway Segment	Genesee Ave to La Jolla Village Dr
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	250	250-950*	950	1100
1	1912	1912	2140	2188	2086	2086
2	1912	1912	2140	2188	2086	2086
3	1912	1912	2140	2188	2086	2086
4	875	**2587**	**2330**	2188	**1951**	821
	2140	428				

2140
on ramp traffic volume

1130
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

NB 2030 8+4 Traffic Analysis with Last Numbers

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Del Mar Heights Rd to Via de la Valle
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	2600
volume on (veh/hr)	1050
volume off (veh/hr)	1400
I-5 volume	4930
Bypass volume	2220
segment volume (veh/hr)	8200

Segment Lengths

diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	700 m
Lane 1	1233	1233	1247	1331	1368	1385
Lane 2	1233	1233	1247	1331	1368	1385
Lane 3	1233	1233	1247	1331	1368	1385
Lane 4	1233	1299	1366	1331	1368	1385
Bypass 1	1221	1221	1312	1268	1268	1373
Bypass 2	999	1142	1203	1346	1355	1288
Acc Lane	1050	840	578	263	105	0
	8200	8200	8200	8200	8200	8200

Diverge

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1700	1700
Lane 2	1700	1700
Lane 3	1700	1700
Lane 4	1700	1700
Aux Lane	1400	1400
	8200	8200

Design	**8+4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Del Mar Heights Rd to Via de la Valle
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	6
total segment length (m)	2650
volume on (veh/hr)	1350
volume off (veh/hr)	1790
I-5 volume	6160
Bypass volume	3110
segment volume (veh/hr)	10620

Segment Lengths

merge length (m)	700
fwy segment length (m)	1800
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	700 m
Lane 1	1540	1540	1561	1675	1724	1747
Lane 2	1540	1540	1561	1675	1724	1747
Lane 3	1540	1540	1561	1675	1724	1747
Lane 4	1540	1633	1727	1675	1724	1747
Bypass 1	1711	1711	1820	1758	1758	1893
Bypass 2	1400	1576	1649	**1826**	**1831**	1738
Acc Lane	1350	1080	743	338	135	0
	10620	10620	10620	10620	10620	10620

Diverge

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	**2208**	**2208**
Lane 2	**2208**	**2208**
Lane 3	**2208**	**2208**
Lane 4	**2208**	**2208**
Aux Lane	1790	1790
	10620	10620

for weaving off ramp traffic only

Percentage of Traffic Exiting (in lane 5) per distance from on ramp

distance (m)	0	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
900	29	34.7	40.3	46	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0
850	34.7	40.3	46	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0	
800	40.3	46	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0		
750	46	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0			
700	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0				
650	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0					
600	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0						
550	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0							
500	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0								
450	79	84.3	89.6	95	96.7	98.3	100	100	100	0									
400	84.3	89.6	95	96.7	98.3	100	100	100	0										
350	89.6	95	96.7	98.3	100	100	100	0											
300	95	96.7	98.3	100	100	100	0												

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	La Jolla Village Dr to Genesee Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	6
total segment length (m)	1500
EB volume on (veh/hr)	660
WB volume on (veh/hr)	640
volume off (veh/hr)	2270
segment volume (veh/hr)	7500
segment volume (veh/hr)	7900

Segment Lengths

merge length (m)	500
fwy segment length (m)	850
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300m	500m
Lane 1	1550	1591	1461	1502
Lane 2	1550	1591	1461	1502
Lane 3	1550	1591	1461	1502
Lane 4	1550	1591	1461	1502
Aux Lane	660	495	1016	1491
	6860	6860	6860	7500

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1408	1408
Lane 2	1408	1408
Lane 3	1408	1408
Lane 4	1408	1408
Aux lane	**2270**	**2270**
	7900	7900

NOTES

Lane 5 and Lane 6 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 4 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 5 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	La Jolla Village Dr to Genesee Ave
Time Duration	PM peak
Analysis Type	

Data Entry

Parameter	Input Value
number of lanes	6
total segment length (m)	1500
EB volume on (veh/hr)	1050
WB volume on (veh/hr)	500
volume off (veh/hr)	730
segment volume (veh/hr)	5950
segment volume (veh/hr)	6730

Segment Lengths

merge length (m)	500
fwy segment length (m)	850
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300m	500m
Lane 1	1100	1166	1095	1161
Lane 2	1100	1166	1095	1161
Lane 3	1100	1166	1095	1161
Lane 4	1100	1166	1095	1161
Aux Lane	1050	788	1070	1308
	5450	5450	5450	5950

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1500	1500
Lane 2	1500	1500
Lane 3	1500	1500
Lane 4	1500	1500
Aux lane	730	730
	6730	6730

NOTES

Lane 5 and Lane 6 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 4 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 5 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	La Jolla Village Dr to Genesee Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	500	500-1350	1350	1500
1	1550	1591	1461	1502	1500	1408	1408
2	1550	1591	1461	1502	1500	1408	1408
3	1550	1591	1461	1502	1500	1408	1408
4	1550	1591	1461	1502	1500	1408	1408
	660	495	1016	1491	1500	**2270**	**2270**

660
EB on ramp traffic volume

640
WB on ramp traffic volume

2270
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	La Jolla Village Dr to Genesee Ave
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	500	500-1350*	1350	1500
1	1100	1166	1095	1161	1190	1500	1500
2	1100	1166	1095	1161	1190	1500	1500
3	1100	1166	1095	1161	1190	1500	1500
4	1100	1166	1095	1161	1190	1500	1500
	1050	788	1070	1308	1190	730	730

1050
EB on ramp traffic volume

500
WB on ramp traffic volume

730
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	**2030 8+4**
Freeway & Direction	I-5 Northbound
Freeway Segment	I-5 (Genesee Ave to Del Mar Heights Rd)
Time Duration	AM peak

Data Entry

Parameter	Input Value
I-5	7900
Genesee off	2270
I-5	5630
Sorrento Valley off	1870
I-5 to Bypass	1630
I-5	2130
I-805 to I-5	3590
I-5 / I-805 junction	5720
I-5 (HOV in/out)	6080
Carmel Valley off	1150
I-5	4930

Traffic Volume Distribution (vehicles per hour)

Distance	**0 m**	**150 m**	**300 m**	**450 m**
Lane 1				
Lane 2				
Lane 3				
Lane 4				
Lane 5				
Lane 6				

Design Year	**2030 10+4**
Freeway & Direction	I-5 Northbound
Freeway Segment	I-5 (Genesee Ave to Del Mar Heights Rd)
Time Duration	PM peak

Data Entry

Parameter	Input Value
I-5	6730
Genesee off	730
I-5	6000
Sorrento Valley off	1320
I-5 to Bypass	1630
I-5	3050
I-805 to I-5	4000
I-5 / I-805 junction	7050
I-5 (HOV in/out)	7460
Carmel Valley off	1300
I-5	6160

Design Year	**2030 8+4**
Freeway & Direction	I-5 Northbound
Freeway Segment	Bypass
Time Duration	AM peak

Data Entry

Parameter	Input Value
I-5	5630
Genesee on	1030
Sorrento Valley off	800
Genesee to Bypass	230
I-5 to Bypass	1630
I-5 Bypass	1860
I-805 Bypass	2140
Bypass	4000
Carmel Mountain off	850
Carmel Mountain on	720
Bypass	3870
SR-56 EB off	2140
Bypass	1730
Carmel Valley Rd on	360
Bypass	2090
SR-56 WB on	1730
Bypass	3820
Del Mar Heights Rd off	1600
Bypass	2220
Del Mar Heights Rd on	1050
Bypass to I-5	3270

I-5 and Genesee on ramp to Bypass

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	400 m
Lane 1	734			
Lane 2	897			
Lane 3	230			0

I-5 Bypass / I-805 Bypass merge to Carmel Mountain off 1160 m

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m
Lane 1	963			
Lane 2	1177			
Lane 3	0			
Lane 4	0			

I-5 Bypass: Carmel Mountain Rd on to SR-56 EB off 920 m

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	900 m
Lane 1							952
Lane 2							779
Lane 3							963
Lane 4		720					1177
							3870

I-5 Bypass: Carmel Valley Rd on & SR-56 WB on to Del Mar Heights Rd off 1120 m

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	900 m	1050 m	1150 m
Lane 1	952	952							1332
Lane 2	779	1139							888
Lane 3	0	0	0	1730					1600
									3820

Design Year	**2030 8+4**
Freeway & Direction	I-5 Northbound
Freeway Segment	Bypass
Time Duration	PM peak

Data Entry

Parameter	Input Value
I-5	6000
Genesee on	2400
Sorrento Valley off	800
Genesee to Bypass	1600
I-5 to Bypass	1630
I-5 Bypass	3230
I-805 Bypass	3700
Bypass	6930
Carmel Mountain off	1120
Carmel Mountain on	960
Bypass	6770
SR-56 EB off	3740
Bypass	3030
Carmel Valley Rd on	500
Bypass	3530
SR-56 WB on	1150
Bypass	4680
Del Mar Heights Rd off	1570
Bypass	3110
Del Mar Heights Rd on	1350
Bypass to I-5	4460

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Del Mar Heights Rd to Via de la Valle
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	2600
volume on (veh/hr)	1050
volume off (veh/hr)	1400
segment volume (veh/hr)	8200

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m
Lane 1	1430	1430	1462	1518	1564	1592
Lane 2	1430	1430	1462	1518	1564	1592
Lane 3	1430	1430	1462	1518	1564	1592
Lane 4	1430	1430	1462	1518	1564	1592
Lane 5	1430	**1829**	**2113**	**2033**	**1911**	**1833**
Acc Lane	1050	651	242	95	32	0
	8200	8200	8200	8200	8200	8200

Segment Lengths

merge length (m)	750
fwy segment length (m)	1700
diverge length (m)	150

Diverge

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1495	1495
Lane 2	1495	1495
Lane 3	1495	1495
Lane 4	1495	1495
Lane 5	**2220**	820
	8200	6800

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Del Mar Heights Rd to Via de la Valle
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	2600
volume on (veh/hr)	1350
volume off (veh/hr)	1700
segment volume (veh/hr)	10620

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m
Lane 1	1854	1854	1895	1967	**2027**	**2062**
Lane 2	1854	1854	1895	1967	**2027**	**2062**
Lane 3	1854	1854	1895	1967	**2027**	**2062**
Lane 4	1854	1854	1895	1967	**2027**	**2062**
Lane 5	**1854**	**2367**	**2732**	**2629**	**2472**	**2372**
Acc Lane	1350	837	311	122	41	0
	10620	10620	10620	10620	10620	10620

Segment Lengths

merge length (m)	750
fwy segment length (m)	1700
diverge length (m)	150

Diverge

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1965	1965
Lane 2	1965	1965
Lane 3	1965	1965
Lane 4	1965	1965
Lane 5	**2762**	1062
	10620	8920

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Del Mar Heights Rd to Via de la Valle
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	0	150	300-2450*	2450	2600
1	1430	1430	1367	1495	1495
2	1430	1430	1367	1495	1495
3	1430	1430	1367	1495	1495
4	1430	1430	1367	1495	1495
5	1430	1829	1367	**2220**	820
	1050	651	1367	8200	6800

1050
on ramp traffic volume

1400
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Del Mar Heights Rd to Via de la Valle
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	0	150	300-2450*	2450	2600
1	1854	1854	1770	1965	1965
2	1854	1854	1770	1965	1965
3	1854	1854	1770	1965	1965
4	1854	1854	1770	1965	1965
5	1854	2367	1770	**2762**	**1062**
	1350	837	1770	10620	8920

1350
on ramp traffic volume

1700
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Via de la Valle to Lomas Santa Fe
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1400
EB volume on (veh/hr)	410
WB volume on (veh/hr)	400
volume off (veh/hr)	690
segment volume (veh/hr)	7610

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	550 m	700 m
Lane 1	1700	1712	1739	1749	1748	1745
Lane 2	1700	1712	1739	1749	1748	1745
Lane 3	1700	1712	1739	1749	1748	1745
Lane 4	1700	1712	1739	1749	1748	1745
Aux Lane	410	363	254	213	219	632
	7210	7210	7210	7210	7210	7610

Segment Lengths

merge length (m)	700
fwy segment length (m)	550
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1730	1730
Lane 2	1730	1730
Lane 3	1730	1730
Lane 4	1730	1730
Aux Lane	690	690
	7610	7610

NOTES

Auxiliary Lane and Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Via de la Valle to Lomas Santa Fe
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1400
EB volume on (veh/hr)	690
WB volume on (veh/hr)	520
volume off (veh/hr)	810
segment volume (veh/hr)	10130

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	550 m	700 m
Lane 1	2230	2254	2305	2327	2331	2331
Lane 2	2230	2254	2305	2327	2331	2331
Lane 3	2230	2254	2305	2327	2331	2331
Lane 4	2230	2254	2305	2327	2331	2331
Aux Lane	690	593	392	302	284	804
	9610	9610	9610	9610	9610	10130

Segment Lengths

merge length (m)	700
fwy segment length (m)	550
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	2330	2330
Lane 2	2330	2330
Lane 3	2330	2330
Lane 4	2330	2330
Aux Lane	810	810
	10130	10130

NOTES

Auxiliary Lane AND Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (3 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Via de la Valle to Lomas Santa Fe
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	550	700	700-1250*	1250	1400
1	1700	1712	1739	1749	1748	1745	1522	1730	1730
2	1700	1712	1739	1749	1748	1745	1522	1730	1730
3	1700	1712	1739	1749	1748	1745	1522	1730	1730
4	1700	1712	1739	1749	1748	1745	1522	1730	1730
	410	363	254	213	219	632	1522	690	690

410
EB on ramp traffic volume

400
WB on ramp traffic volume

690
off ramp traffic volume

Design Year	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Via de la Valle to Lomas Santa Fe
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	550	700	700-1250*	1250	1400
1	**2230**	**2254**	**2305**	**2327**	**2331**	**2331**	**2026**	**2330**	**2330**
2	**2230**	**2254**	**2305**	**2327**	**2331**	**2331**	**2026**	**2330**	**2330**
3	**2230**	**2254**	**2305**	**2327**	**2331**	**2331**	**2026**	**2330**	**2330**
4	**2230**	**2254**	**2305**	**2327**	**2331**	**2331**	**2026**	**2330**	**2330**
	690	593	392	302	284	804	**2026**	810	810

690
EB on ramp traffic volume

520
WB on ramp traffic volume

810
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Lomas Santa Fe to Manchester Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1800
EB volume on (veh/hr)	480
WB volume on (veh/hr)	460
volume off (veh/hr)	970
segment volume (veh/hr)	7280

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	500 m
Lane 1	1585	1590	1612	1617
Lane 2	1585	1590	1612	1617
Lane 3	1585	1590	1612	1617
Lane 4	1585	1590	1612	1617
Aux lane	480	462	371	813
	6820	6820	6820	7280

Segment Lengths

merge length (m)	500
fwy segment length (m)	1150
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1578	1578
Lane 2	1578	1578
Lane 3	1578	1578
Lane 4	1578	1578
Aux Lane	970	970
	7280	7280

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Lomas Santa Fe to Manchester Ave
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1800
EB volume on (veh/hr)	530
WB volume on (veh/hr)	460
volume off (veh/hr)	1430
segment volume (veh/hr)	9800

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	500 m
Lane 1	2203	2200	2218	2216
Lane 2	2203	2200	2218	2216
Lane 3	2203	2200	2218	2216
Lane 4	2203	2200	2218	2216
Aux Lane	530	538	467	936
	9340	9340	9340	9800

Segment Lengths

merge length (m)	500
fwy segment length (m)	1150
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	2093	2093
Lane 2	2093	2093
Lane 3	2093	2093
Lane 4	2093	2093
Aux Lane	1430	1430
	9800	9800

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Lomas Santa Fe to Manchester Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	500	500-1650*	1650	1800
1	1585	1590	1612	1617	1213	1578	1578
2	1585	1590	1612	1617	1213	1578	1578
3	1585	1590	1612	1617	1213	1578	1578
4	1585	1590	1612	1617	1213	1578	1578
	480	462	371	813	1213	970	970

480
EB on ramp traffic volume

460
WB on ramp traffic volume

970
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Lomas Santa Fe to Manchester Ave
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	500	500-1650*	1650	1800
1	**2203**	**2200**	**2218**	**2216**	1633	**2093**	**2093**
2	**2203**	**2200**	**2218**	**2216**	1633	**2093**	**2093**
3	**2203**	**2200**	**2218**	**2216**	1633	**2093**	**2093**
4	**2203**	**2200**	**2218**	**2216**	1633	**2093**	**2093**
	530	538	467	936	1633	1430	1430

530
EB on ramp traffic volume

460
WB on ramp traffic volume

1430
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Manchester Ave to Birmingham Dr
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1300
volume on (veh/hr)	220
volume off (veh/hr)	440
segment volume (veh/hr)	6530

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1578	1578
Lane 2	1578	1578
Lane 3	1578	1578
Lane 4	1578	1578
Aux Lane	220	220
	6530	6530

Segment Lengths

merge length (m)	150
fwy segment length (m)	1000
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1523	1523
Lane 2	1523	1523
Lane 3	1523	1523
Lane 4	1523	1523
Aux Lane	440	440
	6530	6530

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Manchester Ave to Birmingham Dr
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1300
volume on (veh/hr)	190
volume off (veh/hr)	760
segment volume (veh/hr)	8560

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	**2093**	**2088**
Lane 2	**2093**	**2088**
Lane 3	**2093**	**2088**
Lane 4	**2093**	**2088**
Aux Lane	190	209
	8560	8560

Segment Lengths

merge length (m)	150
fwy segment length (m)	1000
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1950	1950
Lane 2	1950	1950
Lane 3	1950	1950
Lane 4	**1950**	**1950**
Aux Lane	760	760
	8560	8560

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Manchester Ave to Birmingham Dr
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1150*	1150	1300
1	1578	1578	1306	1523	1523
2	1578	1578	1306	1523	1523
3	1578	1578	1306	1523	1523
4	1578	1578	1306	1523	1523
	220	220	1306	440	440

220
on ramp traffic volume

440
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Manchester Ave to Birmingham Dr
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1150*	1150	1300
1	**2093**	**2088**	1712	1950	1950
2	**2093**	**2088**	1712	1950	1950
3	**2093**	**2088**	1712	1950	1950
4	**2093**	**2088**	1712	**1950**	**1950**
	190	209	1712	760	760

190
on ramp traffic volume

760
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Birmingham Dr to Santa Fe Dr
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	600
volume on (veh/hr)	500
volume off (veh/hr)	520
segment volume (veh/hr)	6590

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m
Lane 1	1735	1707	1713	1753	1788
Lane 2	1735	1707	1713	1753	1788
Lane 3	1735	1707	1713	1753	1788
Lane 4	885	958	986	839	707
Aux Lane	500	510	465	493	520
	6590	6590	6590	6590	6590

Calculated Data

Thru Volume (lane 5)	Value
10%	557

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2200 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Birmingham Dr to Santa Fe Dr
Time Duration	PM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	600
volume on (veh/hr)	430
volume off (veh/hr)	580
segment volume (veh/hr)	8230

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m
Lane 1	**2238**	**2207**	**2204**	**2236**	**2266**
Lane 2	**2238**	**2207**	**2204**	**2236**	**2266**
Lane 3	**2238**	**2207**	**2204**	**2236**	**2266**
Lane 4	1087	1105	1116	975	851
Aux lane	430	505	501	547	580
	8230	8230	8230	8230	8230

Calculated Data

Thru Volume (lane 5)	Value
10%	722

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2200 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Birmingham Dr to Santa Fe Dr
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600
1	1735	1707	1713	1753	1788
2	1735	1707	1713	1753	1788
3	1735	1707	1713	1753	1788
4	885	958	986	839	707
	500	510	465	493	520

500
on ramp traffic volume

520
off ramp traffic volume

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Birmingham Dr to Santa Fe Dr
Time Duration	PM peak
Analysis Type	weave analysis with aux lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600
1	**2238**	**2207**	**2204**	**2236**	**2266**
2	**2238**	**2207**	**2204**	**2236**	**2266**
3	**2238**	**2207**	**2204**	**2236**	**2266**
4	1087	1105	1116	975	851
	430	505	501	547	580

430
on ramp traffic volume

580
off ramp traffic volume

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Santa Fe Dr to Encinitas Blvd
Time Duration	AM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	800
volume on (veh/hr)	560
volume off (veh/hr)	810
segment volume (veh/hr)	6640

Calculated Data

Thru Volume (lane 5)	Value
10%	527

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	800 m
Lane 1	1742	1696	1727	1740	1737	1742	1743
Lane 2	1742	1696	1727	1740	1737	1742	1743
Lane 3	1742	1696	1727	1740	1737	1742	1743
Lane 4	853	1551	1459	1421	1430	1415	600
	6080	6640	6640	6640	6640	6640	5830

NOTES

Lane 4 and Aux. Lane 4 not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2200 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Santa Fe Dr to Encinitas Blvd
Time Duration	PM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	800
volume on (veh/hr)	670
volume off (veh/hr)	800
segment volume (veh/hr)	8320

Calculated Data

Thru Volume (lane 5)	Value
10%	685

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	800 m
Lane 1	2214	2169	2215	2239	2240	2247	2249
Lane 2	2214	2169	2215	2239	2240	2247	2249
Lane 3	2214	2169	2215	2239	2240	2247	2249
Lane 4	1007	1813	1676	1603	1599	1579	772
	7650	8320	8320	8320	8320	8320	7520

NOTES

Lane 4 and Aux. Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2200 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Santa Fe Dr to Encinitas Blvd
Time Duration	AM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	750	800
1	1742	1696	1727	1740	1737	1742	1743
2	1742	1696	1727	1740	1737	1742	1743
3	1742	1696	1727	1740	1737	1742	1743
4	853	1551	1459	1421	1430	1415	600
	6080	6640	6640	6640	6640	6640	5830

560
on ramp traffic volume

810
off ramp traffic volume

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Santa Fe Dr to Encinitas Blvd
Time Duration	PM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	750	800
1	**2214**	**2169**	**2215**	**2239**	**2240**	**2247**	**2249**
2	**2214**	**2169**	**2215**	**2239**	**2240**	**2247**	**2249**
3	**2214**	**2169**	**2215**	**2239**	**2240**	**2247**	**2249**
4	1007	1813	1676	1603	1599	1579	772
	7650	8320	8320	8320	8320	8320	7520

670
on ramp traffic volume

800
off ramp traffic volume

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Encinitas Blvd to Leucadia Blvd
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1250
volume on (veh/hr)	770
volume off (veh/hr)	650
segment volume (veh/hr)	6600
approach volume (veh/hr)	5830

Segment Lengths

merge length (m)	150
fwy segment length (m)	950
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	**0 m**	**150 m**
Lane 1	1458	1475
Lane 2	1458	1475
Lane 3	1458	1475
Lane 4	1458	1475
Aux Lane	770	701
	6600	6600

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	**150 m**	**0 m**
Lane 1	1488	1488
Lane 2	1488	1488
Lane 3	1488	1488
Lane 4	1488	1488
Aux Lane	650	650
	6600	6600

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Encinitas Blvd to Leucadia Blvd
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1250
volume on (veh/hr)	960
volume off (veh/hr)	950
segment volume (veh/hr)	8480
approach volume (veh/hr)	7520

Segment Lengths

merge length (m)	150
fwy segment length (m)	950
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	**0 m**	**150 m**
Lane 1	1880	1897
Lane 2	1880	1897
Lane 3	1880	1897
Lane 4	**1880**	**1897**
Aux Lane	960	892
	8480	8480

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	**150 m**	**0 m**
Lane 1	1883	1883
Lane 2	1883	1883
Lane 3	1883	1883
Lane 4	**1883**	**1883**
Aux Lane	950	950
	8480	8480

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Encinitas Blvd to Leucadia Blvd
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)				
	0	150	150-1100*	1100	1250
1	1458	1475	1320	1488	1488
2	1458	1475	1320	1488	1488
3	1458	1475	1320	1488	1488
4	1458	1475	1320	1488	1488
	770	701	1320	650	650

770
on ramp traffic volume

650
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Encinitas Blvd to Leucadia Blvd
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)				
	0	150	150-1100*	1100	1250
1	1880	1897	1696	1883	1883
2	1880	1897	1696	1883	1883
3	1880	1897	1696	1883	1883
4	**1880**	**1897**	1696	**1883**	**1883**
	960	892	1696	950	950

960
on ramp traffic volume

950
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Leucadia Blvd to La Costa Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1700
volume on (veh/hr)	780
volume off (veh/hr)	780
segment volume (veh/hr)	6730
approach volume (veh/hr)	5950
segment volume (veh/hr)	6820

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1785	1785
Lane 2	1785	1785
Lane 3	1785	1785
Lane 4	595	1375
	5950	6730

Segment Lengths

merge length (m)	150
fwy segment length (m)	1400
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1786	1786
Lane 2	1786	1786
Lane 3	1786	1786
Lane 4	1462	682
	6820	6040

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 3 not to exceed 2200 veh/hr for Merge/Diverge segment
Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2200 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Leucadia Blvd to La Costa Ave
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1700
volume on (veh/hr)	870
volume off (veh/hr)	1090
segment volume (veh/hr)	8400
approach volume (veh/hr)	7530
segment volume (veh/hr)	8530

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	2259	2259
Lane 2	2259	2259
Lane 3	2259	2259
Lane 4	753	1623
	7530	8400

Segment Lengths

merge length (m)	150
fwy segment length (m)	1400
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	2196	2196
Lane 2	2196	2196
Lane 3	2196	2196
Lane 4	1943	853
	8530	7440

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 3 not to exceed 2200 veh/hr for Merge/Diverge segment
Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2200 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Leucadia Blvd to La Costa Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1550*	1550	1700
1	1785	1785	1346	1786	1786
2	1785	1785	1346	1786	1786
3	1785	1785	1346	1786	1786
4	595	1375	1346	1462	682
	5950	6730	1346	6820	6040

780 on ramp traffic volume

780 off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Leucadia Blvd to La Costa Ave
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1550*	1550	1700
1	2259	2259	1680	2196	2196
2	2259	2259	1680	2196	2196
3	2259	2259	1680	2196	2196
4	753	1623	1680	1943	853
	7530	8400	1680	8530	7440

870 on ramp traffic volume

1090 off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	La Costa Ave to Poinsettia Lane
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1800
volume on (veh/hr)	820
volume off (veh/hr)	890
segment volume (veh/hr)	6860
approach volume (veh/hr)	6040

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1359	1359
Lane 2	1359	1359
Lane 3	1359	1359
Lane 4	1359	1359
Lane 5	604	1424
	6040	6860

Segment Lengths

merge length (m)	150
fwy segment length (m)	1500
diverge length (m)	150

Calculated Data

Thru Volume	Value
10%	686

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	450 m	300 m	150 m	0 m
Lane 1	1441	1332	1321	1321
Lane 2	1441	1332	1321	1321
Lane 3	1441	1332	1321	1321
Lane 4	1441	1332	1321	1321
Lane 5	1095	855	757	686
Aux lane	0	676	819	890
	6860	6860	6860	6860

NOTES

Lane 5 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 4 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	La Costa Ave to Poinsettia Lane
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4 to 5
total segment length (m)	1800
volume on (veh/hr)	870
volume off (veh/hr)	930
segment volume (veh/hr)	8470
approach volume (veh/hr)	7600

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1710	1710
Lane 2	1710	1710
Lane 3	1710	1710
Lane 4	1710	1710
Lane 5	760	1630
	7600	8470

Segment Lengths

merge length (m)	150
fwy segment length (m)	1500
diverge length (m)	150

Calculated Data

Thru Volume	Value
10%	847

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	450 m	300 m	150 m	0 m
Lane 1	1799	1685	1673	1673
Lane 2	1799	1685	1673	1673
Lane 3	1799	1685	1673	1673
Lane 4	1799	1685	1673	1673
Lane 5	1275	1024	921	847
Aux lane	0	707	856	930
	8470	8470	8470	8470

NOTES

Lane 5 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	La Costa Ave to Poinsettia Lane
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)						
	0	150	150-1350*	1350	1500	1650	1800
1	1359	1359	1372	1441	1332	1321	1321
2	1359	1359	1372	1441	1332	1321	1321
3	1359	1359	1372	1441	1332	1321	1321
4	1359	1359	1372	1441	1332	1321	1321
	604	1424	1372	1095	855	757	686
					676	819	890

820
on ramp traffic volume

890
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	La Costa Ave to Poinsettia Lane
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)						
	0	150	150-1350*	1350	1500	1650	1800
1	1710	1710	1694	1799	1685	1673	1673
2	1710	1710	1694	1799	1685	1673	1673
3	1710	1710	1694	1799	1685	1673	1673
4	1710	1710	1694	1799	1685	1673	1673
	760	1630	1694	1275	1024	921	847
					707	856	930

870
on ramp traffic volume

930
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Poinsettia Lane to Palomar Airport Road
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5 to 4
total segment length (m)	1750
volume on (veh/hr)	820
volume off (veh/hr)	2290
segment volume (veh/hr)	6790
approach volume (veh/hr)	5970

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1548	1343
Lane 2	1548	1343
Lane 3	1548	1343
Lane 4	1548	1343
Lane 5	597	1417
	6790	6790

Segment Lengths

merge length (m)	150
fwy segment length (m)	850
diverge length (m)	750

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1125	1125
Lane 2	1125	1125
Lane 3	1125	1125
Lane 4	1125	1125
Lane 5	**2290**	**2290**
	6790	6790

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 3 not to exceed 2200 veh/hr for Merge/Diverge segment
Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2200 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Poinsettia Lane to Palomar Airport Road
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5 to 4
total segment length (m)	1750
volume on (veh/hr)	750
volume off (veh/hr)	2300
segment volume (veh/hr)	8290
approach volume (veh/hr)	7540

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1884	1697
Lane 2	1884	1697
Lane 3	1884	1697
Lane 4	1884	1697
Lane 5	754	1504
	8290	8290

Segment Lengths

merge length (m)	150
fwy segment length (m)	850
diverge length (m)	750

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1498	1498
Lane 2	1498	1498
Lane 3	1498	1498
Lane 4	1498	1498
Lane 5	**2300**	**2300**
	8290	8290

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 3 not to exceed 2200 veh/hr for Merge/Diverge segment
Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2200 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Poinsettia Lane to Palomar Airport Road
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)				
Number	0	150	150-1600*	1600	1750
1	1548	1343	1358	1125	1125
2	1548	1343	1358	1125	1125
3	1548	1343	1358	1125	1125
4	1548	1343	1358	1125	1125
5	597	1417	1358	**2290**	**2290**
820					**2290**

on ramp traffic volume

of ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Poinsettia Lane to Palomar Airport Road
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)				
Number	0	150	150-1600*	1600	1750
1	1884	1697	1658	1498	1498
2	1884	1697	1658	1498	1498
3	1884	1697	1658	1498	1498
4	1884	1697	1658	1498	1498
5	754	1504	1658	**2300**	**2300**
750					**2300**

on ramp traffic volume

of ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Palomar Airport Road to Cannon Road
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	950
volume on (veh/hr)	1720
volume off (veh/hr)	930
total volume (veh/hr)	6220

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1125	1181
Lane 2	1125	1181
Lane 3	1125	1181
Lane 4	1125	1181
Aux lane	1720	1497
	6220	6220

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1323	1323
Lane 2	1323	1323
Lane 3	1323	1323
Lane 4	1323	1323
Aux lane	930	930
	6220	6220

Segment Lengths

merge length (m)	150
fwy segment length (m)	820
diverge length (m)	750

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2200 veh/hr

Lanes 1 -4 represent average thru lane volumes (traffic not merging or diverging)

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Palomar Airport Road to Cannon Road
Time Duration	PM peak
Analysis Type	Weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	950
volume on (veh/hr)	2170
volume off (veh/hr)	690
total volume (veh/hr)	8160

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1498	1584
Lane 2	1498	1584
Lane 3	1498	1584
Lane 4	1498	1584
Aux lane	**2170**	**1826**
	8160	8160

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1868	1868
Lane 2	1868	1868
Lane 3	1868	1868
Lane 4	**1868**	**1868**
Aux lane	690	690
	8160	8160

Segment Lengths

merge length (m)	150
fwy segment length (m)	1270
diverge length (m)	750

NOTES

Lane 4 and Aux Lane not to exceed 1800 veh/hr

Lanes 1 through 4 not to exceed 2200 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Palomar Airport Road to Cannon Road
Time Duration	AM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-700*	700	950
1	1125	1181	1244	1323	1323
2	1125	1181	1244	1323	1323
3	1125	1181	1244	1323	1323
4	1125	1181	1244	1323	1323
	1720	1497	1244	930	930

1720 930

on ramp traffic volume of ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Palomar Airport Road to Cannon Road
Time Duration	PM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-700*	700	950
1	1498	1584	1632	1868	1868
2	1498	1584	1632	1868	1868
3	1498	1584	1632	1868	1868
4	1498	1584	1632	**1868**	**1868**
	2170	**1826**	1632	690	690

2170 690

on ramp traffic volume of ramp traffic volume

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Cannon Road to Tamarack Avenue
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1400
volume on (veh/hr)	870
volume off (veh/hr)	710
segment volume (veh/hr)	6160
approach volume (veh/hr)	5290

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1323	1343
Lane 2	1323	1343
Lane 3	1323	1343
Lane 4	1323	1343
Aux lane	870	788
	6160	6160

Segment Lengths

merge length (m)	150
fwy segment length (m)	1100
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1363	1363
Lane 2	1363	1363
Lane 3	1363	1363
Lane 4	1363	1363
Aux lane	710	710
	6160	6160

NOTES

Lane 4 and Acceleration Lane not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 3 not to exceed 2200 veh/hr for Merge/Diverge segment
Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2200 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Cannon Road to Tamarack Avenue
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1400
volume on (veh/hr)	1300
volume off (veh/hr)	880
segment volume (veh/hr)	8800
approach volume (veh/hr)	7500

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1875	1911
Lane 2	1875	1911
Lane 3	1875	1911
Lane 4	**1875**	**1911**
Aux lane	1300	1154
	8800	8800

Segment Lengths

merge length (m)	150
fwy segment length (m)	1100
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1980	1980
Lane 2	1980	1980
Lane 3	1980	1980
Lane 4	**1980**	**1980**
Aux lane	880	880
	8800	8800

NOTES

Lane 4 and Acceleration Lane not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 3 not to exceed 2200 veh/hr for Merge/Diverge segment
Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2200 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Distance from on-ramp	0 m	150 m	300 m	450 m	600 m	750 m
% on	0	100	60	30	19	14
% off	46	63	79	95	100	0

from distribution calc excel sheet

Distance from on-ramp	0 m	150 m	300 m	450 m	600 m	650 m
% on	0	100	60	30	19	17.3
% off	57.3	73.6	89.6	98.3	100	0

from graphs A and B of LOS D method hand out

Distance from on-ramp	0 m	150 m	300 m	450 m	600 m	650
	0 ft	492	984	1476	1969	2133
% on	0	100	60	29	19	17
m	650	500	350	200	50	0
ft	2133	1640	1148	656	164	0
% off	58	73	90	98	100	0

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Cannon Road to Tamarack Avenue
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)				
	0	150	150-1250*	1250	1400
1	1323	1343	1232	1363	1363
2	1323	1343	1232	1363	1363
3	1323	1343	1232	1363	1363
4	1323	1343	1232	1363	1363
	870	788	1232	710	710

870 710

on ramp traffic volume of ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Cannon Road to Tamarack Avenue
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)				
	0	150	150-1250*	1250	1400
1	1875	1911	1760	1980	1980
2	1875	1911	1760	1980	1980
3	1875	1911	1760	1980	1980
4	**1875**	**1911**	1760	**1980**	**1980**
	1300	1154	1760	880	880

1300 880

on ramp traffic volume of ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Tamarack Avenue to Carlsbad Village Drive
Time Duration	AM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	950
volume on (veh/hr)	530
volume off (veh/hr)	700
total volume (veh/hr)	5980

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1794	1794
Lane 2	1794	1794
Lane 3	1794	1794
Lane 4	598	1128
	5980	6510

Segment Lengths

merge length (m)	150
fwy segment length (m)	650
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1561	1561
Lane 2	1561	1561
Lane 3	1561	1561
Lane 4	1298	598
	5980	5280

NOTES

Aux. Lane and Lane 4 not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2200 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Tamarack Avenue to Carlsbad Village Drive
Time Duration	PM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	950
volume on (veh/hr)	640
volume off (veh/hr)	840
total volume (veh/hr)	8560

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	**2568**	**2568**
Lane 2	**2568**	**2568**
Lane 3	**2568**	**2568**
Lane 4	856	1496
	8560	9200

Segment Lengths

merge length (m)	150
fwy segment length (m)	650
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	**2288**	**2288**
Lane 2	**2288**	**2288**
Lane 3	**2288**	**2288**
Lane 4	1696	856
	8560	7720

NOTES

Aux. Lane and Lane 4 not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2200 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Tamarack Ave to Carlsbad Village Dr
Time Duration	AM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-800*	800	950
1	1794	1794	1196	1561	1561
2	1794	1794	1196	1561	1561
3	1794	1794	1196	1561	1561
4	598	1128	1196	1298	598
	5980	6510	1196	5980	5280

5980 — 5280

on ramp traffic volume — of ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Tamarack Ave to Carlsbad Village Dr
Time Duration	PM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-800*	800	950
1	2568	2568	1712	2288	2288
2	2568	2568	1712	2288	2288
3	2568	2568	1712	2288	2288
4	**856**	**1496**	1712	**1696**	**856**
	8560	9200	1712	8560	7720

8560 — 7720

on ramp traffic volume — of ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Carlsbad Village Drive to Las Flores Drive
Time Duration	AM peak
Analysis Type	weave analysis with lane addition

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	400
volume on (veh/hr)	590
volume off (veh/hr)	230
total volume (veh/hr)	5870

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	400 m
Lane 1	1516	1457	1511	1600
Lane 2	1516	1457	1511	1600
Lane 3	1516	1457	1511	1600
Lane 4	733	1067	1024	841
Aux lane	590	433	312	230
	5870	5870	5870	5870

Calculated Data

Thru Volume	Value
10%	528

5 thru lanes at Las Flores (Station 826+ 00)
4 thru lanes at Carlsbad Village Drive

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Carlsbad Village Drive to Las Flores Drive
Time Duration	PM peak
Analysis Type	weave analysis with lane addition

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	400
volume on (veh/hr)	660
volume off (veh/hr)	560
total volume (veh/hr)	8380

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	400 m
Lane 1	**2150**	**2057**	**2124**	**2233**
Lane 2	**2150**	**2057**	**2124**	**2233**
Lane 3	**2150**	**2057**	**2124**	**2233**
Lane 4	1270	1502	1381	1122
Aux lane	660	706	627	560
	8380	8380	8380	8380

Calculated Data

Thru Volume	Value
10%	772

5 thru lanes at Las Flores (Station 826+ 00)
4 thru lanes at Carlsbad Village Drive

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Carlsbad Village Dr to Las Flores Dr
Time Duration	AM peak
Analysis Type	weave analysis with lane addition

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	400
1	1516	1457	1511	1600
2	1516	1457	1511	1600
3	1516	1457	1511	1600
4	733	1067	1024	841
	590	433	312	230

590
on ramp traffic volume

230
off ramp traffic volume

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Carlsbad Village Dr to Las Flores Dr
Time Duration	PM peak
Analysis Type	weave analysis with lane addition

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	400
1	**2150**	**2057**	**2124**	**2233**
2	**2150**	**2057**	**2124**	**2233**
3	**2150**	**2057**	**2124**	**2233**
4	1270	1502	1381	1122
	660	706	627	560

660
on ramp traffic volume

560
off ramp traffic volume

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Las Flores Drive to SR-78
Time Duration	AM peak
Analysis Type	

Data Entry

Parameter	Input Value
number of lanes	4 to 4
weave length (m)	550
volume on (veh/hr)	490
WB volume off (veh/hr)	320
EB volume off (veh/hr)	2050
total volume (veh/hr)	6130

Calculated Data

Thru Volume	Value
10%	613

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	350 m	450 m	600 m
Lane 1	964	1062	1074	1054	1049	1049
Lane 2	964	1062	1074	1054	1049	1049
Lane 3	964	1062	1074	1054	1049	1049
Lane 4	964	1062	1074	917	933	613
Lane 5	964	851	966	923	0	0
Lane 6	818	1033	869	1128	0	0
	5640	6130	6130	6130	4080	3760

NOTES

0 - 350 meters: Lanes 4 - 6 not to exceed 1800 veh/hr

0 - 350 meters: Lanes 1 - 3 not to exceed 2200 veh/hr

450 - 600 meters: Lane 4 not to exceed 1800 veh/hr

450 - 600 meters: Lanes 1-3 not to exceed 2200 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Las Flores Drive to SR-78
Time Duration	PM peak
Analysis Type	

Data Entry

Parameter	Input Value
number of lanes	4 to 4
weave length (m)	550
volume on (veh/hr)	750
WB volume off (veh/hr)	380
EB volume off (veh/hr)	3600
total volume (veh/hr)	8570

Calculated Data

Thru Volume	Value
10%	857

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	350 m	450 m	600 m
Lane 1	1321	1349	1366	1251	1244	1244
Lane 2	1321	1349	1366	1251	1244	1244
Lane 3	1321	1349	1366	1251	1244	1244
Lane 4	1321	1349	1366	1218	1237	857
Lane 5	1321	1483	1592	1620	0	0
Lane 6	1217	1693	1515	**1980**	0	0
	7820	8570	8570	8570	4970	4590

NOTES

0 - 350 meters: Lanes 4 - 6 not to exceed 1800 veh/hr

0 - 350 meters: Lanes 1 - 3 not to exceed 2200 veh/hr

450 - 600 meters: Lane 4 not to exceed 1800 veh/hr

450 - 600 meters: Lanes 1-3 not to exceed 2200 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Las Flores Drive to SR-78
Time Duration	AM peak
Analysis Type	

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	350	450	550
1	964	1062	1074	1054	1049	1049
2	964	1062	1074	1054	1049	1049
3	964	1062	1074	1054	1049	1049
4	964	1062	1074	917	933	613
5	964	851	966	923		
6	818	1033	869	1128		

490
on ramp traffic volume

2050
EB SR-78 off ramp traffic volume

320
WB SR-78 off ramp traffic volume

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Las Flores Drive to SR-78
Time Duration	PM peak
Analysis Type	

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	350	450	550
1	1321	1349	1366	1251	1244	1244
2	1321	1349	1366	1251	1244	1244
3	1321	1349	1366	1251	1244	1244
4	1321	1349	1366	1218	1237	857
5	1321	1483	1592	1620		
6	1217	1693	1515	1980		

750
on ramp traffic volume

3600
EB SR-78 off ramp traffic volume

380
WB SR-78 off ramp traffic volume

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	SR-78 to Oceanside BLVD
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	1400
SR-78 volume on (veh/hr)	2490
California Street volume on (veh/hr)	250
volume off (veh/hr)	890
total volume (veh/hr)	6550

Calculated Data

Thru Volume	Value
10%	655

Segment Lengths

merge length (m)	150
fwy segment length (m)	950
diverge length (m)	300

Merge

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1226	1050
Lane 2	1226	1050
Lane 3	1226	1050
Lane 4	381	1050
Aux lane	1245	1050
Aux lane	1245	1050
	6550	6300

Diverge

Traffic Volume Distribution (vehicles per hour)

Distance	300 m	150 m	0 m
Lane 1	1127	1116	1189
Lane 2	1127	1116	1189
Lane 3	1127	1116	1189
Lane 4	1127	1116	1189
Lane 5	915	1016	905
Lane 6	876	1069	890
	6300	6550	6550

NOTES

Lane 6 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 5 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 5 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	SR-78 to Oceanside BLVD
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	1400
SR-78 volume on (veh/hr)	2550
California Street volume on (veh/hr)	280
volume off (veh/hr)	1700
total volume (veh/hr)	7510

Calculated Data

Thru Volume	Value
10%	751

Segment Lengths

merge length (m)	150
fwy segment length (m)	950
diverge length (m)	300

Merge

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1496	1205
Lane 2	1496	1205
Lane 3	1496	1205
Lane 4	471	1205
Aux lane	1275	1205
Aux lane	1275	1205
	7510	7230

Diverge

Traffic Volume Distribution (vehicles per hour)

Distance	300 m	150 m	0 m
Lane 1	1133	1111	1195
Lane 2	1133	1111	1195
Lane 3	1133	1111	1195
Lane 4	1133	1111	1195
Lane 5	1267	1221	1031
Aux lane	**1433**	**1844**	1700
	7230	7510	7510

NOTES

Lane 6 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 5 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 5 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	SR-78 to Oceanside Blvd
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1100*	1100	1250	1400
1	1226	1050	1050	1127	1116	1189
2	1226	1050	1050	1127	1116	1189
3	1226	1050	1050	1127	1116	1189
4	381	1050	1050	1127	1116	1189
	1245	1050	1050	915	1016	905
	1245	1050	1050	876	1069	890

2490
on ramp traffic volume
(SR-78)

250
on ramp traffic volume
(California Street)

890
off ramp traffic volume
(Oceanside BLVD)

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	SR-78 to Oceanside Blvd
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1100*	1100	1250	1400
1	1496	1205	1205	1133	1111	1195
2	1496	1205	1205	1133	1111	1195
3	1496	1205	1205	1133	1111	1195
4	471	1205	1205	1133	1111	1195
	1275	1205	1205	1267	1221	1031
	1275	1205	1205	**1433**	**1844**	1700

2550
on ramp traffic volume
(SR-78)

280
on ramp traffic volume
(California Street)

1700
off ramp traffic volume
(Oceanside BLVD)

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Oceanside Blvd to Mission Ave
Time Duration	AM peak
Analysis Type	weave analysis with lane drop

Data Entry

Parameter	Input Value
number of lanes	5 to 4
total segment length (m)	650
volume on (veh/hr)	490
volume off (veh/hr)	1400
segment volume (veh/hr)	6790

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	650 m
Lane 1	1292	1232	1505	1473	1500
Lane 2	1292	1232	1505	1473	1500
Lane 3	1292	1232	1505	1473	1500
Lane 4	1292	1232	998	1007	890
Lane 5	1134	**1862**	1278	1364	1400
	6300	6790	6790	6790	6790

Calculated Data

Thru Volume	Value
10%	490

NOTES

Lane 5 not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2200 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Oceanside Blvd to Mission Ave
Time Duration	PM peak
Analysis Type	weave analysis with lane drop

Data Entry

Parameter	Input Value
number of lanes	5 to 4
total segment length (m)	650
volume on (veh/hr)	580
volume off (veh/hr)	1990
segment volume (veh/hr)	6930

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	650 m
Lane 1	1250	1165	1362	1306	1333
Lane 2	1250	1165	1362	1306	1333
Lane 3	1250	1165	1362	1306	1333
Lane 4	1250	1165	1070	1082	942
Lane 5	1351	**2270**	1775	**1931**	**1990**
	6350	6930	6930	6930	6930

Calculated Data

Thru Volume	Value
10%	436

NOTES

Lane 5 not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2200 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Oceanside Blvd to Mission Ave
Time Duration	AM peak
Analysis Type	weave analysis with lane drop

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	650
1	1292	1232	1505	1473	1500
2	1292	1232	1505	1473	1500
3	1292	1232	1505	1473	1500
4	1292	1232	998	1007	890
	1134	**1862**	1278	1364	1400

490
on ramp traffic volume

1400
off ramp traffic volume

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Oceanside Blvd to Mission Ave
Time Duration	PM peak
Analysis Type	weave analysis with lane drop

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	650
1	1250	1165	1362	1306	1333
2	1250	1165	1362	1306	1333
3	1250	1165	1362	1306	1333
4	1250	1165	1070	1082	942
	1351	**2270**	1775	**1931**	**1990**

580
on ramp traffic volume

1990
off ramp traffic volume

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Mission Ave to SR-76
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	500
volume on (veh/hr)	790
volume off (veh/hr)	1570
segment volume (veh/hr)	6180

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	500 m
Lane 1	1348	1330	1293	1322
Lane 2	1348	1330	1293	1322
Lane 3	1348	1330	1293	1322
Lane 4	1348	1162	958	643
Aux lane	790	1030	1343	1570
	6180	6180	6180	6180

Calculated Data

Thru Volume	Value
10%	382

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2200 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Mission Ave to SR-76
Time Duration	PM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	500
volume on (veh/hr)	450
volume off (veh/hr)	2210
segment volume (veh/hr)	5390

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	500 m
Lane 1	1235	1033	947	920
Lane 2	1235	1033	947	920
Lane 3	1235	1033	947	920
Lane 4	1235	1007	706	422
Aux lane	450	1284	**1844**	**2210**
	5390	5390	5390	5390

Calculated Data

Thru Volume	Value
10%	273

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2200 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Mission Avenue to SR-76
Time Duration	AM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	500
1	1348	1330	1293	1322
2	1348	1330	1293	1322
3	1348	1330	1293	1322
4	1348	1162	958	643
	790	1030	1343	1570

790
on ramp traffic volume

1570
off ramp traffic volume

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Mission Avenue to SR-76
Time Duration	PM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	500
1	1235	1033	947	920
2	1235	1033	947	920
3	1235	1033	947	920
4	1235	1007	706	422
	450	1284	**1844**	**2210**

450
on ramp traffic volume

2210
off ramp traffic volume

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	**SR-76 to Harbor Drive**
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	700
volume on (veh/hr)	2150
volume off WB (veh/hr)	400
volume off EB (veh/hr)	2080
segment volume (veh/hr)	6760

Calculated Data

Thru Volume	Value
10%	213

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	700 m
Lane 1	918	807	808	1102	**2049**	**2049**
Lane 2	918	807	808	1102	**2049**	**2049**
Lane 3	918	807	808	1102	**2049**	**2049**
Lane 4	1856	2276	1820	1374	613	213
Aux lane	**2150**	**2063**	**2516**	1394	0	400
Aux lane	0	0	0	686	0	0
	6760	6760	6760	6760	6760	6760

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2200 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	SR-76 to Harbor Drive
Time Duration	PM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	700
volume on (veh/hr)	1650
volume off WB (veh/hr)	300
volume off EB (veh/hr)	1250
segment volume (veh/hr)	4830

Calculated Data

Thru Volume	Value
10%	163

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	700 m
Lane 1	677	610	617	842	1456	1456
Lane 2	677	610	617	842	1456	1456
Lane 3	677	610	617	842	1456	1456
Lane 4	1151	1636	1369	1054	463	163
Aux lane	1650	**1365**	1612	838	0	300
Aux lane	0	0	0	413	0	0
	4830	4830	4830	4830	4830	4830

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2200 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	SR-76 to Vandergrift
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	700
volume on (veh/hr)*	1900
volume off WB (veh/hr)	400
volume off EB (veh/hr)	2100
segment volume (veh/hr)	6940

Calculated Data

Thru Volume	Value
10%	254

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	500 m	700 m
Lane 1	1042	930	1060	1256	1210
Lane 2	1042	930	1060	1256	1210
Lane 3	1042	930	1060	1256	1210
Lane 4	1913	2161	1695	1071	810
Aux lane	1900	1988	2065	1407	0
Aux lane	0	0	0	693	0
	6940	6940	6940	6940	4440

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2200 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

SR-76 on ramp volume metered down to 1900 veh/hr from 2200 veh/hr

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	SR-76 to Harbor Drive
Time Duration	AM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	700
1	918	807	808	1102	2049	2049
2	918	807	808	1102	2049	2049
3	918	807	808	1102	2049	2049
4	1856	2276	1820	1374	613	213
	2150	**2063**	**2516**	1394	0	400
	0	0	0	686	0	400

2150 on ramp traffic volume

2080 EB off ramp traffic volume

400 WB off ramp traffic volume

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	SR-76 to Harbor Drive
Time Duration	PM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	700
1	677	610	617	842	1456	1456
2	677	610	617	842	1456	1456
3	677	610	617	842	1456	1456
4	1151	1636	1369	1054	463	163
	1650	**1365**	1612	838	0	300
	0	0	0	413	0	300

1650 on ramp traffic volume

1250 EB off ramp traffic volume

300 WB off ramp traffic volume

SB 2030 8+4 Traffic Analysis with Last Numbers

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Mission Ave to Oceanside Blvd
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment

MERGE

Data Entry

Parameter	Input Value
number of lanes	4 to 5
weave length (m)	800
volume on (veh/hr)	1400
volume off (veh/hr)	390
total volume (veh/hr)	6370

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	800 m
Lane 1	1243	1308	1425	1449	1467	1443
Lane 2	1243	1308	1425	1449	1467	1443
Lane 3	1243	1308	1425	1449	1467	1443
Lane 4	1243	1308	1425	1449	1467	1443
Lane 5	1400	1137	669	575	502	598
	6370	6370	6370	6370	6370	6370

Calculated Data

Thru Volume	Value
10%	458

NOTES

Lane 5 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 4 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Mission Ave to Oceanside Blvd
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment

MERGE

Data Entry

Parameter	Input Value
number of lanes	4 to 5
weave length (m)	800
volume on (veh/hr)	1560
volume off (veh/hr)	630
total volume (veh/hr)	6690

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	800 m
Lane 1	1283	1331	1451	1468	1484	1521
Lane 2	1283	1331	1451	1468	1484	1521
Lane 3	1283	1331	1451	1468	1484	1521
Lane 4	1283	1331	1451	1468	1484	1521
Lane 5	1560	1367	884	817	755	606
	6690	6690	6690	6690	6690	6690

Calculated Data

Thru Volume	Value
10%	450

NOTES

Lane 5 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 4 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

(off ramp traffic percentage in weave lane)

Percentage of Traffic Exiting (in outter most lane) per distance from on ramp

distance (m)	0	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
900	29	34.7	40.3	46	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0
850	34.7	40.3	46	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0	
800	40.3	46	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0		
750	46	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0			
700	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0				
650	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0					
600	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0						
550	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0							
500	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0								
450	79	84.3	89.6	95	96.7	98.3	100	100	100	0									
400	84.3	89.6	95	96.7	98.3	100	100	100	0										
350	89.6	95	96.7	98.3	100	100	100	0											
300	95	96.7	98.3	100	100	100	0												

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Harbor Drive to SR-76
Time Duration	AM peak
Analysis Type	weave with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	700
volume on (veh/hr)	1200
volume off WB (veh/hr)	260
volume off EB (veh/hr)	1250
total volume (veh/hr)	4980

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	500 m	700 m
Lane 1	945	840	829	870	1024	1056
Lane 2	945	840	829	870	1024	1056
Lane 3	945	840	829	870	1024	1056
Lane 4	945	1089	1227	1050	723	563
Aux Lane	1200	1373	1268	1321	1186	1250
	4980	4980	4980	4980	4980	4980

Calculated Data

Thru Volume	Value
10%	227

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2200 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Harbor Drive to SR-76
Time Duration	PM peak
Analysis Type	weave with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	700
volume on (veh/hr)	2000
volume off WB (veh/hr)	300
volume off EB (veh/hr)	1660
total volume (veh/hr)	6380

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	500 m	700 m
Lane 1	1095	936	942	1034	1253	1306
Lane 2	1095	936	942	1034	1253	1306
Lane 3	1095	936	942	1034	1253	1306
Lane 4	1095	1547	**1838**	1554	1035	802
Aux Lane	**2000**	**2026**	1715	1725	1587	1660
	6380	6380	6380	6380	6380	6380

Calculated Data

Thru Volume	Value
10%	242

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2200 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Harbor Drive to SR-76
Time Duration	AM peak
Analysis Type	weave with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	500	700
1	945	840	829	870	1024	1056
2	945	840	829	870	1024	1056
3	945	840	829	870	1024	1056
4	945	1089	1227	1050	723	563
	1200	1373	1268	1321	1186	1250

1200 on ramp traffic volume

260 WB off ramp traffic volume

1250 EB off ramp traffic volume

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Harbor Drive to SR-76
Time Duration	PM peak
Analysis Type	weave with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	500	700
1	1095	936	942	1034	1253	1306
2	1095	936	942	1034	1253	1306
3	1095	936	942	1034	1253	1306
4	1095	1547	**1838**	1554	1035	802
	2000	**2026**	1715	1725	1587	1660

2000 on ramp traffic volume

300 WB off ramp traffic volume

1660 EB off ramp traffic volume

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	SR-76 to Mission Ave
Time Duration	AM peak
Analysis Type	weave with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	400
volume on (veh/hr)	2400
volume off (veh/hr)	390
total volume (veh/hr)	5870

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	400 m
Lane 1	945	924	1068	1340
Lane 2	945	924	1068	1340
Lane 3	945	924	1068	1340
Lane 4	636	**1873**	**2048**	1460
Aux lane	**2400**	1225	618	390
	5870	5870	5870	5870

Calculated Data

Thru Volume	Value
10%	308

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2200 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	SR-76 to Mission Ave
Time Duration	PM peak
Analysis Type	weave with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	400
volume on (veh/hr)	1780
volume off (veh/hr)	590
total volume (veh/hr)	6200

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	400 m
Lane 1	1180	1149	1256	1458
Lane 2	1180	1149	1256	1458
Lane 3	1180	1149	1256	1458
Lane 4	879	1640	1682	1237
Aux lane	1780	1113	750	590
	6200	6200	6200	6200

Calculated Data

Thru Volume	Value
10%	383

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2200 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	SR-76 to Mission Avenue
Time Duration	AM peak
Analysis Type	weave with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	400
1	945	924	1068	1340
2	945	924	1068	1340
3	945	924	1068	1340
4	636	**1873**	**2048**	1460
	2400	1225	618	390

2400
on ramp traffic volume

390
off ramp traffic volume

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	SR-76 to Mission Avenue
Time Duration	PM peak
Analysis Type	weave with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	400
1	1180	1149	1256	1458
2	1180	1149	1256	1458
3	1180	1149	1256	1458
4	879	1640	1682	1237
	1780	1113	750	590

1780
on ramp traffic volume

590
off ramp traffic volume

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Mission Ave to Oceanside Blvd
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	350	450	600	800
1	1243	1308	1425	1449	1467	1443
2	1243	1308	1425	1449	1467	1443
3	1243	1308	1425	1449	1467	1443
4	1243	1308	1425	1449	1467	1443
	1400	1137	669	575	502	598

1400
WB on ramp traffic volume

390
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Mission Ave to Oceanside Blvd
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	350	450	600	800
1	1283	1331	1451	1468	1484	1521
2	1283	1331	1451	1468	1484	1521
3	1283	1331	1451	1468	1484	1521
4	1283	1331	1451	1468	1484	1521
	1560	1367	884	817	755	606

1560
WB on ramp traffic volume

630
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Oceanside Blvd to Cassidy St
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment

Data Entry

Parameter	Input Value
number of lanes	5 to 6
weave length (m)	1200
volume on (veh/hr)	1220
volume off (veh/hr)	250
total volume (veh/hr)	7200

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1196	1196
Lane 2	1196	1196
Lane 3	1196	1196
Lane 4	1196	1196
Lane 5	1196	1391
Lane 6	1220	1025
	7200	7200

Segment Lengths

merge length (m)	150
fwy segment length (m)	900
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1200	1200
Lane 2	1200	1200
Lane 3	1200	1200
Lane 4	1200	1200
Lane 5	1200	1200
Lane 6	1200	950
	7200	6950

NOTES

Lane 6 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 5 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 5 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (6 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design	8 + 4 WITH BUFFER
Freeway & Direction	I-5 Southbound
Freeway Segment	Oceanside Blvd to Cassidy St
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment

Data Entry

Parameter	Input Value
number of lanes	5 to 6
weave length (m)	1200
volume on (veh/hr)	950
volume off (veh/hr)	270
total volume (veh/hr)	7010

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1212	1212
Lane 2	1212	1212
Lane 3	1212	1212
Lane 4	1212	1212
Lane 5	1212	1364
Lane 6	950	798
	7010	7010

Segment Lengths

merge length (m)	150
fwy segment length (m)	900
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1168	1168
Lane 2	1168	1168
Lane 3	1168	1168
Lane 4	1168	1168
Lane 5	1168	1168
Lane 6	1168	898
	7010	6740

NOTES

Lane 6 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 5 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 5 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (6 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Oceanside Blvd to Cassidy St
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1050*	1050	1200
1	1196	1196	1200	1200	1200
2	1196	1196	1200	1200	1200
3	1196	1196	1200	1200	1200
4	1196	1196	1200	1200	1200
5	1196	1391	1200	1200	1200
	1220	1025	1200	1200	950

1220
on ramp traffic volume

250
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Oceanside Blvd to Cassidy St
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1050*	1050	1200
1	1212	1212	1168	1168	1168
2	1212	1212	1168	1168	1168
3	1212	1212	1168	1168	1168
4	1212	1212	1168	1168	1168
5	1212	1364	1168	1168	1168
	950	798	1168	1168	898

950
on ramp traffic volume

270
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Cassidy St to SR-78
Time Duration	AM peak
Analysis Type	weave with 2 lane drop

Data Entry

Parameter	Input Value
number of lanes	6 to 4
weave length (m)	350
volume on (veh/hr)	430
volume off (veh/hr)	2720
total volume (veh/hr)	7380

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	350 m
Lane 1	1134	1043	1164
Lane 2	1134	1043	1164
Lane 3	1134	1043	1164
Lane 4	1134	1043	1168
Lane 5	1134	1690	1224
Lane 6	1282	1518	1496
	6950	7380	7380

Calculated Data

Thru Volume	Value
10%	738

NOTES

Lanes 5 and 6 not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2200 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Cassidy St to SR-78
Time Duration	PM peak
Analysis Type	weave with 2 lane drop

Data Entry

Parameter	Input Value
number of lanes	6 to 4
weave length (m)	350
volume on (veh/hr)	390
volume off (veh/hr)	2370
total volume (veh/hr)	7130

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	350 m
Lane 1	1111	1062	1219
Lane 2	1111	1062	1219
Lane 3	1111	1062	1219
Lane 4	1111	1062	1103
Lane 5	1111	1543	1067
Lane 6	1187	1338	1304
	6740	7130	7130

Calculated Data

Thru Volume	Value
10%	713

NOTES

Lanes 5 and 6 not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2200 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Cassidy St to SR-78
Time Duration	AM peak
Analysis Type	weave with 2 lane drop

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	350
1	1134	1043	1164
2	1134	1043	1164
3	1134	1043	1164
4	1134	1043	1168
5	1134	1690	1224
6	1282	1518	1496

430
on ramp traffic volume

2720
off ramp traffic volume

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Cassidy St to SR-78
Time Duration	PM peak
Analysis Type	weave with 2 lane drop

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	350
1	1111	1062	1219
2	1111	1062	1219
3	1111	1062	1219
4	1111	1062	1103
5	1111	1543	1067
6	1187	1338	1304

390
on ramp traffic volume

2370
off ramp traffic volume

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	SR-78 to Las Flores Drive
Time Duration	AM peak
Analysis Type	weave with 2 lane addition

Data Entry

Parameter	Input Value
number of lanes	4 to 6
weave length (m)	300
volume on (veh/hr)	3120
volume off (veh/hr)	390
total volume (veh/hr)	8030

Calculated Data

Thru Volume	Value
10%	803

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m
Lane 1	1239	1273	1338
Lane 2	1239	1273	1338
Lane 3	1239	1273	1338
Lane 4	1193	1273	1338
Lane 5	1560	1312	1338
Lane 6	1560	1624	948
	8030	8030	7640

NOTES

Lanes 4 - 6 not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2200 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	SR-78 to Las Flores Drive
Time Duration	AM peak
Analysis Type	weave with 2 lane addition

Data Entry

Parameter	Input Value
number of lanes	4 to 6
weave length (m)	300
volume on (veh/hr)	2040
volume off (veh/hr)	490
total volume (veh/hr)	7060

Calculated Data

Thru Volume	Value
10%	706

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m
Lane 1	1275	1095	1177
Lane 2	1275	1095	1177
Lane 3	1275	1095	1177
Lane 4	1196	1095	1177
Lane 5	1020	1144	1177
Lane 6	1020	1536	687
	7060	7060	6570

NOTES

Lanes 4 - 6 not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2200 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	SR-78 to Las Flores Drive
Time Duration	AM peak
Analysis Type	weave with 2 lane addition

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300
1	1239	1273	1338
2	1239	1273	1338
3	1239	1273	1338
4	1193	1273	1338
	1560	1312	1338
	1560	1624	948

3120
on ramp traffic volume

390
off ramp traffic volume

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	SR-78 to Las Flores Drive
Time Duration	PM peak
Analysis Type	weave with 2 lane addition

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300
1	1275	1095	1177
2	1275	1095	1177
3	1275	1095	1177
4	1196	1095	1177
	1020	1144	1177
	1020	1536	687

2040
on ramp traffic volume

490
off ramp traffic volume

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Las Flores Dr to Carlsbad Village Dr
Time Duration	AM peak
Analysis Type	weave analysis with lane drop

Data Entry

Parameter	Input Value
number of lanes	5 to 4
weave length (m)	450
volume on (veh/hr)	310
volume off (veh/hr)	540
total volume (veh/hr)	7950

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	400 m
Lane 1	1619	1602	1865	**2135**
Lane 2	1619	1602	1865	**2135**
Lane 3	1619	1602	1865	**2135**
Lane 4	1619	1602	1043	1006
Lane 5	1165	1542	1312	540
	7640	7950	7950	7950

Calculated Data

Thru Volume	Value
10%	710

5 thru lanes at Las Flores
4 thru lanes at Carlsbad Village Drive

NOTES

Lane 5 not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2200 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Las Flores Dr to Carlsbad Village Dr
Time Duration	PM peak
Analysis Type	weave analysis with lane drop

Data Entry

Parameter	Input Value
number of lanes	5 to 4
weave length (m)	450
volume on (veh/hr)	230
volume off (veh/hr)	700
total volume (veh/hr)	6800

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	400 m
Lane 1	1348	1327	1534	1755
Lane 2	1348	1327	1534	1755
Lane 3	1348	1327	1534	1755
Lane 4	1348	1327	864	836
Lane 5	1177	1494	1333	700
	6570	6800	6800	6800

Calculated Data

Thru Volume	Value
10%	587

5 thru lanes at Las Flores
4 thru lanes at Carlsbad Village Drive

NOTES

Lane 5 not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2200 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Las Flores Dr to Carlsbad Village Dr
Time Duration	AM peak
Analysis Type	weave analysis with lane drop

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450
1	1619	1602	1865	**2135**
2	1619	1602	1865	**2135**
3	1619	1602	1865	**2135**
4	1619	1602	1043	1006
5	1165	1542	1312	540

1165
on ramp traffic volume

540
off ramp traffic volume

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Las Flores Dr to Carlsbad Village Dr
Time Duration	PM peak
Analysis Type	weave analysis with lane drop

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450
1	1348	1327	1534	1755
2	1348	1327	1534	1755
3	1348	1327	1534	1755
4	1348	1327	864	836
5	1177	1494	1333	700

1177
on ramp traffic volume

700
off ramp traffic volume

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Carlsbad Village Dr to Tamarack Ave
Time Duration	AM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	750
volume on (veh/hr)	660
volume off (veh/hr)	440
total volume (veh/hr)	8070

Calculated Data

Thru Volume	Value
15%	1211

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m
Lane 1	1999	1974	1984	2020	2061	2089
Lane 2	1999	1974	1984	2020	2061	2089
Lane 3	1999	1974	1984	2020	2061	2089
Lane 4	1413	1576	1703	1618	1464	1362
Aux lane	660	572	416	394	425	440
	8070	8070	8070	8070	8070	8070

Distance	0 m	150 m	300 m	450 m	600 m	750 m
Lane 1	1999	1974	**2039**	**2081**	**2098**	**2109**
Lane 2	1999	1974	**2039**	**2081**	**2098**	**2109**
Lane 3	1999	1974	**2039**	**2081**	**2098**	**2109**
Lane 4	1413	**2148**	**1954**	1827	1776	1303
	7410	8070	8070	8070	8070	7630

NOTES

Lane 4 and Aux. Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2200 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Carlsbad Village Dr to Tamarack Ave
Time Duration	PM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	750
volume on (veh/hr)	740
volume off (veh/hr)	590
total volume (veh/hr)	6840

Calculated Data

Thru Volume	Value
15%	1026

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m
Lane 1	1581	1503	1482	1539	1603	1660
Lane 2	1581	1503	1482	1539	1603	1660
Lane 3	1581	1503	1482	1539	1603	1660
Lane 4	1356	1520	1736	1575	1391	1270
Aux lane	740	810	657	648	639	590
	6840	6840	6840	6840	6840	6840

Distance	0 m	150 m	300 m	450 m	600 m	750 m
Lane 1	1601	1567	1635	1677	1694	1707
Lane 2	1601	1567	1635	1677	1694	1707
Lane 3	1601	1567	1635	1677	1694	1707
Lane 4	1297	**2138**	**1936**	**1809**	1757	1130
	6100	6840	6840	6840	6840	6250

NOTES

Lane 4 and Aux Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2200 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Carlsbad Village Dr to Tamarack Ave
Time Duration	AM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	550	550	750
1	1999	1974	1984	2020	2061	2089
2	1999	1974	1984	2020	2061	2089
3	1999	1974	1984	2020	2061	2089
4	1413	1576	1703	1618	1464	1362
	660	572	416	394	425	440

660
on ramp traffic volume

440
off ramp traffic volume

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Carlsbad Village Dr to Tamarack Ave
Time Duration	PM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	550	550	750
1	1581	1503	1482	1539	1603	1660
2	1581	1503	1482	1539	1603	1660
3	1581	1503	1482	1539	1603	1660
4	1356	1520	1736	1575	1391	1270
	740	810	657	648	639	590

740
on ramp traffic volume

590
off ramp traffic volume

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Tamarack Avenue to Cannon Road
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1500
volume on (veh/hr)	870
volume off (veh/hr)	1430
segment volume (veh/hr)	8590
approach volume (veh/hr)	7720

Segment Lengths

merge length (m)	150
fwy segment length (m)	1200
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1930	1927
Lane 2	1930	1927
Lane 3	1930	1927
Lane 4	**1930**	**1927**
Aux lane	870	882
	8590	8590

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1790	1790
Lane 2	1790	1790
Lane 3	1790	1790
Lane 4	1790	1790
Aux lane	1430	1430
	8590	8590

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Tamarack Avenue to Cannon Road
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1500
volume on (veh/hr)	830
volume off (veh/hr)	960
segment volume (veh/hr)	6960
approach volume (veh/hr)	6130

Segment Lengths

merge length (m)	150
fwy segment length (m)	1200
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1533	1543
Lane 2	1533	1543
Lane 3	1533	1543
Lane 4	1533	1543
Aux lane	830	789
	6960	6960

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1500	1500
Lane 2	1500	1500
Lane 3	1500	1500
Lane 4	1500	1500
Aux lane	960	960
	6960	6960

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Tamarack Avenue to Cannon Road
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1350*	1350	1500
1	1930	1927	1718	1790	1790
2	1930	1927	1718	1790	1790
3	1930	1927	1718	1790	1790
4	**1930**	**1927**	1718	1790	1790
	870	882	1718	1430	1430

870 on ramp traffic volume

1430 of ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Tamarack Avenue to Cannon Road
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1350*	1350	1500
1	1533	1543	1392	1500	1500
2	1533	1543	1392	1500	1500
3	1533	1543	1392	1500	1500
4	1533	1543	1392	1500	1500
	830	789	1392	960	960

830 on ramp traffic volume

960 of ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Cannon Road to Palomar Airport Road
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	800
volume on (veh/hr)	540
volume off (veh/hr)	2400
total volume (veh/hr)	7700

Calculated Data

Thru Volume	Value
10%	476

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	800 m
Lane 1	1908	1782	1622	1542	1484	1525	1568
Lane 2	1908	1782	1622	1542	1484	1525	1568
Lane 3	1908	1782	1622	1542	1484	1525	1568
Lane 4	1436	1281	1269	1202	1175	830	595
Aux lane	540	1073	1564	**1873**	**2072**	**2296**	**2400**
	7700	7700	7700	7700	7700	7700	7700

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2200 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Cannon Road to Palomar Airport Road
Time Duration	PM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	800
volume on (veh/hr)	860
volume off (veh/hr)	1830
total volume (veh/hr)	6860

Calculated Data

Thru Volume	Value
10%	417

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	800 m
Lane 1	1617	1536	1427	1399	1367	1425	1475
Lane 2	1617	1536	1427	1399	1367	1425	1475
Lane 3	1617	1536	1427	1399	1367	1425	1475
Lane 4	1149	1201	1282	1195	1152	821	606
Aux lane	860	1051	1296	1468	1607	1764	**1830**
	6860	6860	6860	6860	6860	6860	6860

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2200 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Cannon Road to Palomar Airport Road
Time Duration	AM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)						
Number	0	150	300	450	600	750	800
1	1908	1782	1622	1542	1484	1525	1568
2	1908	1782	1622	1542	1484	1525	1568
3	1908	1782	1622	1542	1484	1525	1568
4	1436	1281	1269	1202	1175	830	595
	540	1073	1564	**1873**	**2072**	**2296**	**2400**

540
on ramp traffic volume

2400
off ramp traffic volume

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Cannon Road to Palomar Airport Road
Time Duration	PM peak
Analysis Type	Weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)						
Number	0	150	300	450	600	750	800
1	1617	1536	1427	1399	1367	1425	1475
2	1617	1536	1427	1399	1367	1425	1475
3	1617	1536	1427	1399	1367	1425	1475
4	1149	1201	1282	1195	1152	821	606
	860	1051	1296	1468	1607	1764	**1830**

860
on ramp traffic volume

1830
off ramp traffic volume

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Palomar Airport Road to Poinsettia Lane
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1600
volume on WB (veh/hr)	2150
volume on EB (veh/hr)	390
volume off (veh/hr)	680
segment volume (veh/hr)	7840
approach volume (veh/hr)	5300

Segment Lengths

merge length (m)	900
fwy segment length (m)	550
diverge length (m)	150

Calculated Data

Thru Volume	Value
10%	530

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	900 m
Lane 1	1720	1720	1720	1720	1590	1439	1568
Lane 2	1720	1720	1720	1720	1590	1439	1568
Lane 3	1720	1720	1720	1720	1590	1439	1568
Lane 4	530	1175	1605	**2143**	**2422**	**2551**	1568
Lane 5	**2150**	1505	1075	538	648	971	1568
	7840	7840	7840	7840	7840	7840	7840

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1568	1568
Lane 2	1568	1568
Lane 3	1568	1568
Lane 4	1568	1568
Lane 5	1568	888
	7840	7160

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Palomar Airport Road to Poinsettia Lane
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1600
volume on WB (veh/hr)	2250
volume on EB (veh/hr)	490
volume off (veh/hr)	780
segment volume (veh/hr)	7770
approach volume (veh/hr)	5030

Segment Lengths

merge length (m)	900
fwy segment length (m)	550
diverge length (m)	150

Calculated Data

Thru Volume	Value
10%	503

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	900 m
Lane 1	1672	1672	1672	1672	1509	1374	1554
Lane 2	1672	1672	1672	1672	1509	1374	1554
Lane 3	1672	1672	1672	1672	1509	1374	1554
Lane 4	503	1178	1628	**2191**	**2483**	**2618**	1554
Lane 5	**2250**	1575	1125	563	760	1030	1554
	7770	7770	7770	7770	7770	7770	7770

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1554	1554
Lane 2	1554	1554
Lane 3	1554	1554
Lane 4	1554	1554
Lane 5	1554	774
	7770	6990

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 4 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Palomar Airport Road to Poinsettia Lane
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)									
Number	0	150	300	450	600	750	900	900-1450*	1450	1600
1	1720	1720	1720	1720	1590	1439	1568	1568	1568	1554
2	1720	1720	1720	1720	1590	1439	1568	1568	1568	1568
3	1720	1720	1720	1720	1590	1439	1568	1568	1568	1568
4	530	1175	1605	**2143**	**2422**	**2551**	1568	1568	1568	1568
	2150	1505	1075	538	648	971	1568	1568	1568	888

2150
on ramp traffic volume

390
on ramp traffic volume

680
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Palomar Airport Road to Poinsettia Lane
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)									
Number	0	150	300	450	600	750	900	900-1450*	1450	1600
1	1672	1672	1672	1672	1509	1374	1554	1554	1554	1554
2	1672	1672	1672	1672	1509	1374	1554	1554	1554	1554
3	1672	1672	1672	1672	1509	1374	1554	1554	1554	1554
4	503	1178	1628	**2191**	**2483**	**2618**	1554	1554	1554	1554
	2250	1575	1125	563	760	1030	1554	1554	1554	774

2250
on ramp traffic volume

490
on ramp traffic volume

780
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Poinsettia Lane to La Costa Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5 to 4
total segment length (m)	1600
volume on (veh/hr)	750
volume off (veh/hr)	840
segment volume (veh/hr)	7910
approach volume (veh/hr)	7160
segment volume (veh/hr)	7960

Segment Lengths

merge length (m)	150
fwy segment length (m)	1300
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m
Lane 1	1432	1447	1470	1509
Lane 2	1432	1447	1470	1509
Lane 3	1432	1447	1470	1509
Lane 4	1432	1447	1470	1509
Lane 5	1432	1732	**1935**	**1876**
Acc. lane	750	390	98	0
	7910	7910	7910	7910

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1780	1780
Lane 2	1780	1780
Lane 3	1780	1780
Lane 4	1780	1780
Lane 5	840	840
	7960	7960

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Poinsettia Lane to La Costa Ave
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5 to 4
total segment length (m)	1600
volume on (veh/hr)	1030
volume off (veh/hr)	980
segment volume (veh/hr)	8020
approach volume (veh/hr)	6990
segment volume (veh/hr)	8065

Segment Lengths

merge length (m)	150
fwy segment length (m)	1300
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m
Lane 1	1398	1419	1450	1503
Lane 2	1398	1419	1450	1503
Lane 3	1398	1419	1450	1503
Lane 4	1398	1419	1450	1503
Lane 5	1398	**1810**	**2088**	**2008**
Acc. Lane	1030	536	134	0
	8020	8020	8020	8020

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1771	1771
Lane 2	1771	1771
Lane 3	1771	1771
Lane 4	1771	1771
Lane 5	980	980
	8065	8065

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Poinsettia Lane to La Costa Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)						
	0	150	300	450	450-1450*	1450	1600
1	1432	1447	1470	1509	1582	1780	1780
2	1432	1447	1470	1509	1582	1780	1780
3	1432	1447	1470	1509	1582	1780	1780
4	1432	1447	1470	1509	1582	1780	1780
5	1432	1732	**1935**	1876	1582	840	840
	750	390	98				

750
on ramp traffic volume

840
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Poinsettia Lane to La Costa Ave
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)						
	0	150	300	450	450-1450*	1450	1600
1	1398	1419	1450	1503	1604	1771	1771
2	1398	1419	1450	1503	1604	1771	1771
3	1398	1419	1450	1503	1604	1771	1771
4	1398	1419	1450	1503	1604	1771	1771
5	1398	**1810**	**2088**	**2008**	1604	980	980
	1030	536	134				

1030
on ramp traffic volume

980
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	La Costa Ave to Leucadia Blvd
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1500
volume on (veh/hr)	1050
volume off (veh/hr)	810
segment volume (veh/hr)	8170
approach volume (veh/hr)	7120

Segment Lengths

merge length (m)	150
fwy segment length (m)	1200
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1780	1766
Lane 2	1780	1766
Lane 3	1780	1766
Lane 4	1780	1766
Aux lane	1050	1107
	8170	8170

Distance	0 m	150 m
Lane 1	**2136**	**2136**
Lane 2	**2136**	**2136**
Lane 3	**2136**	**2136**
Lane 4	712	1762
	7120	8170

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1840	1840
Lane 2	1840	1840
Lane 3	1840	1840
Lane 4	**1840**	**1840**
Aux lane	810	810
	8170	8170

Distance	150 m	0 m
Lane 1	**2181**	**2181**
Lane 2	**2181**	**2181**
Lane 3	**2181**	**2181**
Lane 4	1627	817
	8170	7360

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	La Costa Ave to Leucadia Blvd
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1500
volume on (veh/hr)	830
volume off (veh/hr)	900
segment volume (veh/hr)	7920
approach volume (veh/hr)	7090

Segment Lengths

merge length (m)	150
fwy segment length (m)	1200
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1773	1757
Lane 2	1773	1757
Lane 3	1773	1757
Lane 4	1773	1757
Aux Lane	830	893
	7920	7920

Distance	0 m	150 m
Lane 1	**2127**	**2127**
Lane 2	**2127**	**2127**
Lane 3	**2127**	**2127**
Lane 4	709	1539
	7090	7920

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1755	1755
Lane 2	1755	1755
Lane 3	1755	1755
Lane 4	1755	1755
Aux Lane	900	900
	7920	7920

Distance	150 m	0 m
Lane 1	**2076**	**2076**
Lane 2	**2076**	**2076**
Lane 3	**2076**	**2076**
Lane 4	1692	792
	7920	7020

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	La Costa Ave to Leucadia Blvd
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1350*	1350	1500
1	1780	1766	1634	1840	1840
2	1780	1766	1634	1840	1840
3	1780	1766	1634	1840	1840
4	1780	1766	1634	**1840**	**1840**
	1050	1107	1634	810	810

1050 on ramp traffic volume

810 off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	La Costa Ave to Leucadia Blvd
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1350*	1350	1500
1	1773	1757	1584	1755	1755
2	1773	1757	1584	1755	1755
3	1773	1757	1584	1755	1755
4	1773	1757	1584	1755	1755
	830	893	1584	900	900

830 on ramp traffic volume

900 off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Leucadia Blvd to Encinitas Blvd
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1250
volume on (veh/hr)	780
volume off (veh/hr)	1060
segment volume (veh/hr)	8140
approach volume (veh/hr)	7360

Segment Lengths

merge length (m)	150
fwy segment length (m)	950
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1840	1845
Lane 2	1840	1845
Lane 3	1840	1845
Lane 4	**1840**	**1845**
Aux lane	780	762
	8140	8140

Distance	0 m	150 m
Lane 1	**2468**	**2468**
Lane 2	**2468**	**2468**
Lane 3	**2468**	**2468**
Lane 4	736	1516
	8140	8920

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1770	1770
Lane 2	1770	1770
Lane 3	1770	1770
Lane 4	1770	1770
Aux lane	1060	1060
	8140	8140

Distance	0 m	150 m
Lane 1	**2150**	**2150**
Lane 2	**2150**	**2150**
Lane 3	**2150**	**2150**
Lane 4	1690	630
	8140	7080

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Leucadia Blvd to Encinitas Blvd
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1250
volume on (veh/hr)	780
volume off (veh/hr)	960
segment volume (veh/hr)	7800
approach volume (veh/hr)	7020

Segment Lengths

merge length (m)	150
fwy segment length (m)	950
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1755	1763
Lane 2	1755	1763
Lane 3	1755	1763
Lane 4	1755	1763
Aux lane	780	749
	7800	7800

Distance	0 m	150 m
Lane 1	**2366**	**2366**
Lane 2	**2366**	**2366**
Lane 3	**2366**	**2366**
Lane 4	702	1482
	7800	8580

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1710	1710
Lane 2	1710	1710
Lane 3	1710	1710
Lane 4	1710	1710
Aux lane	960	960
	7800	7800

Distance	0 m	150 m
Lane 1	**2078**	**2078**
Lane 2	**2078**	**2078**
Lane 3	**2078**	**2078**
Lane 4	1566	606
	7800	6840

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Leucadia Blvd to Encinitas Blvd
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1100*	1100	1250
1	1840	1845	1628	1770	1770
2	1840	1845	1628	1770	1770
3	1840	1845	1628	1770	1770
4	**1840**	**1845**	1628	1770	1770
	780	762	1628	1060	1060

780 on ramp traffic volume

1060 off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Leucadia Blvd to Encinitas Blvd
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1100*	1100	1250
1	1755	1763	1560	1710	1710
2	1755	1763	1560	1710	1710
3	1755	1763	1560	1710	1710
4	1755	1763	1560	1710	1710
	780	749	1560	960	960

780 on ramp traffic volume

960 off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Encinitas Blvd to Santa Fe Dr
Time Duration	AM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	850
volume on (veh/hr)	760
volume off (veh/hr)	480
segment volume (veh/hr)	7840

Calculated Data

Thru Volume (lane 5)	Value
10%	660

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	850 m
Lane 1	**2086**	**2052**	**2061**	**2104**	**2134**	**2150**	**2188**
Lane 2	**2086**	**2052**	**2061**	**2104**	**2134**	**2150**	**2188**
Lane 3	**2086**	**2052**	**2061**	**2104**	**2134**	**2150**	**2188**
Lane 4	823	1003	1200	1124	1003	911	797
Aux lane	760	682	458	403	434	480	480
	7840	7840	7840	7840	7840	7840	7840

NOTES

Lane 4 and Aux Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2200 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Encinitas Blvd to Santa Fe Dr
Time Duration	PM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	850
volume on (veh/hr)	850
volume off (veh/hr)	580
segment volume (veh/hr)	7690

Calculated Data

Thru Volume (lane 5)	Value
10%	626

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	850 m
Lane 1	**2006**	1965	1973	**2019**	**2051**	**2067**	**2110**
Lane 2	**2006**	1965	1973	**2019**	**2051**	**2067**	**2110**
Lane 3	**2006**	1965	1973	**2019**	**2051**	**2067**	**2110**
Lane 4	823	1020	1238	1153	1016	910	779
Aux lane	850	774	533	479	521	580	580
	7690	7690	7690	7690	7690	7690	7690

NOTES

Lane 4 and Aux Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2200 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Encinitas Blvd to Santa Fe Dr
Time Duration	AM peak
Analysis Type	weave analysis without aux lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	750	850
1	2086	2052	2061	2104	**2134**	**2150**	**2188**
2	2086	2052	2061	2104	**2134**	**2150**	**2188**
3	2086	2052	2061	2104	**2134**	**2150**	**2188**
4	823	1003	1200	1124	1003	911	797
	760	682	458	403	434	480	480

760
on ramp traffic volume

480
off ramp traffic volume

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Encinitas Blvd to Santa Fe Dr
Time Duration	PM peak
Analysis Type	weave analysis without aux lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	750	850
1	**2006**	1965	1973	**2019**	**2051**	**2067**	**2110**
2	**2006**	1965	1973	**2019**	**2051**	**2067**	**2110**
3	**2006**	1965	1973	**2019**	**2051**	**2067**	**2110**
4	823	1020	1238	1153	1016	910	779
	850	774	533	479	521	580	580

850
on ramp traffic volume

580
off ramp traffic volume

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Santa Fe Dr to Birmingham Dr
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	600
volume on (veh/hr)	580
volume off (veh/hr)	420
segment volume (veh/hr)	7750

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m
Lane 1	2077	2054	2071	2120	2160
Lane 2	2077	2054	2071	2120	2160
Lane 3	2077	2054	2071	2120	2160
Lane 4	940	1087	1138	987	849
Aux Lane	580	500	400	404	420
	7750	7750	7750	7750	7750

Calculated Data

Thru Volume (lane 5)	Value
10%	675

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2200 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Santa Fe Dr to Birmingham Dr
Time Duration	PM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	600
volume on (veh/hr)	490
volume off (veh/hr)	520
segment volume (veh/hr)	7450

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m
Lane 1	1996	1968	1973	2012	2046
Lane 2	1996	1968	1973	2012	2046
Lane 3	1996	1968	1973	2012	2046
Lane 4	972	1040	1066	921	791
Aux Lane	490	505	464	493	520
	7450	7450	7450	7450	7450

Calculated Data

Thru Volume (lane 5)	Value
10%	644

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2200 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Santa Fe Dr to Birmingham Dr
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600
1	2077	2054	2071	2120	**2160**
2	2077	2054	2071	2120	**2160**
3	2077	2054	2071	2120	**2160**
4	940	1087	1138	987	849
	580	500	400	404	420

580
on ramp traffic volume

420
off ramp traffic volume

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Santa Fe Dr to Birmingham Dr
Time Duration	PM peak
Analysis Type	weave analysis with aux lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600
1	1996	1968	1973	**2012**	**2046**
2	1996	1968	1973	**2012**	**2046**
3	1996	1968	1973	**2012**	**2046**
4	972	1040	1066	921	791
	490	505	464	493	520

490
on ramp traffic volume

520
off ramp traffic volume

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Birmingham Dr to Manchester Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1350
volume on (veh/hr)	860
volume off (veh/hr)	190
segment volume (veh/hr)	8190

Segment Lengths

merge length (m)	150
fwy segment length (m)	1050
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1833	1869
Lane 2	1833	1869
Lane 3	1833	1869
Lane 4	**1833**	**1869**
Aux lane	860	713
	8190	8190

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	**2000**	**2000**
Lane 2	**2000**	**2000**
Lane 3	**2000**	**2000**
Lane 4	**2000**	**2000**
Aux lane	190	190
	8190	8190

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Birmingham Dr to Manchester Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1350
volume on (veh/hr)	440
volume off (veh/hr)	220
segment volume (veh/hr)	7370

Segment Lengths

merge length (m)	150
fwy segment length (m)	1050
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1733	1747
Lane 2	1733	1747
Lane 3	1733	1747
Lane 4	1733	1747
Aux lane	440	381
	7370	7370

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1788	1788
Lane 2	1788	1788
Lane 3	1788	1788
Lane 4	1788	1788
Aux lane	220	220
	7370	7370

NOTES

Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Birmingham Dr to Manchester Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1200*	1200	1350
1	1833	1869	1638	2000	2000
2	1833	1869	1638	2000	2000
3	1833	1869	1638	2000	2000
4	1833	1869	1638	**2000**	**2000**
	860	713	1638	190	190

860
on ramp traffic volume

190
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Birmingham Dr to Manchester Ave
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1200*	1200	1350
1	1733	1747	1474	1788	1788
2	1733	1747	1474	1788	1788
3	1733	1747	1474	1788	1788
4	1733	1747	1474	1788	1788
	440	381	1474	220	220

440
on ramp traffic volume

220
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Manchester Ave to Lomas Santa Fe
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1500
volume on (veh/hr)	1300
volume off (veh/hr)	890
segment volume (veh/hr)	9300

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	**2240**	**2240**
Lane 2	**2240**	**2240**
Lane 3	**2240**	**2240**
Lane 4	1280	1540
Aux Lane	1300	1040
	9300	9300

Segment Lengths

merge length (m)	150
fwy segment length (m)	1200
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	**2103**	**2103**
Lane 2	**2103**	**2103**
Lane 3	**2103**	**2103**
Lane 4	**2103**	**2103**
Aux Lane	890	890
	9300	9300

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Manchester Ave to Lomas Santa Fe
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1500
volume on (veh/hr)	1130
volume off (veh/hr)	1060
segment volume (veh/hr)	8280

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	**2018**	**2018**
Lane 2	**2018**	**2018**
Lane 3	**2018**	**2018**
Lane 4	1096	1322
Aux Lane	1130	904
	8280	8280

Segment Lengths

merge length (m)	150
fwy segment length (m)	1200
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1805	1805
Lane 2	1805	1805
Lane 3	1805	1805
Lane 4	**1805**	**1805**
Aux Lane	1060	1060
	8280	8280

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 3 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Manchester Ave to Lomas Santa Fe
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1300*	1300	1500
1	**2240**	**2240**	1860	**2103**	**2103**
2	**2240**	**2240**	1860	**2103**	**2103**
3	**2240**	**2240**	1860	**2103**	**2103**
4	1280	1540	1860	**2103**	**2103**
	1300	1040	1860	890	890

1300
on ramp traffic volume

890
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Manchester Ave to Lomas Santa Fe
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1300*	1300	1500
1	**2018**	**2018**	1656	1805	1805
2	**2018**	**2018**	1656	1805	1805
3	**2018**	**2018**	1656	1805	1805
4	1096	1322	1656	**1805**	**1805**
	1130	904	1656	1060	1060

1130
on ramp traffic volume

1060
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Lomas Santa Fe to Via de la Valle
Time Duration	AM peak
Analysis Type	

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1300
WB volume on (veh/hr)	370
EB volume on (veh/hr)	430
volume off (veh/hr)	1050
segment volume (veh/hr)	9560

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	500 m
Lane 1	2482	2482	2488	2513
Lane 2	2482	2482	2488	2513
Lane 3	2482	2482	2488	2513
Lane 4	1314	1351	1370	1388
Aux Lane	370	333	296	634
	9130	9130	9130	9560

Segment Lengths

merge length (m)	500
fwy segment length (m)	650
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	2128	2128
Lane 2	2128	2128
Lane 3	2128	2128
Lane 4	2128	2128
Aux Lane	1050	1050
	9560	9560

NOTES

Auxiliary Lane AND Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 4 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Lomas Santa Fe to Via de la Valle
Time Duration	PM peak
Analysis Type	

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	1300
WB volume on (veh/hr)	370
EB volume on (veh/hr)	410
volume off (veh/hr)	1020
segment volume (veh/hr)	8580

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	500 m
Lane 1	2210	2210	2216	2241
Lane 2	2210	2210	2216	2241
Lane 3	2210	2210	2216	2241
Lane 4	1170	1207	1226	1244
Aux Lane	370	333	296	614
	8170	8170	8170	8580

Segment Lengths

merge length (m)	500
fwy segment length (m)	650
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1890	1890
Lane 2	1890	1890
Lane 3	1890	1890
Lane 4	1890	1890
Aux Lane	1020	1020
	8580	8580

NOTES

Auxiliary Lane and Lane 4 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 4 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (4 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Lomas Santa Fe to Via de la Valle
Time Duration	AM peak
Analysis Type	

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	500	500-1150*	1150	1300
1	**2482**	**2482**	**2488**	**2513**	1912	**2128**	**2128**
2	**2482**	**2482**	**2488**	**2513**	1912	**2128**	**2128**
3	**2482**	**2482**	**2488**	**2513**	1912	**2128**	**2128**
4	1314	1351	1370	1388	**1912**	**2128**	**2128**
	370	333	296	634	1912	1050	1050

370
WB on ramp traffic volume

430
EB on ramp traffic volume

1050
off ramp traffic volume

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Lomas Santa Fe to Via de la Valle
Time Duration	PM peak
Analysis Type	

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	500	500-1150*	1150	1300
1	**2210**	**2210**	**2216**	**2241**	1716	1890	1890
2	**2210**	**2210**	**2216**	**2241**	1716	1890	1890
3	**2210**	**2210**	**2216**	**2241**	1716	1890	1890
4	1170	1207	1226	1244	1716	**1890**	**1890**
	370	333	296	614	1716	1020	1020

370
WB on ramp traffic volume

410
EB on ramp traffic volume

1020
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Via de la Valle to Del Mar Heights Road
Time Duration	AM peak
Analysis Type	

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	2650
WB volume on (veh/hr)	790
EB volume on (veh/hr)	980
volume off (veh/hr)	1290
segment volume (veh/hr)	10280

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	550 m	700 m
Lane 1	1702	1734	1696	1728	1746	1758
Lane 2	1702	1734	1696	1728	1746	1758
Lane 3	1702	1734	1696	1728	1746	1758
Lane 4	1702	1734	1696	1728	1746	1758
Lane 5	1702	1734	1696	1728	1746	1758
Aux Lane	790	632	821	663	568	1492
	9300	9300	9300	9300	9300	10280

Segment Lengths

merge length (m)	700
fwy segment length (m)	1800
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1798	1798
Lane 2	1798	1798
Lane 3	1798	1798
Lane 4	1798	1798
Lane 5	1798	1798
Aux Lane	1290	1290
	10280	10280

NOTES

Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 5 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 5 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Via de la Valle to Del Mar Heights Road
Time Duration	PM peak
Analysis Type	

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	2650
WB volume on (veh/hr)	740
EB volume on (veh/hr)	810
volume off (veh/hr)	1270
segment volume (veh/hr)	9110

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	550 m	700 m
Lane 1	1512	1542	1510	1540	1558	1568
Lane 2	1512	1542	1510	1540	1558	1568
Lane 3	1512	1542	1510	1540	1558	1568
Lane 4	1512	1542	1510	1540	1558	1568
Lane 5	1512	1542	1510	1540	1558	1568
Aux Lane	740	592	748	600	511	1269
	8300	8300	8300	8300	8300	9110

Segment Lengths

merge length (m)	700
fwy segment length (m)	1800
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1568	1568
Lane 2	1568	1568
Lane 3	1568	1568
Lane 4	1568	1568
Lane 5	1568	1568
Aux Lane	1270	1270
	9110	9110

NOTES

Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 5 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 5 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Via de la Valle to Del Mar Heights Road
Time Duration	AM peak
Analysis Type	

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	550	700	700-2500*	2500	2650
1	1702	1734	1696	1728	1746	1758	1713	1798	1798
2	1702	1734	1696	1728	1746	1758	1713	1798	1798
3	1702	1734	1696	1728	1746	1758	1713	1798	1798
4	1702	1734	1696	1728	1746	1758	1713	1798	1798
5	1702	1734	1696	1728	1746	1758	1713	1798	1798
	790	632	821	663	568	1492	1713	1290	1290

790
WB on ramp traffic volume

980
EB on ramp traffic volume

1290
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Via de la Valle to Del Mar Heights Road
Time Duration	PM peak
Analysis Type	

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	550	700	700-2500*	2500	2650
1	1512	1542	1510	1540	1558	1568	1518	1568	1568
2	1512	1542	1510	1540	1558	1568	1518	1568	1568
3	1512	1542	1510	1540	1558	1568	1518	1568	1568
4	1512	1542	1510	1540	1558	1568	1518	1568	1568
5	1512	1542	1510	1540	1558	1568	1518	1568	1568
	740	592	748	600	511	1269	1518	1270	1270

740
WB on ramp traffic volume

810
EB on ramp traffic volume

1270
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design	**8+4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	I-5
Time Duration	AM peak
Analysis Type	

Data Entry

Parameter	Input Value
I-5 (veh/hr)	8990
Bypass off (veh/hr)	3450
I-5 (veh/hr)	5540
Carmel Valley on (veh/hr)	1400
I-5 (veh/hr)	6940
HOV ingress/egress (veh/hr)	6540
I-5 to I-805 (veh/hr)	4100
I-5 (veh/hr)	2440
Bypass on (veh/hr)	2350
I-5 (veh/hr)	4790
Roselle St on (veh/hr)	1330
I-5 (veh/hr)	6120

this color denotes linked values

Design	**8+4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	I-5
Time Duration	PM peak
Analysis Type	

Data Entry

Parameter	Input Value
I-5 (veh/hr)	7840
Bypass off (veh/hr)	3230
I-5 (veh/hr)	4610
Carmel Valley on (veh/hr)	1050
I-5 (veh/hr)	5660
HOV ingress/egress (veh/hr)	5260
I-5 to I-805 (veh/hr)	3350
I-5 (veh/hr)	1910
Bypass on (veh/hr)	3140
I-5 (veh/hr)	5050
Roselle St on (veh/hr)	1800
I-5 (veh/hr)	6850

this color denotes linked values

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Bypass
Time Duration	AM peak
Analysis Type	

Data Entry **new**

Parameter	Input Value
I-5 to Bypass (veh/hr)	3450
DMH WB on (veh/hr)	790
DMH EB on (veh/hr)	1190
Bypass (veh/hr)	5430
SR-56 EB off (veh/hr)	1050
Carmel Valley off (veh/hr)	480
Bypass (veh/hr)	3900
SR-56 WB on (veh/hr)	4000
Bypass (veh/hr)	7900
Carmel Mnt off (veh/hr)	960
Carmel Mnt on (veh/hr)	1120
Bypass (veh/hr)	8060
Bypass to I-805 (veh/hr)	3510
Bypass to I-5 (veh/hr)	4550
Bypass to Genesee (veh/hr)	2200
Bypass to I-5 (veh/hr)	2350
Roselle to Genesee (veh/hr)	800
Genesee off (veh/hr)	3000

these new volume changes
maxes out the BP at 8,000 veh/hr

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Bypass
Time Duration	PM peak
Analysis Type	

Data Entry

Parameter	Input Value
I-5 to Bypass (veh/hr)	3230
DMH WB on (veh/hr)	580
DMH EB on (veh/hr)	770
Bypass (veh/hr)	4580
SR-56 EB off (veh/hr)	1580
Carmel Valley off (veh/hr)	350
Bypass (veh/hr)	2650
SR-56 WB on (veh/hr)	2000
Bypass (veh/hr)	4650
Carmel Mnt off (veh/hr)	760
Carmel Mnt on (veh/hr)	880
Bypass (veh/hr)	4770
Bypass to I-805 (veh/hr)	1350
Bypass to I-5 (veh/hr)	3420
Bypass to Genesee (veh/hr)	280
Bypass to I-5 (veh/hr)	3140
Roselle to Genesee (veh/hr)	850
Genesee off (veh/hr)	1130

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Genesee Ave to La Jolla Village Drive
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	900
volume on (veh/hr)	480
volume off (veh/hr)	1700
segment volume (veh/hr)	6600
segment volume (veh/hr)	6080

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1836	1836
Lane 2	1836	1836
Lane 3	1836	1836
Lane 4	612	732
Aux Lane	480	360
	6600	6600

Segment Lengths

merge length (m)	150
fwy segment length (m)	600
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1095	1095
Lane 2	1095	1095
Lane 3	1095	1095
Lane 4	1095	1095
Aux Lane	1700	1700
	6080	6080

NOTES

Lane 5 and Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 4 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Genesee Ave to La Jolla Village Drive
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	900
volume on (veh/hr)	2100
volume off (veh/hr)	1100
segment volume (veh/hr)	8950
segment volume (veh/hr)	8570

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	2055	2055
Lane 2	2055	2055
Lane 3	2055	2055
Lane 4	685	1210
Aux Lane	**2100**	1575
	8950	8950

Segment Lengths

merge length (m)	150
fwy segment length (m)	600
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1868	1868
Lane 2	1868	1868
Lane 3	1868	1868
Lane 4	**1868**	**1868**
Aux Lane	1100	1100
	8570	8570

NOTES

Lane 5 and Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 4 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Genesee Ave to La Jolla Village Drive
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-800*	800	900
1	1836	1836	1320	1095	1095
2	1836	1836	1320	1095	1095
3	1836	1836	1320	1095	1095
4	612	732	1320	1095	1095
	480	360	1320	1700	1700

480
on ramp traffic volume

1700
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Genesee Ave to La Jolla Village Drive
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-800*	800	900
1	2055	2055	1790	1868	1868
2	2055	2055	1790	1868	1868
3	2055	2055	1790	1868	1868
4	685	1210	1790	1868	1868
	2100	**1575**	1790	1100	1100

2100
on ramp traffic volume

1100
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

NB 2015 10+4 Traffic Analysis
May 2007

Design & Year	2015 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	Lomas Santa Fe to Manchester Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1800
EB volume on (veh/hr)	450
WB volume on (veh/hr)	450
volume off (veh/hr)	930
segment volume (veh/hr)	7270

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	500 m
Lane 1	1354	1354	1359	1382
Lane 2	1354	1354	1359	1382
Lane 3	1354	1354	1359	1382
Lane 4	1354	1354	1359	1382
Lane 5	956	1001	1023	1046
Aux Lane	450	405	360	698
	6820	6820	6820	7270

Segment Lengths

merge length (m)	500
fwy segment length (m)	1150
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1268	1268
Lane 2	1268	1268
Lane 3	1268	1268
Lane 4	1268	1268
Lane 5	1268	1268
Aux Lane	930	930
	7270	7270

NOTES

Merge: Auxiliary Lane & Lane 5 not to exceed 1800 veh/hr; Lanes 1-4 not to exceed 2,000 veh/hr

Diverge: Auxiliary Lane not to exceed 1800 veh/hr; Lanes 1-5 not to exceed 2,000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design & Year	2015 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	Lomas Santa Fe to Manchester Ave
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1800
EB volume on (veh/hr)	510
WB volume on (veh/hr)	440
volume off (veh/hr)	1410
segment volume (veh/hr)	9870

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	500 m
Lane 1	1896	1896	1902	1927
Lane 2	1896	1896	1902	1927
Lane 3	1896	1896	1902	1927
Lane 4	1896	1896	1902	1927
Lane 5	1338	1389	1415	1440
Aux Lane	510	459	408	721
	9430	9430	9430	9870

Segment Lengths

merge length (m)	500
fwy segment length (m)	1150
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1692	1692
Lane 2	1692	1692
Lane 3	1692	1692
Lane 4	1692	1692
Lane 5	1692	1692
Aux Lane	1410	1410
	9870	9870

NOTES

Merge: Auxiliary Lane & Lane 5 not to exceed 1800 veh/hr; Lanes 1-4 not to exceed 2,000 veh/hr

Diverge: Auxiliary Lane not to exceed 1800 veh/hr; Lanes 1-5 not to exceed 2,000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

for weaving off ramp traffic only

Percentage of Traffic Exiting (in lane 5) per distance from on ramp

distance (m)	0	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
900	29	34.7	40.3	46	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0
850	34.7	40.3	46	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0	
800	40.3	46	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0		
750	46	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0			
700	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0				
650	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0					
600	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0						
550	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0							
500	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0								
450	79	84.3	89.6	95	96.7	98.3	100	100	100	0									
400	84.3	89.6	95	96.7	98.3	100	100	100	0										
350	89.6	95	96.7	98.3	100	100	100	0											
300	95	96.7	98.3	100	100	100	0												

Design & Year	2015 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	La Jolla Village Dr to Genesee Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1250
EB volume on (veh/hr)	650
WB volume on (veh/hr)	630
volume off (veh/hr)	2070
segment volume (veh/hr)	7520
segment volume (veh/hr)	7890

Segment Lengths

merge length (m)	500
fwy segment length (m)	600
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	500 m
Lane 1	1248	1281	1175	1208
Lane 2	1248	1281	1175	1208
Lane 3	1248	1281	1175	1208
Lane 4	1248	1281	1175	1208
Lane 5	1248	1281	1175	1208
Lane 6	650	488	1014	1482
	6890	6890	6890	7520

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1164	1164
Lane 2	1164	1164
Lane 3	1164	1164
Lane 4	1164	1164
Lane 5	1164	1164
Aux Lane	2070	2070
	7890	7890

NOTES

Merge: Lane 6 not to exceed 1800 veh/hr; Lanes 1-5 not to exceed 2000 veh/hr

Diverge: Auxiliary Lane not to exceed 1800 veh/hr; Lanes 1 - 5 not to exceed 2000 veh/hr

Lanes 1 - 5 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design & Year	2015 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	La Jolla Village Dr to Genesee Ave
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1250
EB volume on (veh/hr)	1020
WB volume on (veh/hr)	490
volume off (veh/hr)	690
segment volume (veh/hr)	6550
segment volume (veh/hr)	7080

Segment Lengths

merge length (m)	500
fwy segment length (m)	600
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	500 m
Lane 1	1008	1059	989	1040
Lane 2	1008	1059	989	1040
Lane 3	1008	1059	989	1040
Lane 4	1008	1059	989	1040
Lane 5	1008	1059	989	1040
Lane 6	1020	765	1116	1351
	6060	6060	6060	6550

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1278	1278
Lane 2	1278	1278
Lane 3	1278	1278
Lane 4	1278	1278
Lane 5	1278	1278
Aux Lane	690	690
	7080	7080

NOTES

Merge: Lane 6 not to exceed 1800 veh/hr; Lanes 1-5 not to exceed 2000 veh/hr

Diverge: Auxiliary Lane not to exceed 1800 veh/hr; Lanes 1 - 5 not to exceed 2000 veh/hr

Lanes 1 - 5 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	La Jolla Village Dr to Genesee Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	500	500-1100*	1100	1250
1	1248	1281	1175	1208	1297	1164	1164
2	1248	1281	1175	1208	1297	1164	1164
3	1248	1281	1175	1208	1297	1164	1164
4	1248	1281	1175	1208	1297	1164	1164
5	1248	1281	1175	1208	1297	1164	1164
	650	488	1014	1482	1035	**2070**	**2070**

650 EB on ramp traffic volume

630 WB on ramp traffic volume

2070 off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	La Jolla Village Dr to Genesee Ave
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	500	500-1100*	1100	1250
1	1008	1059	989	1040	1241	1278	1278
2	1008	1059	989	1040	1241	1278	1278
3	1008	1059	989	1040	1241	1278	1278
4	1008	1059	989	1040	1241	1278	1278
5	1008	1059	989	1040	1241	1278	1278
	1020	765	1116	1351	345	690	690

1020 EB on ramp traffic volume

490 WB on ramp traffic volume

690 off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design & Year	2015 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	I-5 (Genesee Ave to Del Mar Heights Rd)
Time Duration	AM peak

Data Entry

Parameter	Input Value
I-5	7890
Genesee off	2070
I-5	5820
Sorrento Valley off	1770
I-5 to Bypass	1400
I-5	2650
I-805 to I-5	3400
I-5 / I-805 junction	6050
I-5 (HOV in/out)	6380
Carmel Valley off	1050
I-5	5330

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m
Lane 1				
Lane 2				
Lane 3				
Lane 4				
Lane 5				
Lane 6				

Design & Year	2015 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	I-5 (Genesee Ave to Del Mar Heights Rd)
Time Duration	PM peak

Data Entry

Parameter	Input Value
I-5	7080
Genesee off	690
I-5	6390
Sorrento Valley off	1250
I-5 to Bypass	1400
I-5	3740
I-805 to I-5	3780
I-5 / I-805 junction	7520
I-5 (HOV in/out)	7900
Carmel Valley off	1180
I-5	6720

Design & Year	2015 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	Bypass
Time Duration	AM peak

Data Entry

Parameter	Input Value
I-5	5820
Genesee on	920
Sorrento Valley off	700
Genesee to Bypass	220
I-5 to Bypass	1400
I-5 Bypass	1620
I-805 Bypass	2180
Bypass	3800
Carmel Mountain off	730
Carmel Mountain on	630
Bypass	3700
SR-56 EB off	2470
Bypass	1230
Carmel Valley Rd on	370
Bypass	1600
SR-56 WB on	1580
Bypass	3180
Del Mar Heights Rd off	1480
Bypass	1700
Del Mar Heights Rd on	1120
Bypass to I-5	2820

I-5 and Genesee on ramp to Bypass

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	400 m
Lane 1	630			
Lane 2	770			
Lane 3	220			0

I-5 Bypass / I-805 Bypass merge to Carmel Mountain off 1160 m

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m
Lane 1	981			
Lane 2	1199			
Lane 3	0			
Lane 4	0			

I-5 Bypass: Carmel Mountain Rd on to SR-56 EB off 920 m

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	900 m
Lane 1							677
Lane 2							554
Lane 3							1112
Lane 4		630					1359
							3700

I-5 Bypass: Carmel Valley Rd on & SR-56 WB on to Del Mar Heights Rd off 1120 m

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	900 m	1050 m	1150 m
Lane 1	677	677							1020
Lane 2	554	924							680
Lane 3	0	0	0	1580					1480
									3180

Design & Year	2015 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	Bypass
Time Duration	PM peak

Data Entry

Parameter	Input Value
I-5	6390
Genesee on	2220
Sorrento Valley off	700
Genesee to Bypass	1520
I-5 to Bypass	1400
I-5 Bypass	2920
I-805 Bypass	3450
Bypass	6370
Carmel Mountain off	950
Carmel Mountain on	820
Bypass	6240
SR-56 EB off	3740
Bypass	2500
Carmel Valley Rd on	490
Bypass	2990
SR-56 WB on	1050
Bypass	4040
Del Mar Heights Rd off	1360
Bypass	2680
Del Mar Heights Rd on	1180
Bypass to I-5	3860

Design & Year	2015 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	Del Mar Heights Rd to Via de la Valle
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	6
total segment length (m)	2650
volume on (veh/hr)	1120
volume off (veh/hr)	1360
I-5 volume	5330
Bypass volume	1700
segment volume (veh/hr)	8150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	700 m
Lane 1	1333	1333	1344	1416	1452	1465
Lane 2	1333	1333	1344	1416	1452	1465
Lane 3	1333	1333	1344	1416	1452	1465
Lane 4	1333	1384	1435	1416	1452	1465
Bypass 1	935	935	1052	1018	1018	1130
Bypass 2	765	938	1016	1189	1211	1160
Acc Lane	1120	896	616	280	112	0
	8150	8150	8150	8150	8150	8150

Segment Lengths

merge length (m)	700
fwy segment length (m)	1800
diverge length (m)	150

Diverge

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1358	1358
Lane 2	1358	1358
Lane 3	1358	1358
Lane 4	1358	1358
Lane 5	1358	1358
Aux Lane	1360	1360
	8150	8150

NOTES

Merge: Acc Lane & Bypass Lanes not to exceed 1800 veh/hr; Lanes 1-4 not to exceed 2,000 veh/hr

Diverge: Auxiliary Lane not to exceed 1800 veh/hr; Lanes 1-5 not to exceed 2,000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design & Year	2015 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	Del Mar Heights Rd to Via de la Valle
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	6
total segment length (m)	2650
volume on (veh/hr)	1180
volume off (veh/hr)	1650
I-5 volume	6720
Bypass volume	2680
segment volume (veh/hr)	10580

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	700 m
Lane 1	1680	1680	1698	1797	1840	1860
Lane 2	1680	1680	1698	1797	1840	1860
Lane 3	1680	1680	1698	1797	1840	1860
Lane 4	1680	1760	1841	1797	1840	1860
Bypass 1	1474	1474	1571	1517	1517	1635
Bypass 2	1206	1362	1426	1582	1587	1507
Acc Lane	1180	944	649	295	118	0
	10580	10580	10580	10580	10580	10580

Segment Lengths

merge length (m)	700
fwy segment length (m)	1800
diverge length (m)	150

Diverge

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1786	1786
Lane 2	1786	1786
Lane 3	1786	1786
Lane 4	1786	1786
Lane 5	1786	1786
Aux Lane	1650	1650
	10580	10580

NOTES

Merge: Acc Lane & Bypass Lanes not to exceed 1800 veh/hr; Lanes 1-4 not to exceed 2,000 veh/hr

Diverge: Auxiliary Lane not to exceed 1800 veh/hr; Lanes 1-5 not to exceed 2,000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Del Mar Heights Rd to Via de la Valle
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

REDO AND LINK TO DMH-VdlV

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	750	750-2500*	2500	2650
1	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
2	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
3	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
4	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
5	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
6	#REF!	**#REF!**	**#REF!**	**#REF!**	**#REF!**	**#REF!**	#REF!	#REF!	#REF!
	#REF!	#REF!	#REF!	#REF!	#REF!				

#REF!
on ramp traffic volume

#REF!
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Del Mar Heights Rd to Via de la Valle
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	750	750-2500*	2500	2650
1	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
2	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
3	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
4	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
5	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
6	#REF!	**#REF!**	**#REF!**	**#REF!**	**#REF!**	**#REF!**	#REF!	#REF!	#REF!
	#REF!	#REF!	#REF!	#REF!	#REF!				

#REF!
on ramp traffic volume

#REF!
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design & Year	2015 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	Via de la Valle to Lomas Santa Fe
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1450
EB volume on (veh/hr)	370
WB volume on (veh/hr)	390
volume off (veh/hr)	750
segment volume (veh/hr)	7550

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	550 m	700 m
Lane 1	1358	1365	1384	1390	1386	1383
Lane 2	1358	1365	1384	1390	1386	1383
Lane 3	1358	1365	1384	1390	1386	1383
Lane 4	1358	1365	1384	1390	1386	1383
Lane 5	1358	1365	1384	1390	1386	1383
Aux Lane	370	334	242	213	228	637
	7160	7160	7160	7160	7160	7550

Segment Lengths

merge length (m)	700
fwy segment length (m)	600
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1360	1360
Lane 2	1360	1360
Lane 3	1360	1360
Lane 4	1360	1360
Lane 5	1360	1360
Aux Lane	750	750
	7550	7550

NOTES

Merge: Auxiliary Lane & Lane 5 not to exceed 1800 veh/hr; Lanes 1-4 not to exceed 2,000 veh/hr

Diverge: Auxiliary Lane not to exceed 1800 veh/hr; Lanes 1-5 not to exceed 2,000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design & Year	2015 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	Via de la Valle to Lomas Santa Fe
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1450
EB volume on (veh/hr)	650
WB volume on (veh/hr)	500
volume off (veh/hr)	790
segment volume (veh/hr)	10080

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	550 m	700 m
Lane 1	1786	1804	1842	1858	1861	1861
Lane 2	1786	1804	1842	1858	1861	1861
Lane 3	1786	1804	1842	1858	1861	1861
Lane 4	1786	1804	1842	1858	1861	1861
Lane 5	1786	1804	1842	1858	1861	1861
Aux Lane	650	560	372	289	274	776
	9580	9580	9580	9580	9580	10080

Segment Lengths

merge length (m)	700
fwy segment length (m)	600
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1858	1858
Lane 2	1858	1858
Lane 3	1858	1858
Lane 4	1858	1858
Lane 5	1858	1858
Aux Lane	790	790
	10080	10080

NOTES

Merge: Auxiliary Lane & Lane 5 not to exceed 1800 veh/hr; Lanes 1-4 not to exceed 2,000 veh/hr

Diverge: Auxiliary Lane not to exceed 1800 veh/hr; Lanes 1-5 not to exceed 2,000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Via de la Valle to Lomas Santa Fe
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)								
	0	150	300	450	550	700	700-1300*	1300	1450
1	1358	1365	1384	1390	1386	1383	1435	1360	1360
2	1358	1365	1384	1390	1386	1383	1435	1360	1360
3	1358	1365	1384	1390	1386	1383	1435	1360	1360
4	1358	1365	1384	1390	1386	1383	1435	1360	1360
5	1358	1365	1384	1390	1386	1383	1435	1360	1360
	370	334	242	213	228	637	375	750	750

370
EB on ramp traffic volume

390
WB on ramp traffic volume

750
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Via de la Valle to Lomas Santa Fe
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)								
	0	150	300	450	550	700	700-1300*	1300	1450
1	1786	1804	1842	1858	1861	1861	1937	1858	1858
2	1786	1804	1842	1858	1861	1861	1937	1858	1858
3	1786	1804	1842	1858	1861	1861	1937	1858	1858
4	1786	1804	1842	1858	1861	1861	1937	1858	1858
5	1786	1804	1842	1858	1861	1861	1937	1858	1858
	650	560	372	289	274	776	395	790	790

650
EB on ramp traffic volume

500
WB on ramp traffic volume

790
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Lomas Santa Fe to Manchester Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)						
Number	0	150	300	500	500-1650*	1650	1800
1	1354	1354	1359	1382	1361	1268	1268
2	1354	1354	1359	1382	1361	1268	1268
3	1354	1354	1359	1382	1361	1268	1268
4	1354	1354	1359	1382	1361	1268	1268
5	956	1001	1023	1046	1361	1268	1268
	450	405	360	698	465	930	930

450 EB on ramp traffic volume

450 WB on ramp traffic volume

930 off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Lomas Santa Fe to Manchester Ave
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)						
Number	0	150	300	500	500-1650*	1650	1800
1	1896	1896	1902	1927	1833	1692	1692
2	1896	1896	1902	1927	1833	1692	1692
3	1896	1896	1902	1927	1833	1692	1692
4	1896	1896	1902	1927	1833	1692	1692
5	1338	1389	1415	1440	1833	1692	1692
	510	459	408	721	705	1410	1410

510 EB on ramp traffic volume

440 WB on ramp traffic volume

1410 off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design & Year	2015 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	Manchester Ave to Birmingham Dr
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1450
volume on (veh/hr)	200
volume off (veh/hr)	390
segment volume (veh/hr)	6540

Segment Lengths

merge length (m)	150
fwy segment length (m)	1150
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1347	1342
Lane 2	1347	1342
Lane 3	1347	1342
Lane 4	1347	1342
Lane 5	951	971
Aux Lane	200	200
	6540	6540

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1230	1230
Lane 2	1230	1230
Lane 3	1230	1230
Lane 4	1230	1230
Lane 5	1230	1230
Aux Lane	390	390
	6540	6540

NOTES

Merge: Auxiliary Lane & Lane 5 not to exceed 1800 veh/hr; Lanes 1-4 not to exceed 2,000 veh/hr

Diverge: Auxiliary Lane not to exceed 1800 veh/hr; Lanes 1-5 not to exceed 2,000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design & Year	2015 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	Manchester Ave to Birmingham Dr
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1450
volume on (veh/hr)	180
volume off (veh/hr)	680
segment volume (veh/hr)	8640

Segment Lengths

merge length (m)	150
fwy segment length (m)	1150
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1798	1789
Lane 2	1798	1789
Lane 3	1798	1789
Lane 4	1798	1789
Lane 5	1269	1287
Aux Lane	180	196
	8640	8640

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1592	1592
Lane 2	1592	1592
Lane 3	1592	1592
Lane 4	1592	1592
Lane 5	1592	1592
Aux Lane	680	680
	8640	8640

NOTES

Merge: Auxiliary Lane & Lane 5 not to exceed 1800 veh/hr; Lanes 1-4 not to exceed 2,000 veh/hr

Diverge: Auxiliary Lane not to exceed 1800 veh/hr; Lanes 1-5 not to exceed 2,000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Manchester Ave to Birmingham Dr
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1300*	1300	1450
1	1347	1342	1269	1230	1230
2	1347	1342	1269	1230	1230
3	1347	1342	1269	1230	1230
4	1347	1342	1269	1230	1230
5	951	971	1269	1230	1230
	200	200	195	390	390

200
on ramp traffic volume

390
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Manchester Ave to Birmingham Dr
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1300*	1300	1450
1	1798	1789	1660	1592	1592
2	1798	1789	1660	1592	1592
3	1798	1789	1660	1592	1592
4	1798	1789	1660	1592	1592
5	1269	1287	1660	1592	1592
	180	196	340	680	680

180
on ramp traffic volume

680
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design & Year	2015 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	Birmingham Dr to Santa Fe Dr
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	600
volume on (veh/hr)	450
volume off (veh/hr)	490
segment volume (veh/hr)	6600

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m
Lane 1	1319	1299	1302	1331	1352
Lane 2	1319	1299	1302	1331	1352
Lane 3	1319	1299	1302	1331	1352
Lane 4	1319	1299	1302	1331	1352
Lane 5	875	933	956	812	701
Aux Lane	450	470	435	464	490
	6600	6600	6600	6600	6600

Calculated Data

Thru Volume (lane 5)	Value
10%	566

NOTES

Lane 5 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2200 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design & Year	2015 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	Birmingham Dr to Santa Fe Dr
Time Duration	PM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	600
volume on (veh/hr)	400
volume off (veh/hr)	550
segment volume (veh/hr)	8360

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m
Lane 1	1718	1696	1694	1718	1737
Lane 2	1718	1696	1694	1718	1737
Lane 3	1718	1696	1694	1718	1737
Lane 4	1718	1696	1694	1718	1737
Lane 5	1088	1101	1110	969	861
Aux Lane	400	475	474	518	550
	8360	8360	8360	8360	8360

Calculated Data

Thru Volume (lane 5)	Value
10%	741

NOTES

Lane 5 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Birmingham Dr to Santa Fe Dr
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600
1	1319	1299	1302	1331	1352
2	1319	1299	1302	1331	1352
3	1319	1299	1302	1331	1352
4	1319	1299	1302	1331	1352
5	875	933	956	812	701
	450	470	435	464	490

450
on ramp traffic volume

490
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Birmingham Dr to Santa Fe Dr
Time Duration	PM peak
Analysis Type	weave analysis with aux lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600
1	1718	1696	1694	1718	1737
2	1718	1696	1694	1718	1737
3	1718	1696	1694	1718	1737
4	1718	1696	1694	1718	1737
5	1088	1101	1110	969	861
	400	475	474	518	550

400
on ramp traffic volume

550
off ramp traffic volume

Design & Year	2015 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	Santa Fe Dr to Encinitas Blvd
Time Duration	AM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	800
volume on (veh/hr)	540
volume off (veh/hr)	730
segment volume (veh/hr)	6660

Calculated Data

Thru Volume (lane 5)	Value
10%	539

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	800 m
Lane 1	1322	1291	1315	1326	1325	1329	1330
Lane 2	1322	1291	1315	1326	1325	1329	1330
Lane 3	1322	1291	1315	1326	1325	1329	1330
Lane 4	1322	1291	1315	1326	1325	1329	1330
Lane 5	833	1497	1400	1355	1359	1345	609
	6120	6660	6660	6660	6660	6660	5930

NOTES

Lane 5 not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2200 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design & Year	2015 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	Santa Fe Dr to Encinitas Blvd
Time Duration	PM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	800
volume on (veh/hr)	640
volume off (veh/hr)	750
segment volume (veh/hr)	8450

Calculated Data

Thru Volume (lane 5)	Value
10%	706

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	800 m
Lane 1	1700	1669	1702	1720	1721	1726	1728
Lane 2	1700	1669	1702	1720	1721	1726	1728
Lane 3	1700	1669	1702	1720	1721	1726	1728
Lane 4	1700	1669	1702	1720	1721	1726	1728
Lane 5	1008	1776	1642	1570	1565	1546	789
	7810	8450	8450	8450	8450	8450	7700

NOTES

Lane 5 not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Santa Fe Dr to Encinitas Blvd
Time Duration	AM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	750	800
1	1322	1291	1315	1326	1325	1329	1330
2	1322	1291	1315	1326	1325	1329	1330
3	1322	1291	1315	1326	1325	1329	1330
4	1322	1291	1315	1326	1325	1329	1330
5	833	1497	1400	1355	1359	1345	609

540
on ramp traffic volume

730
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Santa Fe Dr to Encinitas Blvd
Time Duration	PM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	750	800
1	1700	1669	1702	1720	1721	1726	1728
2	1700	1669	1702	1720	1721	1726	1728
3	1700	1669	1702	1720	1721	1726	1728
4	1700	1669	1702	1720	1721	1726	1728
5	1008	**1776**	1642	1570	1565	1546	789

640
on ramp traffic volume

750
off ramp traffic volume

Design & Year	2015 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	Encinitas Blvd to Leucadia Blvd
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1300
volume on (veh/hr)	690
volume off (veh/hr)	640
segment volume (veh/hr)	6620

Segment Lengths

merge length (m)	150
fwy segment length (m)	1000
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1186	1186
Lane 2	1186	1186
Lane 3	1186	1186
Lane 4	1186	1186
Lane 5	1186	1255
Aux Lane	690	621
	6620	6620

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1196	1196
Lane 2	1196	1196
Lane 3	1196	1196
Lane 4	1196	1196
Lane 5	1196	1196
Aux Lane	640	640
	6620	6620

NOTES

Merge: Auxiliary Lane & Lane 5 not to exceed 1800 veh/hr; Lanes 1-4 not to exceed 2,000 veh/hr

Diverge: Auxiliary Lane not to exceed 1800 veh/hr; Lanes 1-5 not to exceed 2,000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design & Year	2015 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	Encinitas Blvd to Leucadia Blvd
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1300
volume on (veh/hr)	910
volume off (veh/hr)	910
segment volume (veh/hr)	8610

Segment Lengths

merge length (m)	150
fwy segment length (m)	1000
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1540	1540
Lane 2	1540	1540
Lane 3	1540	1540
Lane 4	1540	1540
Lane 5	1540	1631
Aux Lane	910	819
	8610	8610

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1540	1540
Lane 2	1540	1540
Lane 3	1540	1540
Lane 4	1540	1540
Lane 5	1540	1540
Aux Lane	910	910
	8610	8610

NOTES

Merge: Auxiliary Lane & Lane 5 not to exceed 1800 veh/hr; Lanes 1-4 not to exceed 2,000 veh/hr

Diverge: Auxiliary Lane not to exceed 1800 veh/hr; Lanes 1-5 not to exceed 2,000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Encinitas Blvd to Leucadia Blvd
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)				
Number	0	150	150-1150*	1150	1300
1	1186	1186	1324	1196	1196
2	1186	1186	1324	1196	1196
3	1186	1186	1324	1196	1196
4	1186	1186	1324	1196	1196
5	1186	1255	1324	1196	1196
	690	621	1324	640	640

690
on ramp traffic volume

640
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Encinitas Blvd to Leucadia Blvd
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)				
Number	0	150	150-1150*	1150	1300
1	1540	1540	1722	1540	1540
2	1540	1540	1722	1540	1540
3	1540	1540	1722	1540	1540
4	1540	1540	1722	1540	1540
5	1540	1631	1722	1540	1540
	910	819	1722	910	910

910
on ramp traffic volume

910
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design & Year	2015 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	Leucadia Blvd to La Costa Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1550
volume on (veh/hr)	760
volume off (veh/hr)	810
segment volume (veh/hr)	6740
approach volume (veh/hr)	5980
segment volume (veh/hr)	6810

Segment Lengths

merge length (m)	150
fwy segment length (m)	1250
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1346	1346
Lane 2	1346	1346
Lane 3	1346	1346
Lane 4	1346	1346
Lane 5	598	1358
	5980	6740

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1330	1330
Lane 2	1330	1330
Lane 3	1330	1330
Lane 4	1330	1330
Lane 5	1491	681
	6810	6000

NOTES

Lane 5 not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 4 not to exceed 2200 veh/hr for Merge/Diverge segment
Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2200 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design & Year	2015 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	Leucadia Blvd to La Costa Ave
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1550
volume on (veh/hr)	800
volume off (veh/hr)	1140
segment volume (veh/hr)	8500
approach volume (veh/hr)	7700
segment volume (veh/hr)	8590

Segment Lengths

merge length (m)	150
fwy segment length (m)	1250
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1733	1733
Lane 2	1733	1733
Lane 3	1733	1733
Lane 4	1733	1733
Lane 5	770	1570
	7700	8500

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1648	1648
Lane 2	1648	1648
Lane 3	1648	1648
Lane 4	1648	1648
Lane 5	1999	859
	8590	7450

NOTES

Lane 5 not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Leucadia Blvd to La Costa Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1400*	1400	1550
1	1346	1346	1348	1330	1330
2	1346	1346	1348	1330	1330
3	1346	1346	1348	1330	1330
4	1346	1346	1348	1330	1330
5	598	1358	1348	1491	681

760
on ramp traffic volume

810
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Leucadia Blvd to La Costa Ave
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1400*	1400	1550
1	1733	1733	1700	1648	1648
2	1733	1733	1700	1648	1648
3	1733	1733	1700	1648	1648
4	1733	1733	1700	1648	1648
5	770	1570	1700	**1999**	859

800
on ramp traffic volume

1140
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design & Year	2015 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	La Costa Ave to Poinsettia Lane
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1700
volume on (veh/hr)	770
volume off (veh/hr)	860
segment volume (veh/hr)	6770
approach volume (veh/hr)	6000

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1350	1350
Lane 2	1350	1350
Lane 3	1350	1350
Lane 4	1350	1350
Lane 5	600	1370
	6000	6770

Segment Lengths

merge length (m)	150
fwy segment length (m)	1100
diverge length (m)	450

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	450 m	300 m	150 m	0 m
Lane 1	1353	1319	1308	1308
Lane 2	1353	1319	1308	1308
Lane 3	1353	1319	1308	1308
Lane 4	1353	1319	1308	1308
Lane 5	1356	952	746	677
Dec Lane	0	542	791	860
	6770	6770	6770	6770

NOTES

Lane 5 & Dec Lane not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 4 not to exceed 2200 veh/hr for Merge/Diverge segment
Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2200 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design & Year	2015 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	La Costa Ave to Poinsettia Lane
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1700
volume on (veh/hr)	810
volume off (veh/hr)	900
segment volume (veh/hr)	8260
approach volume (veh/hr)	7450

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1676	1676
Lane 2	1676	1676
Lane 3	1676	1676
Lane 4	1676	1676
Lane 5	745	1555
	7450	8260

Segment Lengths

merge length (m)	150
fwy segment length (m)	1100
diverge length (m)	450

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	450 m	300 m	150 m	0 m
Lane 1	1681	1645	1634	1634
Lane 2	1681	1645	1634	1634
Lane 3	1681	1645	1634	1634
Lane 4	1681	1645	1634	1634
Lane 5	1537	1114	898	826
Dec Lane	0	567	828	900
	8260	8260	8260	8260

NOTES

Lane 5 & Dec Lane not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	La Costa Ave to Poinsettia Lane
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1250*	1250	1400	1550	1700
1	1350	1350	1354	1353	1319	1308	1308
2	1350	1350	1354	1353	1319	1308	1308
3	1350	1350	1354	1353	1319	1308	1308
4	1350	1350	1354	1353	1319	1308	1308
5	600	1370	1354	1356	952	746	677
					542	791	860

770
on ramp traffic volume

860
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	La Costa Ave to Poinsettia Lane
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1250*	1250	1400	1550	1700
1	1676	1676	1652	1681	1645	1634	1634
2	1676	1676	1652	1681	1645	1634	1634
3	1676	1676	1652	1681	1645	1634	1634
4	1676	1676	1652	1681	1645	1634	1634
5	745	1555	1652	1537	1114	898	826
					567	828	900

810
on ramp traffic volume

900
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design & Year	2015 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	Poinsettia Lane to Palomar Airport Road
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1700
volume on (veh/hr)	760
volume off (veh/hr)	2120
segment volume (veh/hr)	6670
approach volume (veh/hr)	5910

Calculated Data

Thru Volume	Value
10%	667

Segment Lengths

merge length (m)	150
fwy segment length (m)	800
diverge length (m)	750

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1330	1330
Lane 2	1330	1330
Lane 3	1330	1330
Lane 4	1330	1330
Lane 5	591	1351
	5910	6670

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	750 m	600 m	450 m	300 m	150 m	0 m
Lane 1	1257	1167	1082	997	971	971
Lane 2	1257	1167	1082	997	971	971
Lane 3	1257	1167	1082	997	971	971
Lane 4	1257	1167	1082	997	971	971
Lane 5	1642	1218	1070	1070	837	667
Aux lane	0	784	1272	1611	1950	2120
	6670	6670	6670	6670	6670	6670

NOTES

Lane 5 and Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 4 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design & Year	2015 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	Poinsettia Lane to Palomar Airport Road
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1700
volume on (veh/hr)	700
volume off (veh/hr)	2210
segment volume (veh/hr)	8060
approach volume (veh/hr)	7360

Calculated Data

Thru Volume	Value
10%	806

Segment Lengths

merge length (m)	150
fwy segment length (m)	800
diverge length (m)	750

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1656	1656
Lane 2	1656	1656
Lane 3	1656	1656
Lane 4	1656	1656
Lane 5	736	1436
	7360	8060

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	750 m	600 m	450 m	300 m	150 m	0 m
Lane 1	1559	1465	1377	1289	1162	1217
Lane 2	1559	1465	1377	1289	1162	1217
Lane 3	1559	1465	1377	1289	1162	1217
Lane 4	1559	1465	1377	1289	1162	1217
Lane 5	1823	1381	1226	1226	1381	983
Aux lane	0	818	1326	1680	2033	2210
	8060	8060	8060	8060	8060	8060

NOTES

Lane 5 and Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Poinsettia Lane to Palomar Airport Road
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)								
Number	0	150	150-950*	950	1100	1250	1400	1550	1700
1	1330	1330	1334	1257	1167	1082	997	971	971
2	1330	1330	1334	1257	1167	1082	997	971	971
3	1330	1330	1334	1257	1167	1082	997	971	971
4	1330	1330	1334	1257	1167	1082	997	971	971
5	591	1351	1334	**1642**	1218	1070	1070	837	667
					784	1272	1611	**1950**	**2120**

760
on ramp traffic volume

2120
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Poinsettia Lane to Palomar Airport Road
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)								
Number	0	150	150-950*	950	1100	1250	1400	1550	1700
1	1656	1656	1612	1559	1465	1377	1289	1162	1217
2	1656	1656	1612	1559	1465	1377	1289	1162	1217
3	1656	1656	1612	1559	1465	1377	1289	1162	1217
4	1656	1656	1612	1559	1465	1377	1289	1162	1217
5	736	1436	1612	**1823**	1381	1226	1226	1381	983
					818	1326	**1680**	**2033**	**2210**

700
on ramp traffic volume

2210
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design & Year	2015 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	Palomar Airport Road to Cannon Road
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	5
weave length (m)	900
volume on (veh/hr)	1600
volume off (veh/hr)	990
total volume (veh/hr)	6150

Calculated Data

Thru Volume	Value
10%	356

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	900 m
Lane 1	977	935	933	993	1041	1089	1121
Lane 2	977	935	933	993	1041	1089	1121
Lane 3	977	935	933	993	1041	1089	1121
Lane 4	977	935	933	993	1041	1089	1121
Lane 5	643	984	1482	1344	1120	835	676
Aux lane	1600	1428	938	834	864	959	990
	6150	6150	6150	6150	6150	6150	6150

NOTES

Aux Lane and Lane 5 not to exceed 1800 veh/hr

Lanes 1 through 4 not to exceed 2000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design & Year	2015 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	Palomar Airport Road to Cannon Road
Time Duration	PM peak
Analysis Type	Weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	5
weave length (m)	900
volume on (veh/hr)	2020
volume off (veh/hr)	670
total volume (veh/hr)	7870

Calculated Data

Thru Volume	Value
10%	518

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	900 m
Lane 1	1284	1256	1278	1377	1462	1529	1570
Lane 2	1284	1256	1278	1377	1462	1529	1570
Lane 3	1284	1256	1278	1377	1462	1529	1570
Lane 4	1284	1256	1278	1377	1462	1529	1570
Lane 5	712	1177	1824	1655	1373	1077	922
Aux lane	2020	1669	935	705	651	677	670
	7870	7870	7870	7870	7870	7870	7870

NOTES

Aux Lane and Lane 5 not to exceed 1800 veh/hr

Lanes 1 through 4 not to exceed 2000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Palomar Airport Road to Cannon Road
Time Duration	AM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	750	900
1	977	935	933	993	1041	1089	1121
2	977	935	933	993	1041	1089	1121
3	977	935	933	993	1041	1089	1121
4	977	935	933	993	1041	1089	1121
5	643	984	1482	1344	1120	835	676
	1600	1428	938	834	864	959	990

1600
on ramp traffic volume

990
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Palomar Airport Road to Cannon Road
Time Duration	PM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	750	900
1	1284	1256	1278	1377	1462	1529	1570
2	1284	1256	1278	1377	1462	1529	1570
3	1284	1256	1278	1377	1462	1529	1570
4	1284	1256	1278	1377	1462	1529	1570
5	712	1177	**1824**	**1655**	**1373**	1077	922
	2020	**1669**	935	705	651	677	670

2020
on ramp traffic volume

670
off ramp traffic volume

Design & Year	2015 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	Cannon Road to Tamarack Avenue
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1450
volume on (veh/hr)	800
volume off (veh/hr)	650
segment volume (veh/hr)	5960

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1032	1032
Lane 2	1032	1032
Lane 3	1032	1032
Lane 4	1032	1032
Lane 5	1032	1112
Aux lane	800	720
	5960	5960

Segment Lengths

merge length (m)	150
fwy segment length (m)	1150
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1062	1062
Lane 2	1062	1062
Lane 3	1062	1062
Lane 4	1062	1062
Lane 5	1062	1062
Aux lane	650	650
	5960	5960

NOTES

Merge: Auxiliary Lane & Lane 5 not to exceed 1800 veh/hr; Lanes 1-4 not to exceed 2,000 veh/hr

Diverge: Auxiliary Lane not to exceed 1800 veh/hr; Lanes 1-5 not to exceed 2,000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design & Year	2015 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	Cannon Road to Tamarack Avenue
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1450
volume on (veh/hr)	1200
volume off (veh/hr)	860
segment volume (veh/hr)	8420

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1444	1444
Lane 2	1444	1444
Lane 3	1444	1444
Lane 4	1444	1444
Lane 5	1444	1564
Aux lane	1200	1080
	8420	8420

Segment Lengths

merge length (m)	150
fwy segment length (m)	1150
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1512	1512
Lane 2	1512	1512
Lane 3	1512	1512
Lane 4	1512	1512
Lane 5	1512	1512
Aux lane	860	860
	8420	8420

NOTES

Merge: Auxiliary Lane & Lane 5 not to exceed 1800 veh/hr; Lanes 1-4 not to exceed 2,000 veh/hr

Diverge: Auxiliary Lane not to exceed 1800 veh/hr; Lanes 1-5 not to exceed 2,000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Distance from on-ramp	0 m	150 m	300 m	450 m	600 m	750 m
% on	0	100	60	30	19	14
% off	46	63	79	95	100	0

from distribution calc excel sheet

Distance from on-ramp	0 m	150 m	300 m	450 m	600 m	650 m
% on	0	100	60	30	19	17.3
% off	57.3	73.6	89.6	98.3	100	0

from graphs A and B of LOS D method hand out

Distance from on-ramp	0 m	150 m	300 m	450 m	600 m	650
	0 ft	492	984	1476	1969	2133
% on	0	100	60	29	19	17
m	650	500	350	200	50	0
ft	2133	1640	1148	656	164	0
% off	58	73	90	98	100	0

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Cannon Road to Tamarack Avenue
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300-1300*	1300	1450
1	1032	1032	1119	1062	1062
2	1032	1032	1119	1062	1062
3	1032	1032	1119	1062	1062
4	1032	1032	1119	1062	1062
5	1032	1112	1119	1062	1062
	800	720	367	650	650

800
on ramp traffic volume

650
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Cannon Road to Tamarack Avenue
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300-1300*	1300	1450
1	1444	1444	1594	1512	1512
2	1444	1444	1594	1512	1512
3	1444	1444	1594	1512	1512
4	1444	1444	1594	1512	1512
5	1444	1564	1594	1512	1512
	1200	1080	450	860	860

1200
on ramp traffic volume

860
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design & Year	2015 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	Tamarack Avenue to Carlsbad Village Drive
Time Duration	AM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	5
weave length (m)	850
volume on (veh/hr)	470
volume off (veh/hr)	680
total volume (veh/hr)	5780

Calculated Data

Thru Volume	Value
10%	463

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	850 m
Lane 1	1153	1124	1143	1151	1143	1143	1145
Lane 2	1153	1124	1143	1151	1143	1143	1145
Lane 3	1153	1124	1143	1151	1143	1143	1145
Lane 4	1153	1124	1143	1151	1143	1143	1145
Lane 5	699	1285	1209	1177	1210	1209	519
	5310	5780	5780	5780	5780	5780	5100

NOTES

Lane 5 not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2200 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design & Year	2015 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	Tamarack Avenue to Carlsbad Village Drive
Time Duration	PM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	5
weave length (m)	850
volume on (veh/hr)	570
volume off (veh/hr)	810
total volume (veh/hr)	8130

Calculated Data

Thru Volume	Value
10%	675

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	850 m
Lane 1	1651	1617	1640	1650	1641	1641	1644
Lane 2	1651	1617	1640	1650	1641	1641	1644
Lane 3	1651	1617	1640	1650	1641	1641	1644
Lane 4	1651	1617	1640	1650	1641	1641	1644
Lane 5	956	1664	1570	1529	1567	1565	743
	7560	8130	8130	8130	8130	8130	7320

NOTES

Lane 5 not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Tamarack Ave to Carlsbad Village Dr
Time Duration	AM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)						
	0	150	300	450	600	750	850
1	1153	1124	1143	1151	1143	1143	1145
2	1153	1124	1143	1151	1143	1143	1145
3	1153	1124	1143	1151	1143	1143	1145
4	1153	1124	1143	1151	1143	1143	1145
5	699	1285	1209	1177	1210	1209	519

470
on ramp traffic volume

680
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Tamarack Ave to Carlsbad Village Dr
Time Duration	PM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)						
	0	150	300	450	600	750	850
1	1651	1617	1640	1650	1641	1641	1644
2	1651	1617	1640	1650	1641	1641	1644
3	1651	1617	1640	1650	1641	1641	1644
4	1651	1617	1640	1650	1641	1641	1644
5	956	**1664**	**1570**	1529	**1567**	1565	743

570
on ramp traffic volume

810
off ramp traffic volume

Design & Year	2015 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	Carlsbad Village Drive to Las Flores Drive
Time Duration	AM peak
Analysis Type	weave analysis with lane addition

Data Entry

Parameter	Input Value
number of lanes	5 to 6
weave length (m)	350
volume on (veh/hr)	520
volume off (veh/hr)	220
total volume (veh/hr)	5620

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	350 m
Lane 1	1098	1009	948	948
Lane 2	1098	1009	948	948
Lane 3	1098	1009	948	948
Lane 4	1098	1009	948	948
Lane 5	708	814	948	948
Lane 6	520	769	882	661
	5620	5620	5620	5400

6 thru lanes at Las Flores
5 thru lanes at Carlsbad Village Drive

Design & Year	2015 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	Carlsbad Village Drive to Las Flores Drive
Time Duration	PM peak
Analysis Type	weave analysis with lane addition

Data Entry

Parameter	Input Value
number of lanes	6 to 5
weave length (m)	350
volume on (veh/hr)	600
volume off (veh/hr)	520
total volume (veh/hr)	7920

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	350 m
Lane 1	1530	1403	1301	1299
Lane 2	1530	1403	1301	1299
Lane 3	1530	1403	1301	1299
Lane 4	1530	1403	1301	1299
Lane 5	1200	1136	1301	1299
Lane 6	600	1172	1413	906
	7920	7920	7920	7400

6 thru lanes at Las Flores
5 thru lanes at Carlsbad Village Drive

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Carlsbad Village Dr to Las Flores Dr
Time Duration	AM peak
Analysis Type	weave analysis with lane addition

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	350
1	1098	1009	948	948
2	1098	1009	948	948
3	1098	1009	948	948
4	1098	1009	948	948
5	708	814	948	948
	520	769	882	661

520
on ramp traffic volume

220
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Carlsbad Village Dr to Las Flores Dr
Time Duration	PM peak
Analysis Type	weave analysis with lane addition

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	350
1	1530	1403	1301	1299
2	1530	1403	1301	1299
3	1530	1403	1301	1299
4	1530	1403	1301	1299
5	1200	1136	1301	1299
	600	1172	1413	906

600
on ramp traffic volume

520
off ramp traffic volume

Design & Year	2015 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	Las Flores Drive to SR-78
Time Duration	AM peak
Analysis Type	

Data Entry

Parameter	Input Value
number of lanes	6 to 4
weave length (m)	600
volume on (veh/hr)	450
WB volume off (veh/hr)	310
EB volume off (veh/hr)	1930
total volume (veh/hr)	5850

Calculated Data

Thru Volume	Value
10%	585

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	350 m	450 m	600 m
Lane 1	924	1022	1033	1014	1008	1008
Lane 2	924	1022	1033	1014	1008	1008
Lane 3	924	1022	1033	1014	1008	1008
Lane 4	924	1022	1033	880	895	585
Lane 5	924	801	899	869	0	0
Lane 6	778	962	817	1062	0	0
	5400	5850	5850	5850	3920	3610

NOTES

0 - 350 meters: Lanes 4 - 6 not to exceed 1800 veh/hr

0 - 350 meters: Lanes 1 - 3 not to exceed 2200 veh/hr

450 - 600 meters: Lane 4 not to exceed 1800 veh/hr

450 - 600 meters: Lanes 1-3 not to exceed 2200 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design & Year	2015 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	Las Flores Drive to SR-78
Time Duration	PM peak
Analysis Type	

Data Entry

Parameter	Input Value
number of lanes	6 to 4
weave length (m)	600
volume on (veh/hr)	710
WB volume off (veh/hr)	370
EB volume off (veh/hr)	3300
total volume (veh/hr)	8110

Calculated Data

Thru Volume	Value
10%	811

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	350 m	450 m	600 m
Lane 1	1252	1293	1310	1216	1210	1210
Lane 2	1252	1293	1310	1216	1210	1210
Lane 3	1252	1293	1310	1216	1210	1210
Lane 4	1252	1293	1310	1163	1181	811
Lane 5	1252	1361	1480	1485	0	0
Lane 6	1141	1576	1391	1815	0	0
	7400	8110	8110	8110	4810	4440

NOTES

0 - 350 meters: Lanes 4 - 6 not to exceed 1800 veh/hr

0 - 350 meters: Lanes 1 - 3 not to exceed 2000 veh/hr

450 - 600 meters: Lane 4 not to exceed 1800 veh/hr

450 - 600 meters: Lanes 1-3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Las Flores Drive to SR-78
Time Duration	AM peak
Analysis Type	

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	350	450	600
1	924	1022	1033	1014	1008	1008
2	924	1022	1033	1014	1008	1008
3	924	1022	1033	1014	1008	1008
4	924	1022	1033	880	895	585
5	924	801	899	869		
6	778	962	817	1062		

450
on ramp traffic volume

1930
EB SR-78 off ramp traffic volume

310
WB SR-78 off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Las Flores Drive to SR-78
Time Duration	PM peak
Analysis Type	

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	350	450	600
1	1252	1293	1310	1216	1210	1210
2	1252	1293	1310	1216	1210	1210
3	1252	1293	1310	1216	1210	1210
4	1252	1293	1310	1163	1181	811
5	1252	1361	1480	1485		
6	1141	1576	1391	1815		

710
on ramp traffic volume

3300
EB SR-78 off ramp traffic volume

370
WB SR-78 off ramp traffic volume

Design & Year	2015 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	SR-78 to Oceanside BLVD
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4 to 6 to 5
weave length (m)	1400
SR-78 volume on (veh/hr)	2350
California Street volume on (veh/hr)	240
volume off (veh/hr)	860
total volume (veh/hr)	6250

Calculated Data

Thru Volume	Value
10%	625

Segment Lengths

merge length (m)	150
fwy segment length (m)	950
diverge length (m)	300

Merge

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1090	1002
Lane 2	1090	1002
Lane 3	1090	1002
Lane 4	390	1002
Lane 5	1175	1002
Lane 6	1175	1002
	6010	6010

Diverge

Traffic Volume Distribution (vehicles per hour)

Distance	300 m	150 m	0 m
Lane 1	1073	1062	1131
Lane 2	1073	1062	1131
Lane 3	1073	1062	1131
Lane 4	1073	1062	1131
Lane 5	876	970	865
Lane 6	842	1031	860
	6010	6250	6250

NOTES

Lane 6 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 5 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 5 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design & Year	2015 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	SR-78 to Oceanside BLVD
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4 to 6 to 5
weave length (m)	1400
SR-78 volume on (veh/hr)	2420
California Street volume on (veh/hr)	270
volume off (veh/hr)	1400
total volume (veh/hr)	7220

Calculated Data

Thru Volume	Value
10%	722

Segment Lengths

merge length (m)	150
fwy segment length (m)	950
diverge length (m)	300

Merge

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1350	1158
Lane 2	1350	1158
Lane 3	1350	1158
Lane 4	480	1158
Lane 5	1210	1158
Lane 6	1210	1158
	6950	6950

Diverge

Traffic Volume Distribution (vehicles per hour)

Distance	300 m	150 m	0 m
Lane 1	1144	1127	1207
Lane 2	1144	1127	1207
Lane 3	1144	1127	1207
Lane 4	1144	1127	1207
Lane 5	1143	1155	992
Lane 6	1230	1558	1400
	6950	7220	7220

NOTES

Lane 6 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 5 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 5 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	SR-78 to Oceanside Blvd
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1100*	1100	1250	1400
1	1090	1002	1002	1073	1062	1131
2	1090	1002	1002	1073	1062	1131
3	1090	1002	1002	1073	1062	1131
4	390	1002	1002	1073	1062	1131
	1175	1002	1002	876	970	865
	1175	1002	1002	842	1031	860

2350
on ramp traffic volume
(SR-78)

240
on ramp traffic volume
(California Street)

860
off ramp traffic volume
(Oceanside BLVD)

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	SR-78 to Oceanside Blvd
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1100*	1100	1250	1400
1	1350	1158	1158	1144	1127	1207
2	1350	1158	1158	1144	1127	1207
3	1350	1158	1158	1144	1127	1207
4	480	1158	1158	1144	1127	1207
	1210	1158	1158	1143	1155	992
	1210	1158	1158	1230	1558	1400

2420
on ramp traffic volume
(SR-78)

270
on ramp traffic volume
(California Street)

1400
off ramp traffic volume
(Oceanside BLVD)

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design & Year	2015 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	Oceanside Blvd to Mission Ave
Time Duration	AM peak
Analysis Type	weave analysis with lane drop

Data Entry

Parameter	Input Value
number of lanes	5 to 4
total segment length (m)	600
volume on (veh/hr)	400
volume off (veh/hr)	1280
segment volume (veh/hr)	6270

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m
Lane 1	1206	1151	1411	1377	1397
Lane 2	1206	1151	1411	1377	1397
Lane 3	1206	1151	1411	1377	1397
Lane 4	1206	1151	887	895	799
Lane 5	1048	1665	1151	1244	1280
	5870	6270	6270	6270	6270

Calculated Data

Thru Volume	Value
10%	459

NOTES

Lane 5 not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2200 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design & Year	2015 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	Oceanside Blvd to Mission Ave
Time Duration	PM peak
Analysis Type	weave analysis with lane drop

Data Entry

Parameter	Input Value
number of lanes	5 to 4
total segment length (m)	600
volume on (veh/hr)	480
volume off (veh/hr)	1850
segment volume (veh/hr)	6700

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m
Lane 1	1353	1154	1363	1306	1345
Lane 2	1353	1154	1363	1306	1345
Lane 3	1353	1154	1363	1306	1345
Lane 4	1353	1154	982	992	814
Lane 5	1288	2083	1630	1791	1850
	6700	6700	6700	6700	6700

Calculated Data

Thru Volume	Value
10%	437

NOTES

Lane 5 not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Oceanside Blvd to Mission Ave
Time Duration	AM peak
Analysis Type	weave analysis with lane drop

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600
1	1206	1151	1411	1377	1397
2	1206	1151	1411	1377	1397
3	1206	1151	1411	1377	1397
4	1206	1151	887	895	799
5	1048	**1665**	1151	1244	1280

400
on ramp traffic volume

1280
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Oceanside Blvd to Mission Ave
Time Duration	PM peak
Analysis Type	weave analysis with lane drop

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600
1	1353	1154	1363	1306	1345
2	1353	1154	1363	1306	1345
3	1353	1154	1363	1306	1345
4	1353	1154	982	992	814
5	1288	**2083**	**1630**	**1791**	**1850**

480
on ramp traffic volume

1850
off ramp traffic volume

Design & Year	2015 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	Mission Ave to SR-76
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	450
volume on (veh/hr)	720
volume off (veh/hr)	1560
segment volume (veh/hr)	5710

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m
Lane 1	1138	1055	1091	1166
Lane 2	1138	1055	1091	1166
Lane 3	1138	1055	1091	1166
Lane 4	1575	1310	950	653
Aux lane	720	1235	1486	1560
	5710	5710	5710	5710

Calculated Data

Thru Volume	Value
10%	343

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2200 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design & Year	2015 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	Mission Ave to SR-76
Time Duration	PM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	450
volume on (veh/hr)	410
volume off (veh/hr)	2030
segment volume (veh/hr)	5260

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m
Lane 1	988	880	882	924
Lane 2	988	880	882	924
Lane 3	988	880	882	924
Lane 4	1886	1198	719	458
Aux lane	410	1422	1896	2030
	5260	5260	5260	5260

Calculated Data

Thru Volume	Value
10%	282

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Mission Avenue to SR-76
Time Duration	AM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450
1	1138	1055	1091	1166
2	1138	1055	1091	1166
3	1138	1055	1091	1166
4	1575	1310	950	653
	720	1235	1486	1560

720 on ramp traffic volume

1560 off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Mission Avenue to SR-76
Time Duration	PM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450
1	988	880	882	924
2	988	880	882	924
3	988	880	882	924
4	**1886**	1198	719	458
	410	1422	**1896**	**2030**

410 on ramp traffic volume

2030 off ramp traffic volume

Design & Year	2015 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	SR-76 to Harbor
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	700
volume on (veh/hr)	2050
volume off WB (veh/hr)	350
volume off EB (veh/hr)	2000
segment volume (veh/hr)	6200

Calculated Data

Thru Volume	Value
10%	180

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	500 m	700 m
Lane 1	797	690	834	1046	1050
Lane 2	797	690	834	1046	1050
Lane 3	797	690	834	1046	1050
Lane 4	1760	2153	1714	1062	700
Aux lane	2050	1978	1984	1340	0
Aux lane	0	0	0	660	0
	6200	6200	6200	6200	3850

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2200 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design & Year	2015 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	SR-76 to Harbor
Time Duration	PM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	700
volume on (veh/hr)	1450
volume off WB (veh/hr)	270
volume off EB (veh/hr)	1100
segment volume (veh/hr)	4680

Calculated Data

Thru Volume	Value
10%	186

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	500 m	700 m
Lane 1	725	666	774	924	895
Lane 2	725	666	774	924	895
Lane 3	725	666	774	924	895
Lane 4	1055	1481	1246	810	625
Aux lane	1450	1201	1114	737	0
Aux lane	0	0	0	363	0
	4680	4680	4680	4680	3310

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	SR-76 to Harbor
Time Duration	AM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	500	700
1	797	690	834	1046	1050
2	797	690	834	1046	1050
3	797	690	834	1046	1050
4	**1760**	**2153**	**1714**	1062	700
	2050	**1978**	**1984**	1340	

2050 on ramp traffic volume

660 EB off ramp traffic volume

2000

350 WB off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	SR-76 to Harbor
Time Duration	PM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	500	700
1	725	666	774	924	895
2	725	666	774	924	895
3	725	666	774	924	895
4	1055	1481	1246	810	625
	1450	1201	1114	737	

1450 on ramp traffic volume

363 off ramp traffic volume

1100

270 off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	SR-76 to Harbor
Time Duration	AM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	500	700
1	0	0	0	0	0
2	0	0	0	0	0
3	0	0	0	0	0
4	**0**	**0**	0	0	0
	0	**0**	**0**	0	

0 on ramp traffic volume
(ramp metered down from 2180)

0 EB off ramp traffic volume

0

0 WB off ramp traffic volume

SB 2015 10+4 Traffic Analysis
May 2007

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	Genesee Ave to La Jolla Village Drive
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	950
volume on (veh/hr)	500
volume off (veh/hr)	1600
segment volume (veh/hr)	6950
segment volume (veh/hr)	6430

Segment Lengths

merge length (m)	150
fwy segment length (m)	650
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1451	1451
Lane 2	1451	1451
Lane 3	1451	1451
Lane 4	1451	1451
Lane 5	645	770
Aux Lane	500	375
	6950	6950

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	966	966
Lane 2	966	966
Lane 3	966	966
Lane 4	966	966
Lane 5	966	966
Aux Lane	1600	1600
	6430	6430

NOTES

Lane 5 and Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	Genesee Ave to La Jolla Village Drive
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	950
volume on (veh/hr)	1920
volume off (veh/hr)	1030
segment volume (veh/hr)	8500
segment volume (veh/hr)	8150

Segment Lengths

merge length (m)	150
fwy segment length (m)	650
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1481	1481
Lane 2	1481	1481
Lane 3	1481	1481
Lane 4	1481	1481
Lane 5	658	1138
Aux Lane	1920	1440
	8500	8500

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1424	1424
Lane 2	1424	1424
Lane 3	1424	1424
Lane 4	1424	1424
Lane 5	1424	1424
Aux Lane	1030	1030
	8150	8150

NOTES

Lane 5 and Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

(off ramp traffic percentage in weave lane)

Percentage of Traffic Exiting (in outter most lane) per distance from on ramp

distance (m)	0	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
900	29	34.7	40.3	46	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0
850	34.7	40.3	46	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0	
800	40.3	46	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0		
750	46	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0			
700	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0				
650	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0					
600	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0						
550	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0							
500	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0								
450	79	84.3	89.6	95	96.7	98.3	100	100	100	0									
400	84.3	89.6	95	96.7	98.3	100	100	100	0										
350	89.6	95	96.7	98.3	100	100	100	0											
300	95	96.7	98.3	100	100	100	0												

Design & Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	Harbor to SR-76
Time Duration	AM peak
Analysis Type	weave with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	700
volume on (veh/hr)	1060
volume off WB (veh/hr)	230
volume off EB (veh/hr)	1100
total volume (veh/hr)	4610

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	500 m	700 m
Lane 1	858	806	796	833	861	931
Lane 2	858	806	796	833	861	931
Lane 3	858	806	796	833	861	931
Lane 4	975	984	1107	950	843	487
Aux Lane	1060	1209	1115	1161	955	1100
	4610	4610	4610	4610	4380	4380

Calculated Data

Thru Volume	Value
10%	222

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	Harbor to SR-76
Time Duration	PM peak
Analysis Type	weave with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	700
volume on (veh/hr)	1760
volume off WB (veh/hr)	260
volume off EB (veh/hr)	1490
total volume (veh/hr)	6980

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	500 m	700 m
Lane 1	1297	1229	1233	1312	1360	1481
Lane 2	1297	1229	1233	1312	1360	1481
Lane 3	1297	1229	1233	1312	1360	1481
Lane 4	1329	1486	1742	1493	1327	787
Aux Lane	1760	1806	1538	1551	1313	1490
	6980	6980	6980	6980	6720	6720

Calculated Data

Thru Volume	Value
10%	347

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Harbor to SR-76
Time Duration	AM peak
Analysis Type	weave with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	500	700
1	858	806	796	833	861	931
2	858	806	796	833	861	931
3	858	806	796	833	861	931
4	975	984	1107	950	843	487
	1060	1209	1115	1161	955	1100

1060 on ramp traffic volume

230 WB off ramp traffic volume

1100 EB off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Harbor to SR-76
Time Duration	PM peak
Analysis Type	weave with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	500	700
1	1297	1229	1233	1312	1360	1481
2	1297	1229	1233	1312	1360	1481
3	1297	1229	1233	1312	1360	1481
4	1329	1486	**1742**	1493	1327	787
	1760	**1806**	1538	1551	1313	1490

1760 on ramp traffic volume

260 WB off ramp traffic volume

1490 EB off ramp traffic volume

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	SR-76 to Mission Ave
Time Duration	AM peak
Analysis Type	weave with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	400
volume on (veh/hr)	2200
volume off (veh/hr)	360
total volume (veh/hr)	5480

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	400 m
Lane 1	895	890	1001	1235
Lane 2	895	890	1001	1235
Lane 3	895	890	1001	1235
Lane 4	594	1936	1923	1414
Aux lane	2200	872	555	360
	5480	5480	5480	5480

Calculated Data

Thru Volume	Value
10%	292

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	SR-76 to Mission Ave
Time Duration	PM peak
Analysis Type	weave with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	400
volume on (veh/hr)	1670
volume off (veh/hr)	540
total volume (veh/hr)	5680

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	400 m
Lane 1	1070	1063	1136	1314
Lane 2	1070	1063	1136	1314
Lane 3	1070	1063	1136	1314
Lane 4	801	1673	1620	1199
Aux lane	1670	820	654	540
	5680	5680	5680	5680

Calculated Data

Thru Volume	Value
10%	347

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	SR-76 to Mission Avenue
Time Duration	AM peak
Analysis Type	weave with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	400
1	895	890	1001	1235
2	895	890	1001	1235
3	895	890	1001	1235
4	594	1936	1923	1414
	2200	872	555	360

2200
on ramp traffic volume

360
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	SR-76 to Mission Avenue
Time Duration	PM peak
Analysis Type	weave with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	400
1	1070	1063	1136	1314
2	1070	1063	1136	1314
3	1070	1063	1136	1314
4	801	**1673**	**1620**	1199
	1670	820	654	540

1670
on ramp traffic volume

540
off ramp traffic volume

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	Mission Ave to Oceanside Blvd
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment

Data Entry

Parameter	Input Value
number of lanes	4 to 5
weave length (m)	1050
volume on (veh/hr)	1300
volume off (veh/hr)	350
total volume (veh/hr)	6020

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1180	1204
Lane 2	1180	1204
Lane 3	1180	1204
Lane 4	1180	1204
Lane 5	1300	1204
	6020	6020

Segment Lengths

merge length (m)	550
fwy segment length (m)	350
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1204	1204
Lane 2	1204	1204
Lane 3	1204	1204
Lane 4	1204	1204
Lane 5	1204	854
	6020	5670

NOTES

Lane 5 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	Mission Ave to Oceanside Blvd
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment

Data Entry

Parameter	Input Value
number of lanes	4 to 5
weave length (m)	1050
volume on (veh/hr)	1430
volume off (veh/hr)	630
total volume (veh/hr)	6210

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1195	1242
Lane 2	1195	1242
Lane 3	1195	1242
Lane 4	1195	1242
Lane 5	1430	1242
	6210	6210

Segment Lengths

merge length (m)	550
fwy segment length (m)	350
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1242	1242
Lane 2	1242	1242
Lane 3	1242	1242
Lane 4	1242	1242
Lane 5	1242	612
	6210	5580

NOTES

Lane 5 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Mission Ave to Oceanside Blvd
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)				
Number	0	150	150-900*	900	1050
1	1180	1204	1204	1204	1204
2	1180	1204	1204	1204	1204
3	1180	1204	1204	1204	1204
4	1180	1204	1204	1204	1204
	1300	1204	1204	1204	854

1300
WB on ramp traffic volume

350
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Mission Ave to Oceanside Blvd
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)				
Number	0	150	150-900*	900	1050
1	1195	1242	1242	1242	1242
2	1195	1242	1242	1242	1242
3	1195	1242	1242	1242	1242
4	1195	1242	1242	1242	1242
	1430	1242	1242	1242	612

1430
WB on ramp traffic volume

630
off ramp traffic volume

nnnnnn nnnnnn nnnnnn

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	Oceanside Blvd to Cassidy St
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment

Data Entry

Parameter	Input Value
number of lanes	5 to 6
weave length (m)	1200
volume on (veh/hr)	1140
volume off (veh/hr)	250
total volume (veh/hr)	6810

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1134	1054
Lane 2	1134	1054
Lane 3	1134	1054
Lane 4	1134	1054
Lane 5	1134	1054
Lane 6	1140	1540
	6810	6810

Segment Lengths

merge length (m)	150
fwy segment length (m)	900
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1135	1135
Lane 2	1135	1135
Lane 3	1135	1135
Lane 4	1135	1135
Lane 5	1135	1135
Lane 6	1135	885
	6810	6560

NOTES

Lane 6 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 5 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 5 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (6 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	Oceanside Blvd to Cassidy St
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment

Data Entry

Parameter	Input Value
number of lanes	5 to 6
weave length (m)	1200
volume on (veh/hr)	880
volume off (veh/hr)	280
total volume (veh/hr)	6460

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1116	1036
Lane 2	1116	1036
Lane 3	1116	1036
Lane 4	1116	1036
Lane 5	1116	1036
Lane 6	880	1280
	6460	6460

Segment Lengths

merge length (m)	150
fwy segment length (m)	900
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1077	1077
Lane 2	1077	1077
Lane 3	1077	1077
Lane 4	1077	1077
Lane 5	1077	1077
Lane 6	1077	797
	6460	6180

NOTES

Lane 6 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 5 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 5 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (6 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Oceanside Blvd to Cassidy St
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)				
Number	0	150	150-1050*	1050	1200
1	1134	1054	1135	1135	1135
2	1134	1054	1135	1135	1135
3	1134	1054	1135	1135	1135
4	1134	1054	1135	1135	1135
5	1134	1054	1135	1135	1135
	1140	1540	1135	1135	885

1140
on ramp traffic volume

250
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Oceanside Blvd to Cassidy St
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)				
Number	0	150	150-1050*	1050	1200
1	1116	1036	1077	1077	1077
2	1116	1036	1077	1077	1077
3	1116	1036	1077	1077	1077
4	1116	1036	1077	1077	1077
5	1116	1036	1077	1077	1077
	880	1280	1077	1077	797

880
on ramp traffic volume

280
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	Cassidy St to SR-78
Time Duration	AM peak
Analysis Type	weave with 2 lane drop

Data Entry

Parameter	Input Value
number of lanes	6 to 4
weave length (m)	300
volume on (veh/hr)	410
volume off (veh/hr)	2580
total volume (veh/hr)	6970

Calculated Data

Thru Volume	Value
10%	697

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m
Lane 1	1069	1014	1101
Lane 2	1069	1014	1101
Lane 3	1069	1014	1101
Lane 4	1069	1014	1087
Lane 5	1069	1471	1161
Lane 6	1213	1442	1419
	6560	6970	6970

NOTES

Lanes 5 and 6 not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	Cassidy St to SR-78
Time Duration	PM peak
Analysis Type	weave with 2 lane drop

Data Entry

Parameter	Input Value
number of lanes	6 to 4
weave length (m)	300
volume on (veh/hr)	390
volume off (veh/hr)	2330
total volume (veh/hr)	6570

Calculated Data

Thru Volume	Value
10%	657

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m
Lane 1	1011	973	1071
Lane 2	1011	973	1071
Lane 3	1011	973	1071
Lane 4	1011	973	1028
Lane 5	1011	1356	1049
Lane 6	1123	1322	1282
	6180	6570	6570

NOTES

Lanes 5 and 6 not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Cassidy St to SR-78
Time Duration	AM peak
Analysis Type	weave with 2 lane drop

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300
1	1069	1014	1101
2	1069	1014	1101
3	1069	1014	1101
4	1069	1014	1087
5	1069	1471	1161
6	1213	1442	1419

410
on ramp traffic volume

2580
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Cassidy St to SR-78
Time Duration	PM peak
Analysis Type	weave with 2 lane drop

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300
1	1011	973	1071
2	1011	973	1071
3	1011	973	1071
4	1011	973	1028
5	1011	1356	1049
6	1123	1322	1282

390
on ramp traffic volume

2330
off ramp traffic volume

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	SR-78 to Las Flores Drive
Time Duration	AM peak
Analysis Type	weave with 2 lane addition

Data Entry

Parameter	Input Value
number of lanes	4 to 6
weave length (m)	250
volume on (veh/hr)	3352
volume off (veh/hr)	370
total volume (veh/hr)	7690

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	250 m
Lane 1	1066	1220	1282
Lane 2	1066	1220	1282
Lane 3	1066	1220	1282
Lane 4	1139	1220	1282
Lane 5	1676	1257	1282
Lane 6	1676	1553	912
	7690	7690	7320

Calculated Data

Thru Volume	Value
10%	769

NOTES

Lanes 4 - 6 not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	SR-78 to Las Flores Drive
Time Duration	AM peak
Analysis Type	weave with 2 lane addition

Data Entry

Parameter	Input Value
number of lanes	4 to 6
weave length (m)	250
volume on (veh/hr)	2330
volume off (veh/hr)	460
total volume (veh/hr)	6570

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	250 m
Lane 1	1041	1018	1095
Lane 2	1041	1018	1095
Lane 3	1041	1018	1095
Lane 4	1117	1018	1095
Lane 5	1165	1064	1095
Lane 6	1165	1432	635
	6570	6570	6110

Calculated Data

Thru Volume	Value
10%	657

NOTES

Lanes 4 - 6 not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	SR-78 to Las Flores Drive
Time Duration	AM peak
Analysis Type	weave with 2 lane addition

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	250
1	1066	1220	1282
2	1066	1220	1282
3	1066	1220	1282
4	1139	1220	1282
	1676	1257	1282
	1676	**1553**	912

3352
on ramp traffic volume

370
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	SR-78 to Las Flores Drive
Time Duration	PM peak
Analysis Type	weave with 2 lane addition

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	250
1	1041	1018	1095
2	1041	1018	1095
3	1041	1018	1095
4	1117	1018	1095
	1165	1064	1095
	1165	1432	635

2330
on ramp traffic volume

460
off ramp traffic volume

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	Las Flores Dr to Carlsbad Village Dr
Time Duration	AM peak
Analysis Type	weave analysis with lane drop

Data Entry

Parameter	Input Value
number of lanes	6 to 5
weave length (m)	400
volume on (veh/hr)	280
volume off (veh/hr)	500
total volume (veh/hr)	7600

Calculated Data

Thru Volume	Value
10%	682

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	400 m
Lane 1	1243	1231	1345	1537
Lane 2	1243	1231	1345	1537
Lane 3	1243	1231	1345	1537
Lane 4	1243	1231	1345	1537
Lane 5	1243	1231	984	950
Lane 6	1104	1446	1238	500
	7320	7600	7600	7600

6 thru lanes at Las Flores
5 thru lanes at Carlsbad Village Drive

NOTES

Lane 6 not to exceed 1800 veh/hr
Lanes 1 - 5 not to exceed 2000 veh/hr
Lanes 1 - 5 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	Las Flores Dr to Carlsbad Village Dr
Time Duration	PM peak
Analysis Type	weave analysis with lane drop

Data Entry

Parameter	Input Value
number of lanes	6 to 5
weave length (m)	400
volume on (veh/hr)	210
volume off (veh/hr)	630
total volume (veh/hr)	6320

Calculated Data

Thru Volume	Value
10%	548

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	400 m
Lane 1	1006	991	1075	1229
Lane 2	1006	991	1075	1229
Lane 3	1006	991	1075	1229
Lane 4	1006	991	1075	1229
Lane 5	1006	991	800	775
Lane 6	1079	1367	1220	630
	6110	6320	6320	6320

6 thru lanes at Las Flores
5 thru lanes at Carlsbad Village Drive

NOTES

Lane 6 not to exceed 1800 veh/hr
Lanes 1 - 5 not to exceed 2000 veh/hr
Lanes 1 - 5 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Las Flores Dr to Carlsbad Village Dr
Time Duration	AM peak
Analysis Type	weave analysis with lane drop

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	400
1	1243	1231	1345	1537
2	1243	1231	1345	1537
3	1243	1231	1345	1537
4	1243	1231	1345	1537
5	1243	1231	984	950
6	1104	1446	1238	500

280
on ramp traffic volume

500
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Las Flores Dr to Carlsbad Village Dr
Time Duration	PM peak
Analysis Type	weave analysis with lane drop

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	400
1	1006	991	1075	1229
2	1006	991	1075	1229
3	1006	991	1075	1229
4	1006	991	1075	1229
5	1006	991	800	775
6	1079	1367	1220	630

210
on ramp traffic volume

630
off ramp traffic volume

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	Carlsbad Village Dr to Tamarack Ave
Time Duration	AM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	5
weave length (m)	750
volume on (veh/hr)	650
volume off (veh/hr)	400
total volume (veh/hr)	7750

Calculated Data

Thru Volume	Value
10%	670

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m
Lane 1	1562	1545	1594	1626	1639	1647
Lane 2	1562	1545	1594	1626	1639	1647
Lane 3	1562	1545	1594	1626	1639	1647
Lane 4	1562	1545	1594	1626	1639	1647
Lane 5	854	1572	1376	1245	1194	761
	7100	7750	7750	7750	7750	7350

NOTES

Lane 5 not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	Carlsbad Village Dr to Tamarack Ave
Time Duration	PM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	5
weave length (m)	750
volume on (veh/hr)	670
volume off (veh/hr)	530
total volume (veh/hr)	6360

Calculated Data

Thru Volume	Value
10%	516

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m
Lane 1	1233	1210	1256	1285	1297	1305
Lane 2	1233	1210	1256	1285	1297	1305
Lane 3	1233	1210	1256	1285	1297	1305
Lane 4	1233	1210	1256	1285	1297	1305
Lane 5	760	1520	1337	1221	1173	610
	5690	6360	6360	6360	6360	5830

NOTES

Lane 5 not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Carlsbad Village Dr to Tamarack Ave
Time Duration	AM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	750
1	1562	1545	1594	1626	1639	1647
2	1562	1545	1594	1626	1639	1647
3	1562	1545	1594	1626	1639	1647
4	1562	1545	1594	1626	1639	1647
5	854	**1572**	1376	1245	1194	761

650
on ramp traffic volume

400
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Carlsbad Village Dr to Tamarack Ave
Time Duration	PM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	750
1	1233	1210	1256	1285	1297	1305
2	1233	1210	1256	1285	1297	1305
3	1233	1210	1256	1285	1297	1305
4	1233	1210	1256	1285	1297	1305
5	760	1520	1337	1221	1173	610

670
on ramp traffic volume

530
off ramp traffic volume

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	Tamarack Avenue to Cannon Road
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1500
volume on (veh/hr)	870
volume off (veh/hr)	1320
segment volume (veh/hr)	8330

Segment Lengths

merge length (m)	150
fwy segment length (m)	1200
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1558	1558
Lane 2	1558	1558
Lane 3	1558	1558
Lane 4	1558	1558
Lane 5	1228	1315
Aux Lane	870	783
	8330	8330

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1490	1490
Lane 2	1490	1490
Lane 3	1490	1490
Lane 4	1490	1490
Lane 5	1157	1052
Aux lane	1214	1320
	8330	8330

NOTES

Lane 5 and Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	Tamarack Avenue to Cannon Road
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1500
volume on (veh/hr)	760
volume off (veh/hr)	890
segment volume (veh/hr)	6510

Segment Lengths

merge length (m)	150
fwy segment length (m)	1200
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1195	1195
Lane 2	1195	1195
Lane 3	1195	1195
Lane 4	1195	1195
Lane 5	972	1048
Aux Lane	760	684
	6510	6510

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1194	1194
Lane 2	1194	1194
Lane 3	1194	1194
Lane 4	1194	1194
Lane 5	914	843
Aux lane	819	890
	6510	6510

NOTES

Lane 5 and Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Tamarack Avenue to Cannon Road
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1350*	1350	1500
1	1558	1558	1447	1490	1490
2	1558	1558	1447	1490	1490
3	1558	1558	1447	1490	1490
4	1558	1558	1447	1490	1490
5	1228	1315	1447	1157	1052
	870	783	1095	1214	1320

870
on ramp traffic volume

1320
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Tamarack Avenue to Cannon Road
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1350*	1350	1500
1	1195	1195	1137	1194	1194
2	1195	1195	1137	1194	1194
3	1195	1195	1137	1194	1194
4	1195	1195	1137	1194	1194
5	972	1048	1137	914	843
	760	684	825	819	890

760
on ramp traffic volume

890
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	Cannon Road to Palomar Airport Road
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	5
weave length (m)	800
volume on (veh/hr)	570
volume off (veh/hr)	2260
total volume (veh/hr)	7580

Calculated Data

Thru Volume	Value
10%	475

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	800 m
Lane 1	1408	1320	1209	1155	1116	1147	1180
Lane 2	1408	1320	1209	1155	1116	1147	1180
Lane 3	1408	1320	1209	1155	1116	1147	1180
Lane 4	1408	1320	1209	1155	1116	1147	1180
Lane 5	1379	1257	1258	1189	1161	827	600
Aux lane	570	1042	1487	1769	1955	2164	2260
	7580	7580	7580	7580	7580	7580	7580

NOTES

Lane 5 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	Cannon Road to Palomar Airport Road
Time Duration	PM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	5
weave length (m)	800
volume on (veh/hr)	890
volume off (veh/hr)	1720
total volume (veh/hr)	6510

Calculated Data

Thru Volume	Value
10%	390

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	800 m
Lane 1	1136	1080	1006	990	969	1014	1051
Lane 2	1136	1080	1006	990	969	1014	1051
Lane 3	1136	1080	1006	990	969	1014	1051
Lane 4	1136	1080	1006	990	969	1014	1051
Lane 5	1078	1158	1250	1162	1117	795	586
Aux lane	890	1030	1237	1387	1515	1661	1720
	6510	6510	6510	6510	6510	6510	6510

NOTES

Lane 5 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Cannon Road to Palomar Airport Road
Time Duration	AM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)						
Number	0	150	300	450	600	750	800
1	1408	1320	1209	1155	1116	1147	1180
2	1408	1320	1209	1155	1116	1147	1180
3	1408	1320	1209	1155	1116	1147	1180
4	1408	1320	1209	1155	1116	1147	1180
5	1379	1257	1258	1189	1161	827	600
	570	1042	**1487**	**1769**	**1955**	**2164**	**2260**

570
on ramp traffic volume

2260
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Cannon Road to Palomar Airport Road
Time Duration	PM peak
Analysis Type	Weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)						
Number	0	150	300	450	600	750	800
1	1136	1080	1006	990	969	1014	1051
2	1136	1080	1006	990	969	1014	1051
3	1136	1080	1006	990	969	1014	1051
4	1136	1080	1006	990	969	1014	1051
5	1078	1158	1250	1162	1117	795	586
	890	1030	1237	1387	1515	**1661**	**1720**

890
on ramp traffic volume

1720
off ramp traffic volume

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	Palomar Airport Road to Poinsettia Lane
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1950
volume on WB (veh/hr)	1990
volume on EB (veh/hr)	360
volume off (veh/hr)	620
segment volume (veh/hr)	7670
approach volume (veh/hr)	5320

Segment Lengths

merge length (m)	900
fwy segment length (m)	900
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	900 m
Lane 1	1197	1197	1247	1402	1363	1508	1588
Lane 2	1197	1197	1247	1402	1363	1508	1588
Lane 3	1197	1197	1247	1402	1363	1508	1588
Lane 4	1197	1197	1247	1402	1363	1508	1588
Lane 5	532	1030	1686	1762	1717	1506	1320
Acc lane	1990	1493	637	299	499	132	0
	7310	7310	7310	7670	7670	7670	7670

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1534	1534
Lane 2	1534	1534
Lane 3	1534	1534
Lane 4	1534	1534
Lane 5	1534	914
	7670	7050

NOTES

Lane 5 and Acceleration Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	Palomar Airport Road to Poinsettia Lane
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1950
volume on WB (veh/hr)	2080
volume on EB (veh/hr)	450
volume off (veh/hr)	700
segment volume (veh/hr)	7320
approach volume (veh/hr)	4790

Segment Lengths

merge length (m)	900
fwy segment length (m)	900
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	900 m
Lane 1	1078	1078	1130	1309	1238	1404	1495
Lane 2	1078	1078	1130	1309	1238	1404	1495
Lane 3	1078	1078	1130	1309	1238	1404	1495
Lane 4	1078	1078	1130	1309	1238	1404	1495
Lane 5	479	999	1685	1772	1773	1554	1342
Acc lane	2080	1493	666	312	596	152	0
	6870	6803	6870	7320	7320	7320	7320

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1464	1464
Lane 2	1464	1464
Lane 3	1464	1464
Lane 4	1464	1464
Lane 5	1464	764
	7320	6620

NOTES

Lane 5 and Acceleration Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Palomar Airport Road to Poinsettia Lane
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	750	900	900-1800*	1800	1950
1	1197	1197	1247	1402	1363	1508	1588	1534	1534	1534
2	1197	1197	1247	1402	1363	1508	1588	1534	1534	1534
3	1197	1197	1247	1402	1363	1508	1588	1534	1534	1534
4	1197	1197	1247	1402	1363	1508	1588	1534	1534	1534
5	532	1030	**1686**	**1762**	**1717**	1506	1320	1534	1534	914
	1990	1493	637	299	499	132				

1990
on ramp traffic volume

360
on ramp traffic volume

620
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Palomar Airport Road to Poinsettia Lane
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	750	900	900-1800*	1800	1950
1	1078	1078	1130	1309	1238	1404	1495	1464	1464	1464
2	1078	1078	1130	1309	1238	1404	1495	1464	1464	1464
3	1078	1078	1130	1309	1238	1404	1495	1464	1464	1464
4	1078	1078	1130	1309	1238	1404	1495	1464	1464	1464
5	479	999	**1685**	**1772**	**1773**	1554	1342	1464	1464	764
	2080	1493	666	312	596	152				

2080
on ramp traffic volume

450
on ramp traffic volume

700
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	Poinsettia Lane to La Costa Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1700
volume on (veh/hr)	720
volume off (veh/hr)	770
segment volume (veh/hr)	7770
segment volume (veh/hr)	7800

Segment Lengths

merge length (m)	300
fwy segment length (m)	1250
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m
Lane 1	1527	1527	1585
Lane 2	1527	1527	1585
Lane 3	1527	1527	1585
Lane 4	1527	1527	1585
Lane 5	942	1518	1432
Acc Lane	720	144	0
	7770	7770	7770

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1563	1563
Lane 2	1563	1563
Lane 3	1563	1563
Lane 4	1563	1563
Lane 5	1550	780
	7800	7030

NOTES

Lane 5 and Acceleration Lane not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	Poinsettia Lane to La Costa Ave
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1700
volume on (veh/hr)	990
volume off (veh/hr)	910
segment volume (veh/hr)	7610
segment volume (veh/hr)	7650

Segment Lengths

merge length (m)	300
fwy segment length (m)	1250
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m
Lane 1	1441	1441	1520
Lane 2	1441	1441	1520
Lane 3	1441	1441	1520
Lane 4	1441	1441	1520
Lane 5	857	1649	1530
Acc Lane	990	198	0
	7610	7610	7610

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1494	1494
Lane 2	1494	1494
Lane 3	1494	1494
Lane 4	1494	1494
Lane 5	1675	765
	7650	6740

NOTES

Lane 5 and Acceleration Lane not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Poinsettia Lane to La Costa Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)					
Number	0	150	300	300-1550*	1550	1700
1	1527	1527	1585	1554	1563	1563
2	1527	1527	1585	1554	1563	1563
3	1527	1527	1585	1554	1563	1563
4	1527	1527	1585	1554	1563	1563
5	942	1518	1432	1554	1550	780
	720	144				

720
on ramp traffic volume

770
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Poinsettia Lane to La Costa Ave
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)					
Number	0	150	300	300-1550*	1550	1700
1	1441	1441	1520	1522	1494	1494
2	1441	1441	1520	1522	1494	1494
3	1441	1441	1520	1522	1494	1494
4	1441	1441	1520	1522	1494	1494
5	857	1649	1530	1522	1675	765
	990	198				

990
on ramp traffic volume

910
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	La Costa Ave to Leucadia Blvd
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1500
volume on (veh/hr)	1050
volume off (veh/hr)	830
segment volume (veh/hr)	8080
approach volume (veh/hr)	7030

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1582	1582
Lane 2	1582	1582
Lane 3	1582	1582
Lane 4	1582	1582
Lane 5	703	1753
	7030	8080

Segment Lengths

merge length (m)	150
fwy segment length (m)	1200
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1611	1611
Lane 2	1611	1611
Lane 3	1611	1611
Lane 4	1611	1611
Lane 5	1638	808
	8080	7250

NOTES

Lane 5 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	La Costa Ave to Leucadia Blvd
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1500
volume on (veh/hr)	830
volume off (veh/hr)	930
segment volume (veh/hr)	7570
approach volume (veh/hr)	6740

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1517	1517
Lane 2	1517	1517
Lane 3	1517	1517
Lane 4	1517	1517
Lane 5	674	1504
	6740	7570

Segment Lengths

merge length (m)	150
fwy segment length (m)	1200
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1471	1471
Lane 2	1471	1471
Lane 3	1471	1471
Lane 4	1471	1471
Lane 5	1687	757
	7570	6640

NOTES

Lane 5 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	La Costa Ave to Leucadia Blvd
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1350*	1350	1500
1	1582	1582	1616	1611	1611
2	1582	1582	1616	1611	1611
3	1582	1582	1616	1611	1611
4	1582	1582	1616	1611	1611
5	703	**1753**	**1616**	**1638**	808

1050
on ramp traffic volume

830
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	La Costa Ave to Leucadia Blvd
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1350*	1350	1500
1	1517	1517	1514	1471	1471
2	1517	1517	1514	1471	1471
3	1517	1517	1514	1471	1471
4	1517	1517	1514	1471	1471
5	674	1504	1514	**1687**	757

830
on ramp traffic volume

930
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	Leucadia Blvd to Encinitas Blvd
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1200
volume on (veh/hr)	820
volume off (veh/hr)	940
segment volume (veh/hr)	8070
approach volume (veh/hr)	7250

Segment Lengths

merge length (m)	150
fwy segment length (m)	900
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1631	1631
Lane 2	1631	1631
Lane 3	1631	1631
Lane 4	1631	1631
Lane 5	725	1545
	7250	8070

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1625	1625
Lane 2	1625	1625
Lane 3	1625	1625
Lane 4	1625	1625
Lane 5	1571	631
	8070	7130

NOTES

Lane 5 not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	Leucadia Blvd to Encinitas Blvd
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1200
volume on (veh/hr)	820
volume off (veh/hr)	850
segment volume (veh/hr)	7460
approach volume (veh/hr)	6640

Segment Lengths

merge length (m)	150
fwy segment length (m)	900
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1494	1494
Lane 2	1494	1494
Lane 3	1494	1494
Lane 4	1494	1494
Lane 5	664	1484
	6640	7460

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1508	1508
Lane 2	1508	1508
Lane 3	1508	1508
Lane 4	1508	1508
Lane 5	1429	579
	7460	6610

NOTES

Lane 5 not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Leucadia Blvd to Encinitas Blvd
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1050*	1050	1200
1	1631	1631	1614	1625	1625
2	1631	1631	1614	1625	1625
3	1631	1631	1614	1625	1625
4	1631	1631	1614	1625	1625
5	725	1545	1614	**1571**	631

820
on ramp traffic volume

940
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Leucadia Blvd to Encinitas Blvd
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1050*	1050	1200
1	1494	1494	1492	1508	1508
2	1494	1494	1492	1508	1508
3	1494	1494	1492	1508	1508
4	1494	1494	1492	1508	1508
5	664	1484	1492	**1429**	579

820
on ramp traffic volume

850
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	Encinitas Blvd to Santa Fe Dr
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	850
volume on (veh/hr)	710
volume off (veh/hr)	450
segment volume (veh/hr)	7840

Calculated Data

Thru Volume (lane 5)	Value
10%	668

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	850 m
Lane 1	1585	1557	1550	1568	1595	1622	1642
Lane 2	1585	1557	1550	1568	1595	1622	1642
Lane 3	1585	1557	1550	1568	1595	1622	1642
Lane 4	1585	1557	1550	1568	1595	1622	1642
Lane 5	790	886	1092	1128	1026	896	822
Aux Lane	710	725	548	441	435	457	450
	7840	7840	7840	7840	7840	7840	7840

NOTES

Lane 5 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	Encinitas Blvd to Santa Fe Dr
Time Duration	PM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	850
volume on (veh/hr)	800
volume off (veh/hr)	550
segment volume (veh/hr)	7410

Calculated Data

Thru Volume (lane 5)	Value
10%	606

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	850 m
Lane 1	1464	1430	1420	1438	1467	1498	1520
Lane 2	1464	1430	1420	1438	1467	1498	1520
Lane 3	1464	1430	1420	1438	1467	1498	1520
Lane 4	1464	1430	1420	1438	1467	1498	1520
Lane 5	755	861	1092	1132	1016	865	780
Aux Lane	800	830	638	525	525	555	550
	7410	7410	7410	7410	7410	7410	7410

NOTES

Lane 5 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Encinitas Blvd to Santa Fe Dr
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	750	850
1	1585	1557	1550	1568	1595	1622	1642
2	1585	1557	1550	1568	1595	1622	1642
3	1585	1557	1550	1568	1595	1622	1642
4	1585	1557	1550	1568	1595	1622	1642
5	790	886	1092	1128	1026	896	822
	710	725	548	441	435	457	450

710
on ramp traffic volume

450
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Encinitas Blvd to Santa Fe Dr
Time Duration	PM peak
Analysis Type	weave analysis with aux lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	750	850
1	1464	1430	1420	1438	1467	1498	1520
2	1464	1430	1420	1438	1467	1498	1520
3	1464	1430	1420	1438	1467	1498	1520
4	1464	1430	1420	1438	1467	1498	1520
5	755	861	1092	1132	1016	865	780
	800	830	638	525	525	555	550

800
on ramp traffic volume

550
off ramp traffic volume

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	Santa Fe Dr to Birmingham Dr
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	600
volume on (veh/hr)	550
volume off (veh/hr)	380
segment volume (veh/hr)	7790

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m
Lane 1	1579	1563	1576	1614	1640
Lane 2	1579	1563	1576	1614	1640
Lane 3	1579	1563	1576	1614	1640
Lane 4	1579	1563	1576	1614	1640
Lane 5	925	1071	1121	969	851
Aux Lane	550	465	366	366	380
	7790	7790	7790	7790	7790

Calculated Data

Thru Volume (lane 5)	Value
10%	686

NOTES

Lane 5 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	Santa Fe Dr to Birmingham Dr
Time Duration	PM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	600
volume on (veh/hr)	460
volume off (veh/hr)	470
segment volume (veh/hr)	7200

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m
Lane 1	1454	1435	1440	1469	1639
Lane 2	1454	1435	1440	1469	1639
Lane 3	1454	1435	1440	1469	1639
Lane 4	1454	1435	1440	1469	1639
Lane 5	923	993	1020	876	765
Aux Lane	460	465	422	446	470
	7200	7200	7200	7200	7790

Calculated Data

Thru Volume (lane 5)	Value
10%	627

NOTES

Lane 5 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Santa Fe Dr to Birmingham Dr
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600
1	1579	1563	1576	1614	1640
2	1579	1563	1576	1614	1640
3	1579	1563	1576	1614	1640
4	1579	1563	1576	1614	1640
5	925	1071	1121	969	851
	550	465	366	366	380

550
on ramp traffic volume

380
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Santa Fe Dr to Birmingham Dr
Time Duration	PM peak
Analysis Type	weave analysis with aux lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600
1	1454	1435	1440	1469	1639
2	1454	1435	1440	1469	1639
3	1454	1435	1440	1469	1639
4	1454	1435	1440	1469	1639
5	923	993	1020	876	765
	460	465	422	446	470

460
on ramp traffic volume

470
off ramp traffic volume

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	Birmingham Dr to Manchester Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1200
volume on (veh/hr)	770
volume off (veh/hr)	190
segment volume (veh/hr)	8180

Segment Lengths

merge length (m)	150
fwy segment length (m)	900
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1482	1482
Lane 2	1482	1482
Lane 3	1482	1482
Lane 4	1482	1482
Lane 5	1482	1559
Aux Lane	770	693
	8180	8180

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1598	1598
Lane 2	1598	1598
Lane 3	1598	1598
Lane 4	1598	1598
Lane 5	1598	1598
Aux Lane	190	190
	8180	8180

NOTES

Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 5 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 5 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	Birmingham Dr to Manchester Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1200
volume on (veh/hr)	440
volume off (veh/hr)	220
segment volume (veh/hr)	7170

Segment Lengths

merge length (m)	150
fwy segment length (m)	900
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1346	1346
Lane 2	1346	1346
Lane 3	1346	1346
Lane 4	1346	1346
Lane 5	1346	1390
Aux Lane	440	396
	7170	7170

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1390	1390
Lane 2	1390	1390
Lane 3	1390	1390
Lane 4	1390	1390
Lane 5	1390	1390
Aux Lane	220	220
	7170	7170

NOTES

Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 5 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 5 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Birmingham Dr to Manchester Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1050*	1050	1200
1	1482	1482	1636	1598	1598
2	1482	1482	1636	1598	1598
3	1482	1482	1636	1598	1598
4	1482	1482	1636	1598	1598
5	1482	1559	1636	1598	1598
		693	1636	190	

770
on ramp traffic volume

190
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Birmingham Dr to Manchester Ave
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1050*	1050	1200
1	1346	1346	1434	1390	1390
2	1346	1346	1434	1390	1390
3	1346	1346	1434	1390	1390
4	1346	1346	1434	1390	1390
5	1346	1390	1434	1390	1390
		396	1434	220	

440
on ramp traffic volume

220
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	Manchester Ave to Lomas Santa Fe
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1550
volume on (veh/hr)	1250
volume off (veh/hr)	870
segment volume (veh/hr)	9240

Segment Lengths

merge length (m)	150
fwy segment length (m)	1250
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1677	1677
Lane 2	1677	1677
Lane 3	1677	1677
Lane 4	1677	1677
Lane 5	1282	1532
Aux Lane	1250	1000
	9240	9240

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1674	1674
Lane 2	1674	1674
Lane 3	1674	1674
Lane 4	1674	1674
Lane 5	1674	1674
Aux Lane	870	870
	9240	9240

NOTES

Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 5 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 5 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	Manchester Ave to Lomas Santa Fe
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1550
volume on (veh/hr)	1090
volume off (veh/hr)	1050
segment volume (veh/hr)	8040

Segment Lengths

merge length (m)	150
fwy segment length (m)	1250
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1472	1472
Lane 2	1472	1472
Lane 3	1472	1472
Lane 4	1472	1472
Lane 5	1062	1280
Aux Lane	1090	872
	8040	8040

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1398	1398
Lane 2	1398	1398
Lane 3	1398	1398
Lane 4	1398	1398
Lane 5	1398	1398
Aux Lane	1050	1050
	8040	8040

NOTES

Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 5 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 5 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Manchester Ave to Lomas Santa Fe
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1300*	1300	1450
1	**1677**	**1677**	**1761**	1674	1674
2	**1677**	**1677**	**1761**	1674	1674
3	**1677**	**1677**	**1761**	1674	1674
4	**1677**	**1677**	**1761**	1674	1674
5	1282	1532	**1761**	1674	1674
	1250	1000	435	870	870

1250
on ramp traffic volume

870
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Manchester Ave to Lomas Santa Fe
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1300*	1300	1450
1	1472	1472	1503	1398	1398
2	1472	1472	1503	1398	1398
3	1472	1472	1503	1398	1398
4	1472	1472	1503	1398	1398
5	1062	1280	1503	1398	1398
	1090	872	525	1050	1050

1090
on ramp traffic volume

1050
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	Lomas Santa Fe to Via de la Valle
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1350
WB volume on (veh/hr)	360
EB volume on (veh/hr)	420
volume off (veh/hr)	940
segment volume (veh/hr)	9440

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	500 m
Lane 1	1840	1840	1845	1863
Lane 2	1840	1840	1845	1863
Lane 3	1840	1840	1845	1863
Lane 4	1840	1840	1845	1863
Lane 5	1299	1335	1353	1371
Aux Lane	360	324	288	618
	9020	9020	9020	9440

Segment Lengths

merge length (m)	500
fwy segment length (m)	700
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1700	1700
Lane 2	1700	1700
Lane 3	1700	1700
Lane 4	1700	1700
Lane 5	1700	1700
Aux Lane	940	940
	9440	9440

NOTES

Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 5 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 5 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	Lomas Santa Fe to Via de la Valle
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1350
WB volume on (veh/hr)	360
EB volume on (veh/hr)	400
volume off (veh/hr)	940
segment volume (veh/hr)	8190

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	500 m
Lane 1	1579	1579	1583	1601
Lane 2	1579	1579	1583	1601
Lane 3	1579	1579	1583	1601
Lane 4	1579	1579	1583	1601
Lane 5	1115	1151	1169	1187
Aux Lane	360	324	288	598
	7790	7790	7790	8190

Segment Lengths

merge length (m)	500
fwy segment length (m)	700
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1450	1450
Lane 2	1450	1450
Lane 3	1450	1450
Lane 4	1450	1450
Lane 5	1450	1450
Aux Lane	940	940
	8190	8190

NOTES

Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 5 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 5 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Lomas Santa Fe to Via de la Valle
Time Duration	AM peak
Analysis Type	

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	500	500-1200*	1200	1350
1	**1840**	**1840**	**1845**	**1863**	**1794**	**1700**	**1700**
2	**1840**	**1840**	**1845**	**1863**	**1794**	**1700**	**1700**
3	**1840**	**1840**	**1845**	**1863**	**1794**	**1700**	**1700**
4	**1840**	**1840**	**1845**	**1863**	**1794**	**1700**	**1700**
5	1299	1335	1353	1371	1794	1700	1700
	360	324	288	618	470	940	940

360 WB on ramp traffic volume

420 EB on ramp traffic volume

940 off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Lomas Santa Fe to Via de la Valle
Time Duration	PM peak
Analysis Type	

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	500	500-1200*	1200	1350
1	1579	1579	1583	1601	1544	1450	1450
2	1579	1579	1583	1601	1544	1450	1450
3	1579	1579	1583	1601	1544	1450	1450
4	1579	1579	1583	1601	1544	1450	1450
5	1115	1151	1169	1187	1544	1450	1450
	360	324	288	598	470	940	940

360 WB on ramp traffic volume

400 EB on ramp traffic volume

940 off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	Via de la Valle to Del Mar Heights Road
Time Duration	AM peak
Analysis Type	

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	3050
WB volume on (veh/hr)	740
EB volume on (veh/hr)	960
volume off (veh/hr)	1260
segment volume (veh/hr)	10200

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	550 m	700 m
Lane 1	1806	1797	1790	1796	1784	1774
Lane 2	1806	1797	1790	1796	1784	1774
Lane 3	1806	1797	1790	1796	1784	1774
Lane 4	1806	1797	1790	1796	1784	1774
Lane 5	1275	1387	1449	1474	1549	1611
Aux Lane	740	666	630	581	554	1493
	9240	9240	9240	9240	9240	10200

Segment Lengths

merge length (m)	700
fwy segment length (m)	2200
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1788	1788
Lane 2	1788	1788
Lane 3	1788	1788
Lane 4	1788	1788
Lane 5	1788	1788
Aux Lane	1260	1260
	10200	10200

NOTES

Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 5 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 5 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	Via de la Valle to Del Mar Heights Road
Time Duration	PM peak
Analysis Type	

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	3050
WB volume on (veh/hr)	690
EB volume on (veh/hr)	810
volume off (veh/hr)	1180
segment volume (veh/hr)	8750

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	550 m	700 m
Lane 1	1541	1532	1526	1531	1520	1510
Lane 2	1541	1532	1526	1531	1520	1510
Lane 3	1541	1532	1526	1531	1520	1510
Lane 4	1541	1532	1526	1531	1520	1510
Lane 5	1088	1192	1250	1274	1344	1402
Aux Lane	690	621	587	542	517	1308
	7940	7940	7940	7940	7940	8750

Segment Lengths

merge length (m)	700
fwy segment length (m)	2200
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1514	1514
Lane 2	1514	1514
Lane 3	1514	1514
Lane 4	1514	1514
Lane 5	1514	1514
Aux Lane	1180	1180
	8750	8750

NOTES

Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 5 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 5 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Via de la Valle to Del Mar Heights Road
Time Duration	AM peak
Analysis Type	

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	550	700	700-2900*	2900	3050
1	1806	1797	1790	1796	1784	1774	1914	1788	1788
2	1806	1797	1790	1796	1784	1774	1914	1788	1788
3	1806	1797	1790	1796	1784	1774	1914	1788	1788
4	1806	1797	1790	1796	1784	1774	1914	1788	1788
5	1275	1387	1449	1474	1549	1611	1914	1788	1788
	740	666	630	581	554	1493	630	1260	1260

740 WB on ramp traffic volume

960 EB on ramp traffic volume

1260 off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Via de la Valle to Del Mar Heights Road
Time Duration	PM peak
Analysis Type	

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	550	700	700-2900*	2900	3050
1	1541	1532	1526	1531	1520	1510	1624	1514	1514
2	1541	1532	1526	1531	1520	1510	1624	1514	1514
3	1541	1532	1526	1531	1520	1510	1624	1514	1514
4	1541	1532	1526	1531	1520	1510	1624	1514	1514
5	1088	1192	1250	1274	1344	1402	1624	1514	1514
	690	621	587	542	517	1308	630	1180	1180

690 WB on ramp traffic volume

810 EB on ramp traffic volume

1180 off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	I-5
Time Duration	AM peak
Analysis Type	

Data Entry

Parameter	Input Value
I-5 (veh/hr)	8940
Bypass off (veh/hr)	2870
I-5 (veh/hr)	6070
Carmel Valley on (veh/hr)	1250
I-5 (veh/hr)	7320
HOV ingress/egress (veh/hr)	6960
I-5 to I-805 (veh/hr)	3700
I-5 (veh/hr)	3260
Bypass on (veh/hr)	1970
I-5 (veh/hr)	5230
Roselle St on (veh/hr)	1220
I-5 (veh/hr)	6450

this color denotes linked values

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	I-5
Time Duration	PM peak
Analysis Type	

Data Entry

Parameter	Input Value
I-5 (veh/hr)	7570
Bypass off (veh/hr)	2630
I-5 (veh/hr)	4940
Carmel Valley on (veh/hr)	940
I-5 (veh/hr)	5880
HOV ingress/egress (veh/hr)	5520
I-5 to I-805 (veh/hr)	3280
I-5 (veh/hr)	2240
Bypass on (veh/hr)	2690
I-5 (veh/hr)	4930
Roselle St on (veh/hr)	1650
I-5 (veh/hr)	6580

this color denotes linked values

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	Bypass
Time Duration	AM peak
Analysis Type	

Data Entry

Parameter	Input Value
I-5 to Bypass (veh/hr)	2870
DMH WB on (veh/hr)	750
DMH EB on (veh/hr)	1160
Bypass (veh/hr)	4780
SR-56 EB off (veh/hr)	900
Carmel Valley off (veh/hr)	450
Bypass (veh/hr)	3430
SR-56 WB on (veh/hr)	3070
Bypass (veh/hr)	6500
Carmel Mnt off (veh/hr)	820
Carmel Mnt on (veh/hr)	950
Bypass (veh/hr)	6630
Bypass to I-805 (veh/hr)	2770
Bypass to I-5 (veh/hr)	3860
Genesee off (veh/hr)	1890
Bypass to I-5 (veh/hr)	1970

this color denotes linked values

Design Year	2015 10+4
Freeway & Direction	I-5 Southbound
Freeway Segment	Bypass
Time Duration	PM peak
Analysis Type	

Data Entry

Parameter	Input Value
I-5 to Bypass (veh/hr)	2630
DMH WB on (veh/hr)	560
DMH EB on (veh/hr)	740
Bypass (veh/hr)	3930
SR-56 EB off (veh/hr)	1430
Carmel Valley off (veh/hr)	330
Bypass (veh/hr)	2170
SR-56 WB on (veh/hr)	2000
Bypass (veh/hr)	4170
Carmel Mnt off (veh/hr)	650
Carmel Mnt on (veh/hr)	750
Bypass (veh/hr)	4270
Bypass to I-805 (veh/hr)	1320
Bypass to I-5 (veh/hr)	2950
Genesee off (veh/hr)	260
Bypass to I-5 (veh/hr)	2690

this color denotes linked values

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Genesee Ave to La Jolla Village Drive
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-800*	800	950
1	1451	1451	1230	966	966
2	1451	1451	1230	966	966
3	1451	1451	1230	966	966
4	1451	1451	1230	966	966
5	645	770	1230	966	966
	500	375	800	1600	1600

500
on ramp traffic volume

1600
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Genesee Ave to La Jolla Village Drive
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-800*	800	950
1	1481	1481	1597	1424	1424
2	1481	1481	1597	1424	1424
3	1481	1481	1597	1424	1424
4	1481	1481	1597	1424	1424
5	658	1138	1597	1424	1424
	1920	**1440**	515	1030	1030

1920
on ramp traffic volume

1030
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

NB 2030 10+4 Traffic Analysis Ramp Metered
May 2007

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Manchester Ave to Birmingham Dr
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)				
	0	150	150-1300*	1300	1450
1	1636	1631	1543	1498	1498
2	1636	1631	1543	1498	1498
3	1636	1631	1543	1498	1498
4	1636	1631	1543	1498	1498
5	1155	1179	1543	1498	1498
	240	239	225	450	450

240
on ramp traffic volume

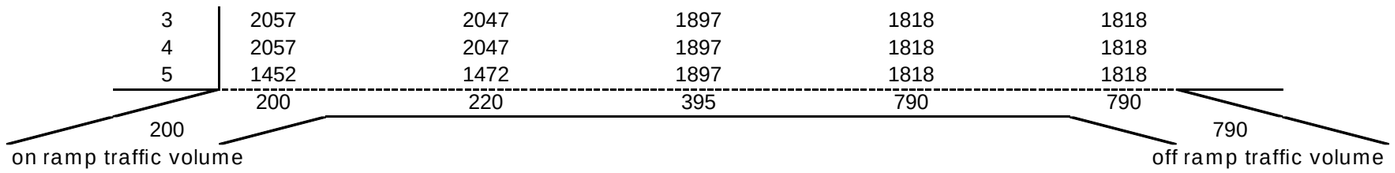
450
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Manchester Ave to Birmingham Dr
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)				
	0	150	150-1300*	1300	1450
1	2057	2047	1897	1818	1818
2	2057	2047	1897	1818	1818



*Assumes equal distribution of traffic volume in main lanes along freeway segment

for weaving off ramp traffic only

Percentage of Traffic Exiting (in lane 5) per distance from on ramp

distance (m)	0	50	100	150	200	250	300	350	400	450	500	550
900	29	34.7	40.3	46	51.7	57.3	63	68.3	73.6	79	84.3	89.6
850	34.7	40.3	46	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95
800	40.3	46	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7
750	46	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3
700	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100
650	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100
600	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100
550	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0
500	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0	
450	79	84.3	89.6	95	96.7	98.3	100	100	100	0		
400	84.3	89.6	95	96.7	98.3	100	100	100	0			
350	89.6	95	96.7	98.3	100	100	100	0				
300	95	96.7	98.3	100	100	100	0					

600	650	700	750	800	850	900
95	96.7	98.3	100	100	100	0
96.7	98.3	100	100	100	0	
98.3	100	100	100	0		
100	100	100	0			
100	100	0				
100	0					
0						

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to I-5 and Sorrento Valley
Time Duration	AM peak
Analysis Type	braid V1A (thru traffic in BP; Gen not allowed to BP)

use with NB bypass design number 1

Data Entry

Parameter	Input Value
number of lanes	6 to 4
total segment length (m)	
Genesee Ave on (veh/hr)	2030
Gen to I-5 on (veh/hr)	1230
Gen to SV on (veh/hr)	800
SV off (veh/hr)	1570
SV total off (veh/hr)	2370
I-5 volume 1 (veh/hr)	4730
Bypass volume (veh/hr)	2300
I-5 volume 2 (veh/hr)	860
I-5 volume 3 (veh/hr)	2090
BP + SV (veh/hr)	3870

Diverge - I-5 to Bypass

Traffic Volume Distribution (vehicles per hour)

Distance	300 m	150 m	0 m
Lane 1	788	215	215
Lane 2	788	215	215
Lane 3	788	215	215
Lane 4	788	796	215
Lane 5	788	1645	0
Lane 6	788	1645	0
	4730	4730	860

Weave - Genesee Ave to Bypass to Sorento Valley

Traffic Volume Distribution (vehicles per hour)

	Distance	0 m	150 m	300 m	350 m	500 m	650 m
BP	**Lane 1**	1189	1150	1035	1035	1035	1150
BP	**Lane 2**	1189	1150	1035	1035	1035	1150
BP	**Lane 3**	1492	1099	823	586	230	0
G	**Lane 4**	800	1271	1778	2015	0	0
		4670	4670	4670	4670	2300	2300

Merge - Genesee Ave to I-5

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	215	215
Lane 2	215	215
Lane 3	215	215
Lane 4	215	1445
	860	2090

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to I-5 and Sorrento Valley
Time Duration	AM peak
Analysis Type	braid V1B (no thru traffic in BP; Gen not allowed to BP)

use with NB bypass design number 2

Data Entry

Parameter	Input Value
number of lanes	6 to 4
total segment length (m)	
Genesee Ave on (veh/hr)	2030
Gen to I-5 on (veh/hr)	1230
Gen to SV on (veh/hr)	800
SV off (veh/hr)	1570
SV total off (veh/hr)	2370
I-5 volume 1 (veh/hr)	4730
Bypass volume (veh/hr)	1512
I-5 volume 2 (veh/hr)	1648
I-5 volume 3 (veh/hr)	2878
BP + SV (veh/hr)	3082

Diverge - I-5 to Bypass

Traffic Volume Distribution (vehicles per hour)

Distance	300 m	150 m	0 m
Lane 1	788	412	412
Lane 2	788	412	412
Lane 3	788	412	412
Lane 4	788	874	412
Lane 5	788	1310	0
Lane 6	788	1310	0
	4730	4730	1648

Weave - Genesee Ave to Bypass to Sorento Valley

Traffic Volume Distribution (vehicles per hour)

	Distance	0 m	150 m	300 m	350 m	500 m	650 m
BP	**Lane 1**	795	756	680	680	680	756
BP	**Lane 2**	795	756	680	680	680	756
BP	**Lane 3**	1492	1099	744	507	151	0
G	**Lane 4**	800	1271	1778	2015	0	0
		3882	3882	3882	3882	1512	1512

Merge - Genesee Ave to I-5

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	412	412
Lane 2	412	412
Lane 3	412	412
Lane 4	412	1642
	1648	2878

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to I-5 and Sorrento Valley
Time Duration	AM peak
Analysis Type	braid V1C (no thru traffic in BP; Gen allowed to BP; DMH in BP)

use with NB bypass design number 3

Data Entry

Parameter	Input Value
number of lanes	
total segment length (m)	
Genesee Ave on (veh/hr)	2030
Gen to I-5 on (veh/hr)	630
Gen to BP on (veh/hr)	600
Gen to SV on (veh/hr)	800
SV off (veh/hr)	1570
SV total off (veh/hr)	2370
I-5 volume 1 (veh/hr)	4730
Bypass volume (veh/hr)	2312
I-5 volume 2 (veh/hr)	1448
I-5 volume 3 (veh/hr)	2078
BP + SV (veh/hr)	3282

Diverge - I-5 to Bypass

Traffic Volume Distribution (vehicles per hour)

Distance	300 m	150 m	0 m
Lane 1	788	362	362
Lane 2	788	362	362
Lane 3	788	362	362
Lane 4	788	854	362
Lane 5	788	1395	0
Lane 6	788	1395	0
	4730	4730	1448

Weave - Genesee Ave to Bypass to Sorento Valley

Traffic Volume Distribution (vehicles per hour)

	Distance	0 m	150 m	300 m	350 m	500 m	650 m
BP	**Lane 1**	895	856	916	946	1021	1156
BP	**Lane 2**	895	856	988	976	1021	1156
BP	**Lane 3**	1492	1265	1001	746	270	0
G	**Lane 4**	1400	1705	1778	2015	0	0
		4682	4682	4682	4682	2312	2312

Merge - Genesee Ave to I-5

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	362	362
Lane 2	362	362
Lane 3	362	362
Lane 4	362	992
	1448	2078

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to I-5 and Sorrento Valley
Time Duration	AM peak
Analysis Type	braid V1D (no thru traffic in BP; Gen allowed to BP)

use with NB bypass design numbers 4, 5, 6, & 7

Data Entry

Parameter	Input Value
number of lanes	
total segment length (m)	
Genesee Ave on (veh/hr)	2030
Gen to I-5 on (veh/hr)	630
Gen to BP on (veh/hr)	600
Gen to SV on (veh/hr)	800
SV off (veh/hr)	1570
SV total off (veh/hr)	2370
I-5 volume 1 (veh/hr)	4730
Bypass volume (veh/hr)	1512
I-5 volume 2 (veh/hr)	2248
I-5 volume 3 (veh/hr)	2878
BP + SV (veh/hr)	2482

Diverge - I-5 to Bypass

Traffic Volume Distribution (vehicles per hour)

Distance	300 m	150 m	0 m
Lane 1	788	562	562
Lane 2	788	562	562
Lane 3	788	562	562
Lane 4	788	934	562
Lane 5	788	1055	0
Lane 6	788	1055	0
	4730	4730	2248

Weave - Genesee Ave to Bypass to Sorento Valley

Traffic Volume Distribution (vehicles per hour)

	Distance	0 m	150 m	300 m	350 m	500 m	650 m
BP	**Lane 1**	495	456	516	546	621	756
BP	**Lane 2**	495	456	588	576	621	756
BP	**Lane 3**	1492	1265	1001	746	270	0
G	**Lane 4**	1400	1705	1778	2015	0	0
		3882	3882	3882	3882	1512	1512

Merge - Genesee Ave to I-5

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	562	562
Lane 2	562	562
Lane 3	562	562
Lane 4	562	1192
	2248	2878

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to I-5 and Sorrento Valley
Time Duration	AM peak
Analysis Type	braid V1E (no thru traffic in BP; All Genesee to I-5 in BP; SV not in BP)

use with NB bypass design number 8, 9 & 10

Data Entry

Parameter	Input Value
number of lanes	
total segment length (m)	
Genesee Ave on (veh/hr)	2030
Gen to BP on (veh/hr)	1230
Gen to SV on (veh/hr)	800
SV off (veh/hr)	1570
SV total off (veh/hr)	2370
I-5 volume 1 (veh/hr)	4730
Bypass volume (veh/hr)	2142
I-5 volume 2 (veh/hr)	3818
I-5 volume 3 (veh/hr)	2248
BP + SV (veh/hr)	2482

*see diagrams below for Genesee on/Sorrento Valley off traffic distributions for use with NB bypass alternatives 8, 9 & 10

"Ted Design"

diagram for G-SV braid V1E (for use with NB BP exhibit alternatives 8 & 10)
slip ramp later in design allowing DMH traffic from I-5 (700 veh) to enter Bypass so it can exit at DMH

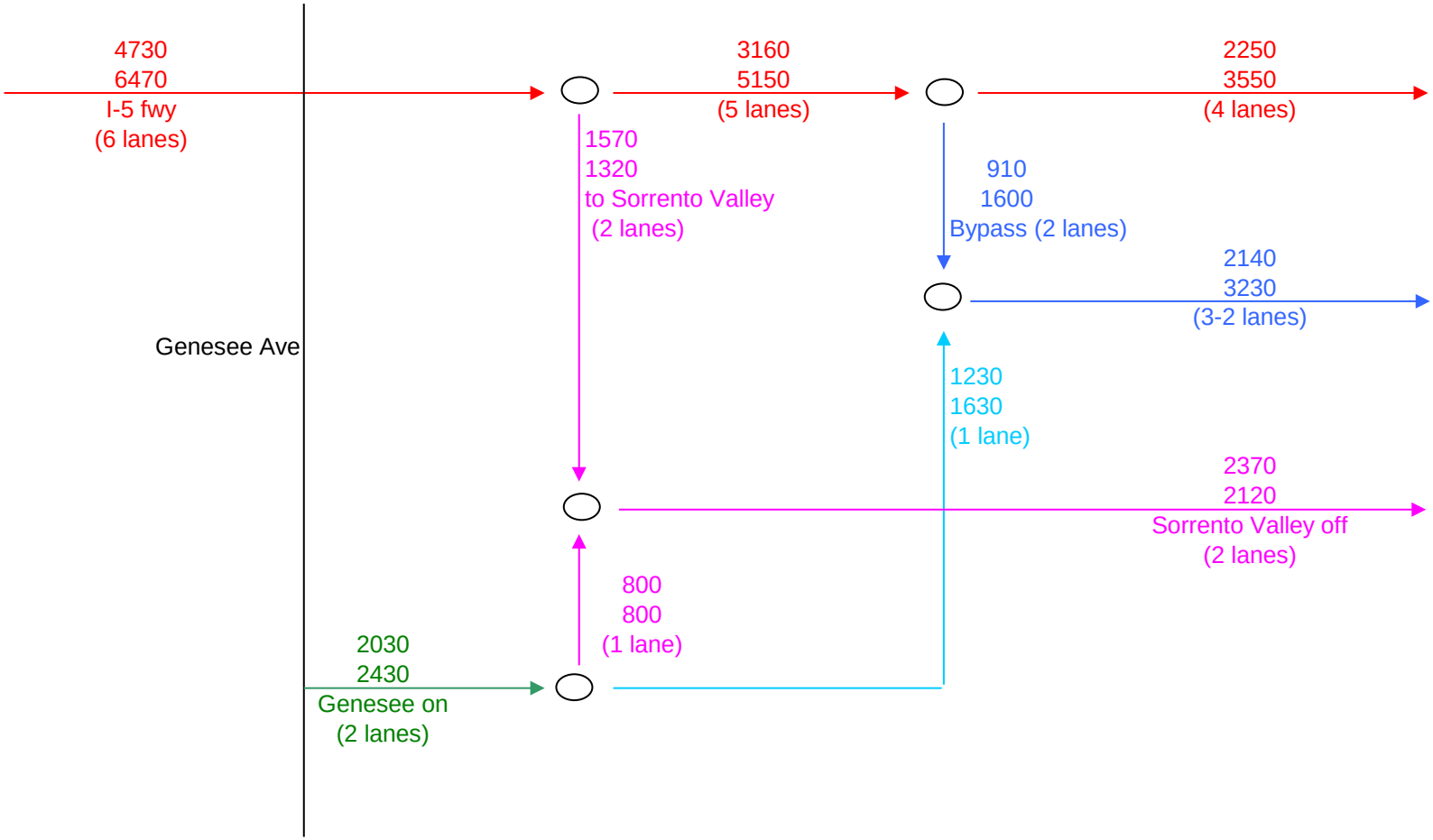
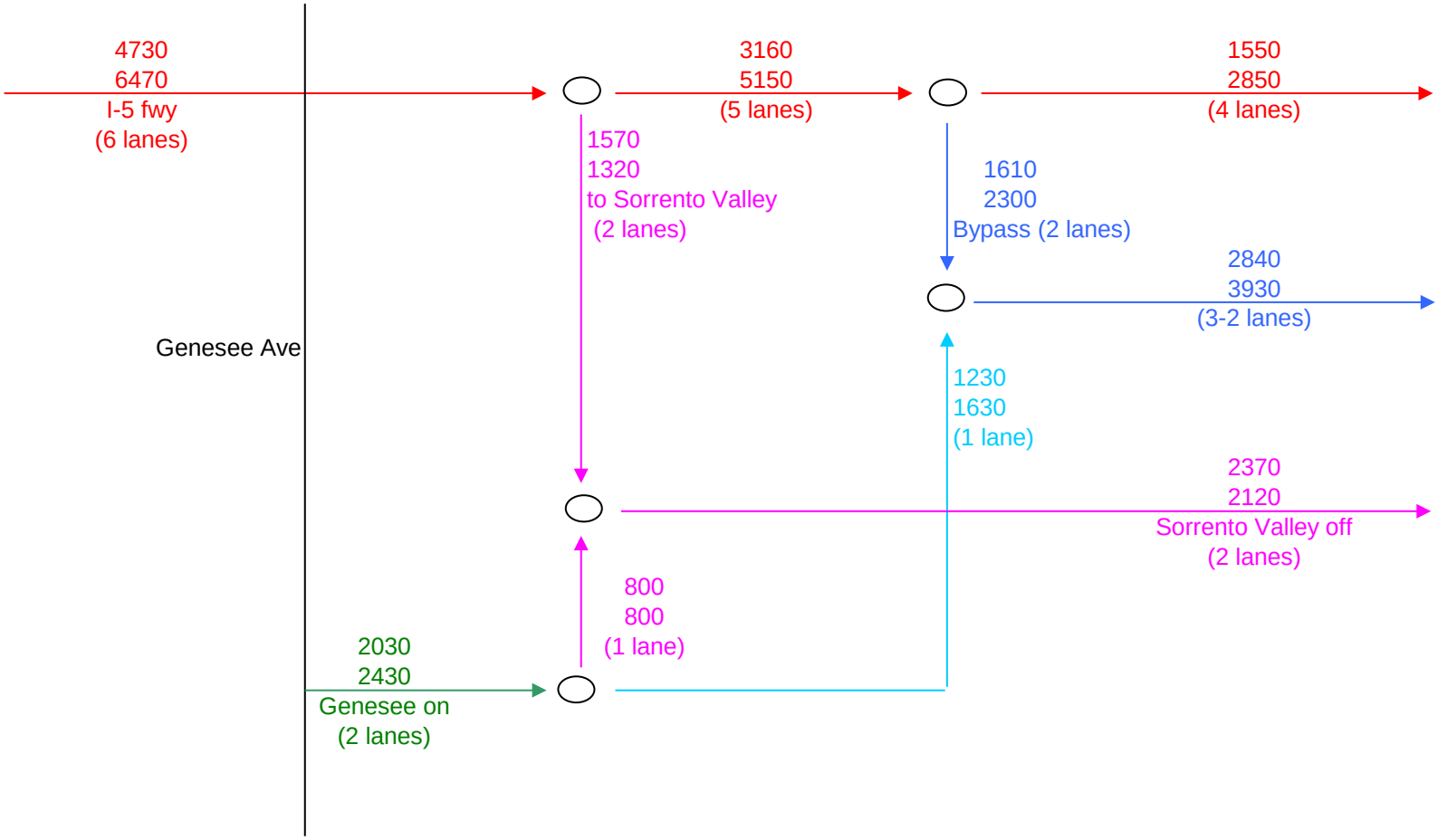


diagram for G-SV braid V1E (for use with NB BP exhibit alternative 9)
*no DMH slip ramp; all DMH off traffic enters BP at beginning



Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to I-5 and Sorrento Valley
Time Duration	PM peak
Analysis Type	braid V1A (thru traffic in Bypass)

Data Entry

Parameter	Input Value
number of lanes	6 to 4
total segment length (m)	
Genesee Ave on (veh/hr)	2430
Gen to I-5 on (veh/hr)	1630
Gen to SV on (veh/hr)	800
SV off (veh/hr)	1320
SV total off (veh/hr)	2120
I-5 volume 1 (veh/hr)	6470
Bypass volume (veh/hr)	3450
I-5 volume 2 (veh/hr)	1700
I-5 volume 3 (veh/hr)	3330
BP + SV (veh/hr)	4770

Diverge - I-5 to Bypass

Traffic Volume Distribution (vehicles per hour)

Distance	300 m	150 m	0 m
Lane 1	1078	425	425
Lane 2	1078	425	425
Lane 3	1078	425	425
Lane 4	1078	1141	425
Lane 5	1078	2027	0
Lane 6	1078	2027	0
	6470	6470	1700

Weave - Genesee Ave to Bypass to Sorento Valley

Traffic Volume Distribution (vehicles per hour)

	Distance	0 m	150 m	300 m	350 m	500 m	650 m
BP	**Lane 1**	1758	1725	1553	1553	1553	1725
BP	**Lane 2**	1758	1725	1553	1553	1553	1725
BP	**Lane 3**	1254	924	875	663	345	0
G	**Lane 4**	800	1196	1590	1802	0	0
		5570	5570	5570	5570	3450	3450

Merge - Genesee Ave to I-5

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	425	425
Lane 2	425	425
Lane 3	425	425
Lane 4	425	2055
	1700	3330

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to I-5 and Sorrento Valley
Time Duration	PM peak
Analysis Type	braid V1B (no thru traffic in Bypass)

Data Entry

Parameter	Input Value
number of lanes	6 to 4
total segment length (m)	
Genesee Ave on (veh/hr)	2430
Gen to I-5 on (veh/hr)	1630
Gen to SV on (veh/hr)	800
SV off (veh/hr)	1320
SV total off (veh/hr)	2120
I-5 volume 1 (veh/hr)	6470
Bypass volume (veh/hr)	2401
I-5 volume 2 (veh/hr)	2749
I-5 volume 3 (veh/hr)	4379
BP + SV (veh/hr)	3721

Diverge - I-5 to Bypass

Traffic Volume Distribution (vehicles per hour)

Distance	300 m	150 m	0 m
Lane 1	1078	687	687
Lane 2	1078	687	687
Lane 3	1078	687	687
Lane 4	1078	1245	687
Lane 5	1078	1581	0
Lane 6	1078	1581	0
	6470	6470	2749

Weave - Genesee Ave to Bypass to Sorento Valley

Traffic Volume Distribution (vehicles per hour)

	Distance	0 m	150 m	300 m	350 m	500 m	650 m
BP	**Lane 1**	1234	1201	1080	1080	1080	1201
BP	**Lane 2**	1234	1201	1080	1080	1080	1201
BP	**Lane 3**	1254	924	770	558	240	0
G	**Lane 4**	800	1196	1590	1802	0	0
		4521	4521	4521	4521	2401	2401

Merge - Genesee Ave to I-5

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	687	687
Lane 2	687	687
Lane 3	687	687
Lane 4	687	2317
	2749	4379

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to I-5 and Sorrento Valley
Time Duration	AM peak
Analysis Type	braid V1C (no thru traffic in BP; Gen allowed to BP; DMH in BP)

Data Entry

Parameter	Input Value
number of lanes	
total segment length (m)	
Genesee Ave on (veh/hr)	2430
Gen to I-5 on (veh/hr)	830
Gen to BP on (veh/hr)	800
Gen to SV on (veh/hr)	800
SV off (veh/hr)	1320
SV total off (veh/hr)	2120
I-5 volume 1 (veh/hr)	6470
Bypass volume (veh/hr)	3201
I-5 volume 2 (veh/hr)	2749
I-5 volume 3 (veh/hr)	3579
BP + SV (veh/hr)	3721

Diverge - I-5 to Bypass

Traffic Volume Distribution (vehicles per hour)

Distance	300 m	150 m	0 m
Lane 1	1078	687	687
Lane 2	1078	687	687
Lane 3	1078	687	687
Lane 4	1078	1245	687
Lane 5	1078	1581	0
Lane 6	1078	1581	0
	6470	6470	2749

Weave - Genesee Ave to Bypass to Sorento Valley

Traffic Volume Distribution (vehicles per hour)

	Distance	0 m	150 m	300 m	350 m	500 m	650 m
BP	**Lane 1**	1234	1201	1281	1321	1421	1601
BP	**Lane 2**	1234	1201	1377	1361	1421	1601
BP	**Lane 3**	1254	1300	1074	838	360	0
G	**Lane 4**	1600	1620	1590	1802	0	0
		5321	5321	5321	5321	3201	3201

Merge - Genesee Ave to I-5

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	687	687
Lane 2	687	687
Lane 3	687	687
Lane 4	687	1517
	2749	3579

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to I-5 and Sorrento Valley
Time Duration	AM peak
Analysis Type	braid V1D (no thru traffic in BP; Gen allowed to BP)

Data Entry

Parameter	Input Value
number of lanes	
total segment length (m)	
Genesee Ave on (veh/hr)	2430
Gen to I-5 on (veh/hr)	830
Gen to BP on (veh/hr)	800
Gen to SV on (veh/hr)	800
SV off (veh/hr)	1320
SV total off (veh/hr)	2120
I-5 volume 1 (veh/hr)	6470
Bypass volume (veh/hr)	2401
I-5 volume 2 (veh/hr)	3549
I-5 volume 3 (veh/hr)	4379
BP + SV (veh/hr)	2921

Diverge - I-5 to Bypass

Traffic Volume Distribution (vehicles per hour)

Distance	300 m	150 m	0 m
Lane 1	1078	887	887
Lane 2	1078	887	887
Lane 3	1078	887	887
Lane 4	1078	1325	887
Lane 5	1078	1241	0
Lane 6	1078	1241	0
	6470	6470	3549

Weave - Genesee Ave to Bypass to Sorento Valley

Traffic Volume Distribution (vehicles per hour)

	Distance	0 m	150 m	300 m	350 m	500 m	650 m
BP	**Lane 1**	834	801	881	921	1021	1201
BP	**Lane 2**	834	801	977	961	1021	1201
BP	**Lane 3**	1254	1300	1074	838	360	0
G	**Lane 4**	1600	1620	1590	1802	0	0
		4521	4521	4521	4521	2401	2401

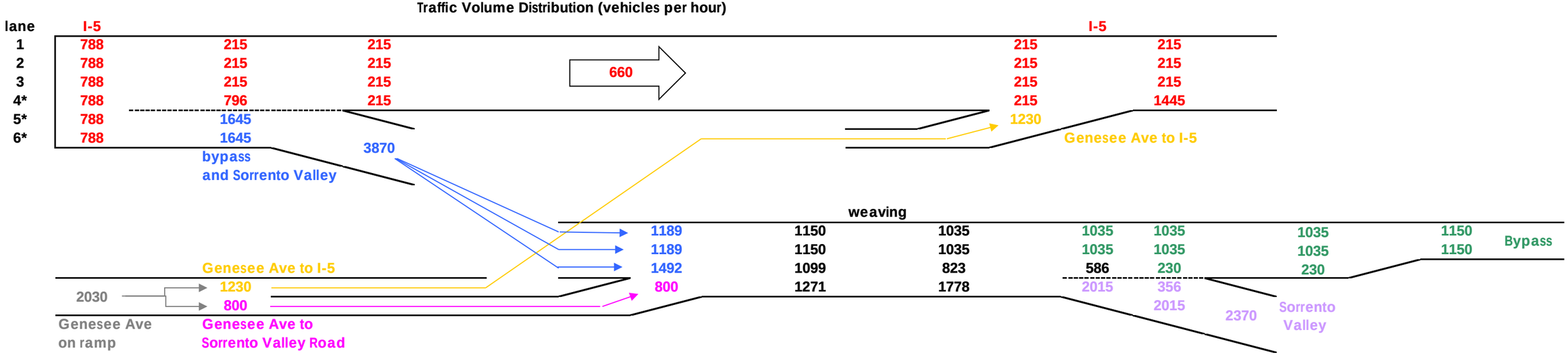
Merge - Genesee Ave to I-5

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	887	887
Lane 2	887	887
Lane 3	887	887
Lane 4	887	1717
	3549	4379

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to I-5 and Sorrento Valley
Time Duration	AM peak
Analysis Type	braid V1A (thru traffic in Bypass)

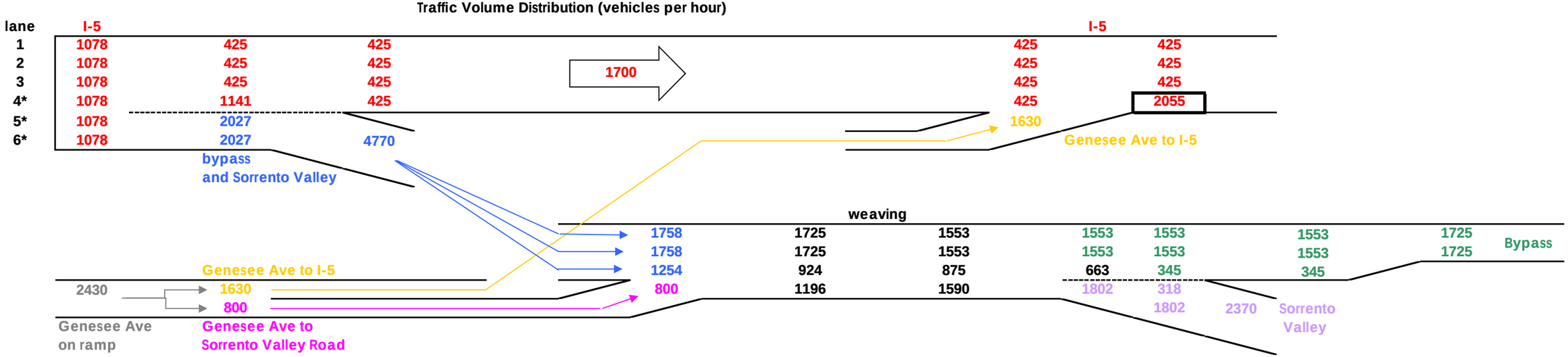
Traffic Volume Distribution (vehicles per hour)



*Lanes 5 & 6 exit with lane 4 option create 3 lanes for bypass

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to I-5 and Sorrento Valley
Time Duration	PM peak
Analysis Type	braid V1A (thru traffic in Bypass)

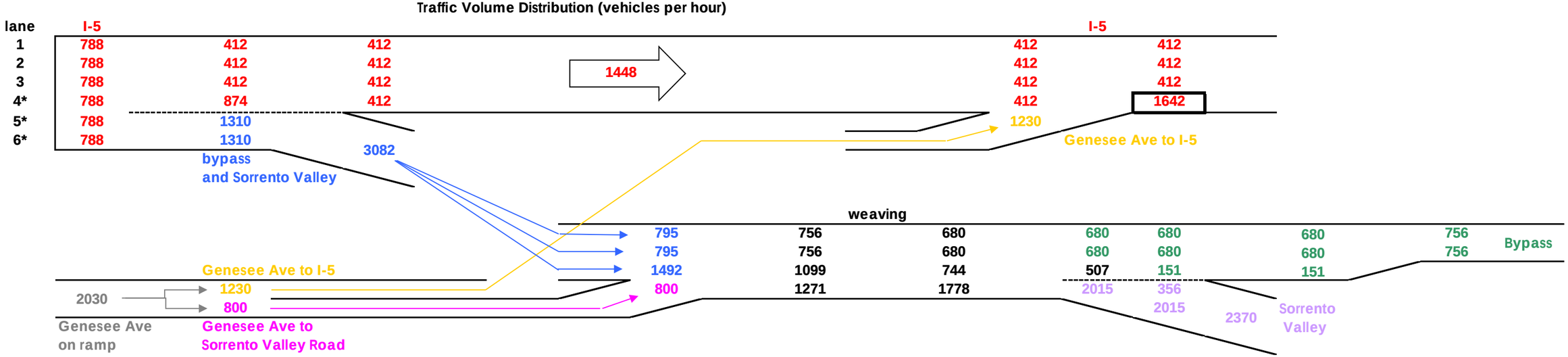
Traffic Volume Distribution (vehicles per hour)



*Lanes 5 & 6 exit with lane 4 option create 3 lanes for bypass

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to I-5 and Sorrento Valley
Time Duration	AM peak
Analysis Type	braid V1B (no thru traffic in Bypass)

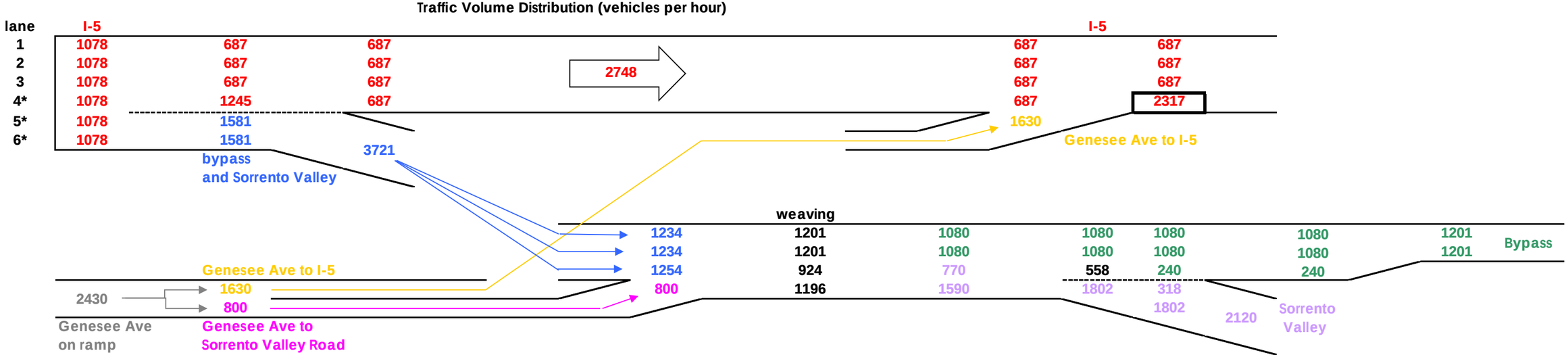
Traffic Volume Distribution (vehicles per hour)



*Lanes 5 & 6 exit with lane 4 option create 3 lanes for bypass

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to I-5 and Sorrento Valley
Time Duration	PM peak
Analysis Type	braid V1B (no thru traffic in Bypass)

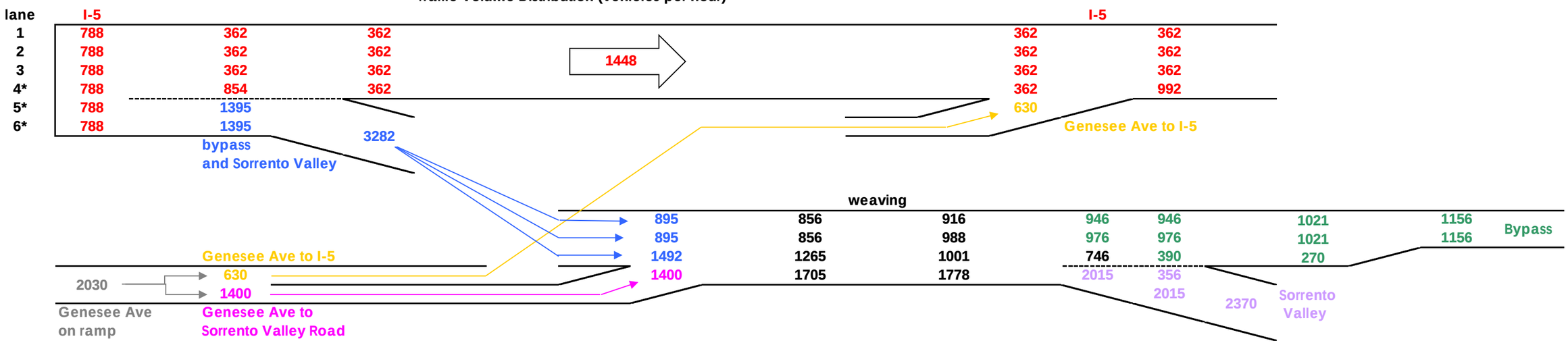
Traffic Volume Distribution (vehicles per hour)



*Lanes 5 & 6 exit with lane 4 option create 3 lanes for bypass

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to I-5 and Sorrento Valley
Time Duration	AM peak
Analysis Type	braid V1C (no thru traffic in BP; Gen allowed to BP; DMH in BP)

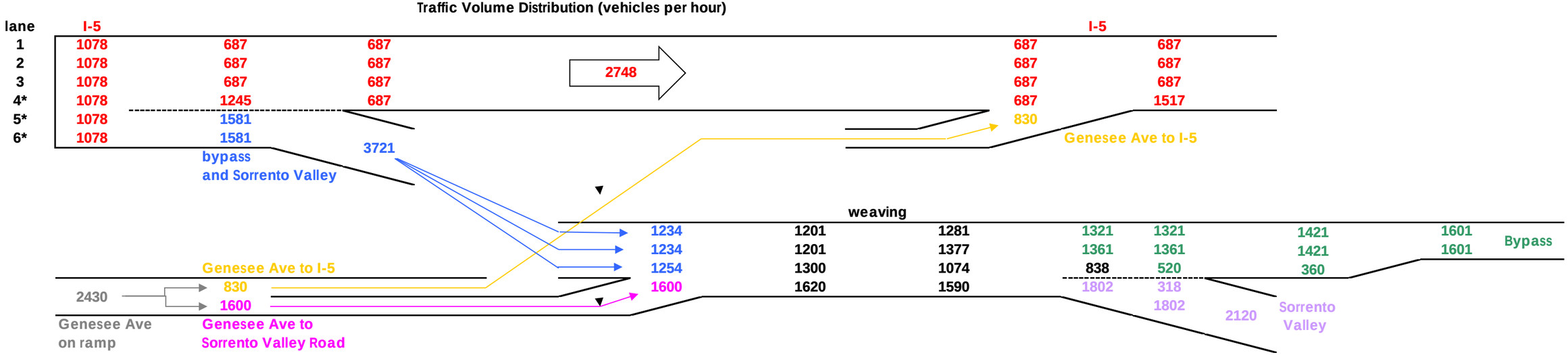
Traffic Volume Distribution (vehicles per hour)



*Lanes 5 & 6 exit with lane 4 option create 3 lanes for bypass

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to I-5 and Sorrento Valley
Time Duration	PM peak
Analysis Type	braid V1C (no thru traffic in BP; Gen allowed to BP; DMH in BP)

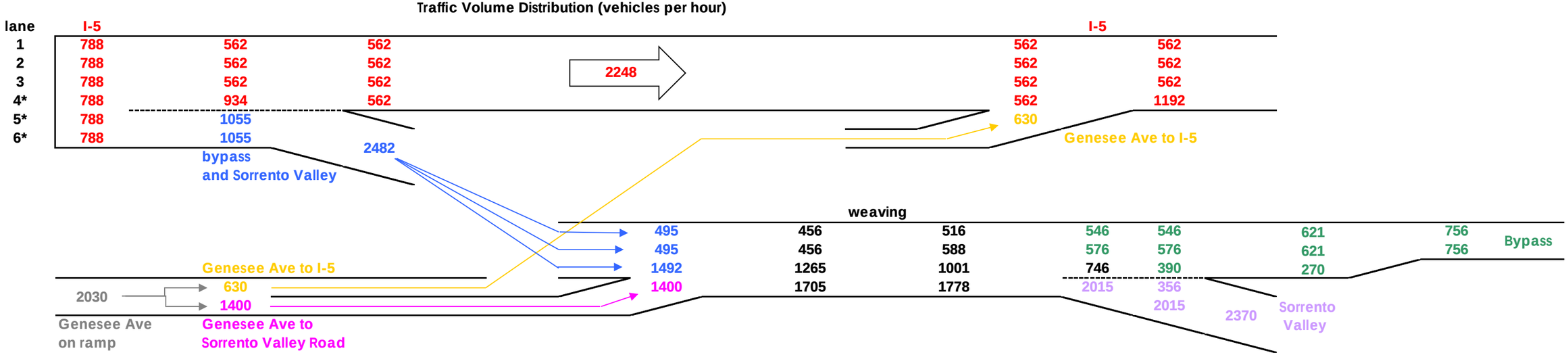
Traffic Volume Distribution (vehicles per hour)



*Lanes 5 & 6 exit with lane 4 option create 3 lanes for bypass

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to I-5 and Sorrento Valley
Time Duration	AM peak
Analysis Type	braid V1D (no thru traffic in BP; Gen allowed to BP)

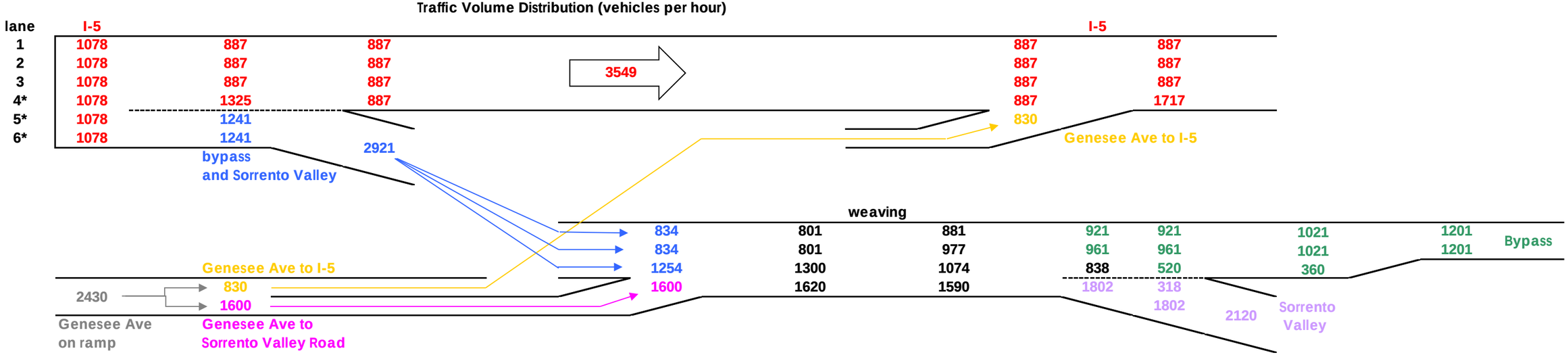
Traffic Volume Distribution (vehicles per hour)



*Lanes 5 & 6 exit with lane 4 option create 3 lanes for bypass

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to I-5 and Sorrento Valley
Time Duration	PM peak
Analysis Type	braid V1D (no thru traffic in BP; Gen allowed to BP)

Traffic Volume Distribution (vehicles per hour)



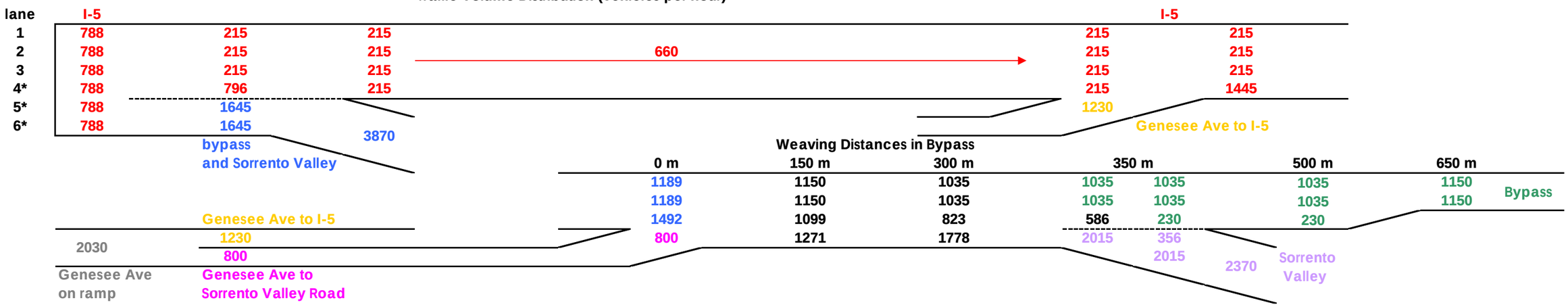
*Lanes 5 & 6 exit with lane 4 option create 3 lanes for bypass

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to I-5 and Sorrento Valley
Time Duration	AM peak
Analysis Type	braid V1A (thru traffic in Bypass)

DOES NOT INCLUDE V1C AND V1D

***Lanes 5 & 6 exit with lane 4 option create 3 lanes for bypass**

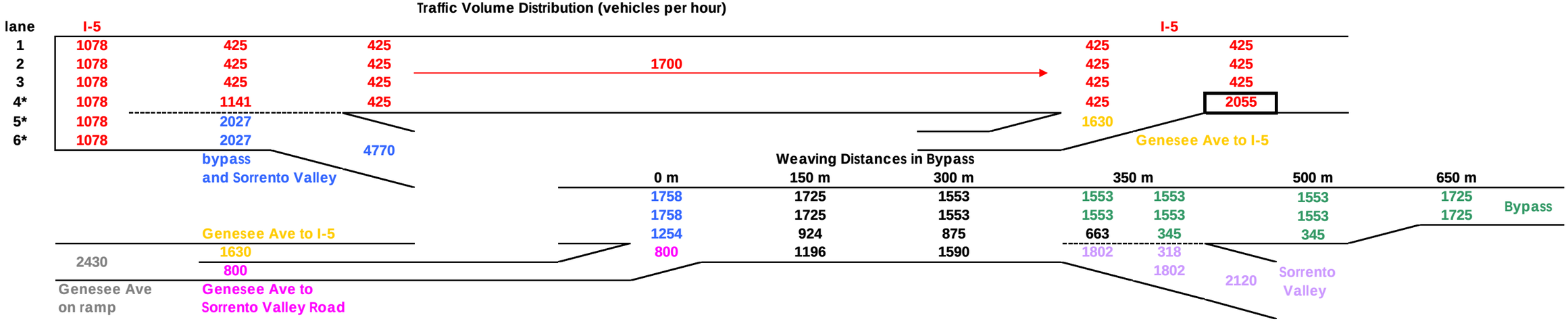
Traffic Volume Distribution (vehicles per hour)



Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to I-5 and Sorrento Valley
Time Duration	PM peak
Analysis Type	braid V1A (thru traffic in Bypass)

***Lanes 5 & 6 exit with lane 4 option create 3 lanes for bypass**

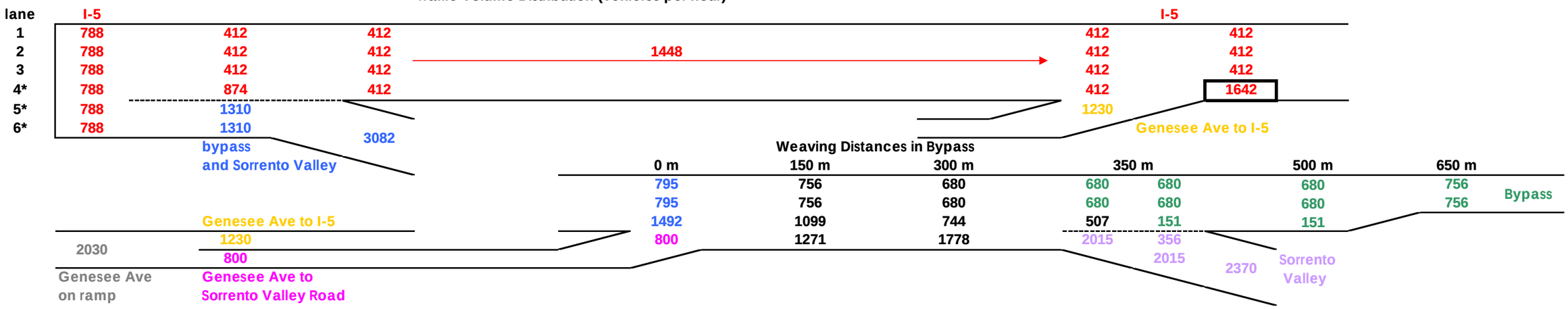
Traffic Volume Distribution (vehicles per hour)



Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to I-5 and Sorrento Valley
Time Duration	AM peak
Analysis Type	braid V1B (no thru traffic in Bypass)

***Lanes 5 & 6 exit with lane 4 option create 3 lanes for bypass**

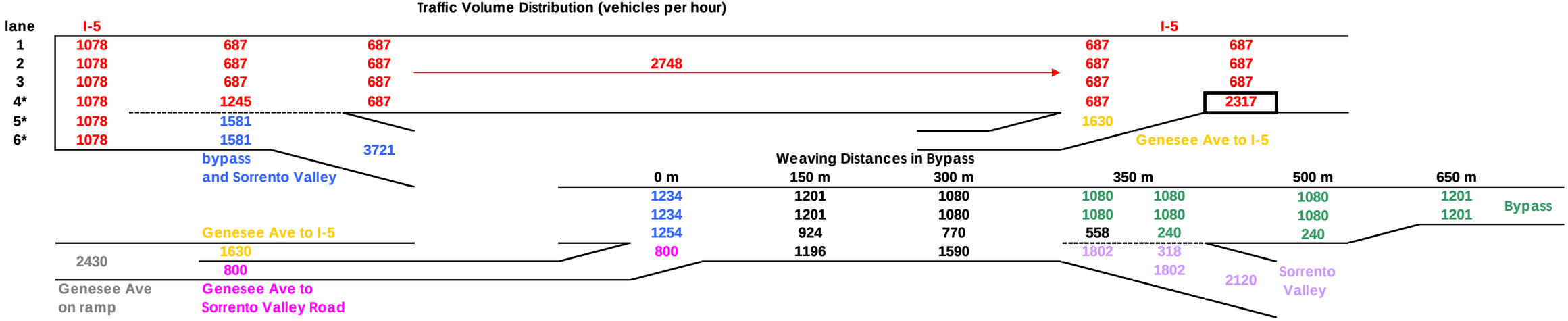
Traffic Volume Distribution (vehicles per hour)



Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to I-5 and Sorrento Valley
Time Duration	PM peak
Analysis Type	braid V1B (no thru traffic in Bypass)

***Lanes 5 & 6 exit with lane 4 option create 3 lanes for bypass**

Traffic Volume Distribution (vehicles per hour)



Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to I-5 and Sorrento Valley
Time Duration	AM peak
Analysis Type	braid V2A (thru traffic in Bypass)

Version 2 - Genesee Ave to I-5 traffic stays in bypass

Bypass has 4 lanes

Parameter	Input Value
number of lanes	6 to 4
Genesee Ave on (veh/hr)	2430
Gen to I-5 on (veh/hr)	1630
Gen to SV on (veh/hr)	800
SV off (veh/hr)	1570
SV total off (veh/hr)	2370
I-5 volume 1 (veh/hr)	4530
Bypass volume (veh/hr)	2300
I-5 volume 2 (veh/hr)	660
BP + SV (veh/hr)	3870
BP + Genesee (veh/hr)	3930

Diverge - I-5 to Bypass

Traffic Volume Distribution (vehicles per hour)

Distance	300 m	150 m	0 m
Lane 1	755	165	165
Lane 2	755	165	165
Lane 3	755	165	165
Lane 4	755	746	165
Lane 5	755	1645	0
Lane 6	755	1645	0
	4530	4530	660

Weave - Genesee Ave to Bypass to Sorento Valley

Traffic Volume Distribution (vehicles per hour)

	Distance	0 m	150 m	300 m	350 m	500 m	650 m
BP	**Lane 1**	1189	1150	1313	1395	1598	1965
BP	**Lane 2**	1189	1150	1509	1476	1598	1965
BP	**Lane 3**	1492	2089	1701	1415	734	0
G	**Lane 4**	2430	1911	1778	2015	0	0
		6300	6300	6300	6300	3930	3930

NOTES

weave - traffic volumes not to exceed 1800 veh/hr

Lane 4 in diverge analysis has 15% option to Bypass

Weave - Lane 3 has 15% option off to Sorrento Valley Road

All Genesee traffic enters bypass in Lane 3 of weave

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to I-5 and Sorrento Valley
Time Duration	AM peak
Analysis Type	braid V 2b

Version 2 - Genesee Ave to I-5 traffic stays in bypass

Bypass has 3 lanes (not diagramed)

Parameter	Input Value
number of lanes	6 to 4
Genesee Ave on (veh/hr)	2430
Gen to I-5 on (veh/hr)	1630
Gen to SV on (veh/hr)	800
SV off (veh/hr)	1570
SV total off (veh/hr)	2370
I-5 volume 1 (veh/hr)	4530
Bypass volume (veh/hr)	2300
I-5 volume 2 (veh/hr)	660
BP + SV (veh/hr)	3870
BP + Genesee (veh/hr)	3930

Diverge - I-5 to Bypass

Traffic Volume Distribution (vehicles per hour)

Distance	300 m	150 m	0 m
Lane 1	755	165	165
Lane 2	755	165	165
Lane 3	755	165	165
Lane 4	755	165	165
Lane 5	755	1935	0
Lane 6	755	1935	0
	4530	4530	660

Weave - Genesee Ave to Bypass to Sorento Valley

Traffic Volume Distribution (vehicles per hour)

	Distance	0 m	150 m	300 m	350 m	
BP	**Lane 1**	1919	1840	1969	1917	BP
BP	**Lane 2**	1952	1978	1917	2013	BP
G	**Lane 3**	2430	2482	2415	2370	SV
		6300	6300	6300	6300	

NOTES

weave - traffic volumes not to exceed 1800 veh/hr

Weave - Lane 3 exits to Sorrento Valley Road

Bypass reduced from 4 lanes to 3

Lanes 5 & 6 in diverge exit to bypass weave; no Lane 4 option

All Genesee traffic enters bypass in Lane 3 of weave

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to I-5 and Sorrento Valley
Time Duration	PM peak
Analysis Type	braid V2A (thru traffic in Bypass)

Version 2 - Genesee Ave to I-5 traffic stays in bypass

Parameter	Input Value
number of lanes	6 to 4
Genesee Ave on (veh/hr)	2430
Gen to I-5 on (veh/hr)	1630
Gen to SV on (veh/hr)	800
SV off (veh/hr)	1320
SV total off (veh/hr)	2120
I-5 volume 1 (veh/hr)	6470
Bypass volume (veh/hr)	3450
I-5 volume 2 (veh/hr)	1700
BP + SV (veh/hr)	4770
BP + Genesee (veh/hr)	5080

Diverge - I-5 to Bypass

Traffic Volume Distribution (vehicles per hour)

Distance	300 m	150 m	0 m
Lane 1	1078	425	425
Lane 2	1078	425	425
Lane 3	1078	425	425
Lane 4	1078	1141	425
Lane 5	1078	2027	0
Lane 6	1078	2027	0
	6470	6470	1700

Weave - Genesee Ave to Bypass to Sorento Valley

Traffic Volume Distribution (vehicles per hour)

	Distance	0 m	150 m	300 m	350 m	500 m	650 m
BP	**Lane 1**	1758	1725	1888	1970	2173	2540
BP	**Lane 2**	1758	1725	2084	2051	2173	2540
BP	**Lane 3**	1254	1964	1638	1378	734	0
G	**Lane 4**	2430	1786	1590	1802	0	0
		7200	7200	7200	7200	5080	5080

NOTES

weave - traffic volumes not to exceed 1800 veh/hr

Lane 4 in diverge analysis has 15% option to Bypass

Weave - Lane 3 has 15% option off to Sorrento Valley Road

All Genesee traffic enters bypass in Lane 3 of weave

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to I-5 and Sorrento Valley
Time Duration	PM peak
Analysis Type	braid V 2b

Version 2 - Genesee Ave to I-5 traffic stays in bypass

Bypass has 3 lanes (not diagramed)

Parameter	Input Value
number of lanes	6 to 4
Genesee Ave on (veh/hr)	2430
Gen to I-5 on (veh/hr)	1630
Gen to SV on (veh/hr)	800
SV off (veh/hr)	1320
SV total off (veh/hr)	2120
I-5 volume 1 (veh/hr)	6470
Bypass volume (veh/hr)	3450
I-5 volume 2 (veh/hr)	1700
BP + SV (veh/hr)	4770
BP + Genesee (veh/hr)	5080

Diverge - I-5 to Bypass

Traffic Volume Distribution (vehicles per hour)

Distance	300 m	150 m	0 m
Lane 1	1078	425	425
Lane 2	1078	425	425
Lane 3	1078	425	425
Lane 4	1078	1141	425
Lane 5	1078	2027	0
Lane 6	1078	2027	0
	6470	6470	1700

Weave - Genesee Ave to Bypass to Sorento Valley

Traffic Volume Distribution (vehicles per hour)

	Distance	0 m	150 m	300 m	350 m	
BP	**Lane 1**	2826	2760	2774	2550	BP
BP	**Lane 2**	1944	2148	2249	2531	BP
G	**Lane 3**	2430	2292	2177	2120	SV
		7200	7200	7200	7200	

NOTES

weave - traffic volumes not to exceed 1800 veh/hr

Weave - Lane 3 exits to Sorrento Valley Road

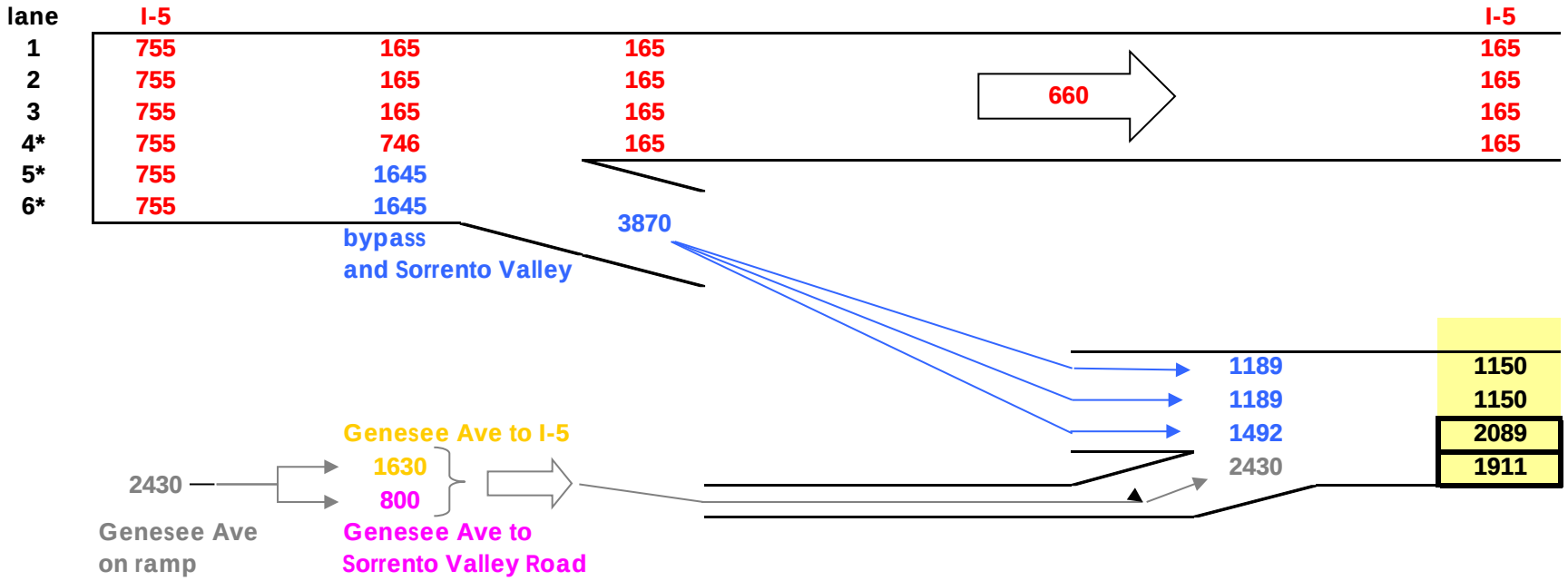
Bypass reduced from 4 lanes to 3

Lanes 5 & 6 in diverge exit to bypass weave; no Lane 4 option

All Genesee traffic enters bypass in Lane 3 of weave

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to I-5 and Sorrento Valley
Time Duration	AM peak
Analysis Type	braid V 2a

Traffic Volume Distribution (vehicles per hour)

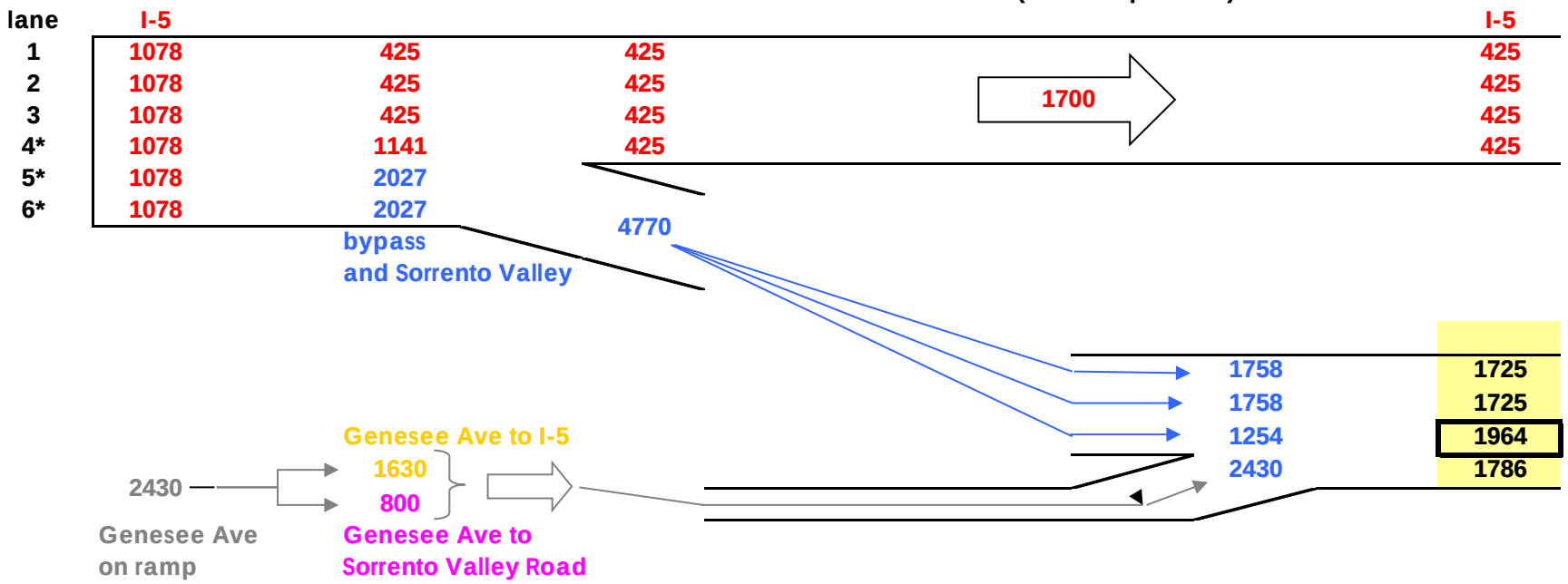


***Lanes 5 and 6 exit with lane 4 option create 3 lanes for bypass**

Bypass - lane 3 options off to Sorrento Valley Road; Lane 3 continues in Bypass for 150 m

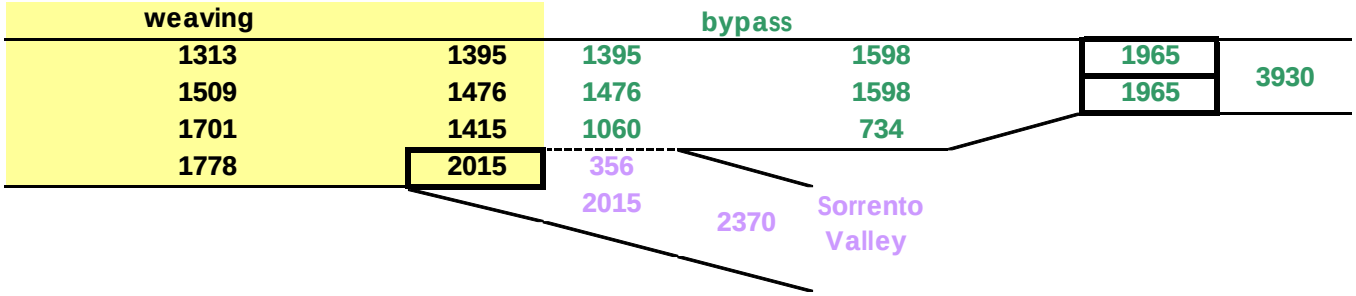
Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to I-5 and Sorrento Valley
Time Duration	PM peak
Analysis Type	braid V 2a

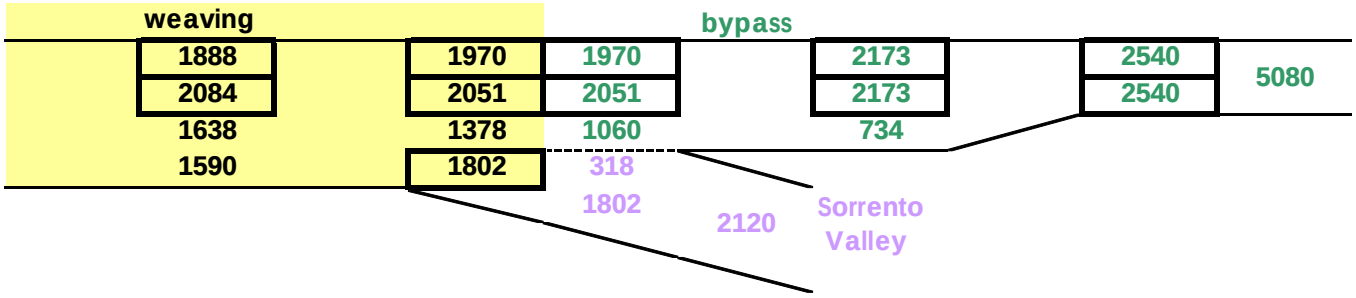
Traffic Volume Distribution (vehicles per hour)



***Lanes 5 and 6 exit with lane 4 option create 3 lanes for bypass**

Bypass - lane 3 options off to Sorrento Valley Road; Lane 3 continues in Bypass for 150 m


weaving
bypass
1313
1509
1701
1778
1395
1476
1415
2015
1395
1476
1060
356
2015
2370
1598
1598
734
Sorrento
Valley
1965
1965
3930


weaving
bypass
1888
2084
1638
1590
1970
2051
1378
1802
1970
2051
1060
318
1802
2120
2173
2173
734
Sorrento
Valley
2540
2540
5080

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to I-5 and Sorrento Valley
Time Duration	AM peak
Analysis Type	braid V 2A

***Lanes 5 and 6 exit with lane 4 option create 3 lanes for bypass**

Bypass - lane 3 options off to Sorrento Valley Road; Lane 3 continues in Bypass for 150 m

Traffic Volume Distribution (vehicles per hour)

lane	I-5				I-5
1	755	165	165		165
2	755	165	165		165
3	755	165	165		165
4*	755	746	165		165
5*	755	1645			
6*	755	1645			
		bypass and Sorrento Valley	3870		

Weaving Distances

0 m	150 m	300 m	350 m				
1189	1150	1313	1395	1395	1598	1965	3930
1189	1150	1509	1476	1476	1598	1965	
1492	2089	1701	1415	1060	734		
2430	1911	1778	2015	356			
				2015			

bypass

2430 Genesee Ave on ramp

2370 Sorrento Valley

***Lanes 5 and 6 exit with lane 4 option create 3 lanes for bypass**

Bypass - lane 3 options off to Sorrento Valley Road; Lane 3 continues in Bypass for 150 m

Traffic Volume Distribution (vehicles per hour)

lane	I-5				I-5
1	1078	425	425		425
2	1078	425	425		425
3	1078	425	425		425
4*	1078	1141	425		425
5*	1078	2027			
6*	1078	2027			
		bypass and Sorrento Valley	4770		

Weaving Distances

0 m	150 m	300 m	350 m				
1758	1725	1888	1970	1970	2173	2540	5080
1758	1725	2084	2051	2051	2173	2540	
1254	1964	1638	1378	1060	734		
2430	1786	1590	1802	318			
				1802			

bypass

2430 Genesee Ave on ramp

2120 Sorrento Valley

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to I-5 and Sorrento Valley
Time Duration	AM peak
Analysis Type	Kimley/Horn design

Parameter	Input Value
number of lanes	4 to 6
Genesee Ave on (veh/hr)	2430
Gen to I-5 on (veh/hr)	1630
Gen to SV on (veh/hr)	800
SV off from BP (veh/hr)	1570
SV off total (veh/hr)	2370
I-5 volume (veh/hr)	4530
Bypass volume (veh/hr)	2300
thru volume	453
I-5 + Gon	6960
I-5 + G(on) - SV(tot)	4590

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to I-5 and Sorrento Valley
Time Duration	AM peak
Analysis Type	braid version 4A (thru volume in bypass)

design discarded

Parameter	Input Value
number of lanes	4 to 6
Genesee Ave on (veh/hr)	2430
Gen to I-5 on (veh/hr)	1630
Gen to SV on (veh/hr)	800
SV off from I-5 (veh/hr)	1570
SV off total (veh/hr)	2370
I-5 volume 1 (veh/hr)	4530
Bypass volume (veh/hr)	2300
I-5 volume 2 (veh/hr)	2960
I-5 volume 3 (veh/hr)	660
I-5 + G(on)	2290
I-5 + G(on) + BP	4590

I-5

Traffic Volume Distribution (vehicles per hour)

	Distance	0 m	150 m	300 m
I-5	**Lane 1**	381	258	220
I-5	**Lane 2**	381	258	220
I-5	**Lane 3**	381	258	220
BP	**Lane 4**	818	983	1035
BP	**Lane 5**	999	1202	1265
SV	**Lane 6**	1570	0	0
		4530	2960	2960

Sorento Valley

Traffic Volume Distribution (vehicles per hour)

	Distance	0 m	150 m	300 m	350 m
I-5	**Lane 1**	1570	0	0	0
G	**Lane 2**	800	0	0	0
		2370			

merge into one lane???

I-5

Traffic Volume Distribution (vehicles per hour)

	Distance	450 m	600 m	750 m	900 m	1050 m	1200 m	1300 m
I-5	**Lane 1**	220						
	Lane 2	220						
	Lane 3	220						
Gon	**Lane 4**	1630						
BP	**Lane 5**	1035						
BP	**Lane 6**	1265						
		4590						

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to I-5 and Sorrento Valley
Time Duration	AM peak
Analysis Type	braid version 4B (no thru volume in bypass)

Parameter	Input Value
number of lanes	4 to 6
Genesee Ave on (veh/hr)	2430
Gen to I-5 on (veh/hr)	1630
Gen to SV on (veh/hr)	800
SV off from I-5 (veh/hr)	1570
SV off total (veh/hr)	2370
I-5 volume 1 (veh/hr)	4530
Bypass volume (veh/hr)	1512
I-5 volume 2 (veh/hr)	2960
I-5 volume 3 (veh/hr)	1448
I-5 + G(on)	3078
I-5 + G(on)+ BP	4590

I-5

Traffic Volume Distribution (vehicles per hour)

	Distance	0 m	150 m	300 m
I-5	**Lane 1**	589	508	483
I-5	**Lane 2**	589	508	483
I-5	**Lane 3**	589	508	483
BP	**Lane 4**	538	646	680
BP	**Lane 5**	657	790	832
SV	**Lane 6**	1570	0	0
		4530	2960	2960

Weave - Sorento Valley

Traffic Volume Distribution (vehicles per hour)

	Distance	0 m	150 m	300 m	350 m
I-5	**Lane 1**	1570	0	0	0
G	**Lane 2**	800	0	0	0
		2370			

merge into one lane???

I-5

Traffic Volume Distribution (vehicles per hour)

	Distance	450 m	600 m	750 m	900 m	1050 m	1200 m	1300 m
I-5	**Lane 1**	483						
	Lane 2	483						
	Lane 3	483						
Gon	**Lane 4**	1630						
BP	**Lane 5**	680						
BP	**Lane 6**	832						
		4590						

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to I-5 and Sorrento Valley
Time Duration	AM peak
Analysis Type	braid version 4C (no thru volume in bypass; DMH in bypass)

Parameter	Input Value
number of lanes	4 to 6
Genesee Ave on (veh/hr)	2430
Gen to I-5 on (veh/hr)	1630
Gen to SV on (veh/hr)	800
SV off from I-5 (veh/hr)	1570
SV off total (veh/hr)	2370
I-5 volume 1 (veh/hr)	4530
Bypass volume (veh/hr)	2312
I-5 volume 2 (veh/hr)	2960
I-5 volume 3 (veh/hr)	648
I-5 + G(on)	2278
I-5 + G(on)+ BP	4590

I-5

Traffic Volume Distribution (vehicles per hour)

	Distance	0 m	150 m	300 m
I-5	**Lane 1**	378	255	216
I-5	**Lane 2**	378	255	216
I-5	**Lane 3**	378	255	216
BP	**Lane 4**	822	988	1040
BP	**Lane 5**	1005	1208	1272
SV	**Lane 6**	1570	0	0
		4530	2960	2960

Weave - Sorento Valley

Traffic Volume Distribution (vehicles per hour)

	Distance	0 m	150 m	300 m	350 m
I-5	**Lane 1**	1570	0	0	0
G	**Lane 2**	800	0	0	0
		2370			

merge into one lane???

I-5

Traffic Volume Distribution (vehicles per hour)

	Distance	450 m	600 m	750 m	900 m	1050 m	1200 m	1300 m
I-5	**Lane 1**	216						
	Lane 2	216						
	Lane 3	216						
Gon	**Lane 4**	1630						
BP	**Lane 5**	1040						
BP	**Lane 6**	1272						
		4590						

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to I-5 and Sorrento Valley
Time Duration	PM peak
Analysis Type	braid version 4A (thru volume in bypass)

Parameter	Input Value
number of lanes	4 to 6
Genesee Ave on (veh/hr)	2430
Gen to I-5 on (veh/hr)	1630
Gen to SV on (veh/hr)	800
SV off from I-5 (veh/hr)	1320
SV off total (veh/hr)	2120
I-5 volume 1 (veh/hr)	6470
Bypass volume (veh/hr)	3450
I-5 volume 2 (veh/hr)	5150
I-5 volume 3 (veh/hr)	1700
I-5 + G(on)	3330
I-5 + G(on)+ BP	6780

I-5

Traffic Volume Distribution (vehicles per hour)

	Distance	0 m	150 m	300 m
I-5	**Lane 1**	808	624	567
I-5	**Lane 2**	808	624	567
I-5	**Lane 3**	808	624	567
BP	**Lane 4**	1226	1475	1553
BP	**Lane 5**	1499	1803	1898
SV	**Lane 6**	1320	0	0
		6470	5150	5150

Weave - Sorento Valley

Traffic Volume Distribution (vehicles per hour)

	Distance	0 m	150 m	300 m	350 m
I-5	**Lane 1**	1320	0	0	0
G	**Lane 2**	800	0	0	0
		2120			

merge into one lane???

I-5

Traffic Volume Distribution (vehicles per hour)

	Distance	450 m	600 m	750 m	900 m	1050 m	1200 m	1300 m
I-5	**Lane 1**	567						
	Lane 2	567						
	Lane 3	567						
Gon	**Lane 4**	1630						
BP	**Lane 5**	1553						
BP	**Lane 6**	1898						
		6780						

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to I-5 and Sorrento Valley
Time Duration	AM peak
Analysis Type	braid version 4B (no thru volume in bypass)

Parameter	Input Value
number of lanes	4 to 6
Genesee Ave on (veh/hr)	2430
Gen to I-5 on (veh/hr)	1630
Gen to SV on (veh/hr)	800
SV off from I-5 (veh/hr)	1320
SV off total (veh/hr)	2120
I-5 volume 1 (veh/hr)	6470
Bypass volume (veh/hr)	2401
I-5 volume 2 (veh/hr)	5150
I-5 volume 3 (veh/hr)	2749
I-5 + G(on)	4379
I-5 + G(on)+ BP	6780

I-5

Traffic Volume Distribution (vehicles per hour)

	Distance	0 m	150 m	300 m
I-5	**Lane 1**	1084	956	916
I-5	**Lane 2**	1084	956	916
I-5	**Lane 3**	1084	956	916
BP	**Lane 4**	854	1026	1080
BP	**Lane 5**	1043	1255	1321
SV	**Lane 6**	1320	0	0
		6470	5150	5150

Weave - Sorento Valley

Traffic Volume Distribution (vehicles per hour)

	Distance	0 m	150 m	300 m	350 m
I-5	**Lane 1**	1320	0	0	0
G	**Lane 2**	800	0	0	0
		2120			

merge into one lane???

I-5

Traffic Volume Distribution (vehicles per hour)

	Distance	450 m	600 m	750 m	900 m	1050 m	1200 m	1300 m
I-5	**Lane 1**	916						
	Lane 2	916						
	Lane 3	916						
Gon	**Lane 4**	1630						
BP	**Lane 5**	1080						
BP	**Lane 6**	1321						
		6780						

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to I-5 and Sorrento Valley
Time Duration	AM peak
Analysis Type	braid version 4C (no thru volume in bypass; DMH in bypass)

Parameter	Input Value
number of lanes	4 to 6
Genesee Ave on (veh/hr)	2430
Gen to I-5 on (veh/hr)	1630
Gen to SV on (veh/hr)	800
SV off from I-5 (veh/hr)	1320
SV off total (veh/hr)	2120
I-5 volume 1 (veh/hr)	6470
Bypass volume (veh/hr)	3201
I-5 volume 2 (veh/hr)	5150
I-5 volume 3 (veh/hr)	1949
I-5 + G(on)	3579
I-5 + G(on)+ BP	6780

I-5

Traffic Volume Distribution (vehicles per hour)

	Distance	0 m	150 m	300 m
I-5	**Lane 1**	874	703	650
I-5	**Lane 2**	874	703	650
I-5	**Lane 3**	874	703	650
BP	**Lane 4**	1138	1368	1440
BP	**Lane 5**	1391	1673	1761
SV	**Lane 6**	1320	0	0
		6470	5150	5150

Weave - Sorento Valley

Traffic Volume Distribution (vehicles per hour)

	Distance	0 m	150 m	300 m	350 m
I-5	**Lane 1**	1320	0	0	0
G	**Lane 2**	800	0	0	0
		2120			

merge into one lane???

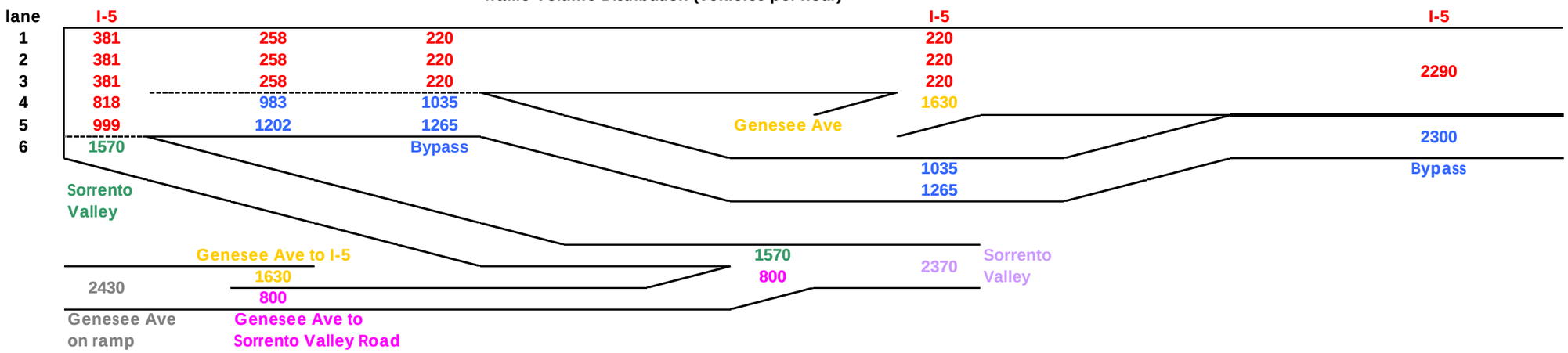
I-5

Traffic Volume Distribution (vehicles per hour)

	Distance	450 m	600 m	750 m	900 m	1050 m	1200 m	1300 m
I-5	**Lane 1**	650						
	Lane 2	650						
	Lane 3	650						
Gon	**Lane 4**	1630						
BP	**Lane 5**	1440						
BP	**Lane 6**	1761						
		6780						

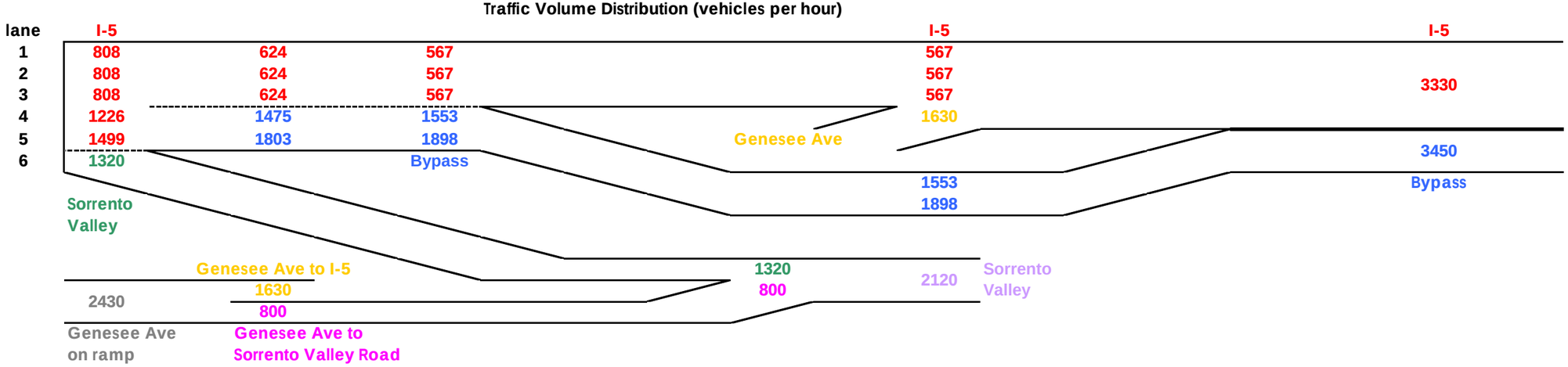
Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to I-5 and Sorrento Valley
Time Duration	AM peak
Analysis Type	Braid V 4A (thru traffic in BP)

Traffic Volume Distribution (vehicles per hour)



Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to I-5 and Sorrento Valley
Time Duration	PM peak
Analysis Type	Braid V 4A (thru traffic in BP)

Traffic Volume Distribution (vehicles per hour)



Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to I-5 and Sorrento Valley
Time Duration	AM peak
Analysis Type	merge/diverge (no braid alternative)

Parameter	Input Value
number of lanes	4 to 6
Genesee Ave on (veh/hr)	2430
Gen to I-5 on (veh/hr)	1630
Gen to SV on (veh/hr)	800
SV off from BP (veh/hr)	1570
SV off total (veh/hr)	2370
I-5 volume (veh/hr)	4530
Bypass volume (veh/hr)	2300
thru volume	453
I-5 + Gon	6960
I-5 + G(on) - SV(tot)	4590

numbers are high; Steve T will come up with new numbers

Gon to Svoff = 460 m (450 m)

Svoff to BP = 474 m (500 m)

Genesee on in Lanes 7 & 8

SV exits Lanes 7 & 8

Lanes 5 & 6 exit to BP

Diverge - I-5 to Bypass

Traffic Volume Distribution (vehicles per hour)

Distance	**0 m**	**150 m**	**300 m**	**450 m**	**600 m**	**750 m**	**900 m**	**950 m**
Lane 1	567	517	631	706	666	693	601	573
Lane 2	567	517	631	706	666	693	601	573
Lane 3	567	517	631	706	666	693	601	573
Lane 4	567	517	631	706	666	693	601	573
Lane 5	567	517	631	706	879	818	983	1035
Lane 6	1693	1745	1346	1058	1049	999	1202	1265
Lane 7	1215	1746	1424	1067	0	0	0	0
Lane 8	1215	883	1036	1304	0	0	0	0
	6960	6960	6960	6960	4590	4590	4590	4590

I-5 goes from 5 lanes to 6 lanes XXX meters before Genesee on ramp

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to I-5 and Sorrento Valley
Time Duration	PM peak
Analysis Type	merge/diverge (no braid alternative)

Parameter	Input Value
number of lanes	4 to 6
Genesee Ave on (veh/hr)	2430
Gen to I-5 on (veh/hr)	1630
Gen to SV on (veh/hr)	800
SV off from BP (veh/hr)	1320
SV off total (veh/hr)	2120
I-5 volume (veh/hr)	6470
Bypass volume (veh/hr)	3450
thru volume	647
I-5 + Gon	8900
I-5 + G(on) - SV(tot)	6780

Gon to Svoff = 460 m (450 m)
Svoff to BP = 474 m (500 m)

Genesee on in Lanes 7 & 8
SV exits Lanes 7 & 8
Lanes 5 & 6 exit to BP

Diverge - I-5 to Bypass

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	900 m	950 m
Lane 1	956	914	1030	1106	980	1014	876	833
Lane 2	956	914	1030	1106	980	1014	876	833
Lane 3	956	914	1030	1106	980	1014	876	833
Lane 4	956	914	1030	1106	980	1014	876	833
Lane 5	956	914	1030	1106	1302	1226	1475	1553
Lane 6	1690	1859	1527	1252	1557	1499	1803	1898
Lane 7	1215	1589	1224	954	0	0	0	0
Lane 8	1215	883	998	1166	0	0	0	0
	8900	8900	8900	8900	6780	6780	6780	6780

I-5 goes from 5 lanes to 6 lanes XXX meters before Genesee on ramp

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to I-5 and Sorrento Valley
Time Duration	AM peak
Analysis Type	merge/diverge (no braid alternative)

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	750	900	950
1	567	517	631	706	666	693	601	573
2	567	517	631	706	666	693	601	573
3	567	517	631	706	666	693	601	573
4	567	517	631	706	666	693	601	573
5	567	517	631	706	879	818	983	1035
6	1693	1745	1346	1058	1049	999	1202	1265
	1215	1746	1424	1067				
	1215	883	1036	1304				

2430

Genesee Ave on ramp traffic volume

2370

Sorrento Valley off ramp traffic volume

2300

Bypass off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee Ave to I-5 and Sorrento Valley
Time Duration	PM peak
Analysis Type	merge/diverge (no braid alternative)

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	750	900	950
1	956	914	1030	1106	980	1014	876	833
2	956	914	1030	1106	980	1014	876	833
3	956	914	1030	1106	980	1014	876	833
4	956	914	1030	1106	980	1014	876	833
5	956	914	1030	1106	1302	1226	1475	1553
6	1690	**1859**	1527	1252	1557	1499	**1803**	**1898**
	1215	1589	1224	954				
	1215	883	998	1166				

2430

2120

3450

Bypass off ramp traffic volume

Genesee Ave on ramp traffic volume

Sorrento Valley off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	La Jolla Village Dr to Genesee Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1250
EB volume on (veh/hr)	670
WB volume on (veh/hr)	640
volume off (veh/hr)	2270
segment volume (veh/hr)	8710
segment volume (veh/hr)	9110

Segment Lengths

merge length (m)	500
fwy segment length (m)	600
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	500 m
Lane 1	1480	1514	1386	1419
Lane 2	1480	1514	1386	1419
Lane 3	1480	1514	1386	1419
Lane 4	1480	1514	1386	1419
Lane 5	1480	1514	1386	1419
Lane 6	670	503	1142	1615
	8070	8070	8070	8710

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1368	1368
Lane 2	1368	1368
Lane 3	1368	1368
Lane 4	1368	1368
Lane 5	1368	1368
Aux Lane	2270	2270
	9110	9110

NOTES

Merge: Lane 6 not to exceed 1800 veh/hr; Lanes 1-5 not to exceed 2000 veh/hr

Diverge: Auxiliary Lane not to exceed 1800 veh/hr; Lanes 1 - 5 not to exceed 2000 veh/hr

Lanes 1 - 5 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	La Jolla Village Dr to Genesee Ave
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1250
EB volume on (veh/hr)	1050
WB volume on (veh/hr)	500
volume off (veh/hr)	750
segment volume (veh/hr)	7450
segment volume (veh/hr)	8030

Segment Lengths

merge length (m)	500
fwy segment length (m)	600
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	500 m
Lane 1	1180	1233	1146	1199
Lane 2	1180	1233	1146	1199
Lane 3	1180	1233	1146	1199
Lane 4	1180	1233	1146	1199
Lane 5	1180	1233	1146	1199
Lane 6	1050	788	1220	1458
	6950	6950	6950	7450

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1456	1456
Lane 2	1456	1456
Lane 3	1456	1456
Lane 4	1456	1456
Lane 5	1456	1456
Aux Lane	750	750
	8030	8030

NOTES

Merge: Lane 6 not to exceed 1800 veh/hr; Lanes 1-5 not to exceed 2000 veh/hr

Diverge: Auxiliary Lane not to exceed 1800 veh/hr; Lanes 1 - 5 not to exceed 2000 veh/hr

Lanes 1 - 5 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	La Jolla Village Dr to Genesee Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

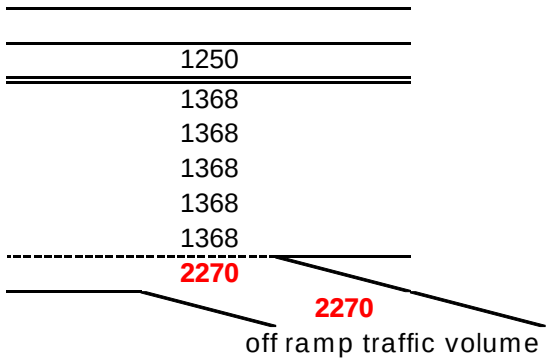
Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)					
	0	150	300	500	500-1100*	1100
1	1480	1514	1386	1419	1515	1368
2	1480	1514	1386	1419	1515	1368
3	1480	1514	1386	1419	1515	1368
4	1480	1514	1386	1419	1515	1368
5	1480	1514	1386	1419	1515	1368
	670	503	1142	1615	1135	**2270**

670
EB on ramp traffic volume

640
WB on ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment


1250
1368
1368
1368
1368
1368
2270
2270
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	La Jolla Village Dr to Genesee Ave
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

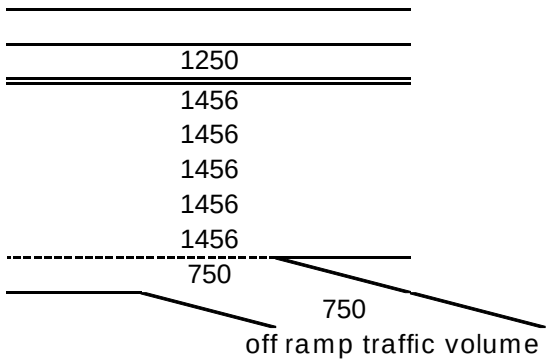
Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)					
	0	150	300	500	500-1100*	1100
1	1180	1233	1146	1199	1415	1456
2	1180	1233	1146	1199	1415	1456
3	1180	1233	1146	1199	1415	1456
4	1180	1233	1146	1199	1415	1456
5	1180	1233	1146	1199	1415	1456
	1050	788	1220	1458	375	750

1050
EB on ramp traffic volume

500
WB on ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment


1250
1456
1456
1456
1456
1456
750
750
off ramp traffic volume

Design Year	2030 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	I-5 (Genesee Ave to Del Mar Heights Rd)
Time Duration	AM peak

Data Entry

Parameter	Input Value
I-5	9110
Genesee off	2270
I-5	6840
Sorrento Valley off	1870
I-5 to Bypass	2170
I-5	2800
I-805 to I-5	3600
I-5 / I-805 junction	6400
I-5 (HOV in/out)	6760
Carmel Valley off	1150
I-5	5610

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m
Lane 1				
Lane 2				
Lane 3				
Lane 4				
Lane 5				
Lane 6				

Design Year	2030 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	I-5 (Genesee Ave to Del Mar Heights Rd)
Time Duration	PM peak

Data Entry

Parameter	Input Value
I-5	8030
Genesee off	750
I-5	7280
Sorrento Valley off	1320
I-5 to Bypass	1630
I-5	4330
I-805 to I-5	4000
I-5 / I-805 junction	8330
I-5 (HOV in/out)	8740
Carmel Valley off	1300
I-5	7440

Design Year	2030 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	Bypass
Time Duration	AM peak

Data Entry

Parameter	Input Value
I-5	6840
Genesee on	1030
Sorrento Valley off	800
Genesee to Bypass	230
I-5 to Bypass	2170
I-5 Bypass	2400
I-805 Bypass	2400
Bypass	4800
Carmel Mountain off	850
Carmel Mountain on	720
Bypass	4670
SR-56 EB off	2520
Bypass	2150
Carmel Valley Rd on	390
Bypass	2540
SR-56 WB on	1730
Bypass	4270
Del Mar Heights Rd off	1600
Bypass	2670
Del Mar Heights Rd on	1300
Bypass to I-5	3970

I-5 and Genesee on ramp to Bypass

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	400 m
Lane 1	977			
Lane 2	1194			
Lane 3	230			0

I-5 Bypass / I-805 Bypass merge to Carmel Mountain off 1160 m

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m
Lane 1	1080			
Lane 2	1320			
Lane 3	0			
Lane 4	0			

I-5 Bypass: Carmel Mountain Rd on to SR-56 EB off 920 m

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	900 m
Lane 1							1183
Lane 2							968
Lane 3							1134
Lane 4		720					1386
							4670

Design Year	2030 10+4
Freeway & Direction	I-5 Northbound
Freeway Segment	Bypass
Time Duration	PM peak

Data Entry

Parameter	Input Value
I-5	7280
Genesee on	2450
Sorrento Valley off	800
Genesee to Bypass	1650
I-5 to Bypass	1630
I-5 Bypass	3280
I-805 Bypass	3800
Bypass	7080
Carmel Mountain off	1120
Carmel Mountain on	960
Bypass	6920
SR-56 EB off	3940
Bypass	2980
Carmel Valley Rd on	520
Bypass	3500
SR-56 WB on	1150
Bypass	4650
Del Mar Heights Rd off	1600
Bypass	3050
Del Mar Heights Rd on	1390
Bypass to I-5	4440

I-5 Bypass: Carmel Valley Rd on & SR-56 WB on to Del Mar Heights Rd off 1120 m

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	900 m	1050 m	1150 m
Lane 1	1183	1183							1602
Lane 2	968	1358							1068
Lane 3	0	0	0	1730					1600
									4270

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Del Mar Heights Rd to Via de la Valle
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	6
total segment length (m)	2650
volume on (veh/hr)	1300
volume off (veh/hr)	1470
I-5 volume	5610
Bypass volume	2670
segment volume (veh/hr)	9580

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	700 m
Lane 1	1403	1403	1420	1522	1568	1588
Lane 2	1403	1403	1420	1522	1568	1588
Lane 3	1403	1403	1420	1522	1568	1588
Lane 4	1403	1483	1563	1522	1568	1588
Bypass 1	1469	1469	1583	1530	1530	1660
Bypass 2	1202	1381	1458	1638	1650	1569
Acc Lane	1300	1040	715	325	130	0
	9580	9580	9580	9580	9580	9580

Segment Lengths

merge length (m)	700
fwy segment length (m)	1800
diverge length (m)	150

Diverge

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1622	1622
Lane 2	1622	1622
Lane 3	1622	1622
Lane 4	1622	1622
Lane 5	1622	1622
Aux Lane	1470	1470
	9580	9580

NOTES

Merge: Acc Lane & Bypass Lanes not to exceed 1800 veh/hr; Lanes 1-4 not to exceed 2,000 veh/hr

Diverge: Auxiliary Lane not to exceed 1800 veh/hr; Lanes 1-5 not to exceed 2,000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Del Mar Heights Rd to Via de la Valle
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	6
total segment length (m)	2650
volume on (veh/hr)	1390
volume off (veh/hr)	1790
I-5 volume	7440
Bypass volume	3050
segment volume (veh/hr)	11880

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	700 m
Lane 1	1860	1860	1880	1994	2044	2067
Lane 2	1860	1860	1880	1994	2044	2067
Lane 3	1860	1860	1880	1994	2044	2067
Lane 4	1860	1952	2043	1994	2044	2067
Bypass 1	1678	1678	1795	1734	1734	1873
Bypass 2	1373	1559	1637	1824	1832	1741
Acc Lane	1390	1112	765	348	139	0
	11880	11880	11880	11880	11880	11880

Segment Lengths

merge length (m)	700
fwy segment length (m)	1800
diverge length (m)	150

Diverge

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	2018	2018
Lane 2	2018	2018
Lane 3	2018	2018
Lane 4	2018	2018
Lane 5	2018	2018
Aux Lane	1790	1790
	11880	11880

NOTES

Merge: Acc Lane & Bypass Lanes not to exceed 1800 veh/hr; Lanes 1-4 not to exceed 2,000 veh/hr

Diverge: Auxiliary Lane not to exceed 1800 veh/hr; Lanes 1-5 not to exceed 2,000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Del Mar Heights Rd to Via de la Valle
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

REDO AND LINK TO DMH-VdlV

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)						
	0	150	300	450	600	750	750-2500*
1	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
2	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
3	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
4	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
5	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
6	#REF!	**#REF!**	**#REF!**	**#REF!**	**#REF!**	**#REF!**	#REF!
	#REF!	#REF!	#REF!	#REF!	#REF!		

#REF!
on ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Del Mar Heights Rd to Via de la Valle
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)						
	0	150	300	450	600	750	750-2500*
1	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
2	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
3	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
4	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
5	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
6	#REF!	**#REF!**	**#REF!**	**#REF!**	**#REF!**	**#REF!**	#REF!
	#REF!	#REF!	#REF!	#REF!	#REF!		

#REF!
on ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

	2500	2650
	#REF!	#REF!
	#REF!	#REF!
	#REF!	#REF!
	#REF!	#REF!
	#REF!	#REF!
	#REF!	#REF!
		#REF!
		off ramp traffic volume

	2500	2650
	#REF!	#REF!
	#REF!	#REF!
	#REF!	#REF!
	#REF!	#REF!
	#REF!	#REF!
	#REF!	#REF!
		#REF!
		off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Via de la Valle to Lomas Santa Fe
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1450
EB volume on (veh/hr)	430
WB volume on (veh/hr)	460
volume off (veh/hr)	780
segment volume (veh/hr)	9000

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	550 m	700 m
Lane 1	1622	1631	1654	1662	1659	1656
Lane 2	1622	1631	1654	1662	1659	1656
Lane 3	1622	1631	1654	1662	1659	1656
Lane 4	1622	1631	1654	1662	1659	1656
Lane 5	1622	1631	1654	1662	1659	1656
Aux Lane	430	383	272	232	243	720
	8540	8540	8540	8540	8540	9000

Segment Lengths

merge length (m)	700
fwy segment length (m)	600
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1644	1644
Lane 2	1644	1644
Lane 3	1644	1644
Lane 4	1644	1644
Lane 5	1644	1644
Aux Lane	780	780
	9000	9000

NOTES

Merge: Auxiliary Lane & Lane 5 not to exceed 1800 veh/hr; Lanes 1-4 not to exceed 2,000 veh/hr

Diverge: Auxiliary Lane not to exceed 1800 veh/hr; Lanes 1-5 not to exceed 2,000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Via de la Valle to Lomas Santa Fe
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1450
EB volume on (veh/hr)	720
WB volume on (veh/hr)	530
volume off (veh/hr)	820
segment volume (veh/hr)	11340

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	550 m	700 m
Lane 1	2018	2039	2081	2100	2104	2104
Lane 2	2018	2039	2081	2100	2104	2104
Lane 3	2018	2039	2081	2100	2104	2104
Lane 4	2018	2039	2081	2100	2104	2104
Lane 5	2018	2039	2081	2100	2104	2104
Aux Lane	720	617	406	311	290	819
	10810	10810	10810	10810	10810	11340

Segment Lengths

merge length (m)	700
fwy segment length (m)	600
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	2104	2104
Lane 2	2104	2104
Lane 3	2104	2104
Lane 4	2104	2104
Lane 5	2104	2104
Aux Lane	820	820
	11340	11340

NOTES

Merge: Auxiliary Lane & Lane 5 not to exceed 1800 veh/hr; Lanes 1-4 not to exceed 2,000 veh/hr

Diverge: Auxiliary Lane not to exceed 1800 veh/hr; Lanes 1-5 not to exceed 2,000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Via de la Valle to Lomas Santa Fe
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	550	700	700-1300*	1300	1450
1	1622	1631	1654	1662	1659	1656	1722	1644	1644
2	1622	1631	1654	1662	1659	1656	1722	1644	1644
3	1622	1631	1654	1662	1659	1656	1722	1644	1644
4	1622	1631	1654	1662	1659	1656	1722	1644	1644
5	1622	1631	1654	1662	1659	1656	1722	1644	1644
	430	383	272	232	243	720	390	780	780

430
EB on ramp traffic volume

460
WB on ramp traffic volume

780
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Via de la Valle to Lomas Santa Fe
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	550	700	700-1300*	1300	1450
1	2018	2039	2081	2100	2104	2104	2186	2104	2104
2	2018	2039	2081	2100	2104	2104	2186	2104	2104
3	2018	2039	2081	2100	2104	2104	2186	2104	2104
4	2018	2039	2081	2100	2104	2104	2186	2104	2104
5	2018	2039	2081	2100	2104	2104	2186	2104	2104
	720	617	406	311	290	819	410	820	820

720
EB on ramp traffic volume

530
WB on ramp traffic volume

820
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Lomas Santa Fe to Manchester Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1800
EB volume on (veh/hr)	490
WB volume on (veh/hr)	470
volume off (veh/hr)	1000
segment volume (veh/hr)	8700

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	500 m
Lane 1	1645	1645	1651	1675
Lane 2	1645	1645	1651	1675
Lane 3	1645	1645	1651	1675
Lane 4	1645	1645	1651	1675
Lane 5	1161	1210	1235	1259
Aux Lane	490	441	392	740
	8230	8230	8230	8700

Segment Lengths

merge length (m)	500
fwy segment length (m)	1150
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1540	1540
Lane 2	1540	1540
Lane 3	1540	1540
Lane 4	1540	1540
Lane 5	1540	1540
Aux Lane	1000	1000
	8700	8700

NOTES

Merge: Auxiliary Lane & Lane 5 not to exceed 1800 veh/hr; Lanes 1-4 not to exceed 2,000 veh/hr

Diverge: Auxiliary Lane not to exceed 1800 veh/hr; Lanes 1-5 not to exceed 2,000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Lomas Santa Fe to Manchester Ave
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1800
EB volume on (veh/hr)	550
WB volume on (veh/hr)	470
volume off (veh/hr)	1460
segment volume (veh/hr)	11140

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	500 m
Lane 1	2151	2151	2157	2185
Lane 2	2151	2151	2157	2185
Lane 3	2151	2151	2157	2185
Lane 4	2151	2151	2157	2185
Lane 5	1518	1573	1601	1628
Aux Lane	550	495	440	773
	10670	10670	10670	11140

Segment Lengths

merge length (m)	500
fwy segment length (m)	1150
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1936	1936
Lane 2	1936	1936
Lane 3	1936	1936
Lane 4	1936	1936
Lane 5	1936	1936
Aux Lane	1460	1460
	11140	11140

NOTES

Merge: Auxiliary Lane & Lane 5 not to exceed 1800 veh/hr; Lanes 1-4 not to exceed 2,000 veh/hr

Diverge: Auxiliary Lane not to exceed 1800 veh/hr; Lanes 1-5 not to exceed 2,000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Lomas Santa Fe to Manchester Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)						
	0	150	300	500	500-1650*	1650	1800
1	1645	1645	1651	1675	1640	1540	1540
2	1645	1645	1651	1675	1640	1540	1540
3	1645	1645	1651	1675	1640	1540	1540
4	1645	1645	1651	1675	1640	1540	1540
5	1161	1210	1235	1259	1640	1540	1540
	490	441	392	740	500	1000	1000

490
EB on ramp traffic volume

470
WB on ramp traffic volume

1000
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Lomas Santa Fe to Manchester Ave
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)						
	0	150	300	500	500-1650*	1650	1800
1	2151	2151	2157	2185	2082	1936	1936
2	2151	2151	2157	2185	2082	1936	1936
3	2151	2151	2157	2185	2082	1936	1936
4	2151	2151	2157	2185	2082	1936	1936
5	1518	1573	1601	1628	2082	1936	1936
	550	495	440	773	730	1460	1460

550
EB on ramp traffic volume

470
WB on ramp traffic volume

1460
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Manchester Ave to Birmingham Dr
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1450
volume on (veh/hr)	240
volume off (veh/hr)	450
segment volume (veh/hr)	7940

Segment Lengths

merge length (m)	150
fwy segment length (m)	1150
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1636	1631
Lane 2	1636	1631
Lane 3	1636	1631
Lane 4	1636	1631
Lane 5	1155	1179
Aux Lane	240	239
	7940	7940

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1498	1498
Lane 2	1498	1498
Lane 3	1498	1498
Lane 4	1498	1498
Lane 5	1498	1498
Aux Lane	450	450
	7940	7940

NOTES

Merge: Auxiliary Lane & Lane 5 not to exceed 1800 veh/hr; Lanes 1-4 not to exceed 2,000 veh/hr

Diverge: Auxiliary Lane not to exceed 1800 veh/hr; Lanes 1-5 not to exceed 2,000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Manchester Ave to Birmingham Dr
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1450
volume on (veh/hr)	200
volume off (veh/hr)	790
segment volume (veh/hr)	9880

Segment Lengths

merge length (m)	150
fwy segment length (m)	1150
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	2057	2047
Lane 2	2057	2047
Lane 3	2057	2047
Lane 4	2057	2047
Lane 5	1452	1472
Aux Lane	200	220
	9880	9880

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1818	1818
Lane 2	1818	1818
Lane 3	1818	1818
Lane 4	1818	1818
Lane 5	1818	1818
Aux Lane	790	790
	9880	9880

NOTES

Merge: Auxiliary Lane & Lane 5 not to exceed 1800 veh/hr; Lanes 1-4 not to exceed 2,000 veh/hr

Diverge: Auxiliary Lane not to exceed 1800 veh/hr; Lanes 1-5 not to exceed 2,000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Birmingham Dr to Santa Fe Dr
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	600
volume on (veh/hr)	530
volume off (veh/hr)	530
segment volume (veh/hr)	8020

Calculated Data

Thru Volume (lane 5)	Value
10%	696

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m
Lane 1	1615	1594	1599	1634	1659
Lane 2	1615	1594	1599	1634	1659
Lane 3	1615	1594	1599	1634	1659
Lane 4	1615	1594	1599	1634	1659
Lane 5	1030	1115	1147	982	855
Aux Lane	530	530	477	504	530
	8020	8020	8020	8020	8020

NOTES

Lane 5 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2200 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Birmingham Dr to Santa Fe Dr
Time Duration	PM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	600
volume on (veh/hr)	430
volume off (veh/hr)	600
segment volume (veh/hr)	9520

Calculated Data

Thru Volume (lane 5)	Value
10%	849

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m
Lane 1	1966	1942	1939	1965	1986
Lane 2	1966	1942	1939	1965	1986
Lane 3	1966	1942	1939	1965	1986
Lane 4	1966	1942	1939	1965	1986
Lane 5	1227	1238	1247	1095	978
Aux Lane	430	515	516	565	600
	9520	9520	9520	9520	9520

NOTES

Lane 5 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Birmingham Dr to Santa Fe Dr
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)				
	0	150	300	450	600
1	1615	1594	1599	1634	1659
2	1615	1594	1599	1634	1659
3	1615	1594	1599	1634	1659
4	1615	1594	1599	1634	1659
5	1030	1115	1147	982	855
	530	530	477	504	530

530
on ramp traffic volume

530
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Birmingham Dr to Santa Fe Dr
Time Duration	PM peak
Analysis Type	weave analysis with aux lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)				
	0	150	300	450	600
1	1966	1942	1939	1965	1986
2	1966	1942	1939	1965	1986
3	1966	1942	1939	1965	1986
4	1966	1942	1939	1965	1986
5	1227	1238	1247	1095	978
	430	515	516	565	600

430
on ramp traffic volume

600
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Santa Fe Dr to Encinitas Blvd
Time Duration	AM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	800
volume on (veh/hr)	590
volume off (veh/hr)	850
segment volume (veh/hr)	8090

Calculated Data

Thru Volume (lane 5)	Value
10%	665

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	800 m
Lane 1	1623	1587	1611	1622	1619	1623	1625
Lane 2	1623	1587	1611	1622	1619	1623	1625
Lane 3	1623	1587	1611	1622	1619	1623	1625
Lane 4	1623	1587	1611	1622	1619	1623	1625
Lane 5	1008	1742	1645	1604	1613	1598	742
	7500	8090	8090	8090	8090	8090	7240

NOTES

Lane 5 not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2200 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030 (10+4 alternative)
Freeway & Direction	I-5 Northbound
Freeway Segment	Santa Fe Dr to Encinitas Blvd
Time Duration	PM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	800
volume on (veh/hr)	700
volume off (veh/hr)	850
segment volume (veh/hr)	9620

Calculated Data

Thru Volume (lane 5)	Value
10%	807

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	800 m
Lane 1	1943	1906	1942	1960	1961	1966	1968
Lane 2	1943	1906	1942	1960	1961	1966	1968
Lane 3	1943	1906	1942	1960	1961	1966	1968
Lane 4	1943	1906	1942	1960	1961	1966	1968
Lane 5	1150	1994	1853	1779	1776	1755	898
	8920	9620	9620	9620	9620	9620	8770

NOTES

Lane 5 not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Santa Fe Dr to Encinitas Blvd
Time Duration	AM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)						
	0	150	300	450	600	750	800
1	1623	1587	1611	1622	1619	1623	1625
2	1623	1587	1611	1622	1619	1623	1625
3	1623	1587	1611	1622	1619	1623	1625
4	1623	1587	1611	1622	1619	1623	1625
5	1008	1742	1645	1604	1613	1598	742

590
on ramp traffic volume

850
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Santa Fe Dr to Encinitas Blvd
Time Duration	PM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)						
	0	150	300	450	600	750	800
1	1943	1906	1942	1960	1961	1966	1968
2	1943	1906	1942	1960	1961	1966	1968
3	1943	1906	1942	1960	1961	1966	1968
4	1943	1906	1942	1960	1961	1966	1968
5	1150	**1994**	1853	1779	1776	1755	898

700
on ramp traffic volume

850
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Encinitas Blvd to Leucadia Blvd
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1300
volume on (veh/hr)	800
volume off (veh/hr)	700
segment volume (veh/hr)	8040

Segment Lengths

merge length (m)	150
fwy segment length (m)	1000
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1448	1448
Lane 2	1448	1448
Lane 3	1448	1448
Lane 4	1448	1448
Lane 5	1448	1528
Aux Lane	800	720
	8040	8040

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1468	1468
Lane 2	1468	1468
Lane 3	1468	1468
Lane 4	1468	1468
Lane 5	1468	1468
Aux Lane	700	700
	8040	8040

NOTES

Merge: Auxiliary Lane & Lane 5 not to exceed 1800 veh/hr; Lanes 1-4 not to exceed 2,000 veh/hr

Diverge: Auxiliary Lane not to exceed 1800 veh/hr; Lanes 1-5 not to exceed 2,000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Encinitas Blvd to Leucadia Blvd
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1300
volume on (veh/hr)	1000
volume off (veh/hr)	1000
segment volume (veh/hr)	9770

Segment Lengths

merge length (m)	150
fwy segment length (m)	1000
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1754	1754
Lane 2	1754	1754
Lane 3	1754	1754
Lane 4	1754	1754
Lane 5	1754	1854
Aux Lane	1000	900
	9770	9770

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1754	1754
Lane 2	1754	1754
Lane 3	1754	1754
Lane 4	1754	1754
Lane 5	1754	1754
Aux Lane	1000	1000
	9770	9770

NOTES

Merge: Auxiliary Lane & Lane 5 not to exceed 1800 veh/hr; Lanes 1-4 not to exceed 2,000 veh/hr

Diverge: Auxiliary Lane not to exceed 1800 veh/hr; Lanes 1-5 not to exceed 2,000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Encinitas Blvd to Leucadia Blvd
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)				
	0	150	150-1150*	1150	1300
1	1448	1448	1608	1468	1468
2	1448	1448	1608	1468	1468
3	1448	1448	1608	1468	1468
4	1448	1448	1608	1468	1468
5	1448	1528	1608	1468	1468
	800	720	1608	700	700

800
on ramp traffic volume

700
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Encinitas Blvd to Leucadia Blvd
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)				
	0	150	150-1150*	1150	1300
1	1754	1754	1954	1754	1754
2	1754	1754	1954	1754	1754
3	1754	1754	1954	1754	1754
4	1754	1754	1954	1754	1754
5	1754	1854	1954	1754	1754
	1000	900	1954	1000	1000

1000
on ramp traffic volume

1000
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Leucadia Blvd to La Costa Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1550
volume on (veh/hr)	850
volume off (veh/hr)	850
segment volume (veh/hr)	8190
approach volume (veh/hr)	7340
segment volume (veh/hr)	8270

Segment Lengths

merge length (m)	150
fwy segment length (m)	1250
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1652	1652
Lane 2	1652	1652
Lane 3	1652	1652
Lane 4	1652	1652
Lane 5	734	1584
	7340	8190

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1648	1648
Lane 2	1648	1648
Lane 3	1648	1648
Lane 4	1648	1648
Lane 5	1677	827
	8270	7420

NOTES

Lane 5 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 4 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Leucadia Blvd to La Costa Ave
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1550
volume on (veh/hr)	900
volume off (veh/hr)	1200
segment volume (veh/hr)	9670
approach volume (veh/hr)	8770
segment volume (veh/hr)	9770

Segment Lengths

merge length (m)	150
fwy segment length (m)	1250
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1973	1973
Lane 2	1973	1973
Lane 3	1973	1973
Lane 4	1973	1973
Lane 5	877	1777
	8770	9670

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1898	1898
Lane 2	1898	1898
Lane 3	1898	1898
Lane 4	1898	1898
Lane 5	2177	977
	9770	8570

NOTES

Lane 5 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Leucadia Blvd to La Costa Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)				
	0	150	150-1400*	1400	1550
1	1652	1652	1638	1648	1648
2	1652	1652	1638	1648	1648
3	1652	1652	1638	1648	1648
4	1652	1652	1638	1648	1648
5	734	1584	1638	1677	827

850
on ramp traffic volume

850
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Leucadia Blvd to La Costa Ave
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)				
	0	150	150-1400*	1400	1550
1	1973	1973	1934	1898	1898
2	1973	1973	1934	1898	1898
3	1973	1973	1934	1898	1898
4	1973	1973	1934	1898	1898
5	877	1777	1934	**2177**	977

900
on ramp traffic volume

1200
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	La Costa Ave to Poinsettia Lane
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1700
volume on (veh/hr)	850
volume off (veh/hr)	950
segment volume (veh/hr)	8270
approach volume (veh/hr)	7420

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1670	1670
Lane 2	1670	1670
Lane 3	1670	1670
Lane 4	1670	1670
Lane 5	742	1592
	7420	8270

Segment Lengths

merge length (m)	150
fwy segment length (m)	1100
diverge length (m)	450

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	450 m	300 m	150 m	0 m
Lane 1	1673	1635	1623	1623
Lane 2	1673	1635	1623	1623
Lane 3	1673	1635	1623	1623
Lane 4	1673	1635	1623	1623
Lane 5	1578	1131	903	827
Dec Lane	0	599	874	950
	8270	8270	8270	8270

NOTES

Lane 5 & Dec Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 4 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	La Costa Ave to Poinsettia Lane
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1700
volume on (veh/hr)	900
volume off (veh/hr)	1000
segment volume (veh/hr)	9470
approach volume (veh/hr)	8570

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1928	1928
Lane 2	1928	1928
Lane 3	1928	1928
Lane 4	1928	1928
Lane 5	857	1757
	8570	9470

Segment Lengths

merge length (m)	150
fwy segment length (m)	1100
diverge length (m)	450

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	450 m	300 m	150 m	0 m
Lane 1	1933	1893	1881	1881
Lane 2	1933	1893	1881	1881
Lane 3	1933	1893	1881	1881
Lane 4	1933	1893	1881	1881
Lane 5	1737	1267	1027	947
Dec Lane	0	630	920	1000
	9470	9470	9470	9470

NOTES

Lane 5 & Dec Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	La Costa Ave to Poinsettia Lane
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)					
	0	150	150-1250*	1250	1400	1550
1	1670	1670	1654	1673	1635	1623
2	1670	1670	1654	1673	1635	1623
3	1670	1670	1654	1673	1635	1623
4	1670	1670	1654	1673	1635	1623
5	742	1592	1654	1578	1131	903
					599	874

850
on ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	La Costa Ave to Poinsettia Lane
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)					
	0	150	150-1250*	1250	1400	1550
1	1928	1928	1894	1933	1893	1881
2	1928	1928	1894	1933	1893	1881
3	1928	1928	1894	1933	1893	1881
4	1928	1928	1894	1933	1893	1881
5	857	1757	1894	1737	1267	1027
					630	920

900
on ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

1700

1623

1623

1623

1623

827

950

950

off ramp traffic volume

1700

1881

1881

1881

1881

947

1000

1000

off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Poinsettia Lane to Palomar Airport Road
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1700
volume on (veh/hr)	900
volume off (veh/hr)	2300
segment volume (veh/hr)	8220
approach volume (veh/hr)	7320

Calculated Data

Thru Volume	Value
10%	822

Segment Lengths

merge length (m)	150
fwy segment length (m)	800
diverge length (m)	750

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1647	1647
Lane 2	1647	1647
Lane 3	1647	1647
Lane 4	1647	1647
Lane 5	732	1632
	7320	8220

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	750 m	600 m	450 m	300 m	150 m	0 m
Lane 1	1585	1487	1395	1303	1275	1275
Lane 2	1585	1487	1395	1303	1275	1275
Lane 3	1585	1487	1395	1303	1275	1275
Lane 4	1585	1487	1395	1303	1275	1275
Lane 5	1880	1420	1259	1259	1006	822
Aux lane	0	851	1380	1748	2116	2300
	8220	8220	8220	8220	8220	8220

NOTES

Lane 5 and Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 4 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Poinsettia Lane to Palomar Airport Road
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1700
volume on (veh/hr)	820
volume off (veh/hr)	2400
segment volume (veh/hr)	9290
approach volume (veh/hr)	8470

Calculated Data

Thru Volume	Value
10%	929

Segment Lengths

merge length (m)	150
fwy segment length (m)	800
diverge length (m)	750

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1906	1906
Lane 2	1906	1906
Lane 3	1906	1906
Lane 4	1906	1906
Lane 5	847	1667
	8470	9290

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	750 m	600 m	450 m	300 m	150 m	0 m
Lane 1	1814	1712	1616	1520	1382	1442
Lane 2	1814	1712	1616	1520	1382	1442
Lane 3	1814	1712	1616	1520	1382	1442
Lane 4	1814	1712	1616	1520	1382	1442
Lane 5	2033	1553	1385	1385	1553	1121
Aux lane	0	888	1440	1824	2208	2400
	9290	9290	9290	9290	9290	9290

NOTES

Lane 5 and Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Poinsettia Lane to Palomar Airport Road
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)							
	0	150	150-950*	950	1100	1250	1400	1550
1	1647	1647	1644	1585	1487	1395	1303	1275
2	1647	1647	1644	1585	1487	1395	1303	1275
3	1647	1647	1644	1585	1487	1395	1303	1275
4	1647	1647	1644	1585	1487	1395	1303	1275
5	732	1632	1644	**1880**	1420	1259	1259	1006
					851	1380	1748	**2116**

900
on ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

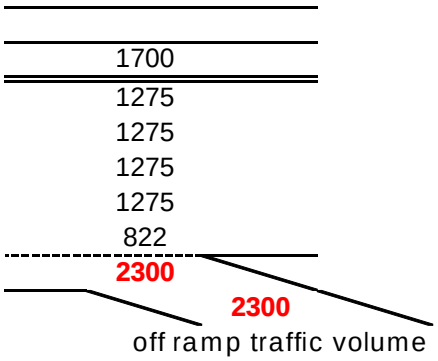
Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Poinsettia Lane to Palomar Airport Road
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

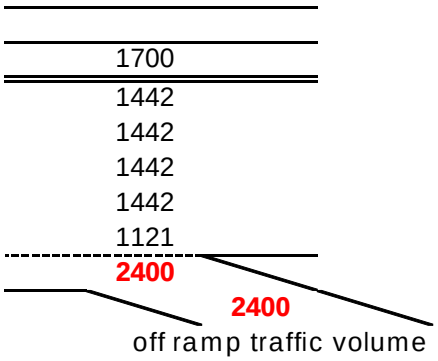
Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)							
	0	150	150-950*	950	1100	1250	1400	1550
1	1906	1906	1858	1814	1712	1616	1520	1382
2	1906	1906	1858	1814	1712	1616	1520	1382
3	1906	1906	1858	1814	1712	1616	1520	1382
4	1906	1906	1858	1814	1712	1616	1520	1382
5	847	1667	1858	**2033**	1553	1385	1385	1553
					888	1440	**1824**	**2208**

820
on ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment


1700
1275
1275
1275
1275
822
2300
2300
off ramp traffic volume


1700
1442
1442
1442
1442
1121
2400
2400
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Palomar Airport Road to Cannon Road
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	5
weave length (m)	900
volume on (veh/hr)	1750
volume off (veh/hr)	1050
total volume (veh/hr)	7670

Calculated Data

Thru Volume	Value
10%	487

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	900 m
Lane 1	1282	1238	1237	1304	1358	1411	1446
Lane 2	1282	1238	1237	1304	1358	1411	1446
Lane 3	1282	1238	1237	1304	1358	1411	1446
Lane 4	1282	1238	1237	1304	1358	1411	1446
Lane 5	792	1166	1712	1562	1317	1009	837
Aux lane	1750	1554	1012	893	921	1019	1050
	7670	7670	7670	7670	7670	7670	7670

NOTES

Lane 5 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2200 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Palomar Airport Road to Cannon Road
Time Duration	PM peak
Analysis Type	Weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	5
weave length (m)	900
volume on (veh/hr)	2200
volume off (veh/hr)	700
total volume (veh/hr)	9090

Calculated Data

Thru Volume	Value
10%	619

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	900 m
Lane 1	1517	1487	1513	1622	1715	1789	1833
Lane 2	1517	1487	1513	1622	1715	1789	1833
Lane 3	1517	1487	1513	1622	1715	1789	1833
Lane 4	1517	1487	1513	1622	1715	1789	1833
Lane 5	822	1330	2035	1852	1544	1225	1059
Aux lane	2200	1811	1005	750	686	710	700
	9090	9090	9090	9090	9090	9090	9090

NOTES

Aux Lane not to exceed 1800 veh/hr

Lanes 1 through 5 not to exceed 2000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Palomar Airport Road to Cannon Road
Time Duration	AM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)						
	0	150	300	450	600	750	900
1	1282	1238	1237	1304	1358	1411	1446
2	1282	1238	1237	1304	1358	1411	1446
3	1282	1238	1237	1304	1358	1411	1446
4	1282	1238	1237	1304	1358	1411	1446
5	792	1166	1712	1562	1317	1009	837
	1750	1554	1012	893	921	1019	1050

1750
on ramp traffic volume

1050
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Palomar Airport Road to Cannon Road
Time Duration	PM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)						
	0	150	300	450	600	750	900
1	1517	1487	1513	1622	1715	1789	1833
2	1517	1487	1513	1622	1715	1789	1833
3	1517	1487	1513	1622	1715	1789	1833
4	1517	1487	1513	1622	1715	1789	1833
5	822	1330	**2035**	**1852**	**1544**	1225	1059
	2200	**1811**	1005	750	686	710	700

2200
on ramp traffic volume

700
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Cannon Road to Tamarack Avenue
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1450
volume on (veh/hr)	880
volume off (veh/hr)	730
segment volume (veh/hr)	7500

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1324	1324
Lane 2	1324	1324
Lane 3	1324	1324
Lane 4	1324	1324
Lane 5	1324	1412
Aux lane	880	792
	7500	7500

Segment Lengths

merge length (m)	150
fwy segment length (m)	1150
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1354	1354
Lane 2	1354	1354
Lane 3	1354	1354
Lane 4	1354	1354
Lane 5	1354	1354
Aux lane	730	730
	7500	7500

NOTES

Merge: Auxiliary Lane & Lane 5 not to exceed 1800 veh/hr; Lanes 1-4 not to exceed 2,000 veh/hr

Diverge: Auxiliary Lane not to exceed 1800 veh/hr; Lanes 1-5 not to exceed 2,000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Distance from on-ramp	0 m	150 m	300 m	450 m	600 m	750 m
% on	0	100	60	30	19	14
% off	46	63	79	95	100	0

from distribution calc excel sheet

Distance from on-ramp	0 m	150 m	300 m	450 m	600 m	650 m
% on	0	100	60	30	19	17.3
% off	57.3	73.6	89.6	98.3	100	0

from graphs A and B of LOS D method hand out

Distance from on-ramp	0 m	150 m	300 m	450 m	600 m	650
	0 ft	492	984	1476	1969	2133
% on	0	100	60	29	19	17
m	650	500	350	200	50	0
ft	2133	1640	1148	656	164	0
% off	58	73	90	98	100	0

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Cannon Road to Tamarack Avenue
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1450
volume on (veh/hr)	1320
volume off (veh/hr)	900
segment volume (veh/hr)	9730

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1682	1682
Lane 2	1682	1682
Lane 3	1682	1682
Lane 4	1682	1682
Lane 5	1682	1814
Aux lane	1320	1188
	9730	9730

Segment Lengths

merge length (m)	150
fwy segment length (m)	1150
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1766	1766
Lane 2	1766	1766
Lane 3	1766	1766
Lane 4	1766	1766
Lane 5	1766	1766
Aux lane	900	900
	9730	9730

NOTES

Merge: Auxiliary Lane & Lane 5 not to exceed 1800 veh/hr; Lanes 1-4 not to exceed 2,000 veh/hr

Diverge: Auxiliary Lane not to exceed 1800 veh/hr; Lanes 1-5 not to exceed 2,000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Cannon Road to Tamarack Avenue
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)				
	0	150	300-1300*	1300	1450
1	1324	1324	1427	1354	1354
2	1324	1324	1427	1354	1354
3	1324	1324	1427	1354	1354
4	1324	1324	1427	1354	1354
5	1324	1412	1427	1354	1354
	880	792	367	730	730

880
on ramp traffic volume

730
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Cannon Road to Tamarack Avenue
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)				
	0	150	300-1300*	1300	1450
1	1682	1682	1856	1766	1766
2	1682	1682	1856	1766	1766
3	1682	1682	1856	1766	1766
4	1682	1682	1856	1766	1766
5	1682	1814	1856	1766	1766
	1320	1188	450	900	900

1320
on ramp traffic volume

900
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Tamarack Avenue to Carlsbad Village Drive
Time Duration	AM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	5
weave length (m)	850
volume on (veh/hr)	540
volume off (veh/hr)	750
total volume (veh/hr)	7310

Calculated Data

Thru Volume	Value
10%	602

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	850 m
Lane 1	1477	1445	1468	1478	1470	1471	1473
Lane 2	1477	1445	1468	1478	1470	1471	1473
Lane 3	1477	1445	1468	1478	1470	1471	1473
Lane 4	1477	1445	1468	1478	1470	1471	1473
Lane 5	862	1530	1438	1396	1430	1428	667
	6770	7310	7310	7310	7310	7310	6560

NOTES

Lane 5 not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2200 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Tamarack Avenue to Carlsbad Village Drive
Time Duration	PM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	5
weave length (m)	850
volume on (veh/hr)	650
volume off (veh/hr)	900
total volume (veh/hr)	9480

Calculated Data

Thru Volume	Value
10%	793

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	850 m
Lane 1	1931	1893	1921	1933	1923	1924	1927
Lane 2	1931	1893	1921	1933	1923	1924	1927
Lane 3	1931	1893	1921	1933	1923	1924	1927
Lane 4	1931	1893	1921	1933	1923	1924	1927
Lane 5	1105	1908	1798	1747	1787	1784	871
	8830	9480	9480	9480	9480	9480	8580

NOTES

Lane 5 not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Tamarack Ave to Carlsbad Village Dr
Time Duration	AM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)						
	0	150	300	450	600	750	850
1	1477	1445	1468	1478	1470	1471	1473
2	1477	1445	1468	1478	1470	1471	1473
3	1477	1445	1468	1478	1470	1471	1473
4	1477	1445	1468	1478	1470	1471	1473
5	862	1530	1438	1396	1430	1428	667

540
on ramp traffic volume

750
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Tamarack Ave to Carlsbad Village Dr
Time Duration	PM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)						
	0	150	300	450	600	750	850
1	1931	1893	1921	1933	1923	1924	1927
2	1931	1893	1921	1933	1923	1924	1927
3	1931	1893	1921	1933	1923	1924	1927
4	1931	1893	1921	1933	1923	1924	1927
5	1105	**1908**	**1798**	1747	**1787**	1784	871

650
on ramp traffic volume

900
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Carlsbad Village Drive to Las Flores Drive
Time Duration	AM peak
Analysis Type	weave analysis with lane addition

Data Entry

Parameter	Input Value
number of lanes	5 to 6
weave length (m)	350
volume on (veh/hr)	600
volume off (veh/hr)	240
total volume (veh/hr)	7160

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	350 m
Lane 1	1422	1312	1219	1218
Lane 2	1422	1312	1219	1218
Lane 3	1422	1312	1219	1218
Lane 4	1422	1312	1219	1218
Lane 5	872	1004	1219	1218
Lane 6	600	910	1064	830
	7160	7160	7160	6920

6 thru lanes at Las Flores

5 thru lanes at Carlsbad Village Drive

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Carlsbad Village Drive to Las Flores Drive
Time Duration	PM peak
Analysis Type	weave analysis with lane addition

Data Entry

Parameter	Input Value
number of lanes	6 to 5
weave length (m)	350
volume on (veh/hr)	670
volume off (veh/hr)	580
total volume (veh/hr)	9250

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	350 m
Lane 1	1800	1653	1527	1524
Lane 2	1800	1653	1527	1524
Lane 3	1800	1653	1527	1524
Lane 4	1800	1653	1527	1524
Lane 5	1380	1309	1527	1524
Lane 6	670	1329	1614	1052
	9250	9250	9250	8670

6 thru lanes at Las Flores
5 thru lanes at Carlsbad Village Drive

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Carlsbad Village Dr to Las Flores Dr
Time Duration	AM peak
Analysis Type	weave analysis with lane addition

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)			
	0	150	300	350
1	1422	1312	1219	1218
2	1422	1312	1219	1218
3	1422	1312	1219	1218
4	1422	1312	1219	1218
5	872	1004	1219	1218
	600	910	1064	830

600
on ramp traffic volume

240
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Carlsbad Village Dr to Las Flores Dr
Time Duration	PM peak
Analysis Type	weave analysis with lane addition

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)			
	0	150	300	350
1	1800	1653	1527	1524
2	1800	1653	1527	1524
3	1800	1653	1527	1524
4	1800	1653	1527	1524
5	1380	1309	1527	1524
	670	1329	1614	1052

670
on ramp traffic volume

580
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Las Flores Drive to SR-78
Time Duration	AM peak
Analysis Type	

Data Entry

Parameter	Input Value
number of lanes	6 to 4
weave length (m)	600
volume on (veh/hr)	500
WB volume off (veh/hr)	330
EB volume off (veh/hr)	2200
total volume (veh/hr)	7420

Calculated Data

Thru Volume	Value
10%	742

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	350 m	450 m	600 m
Lane 1	1192	1354	1369	1388	1383	1383
Lane 2	1192	1354	1369	1388	1383	1383
Lane 3	1192	1354	1369	1388	1383	1383
Lane 4	1192	1354	1369	1056	1072	742
Lane 5	1192	917	1015	990	0	0
Lane 6	962	1087	930	1210	0	0
	6920	7420	7420	7420	5220	4890

NOTES

0 - 350 meters: Lanes 4 - 6 not to exceed 1800 veh/hr

0 - 350 meters: Lanes 1 - 3 not to exceed 2200 veh/hr

450 - 600 meters: Lane 4 not to exceed 1800 veh/hr

450 - 600 meters: Lanes 1-3 not to exceed 2200 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Las Flores Drive to SR-78
Time Duration	PM peak
Analysis Type	

Data Entry

Parameter	Input Value
number of lanes	6 to 4
weave length (m)	600
volume on (veh/hr)	780
WB volume off (veh/hr)	400
EB volume off (veh/hr)	3600
total volume (veh/hr)	9450

Calculated Data

Thru Volume	Value
10%	945

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	350 m	450 m	600 m
Lane 1	1473	1559	1578	1508	1502	1502
Lane 2	1473	1559	1578	1508	1502	1502
Lane 3	1473	1559	1578	1508	1502	1502
Lane 4	1473	1559	1578	1325	1345	945
Lane 5	1473	1487	1621	1620	0	0
Lane 6	1305	1727	1518	1980	0	0
	8670	9450	9450	9450	5850	5450

NOTES

0 - 350 meters: Lanes 4 - 6 not to exceed 1800 veh/hr

0 - 350 meters: Lanes 1 - 3 not to exceed 2000 veh/hr

450 - 600 meters: Lane 4 not to exceed 1800 veh/hr

450 - 600 meters: Lanes 1-3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Las Flores Drive to SR-78
Time Duration	AM peak
Analysis Type	

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)					
	0	150	300	350	450	600
1	1192	1354	1369	1388	1383	1383
2	1192	1354	1369	1388	1383	1383
3	1192	1354	1369	1388	1383	1383
4	1192	1354	1369	1056	1072	742
5	1192	917	1015	990		
6	962	1087	930	1210		

500
on ramp traffic volume

EB SR-78 off ramp traffic volume

2200

WB SR-78 off ramp traffic volume

330

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Las Flores Drive to SR-78
Time Duration	PM peak
Analysis Type	

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)					
	0	150	300	350	450	600
1	1473	1559	1578	1508	1502	1502
2	1473	1559	1578	1508	1502	1502
3	1473	1559	1578	1508	1502	1502
4	1473	1559	1578	1325	1345	945
5	1473	1487	1621	1620		
6	1305	1727	1518	1980		

780
on ramp traffic volume

EB SR-78 off ramp traffic volume

3600

WB SR-78 off ramp traffic volume

400

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	SR-78 to Oceanside BLVD
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4 to 6 to 5
weave length (m)	1400
SR-78 volume on (veh/hr)	2480
California Street volume on (veh/hr)	250
volume off (veh/hr)	920
total volume (veh/hr)	7680

Calculated Data

Thru Volume	Value
10%	768

Segment Lengths

merge length (m)	150
fwy segment length (m)	950
diverge length (m)	300

Merge

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1477	1238
Lane 2	1477	1238
Lane 3	1477	1238
Lane 4	520	1238
Lane 5	1240	1238
Lane 6	1240	1238
	7430	7430

Diverge

Traffic Volume Distribution (vehicles per hour)

Distance	300 m	150 m	0 m
Lane 1	1360	1349	1436
Lane 2	1360	1349	1436
Lane 3	1360	1349	1436
Lane 4	1360	1349	1436
Lane 5	1037	1188	1018
Lane 6	951	1096	920
	7430	7680	7680

NOTES

Lane 6 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 5 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 5 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	SR-78 to Oceanside BLVD
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	4 to 6 to 5
weave length (m)	1400
SR-78 volume on (veh/hr)	2620
California Street volume on (veh/hr)	300
volume off (veh/hr)	1500
total volume (veh/hr)	8470

Calculated Data

Thru Volume	Value
10%	847

Segment Lengths

merge length (m)	150
fwy segment length (m)	950
diverge length (m)	300

Merge

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1655	1362
Lane 2	1655	1362
Lane 3	1655	1362
Lane 4	585	1362
Lane 5	1310	1362
Lane 6	1310	1362
	8170	8170

Diverge

Traffic Volume Distribution (vehicles per hour)

Distance	300 m	150 m	0 m
Lane 1	1380	1361	1456
Lane 2	1380	1361	1456
Lane 3	1380	1361	1456
Lane 4	1380	1361	1456
Lane 5	1297	1346	1147
Lane 6	1354	1680	1500
	8170	8470	8470

NOTES

Lane 6 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 5 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 5 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	SR-78 to Oceanside Blvd
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)					
	0	150	150-1100*	1100	1250	1400
1	1477	1238	1238	1360	1349	1436
2	1477	1238	1238	1360	1349	1436
3	1477	1238	1238	1360	1349	1436
4	520	1238	1238	1360	1349	1436
	1240	1238	1238	1037	1188	1018
	1240	1238	1238	951	1096	920

2480
on ramp traffic volume
(SR-78)

250
on ramp traffic volume
(California Street)

920
off ramp traffic volume
(Oceanside BLVD)

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	SR-78 to Oceanside Blvd
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)					
	0	150	150-1100*	1100	1250	1400
1	1655	1362	1362	1380	1361	1456
2	1655	1362	1362	1380	1361	1456
3	1655	1362	1362	1380	1361	1456
4	585	1362	1362	1380	1361	1456
	1310	1362	1362	1297	1346	1147
	1310	1362	1362	1354	1680	1500

2620
on ramp traffic volume
(SR-78)

300
on ramp traffic volume
(California Street)

1500
off ramp traffic volume
(Oceanside BLVD)

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Oceanside Blvd to Mission Ave
Time Duration	AM peak
Analysis Type	weave analysis with lane drop

Data Entry

Parameter	Input Value
number of lanes	5 to 4
total segment length (m)	600
volume on (veh/hr)	500
volume off (veh/hr)	1420
segment volume (veh/hr)	7800

Calculated Data

Thru Volume	Value
10%	588

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m
Lane 1	1515	1454	1799	1767	1795
Lane 2	1515	1454	1799	1767	1795
Lane 3	1515	1454	1799	1767	1795
Lane 4	1515	1454	1105	1115	995
Lane 5	1241	1983	1297	1384	1420
	7300	7800	7800	7800	7800

NOTES

Lane 5 not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2200 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Oceanside Blvd to Mission Ave
Time Duration	PM peak
Analysis Type	weave analysis with lane drop

Data Entry

Parameter	Input Value
number of lanes	5 to 4
total segment length (m)	600
volume on (veh/hr)	600
volume off (veh/hr)	2050
segment volume (veh/hr)	8000

Calculated Data

Thru Volume	Value
10%	535

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m
Lane 1	1631	1393	1660	1603	1657
Lane 2	1631	1393	1660	1603	1657
Lane 3	1631	1393	1660	1603	1657
Lane 4	1631	1393	1190	1202	980
Lane 5	1478	2427	1830	1990	2050
	8000	8000	8000	8000	8000

NOTES

Lane 5 not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Oceanside Blvd to Mission Ave
Time Duration	AM peak
Analysis Type	weave analysis with lane drop

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)				
	0	150	300	450	600
1	1515	1454	1799	1767	1795
2	1515	1454	1799	1767	1795
3	1515	1454	1799	1767	1795
4	1515	1454	1105	1115	995
5	1241	**1983**	1297	1384	1420

500
on ramp traffic volume

1420
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Oceanside Blvd to Mission Ave
Time Duration	PM peak
Analysis Type	weave analysis with lane drop

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)				
	0	150	300	450	600
1	1631	1393	1660	1603	1657
2	1631	1393	1660	1603	1657
3	1631	1393	1660	1603	1657
4	1631	1393	1190	1202	980
5	1478	**2427**	**1830**	**1990**	**2050**

600
on ramp traffic volume

2050
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Mission Ave to SR-76
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	450
volume on (veh/hr)	800
volume off (veh/hr)	1600
segment volume (veh/hr)	7180

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m
Lane 1	1546	1461	1503	1586
Lane 2	1546	1461	1503	1586
Lane 3	1546	1461	1503	1586
Lane 4	1742	1510	1142	822
Aux lane	800	1288	1528	1600
	7180	7180	7180	7180

Calculated Data

Thru Volume	Value
10%	478

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2200 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Mission Ave to SR-76
Time Duration	PM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	450
volume on (veh/hr)	450
volume off (veh/hr)	2300
segment volume (veh/hr)	6400

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m
Lane 1	1256	1133	1134	1181
Lane 2	1256	1133	1134	1181
Lane 3	1256	1133	1134	1181
Lane 4	2182	1394	851	559
Aux lane	450	1607	2148	2300
	6400	6400	6400	6400

Calculated Data

Thru Volume	Value
10%	365

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Mission Avenue to SR-76
Time Duration	AM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)			
	0	150	300	450
1	1546	1461	1503	1586
2	1546	1461	1503	1586
3	1546	1461	1503	1586
4	1742	1510	1142	822
	800	1288	1528	1600

800
on ramp traffic volume

1600
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Mission Avenue to SR-76
Time Duration	PM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)			
	0	150	300	450
1	1256	1133	1134	1181
2	1256	1133	1134	1181
3	1256	1133	1134	1181
4	**2182**	1394	851	559
	450	1607	**2148**	**2300**

450
on ramp traffic volume

2300
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	SR-76 to Harbor
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	700
volume on (veh/hr)	2200
volume off WB (veh/hr)	400
volume off EB (veh/hr)	2100
segment volume (veh/hr)	7780

Calculated Data

Thru Volume	Value
10%	308

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	500 m	700 m
Lane 1	1204	1092	1248	1475	1420
Lane 2	1204	1092	1248	1475	1420
Lane 3	1204	1092	1248	1475	1420
Lane 4	1967	2410	1950	1254	1020
Aux lane	2200	2093	2086	1407	0
Aux lane	0	0	0	693	0
	7780	7780	7780	7780	5280

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2200 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	SR-76 to Harbor
Time Duration	PM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	700
volume on (veh/hr)	1650
volume off WB (veh/hr)	300
volume off EB (veh/hr)	1250
segment volume (veh/hr)	5750

Calculated Data

Thru Volume	Value
10%	255

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	500 m	700 m
Lane 1	953	886	1008	1179	1125
Lane 2	953	886	1008	1179	1125
Lane 3	953	886	1008	1179	1125
Lane 4	1243	1728	1461	965	825
Aux lane	1650	1365	1266	838	0
Aux lane	0	0	0	413	0
	5750	5750	5750	5750	4200

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	SR-76 to Harbor
Time Duration	AM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)				
	0	150	300	500	700
1	1204	1092	1248	1475	1420
2	1204	1092	1248	1475	1420
3	1204	1092	1248	1475	1420
4	**1967**	**2410**	**1950**	1254	1020
	2200	**2093**	**2086**	1407	

2200
on ramp traffic volume

693
2100
EB off ramp traffic volume

400
WB off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	SR-76 to Harbor
Time Duration	PM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)				
	0	150	300	500	700
1	953	886	1008	1179	1125
2	953	886	1008	1179	1125
3	953	886	1008	1179	1125
4	1243	1728	1461	965	825
	1650	1365	1266	838	
				413	

1650
on ramp traffic volume

1250
off ramp traffic volume

300
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	SR-76 to Harbor
Time Duration	AM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)				
	0	150	300	500	700
1	0	0	0	0	0
2	0	0	0	0	0
3	0	0	0	0	0
4	**0**	**0**	0	0	0
	0	**0**	**0**	0	
0				0	

0

0

on ramp traffic volume
(ramp metered down from 2180)

EB off ramp traffic volume

WB off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Oceanside Blvd to Vandergrift
Time Duration	AM peak
Analysis Type	congestion analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	2950
Oceanside on (veh/hr)	500
Mission off (veh/hr)	1400
Mission on (veh/hr)*	500
SR-76 off (veh/hr)	1600
SR-76 on (veh/hr)	2200
EB Vandergrift off (veh/hr)	2100
WB Vandergrift off (veh/hr)	400

segment	seg vol
oceanside - mission	7140
mission - SR 76	6400
SR 76 - Vandergrift	7000

Calculated Data

Thru Volume	Value
weave 1	524
weave 2	430
weave 3	230

*(metered down from 800)

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m
Lane 1	1368	1309	1607	1575	1550	1685
Lane 2	1368	1309	1607	1575	1550	1685
Lane 3	1368	1309	1607	1575	1550	1685
Lane 4	1368	1309	1039	1049	1089	846
Lane 5	1168	1906	1281	1365	1400	0
	6640	7140	7140	7140	7140	5900

oceanside on

mission off

600 m lane drop

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Oceanside Blvd to Vandergrift
Time Duration	PM peak
Analysis Type	congestion analysis

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	2950
Oceanside on (veh/hr)	600
Mission off (veh/hr)	2050
Mission on (veh/hr)	450
SR-76 off (veh/hr)	2300
SR-76 on (veh/hr)	1650
EB Vandergrift off (veh/hr)	1250
WB Vandergrift off (veh/hr)	300

segment	seg vol
oceanside - mission	8630
mission - sr 76	7200
SR 76 - Vandergrift	6550

Calculated Data

Thru Volume	Value
weave 1	598
weave 2	445
weave 3	335

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m
Lane 1	1622	1535	1849	1792	1743	1902
Lane 2	1622	1535	1849	1792	1743	1902
Lane 3	1622	1535	1849	1792	1743	1902
Lane 4	1622	1535	1253	1265	1351	1043
Lane 5	1541	2490	1830	1990	2050	0
	8030	8630	8630	8630	8630	6750

oceanside on

mission off

600 m lane drop

900 m	1050 m	1200 m	1300 m	1450 m	1600 m	1750	1900 m	2050 m	2200 m	2250 m	2400 m	2550 m
1615	1525	1423	1402	1317	1263	1273	1237	1118	999	970	858	1014
1615	1525	1423	1402	1317	1263	1273	1237	1118	999	970	858	1014
1615	1525	1423	1402	1317	1263	1273	1237	1118	999	970	858	1014
1054	1326	1630	1694	1267	1103	981	1089	1446	1803	1889	2332	1872
0	0	0	500	1183	1507	1600	0	0	0	2200	2093	2086
5900	5900	5900	6400	6400	6400	6400	4800	4800	4800	7000	7000	7000

mission on SR76 off SR76 on

700 m	450 m aux lane	500 m	500 m aux lane

900 m	1050 m	1200 m	1300 m	1450 m	1600 m	1750	1900 m	2050 m	2200 m	2250 m	2400 m	2550 m
1803	1672	1527	1496	1373	1332	1354	1349	1278	1208	1193	1126	1248
1803	1672	1527	1496	1373	1332	1354	1349	1278	1208	1193	1126	1248
1803	1672	1527	1496	1373	1332	1354	1349	1278	1208	1193	1126	1248
1342	1733	2170	2262	1474	1056	839	853	1065	1278	1323	1808	1541
0	0	0	450	1607	2148	2300	0	0	0	1650	1365	1266
6750	6750	6750	7200	7200	7200	7200	4900	4900	4900	6550	6550	6550
			mission on			SR76 off				SR76 on		

700 m	450 m aux lane	500 m	500 m aux lane

2750 m	2900 m	2950 m
1241	1337	1337
1241	1337	1337
1241	1337	1337
1176	890	490
2100	0	0
7000	4900	4500

vandergrift EB off

vandergrift WB off

	200 m

2750 m	2900 m	2950 m
1419	1490	1490
1419	1490	1490
1419	1490	1490
1045	830	530
1250	0	0
6550	5300	5000

vandergrift EB off

vandergrift WB off

	200 m

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Oceanside Blvd to Vandergrift
Time Duration	AM peak
Analysis Type	congestion analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)					
	0	150	300	450	600	750
1	1368	1309	1607	1575	1550	1685
2	1368	1309	1607	1575	1550	1685
3	1368	1309	1607	1575	1550	1685
4	1368	1309	1039	1049	1089	846
5	1168	**1906**	1281	1365	1400	

500
on ramp traffic volume
(Oceanside Blvd)

1400
off ramp traffic volume
(Mission Ave)

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Oceanside Blvd to Vandergrift
Time Duration	PM peak
Analysis Type	congestion analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)					
	0	150	300	450	600	750
1	1622	1535	1849	1792	1743	1902
2	1622	1535	1849	1792	1743	1902
3	1622	1535	1849	1792	1743	1902
4	1622	1535	1253	1265	1351	1043
5	1541	**2490**	**1830**	**1990**	**2050**	

600
on ramp traffic volume
(Oceanside Blvd)

2050
off ramp traffic volume
(Mission Ave)

900	1050	1200	1300	1450	1600
1615	1525	1423	1402	1317	1263
1615	1525	1423	1402	1317	1263
1615	1525	1423	1402	1317	1263
1054	1326	1630	1694	1267	1103
			500	1183	1507

500

on ramp traffic volume
(Mission Ave)

900	1050	1200	1300	1450	1600
1803	1672	1527	1496	1373	1332
1803	1672	1527	1496	1373	1332
1803	1672	1527	1496	1373	1332
1342	1733	**2170**	**2262**	1474	1056
			450	1607	**2148**

450

on ramp traffic volume
(Mission Ave)

1750	1900	2050	2200	2250	2400	2550
1273	1237	1118	999	970	858	1014
1273	1237	1118	999	970	858	1014
1273	1237	1118	999	970	858	1014
981	1089	1446	**1803**	**1889**	**2332**	**1872**
1600				**2200**	**2093**	**2086**

1600

off ramp traffic volume
(SR-76)

2200

on ramp traffic volume
(SR-76)

1750	1900	2050	2200	2250	2400	2550
1354	1349	1278	1208	1193	1126	1248
1354	1349	1278	1208	1193	1126	1248
1354	1349	1278	1208	1193	1126	1248
839	853	1065	1278	1323	1808	1541
2300				1650	1365	1266

2300

off ramp traffic volume
(SR-76)

1650

on ramp traffic volume
(SR-76)

2750	2900	2950
1241	1337	1337
1241	1337	1337
1241	1337	1337
1176	890	490
2100		
	2100	400
	off ramp traffic volume (EB Vandergrift)	off ramp traffic volume (WB Vandergrift)

2750	2900	2950
1419	1490	1490
1419	1490	1490
1419	1490	1490
1045	830	530
1250		

1250
off ramp traffic volume
(EB Vandergrift)

300
off ramp traffic volume
(WB Vandergrift)

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Oceanside Blvd to Vandergrift
Time Duration	AM peak
Analysis Type	congestion analysis with braid

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	3300
Oceanside on (veh/hr)	500
Mission off (veh/hr)	1400
Mission on (veh/hr)*	500
SR-76 off (veh/hr)	1600
Vandergrift off (veh/hr)	2500
SR-76 on (veh/hr)	2200

segment	seg vol
oceanside - mission	7140
mission - sr 76	6400
SR 76 - Vandergrift	7000

Calculated Data

Thru Volume	Value
10%	524

*(metered down from 800)

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m
Lane 1	1368	1309	1607	1522	1518	1532
Lane 2	1368	1309	1607	1522	1518	1532
Lane 3	1368	1309	1607	1522	1518	1532
Lane 4	1368	1309	1039	1209	1185	1304
Lane 5	1168	1906	1281	1365	1400	0
	6640	7140	7140	7140	7140	5900

oside on

mission off

600 m lane drop

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Oceanside Blvd to Vandergrift
Time Duration	PM peak
Analysis Type	congestion analysis with braid

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	3300
Oceanside on (veh/hr)	600
Mission off (veh/hr)	2050
Mission on (veh/hr)	450
SR-76 off (veh/hr)	2300
Vandergrift off (veh/hr)	1550
SR-76 on (veh/hr)	1650

segment	seg vol
oceanside - mission	8630
mission - SR 76	7200
SR 76 - Vandergrift	6550

Calculated Data

Thru Volume	Value
10%	449

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m
Lane 1	1660	1572	1849	1715	1697	1751
Lane 2	1660	1572	1849	1715	1697	1751
Lane 3	1660	1572	1849	1715	1697	1751
Lane 4	1660	1572	1253	1495	1489	1497
Lane 5	1392	2341	1830	1990	2050	0
	8030	8630	8630	8630	8630	6750

oside on

mission off

600 m lane drop

900 m	1050 m	1200 m	1300 m	1450 m	1600 m	1650 m	1800 m	1950 m	1950-3150	3150 m	3300 m
1490	1378	1162	918	780	670	688	767	690	575	575	575
1490	1378	1162	918	780	670	688	767	690	575	575	575
1490	1378	1162	918	780	670	688	767	690	575	575	575
1431	1765	2414	3145	2782	2790	2735	2500	230	575	575	2775
0	0	0	500	1277	1600	1600	0	0	0	0	0
5900	5900	5900	6400	6400	6400	6400	4800	2300	2300	2300	4500
			mission on			SR76 off		vandergrift off			SR76 on

700 m	350 m	aux lane	300 m	1200 m	150 m

900 m	1050 m	1200 m	1300 m	1450 m	1600 m	1650 m	1800 m	1950 m	1950-3150	3150 m	3300 m
1702	1602	1407	1186	1083	1018	1037	1117	1005	838	838	838
1702	1602	1407	1186	1083	1018	1037	1117	1005	838	838	838
1702	1602	1407	1186	1083	1018	1037	1117	1005	838	838	838
1644	1945	2530	3193	2183	1889	1790	1550	335	838	838	2488
0	0	0	450	1769	2257	2300	0	0	0	0	0
6750	6750	6750	7200	7200	7200	7200	4900	3350	3350	3350	5000
			mission on			SR76 off		vandergrift off			SR76 on

700 m	350 m	aux lane	300 m	1200 m	150 m

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Oceanside Blvd to Vandergrift
Time Duration	AM peak
Analysis Type	congestion analysis with braid

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)					
	0	150	300	450	600	750
1	1368	1309	1607	1522	1518	1532
2	1368	1309	1607	1522	1518	1532
3	1368	1309	1607	1522	1518	1532
4	1368	1309	1039	1209	1185	1304
5	1168	**1906**	1281	1365	1400	

500
on ramp traffic volume
(Oceanside Blvd)

1400
off ramp traffic volume
(Mission Ave)

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Oceanside Blvd to Vandergrift
Time Duration	PM peak
Analysis Type	congestion analysis with braid

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)					
	0	150	300	450	600	750
1	1660	1572	1849	1715	1697	1751
2	1660	1572	1849	1715	1697	1751
3	1660	1572	1849	1715	1697	1751
4	1660	1572	1253	1495	1489	1497
5	1392	**2341**	**1830**	**1990**	**2050**	

600
on ramp traffic volume
(Oceanside Blvd)

2050
off ramp traffic volume
(Mission Ave)

900	1050	1200	1300	1450	1600
1490	1378	1162	918	780	670
1490	1378	1162	918	780	670
1490	1378	1162	918	780	670
1431	1765	**2414**	**3145**	**2782**	**2790**
			500	1277	1600

500

on ramp traffic volume
(Mission Ave)
(metered down from 800 veh/hr)

900	1050	1200	1300	1450	1600
1702	1602	1407	1186	1083	1018
1702	1602	1407	1186	1083	1018
1702	1602	1407	1186	1083	1018
1644	**1945**	**2530**	**3193**	**2183**	**1889**
			450	1769	**2257**

450

on ramp traffic volume
(Mission Ave)

1650	1800	1950	1950-3150	3150	3300
688	767	690	575	575	575
688	767	690	575	575	575
688	767	690	575	575	575
2735	**2500**	230	575	575	**2775**
1600					
	1600	**2500**		**2200**	
	off ramp traffic volume (SR-76)	off ramp traffic volume (Vandergrift)		on ramp traffic volume (SR-76)	

1650	1800	1950	1950-3150	3150	3300
1037	1117	1005	837.5	838	838
1037	1117	1005	837.5	838	838
1037	1117	1005	837.5	838	838
1790	1550	335	837.5	838	**2488**
2300					
	2300	1550		1650	
	off ramp traffic volume (SR-76)	off ramp traffic volume (Vandergrift)		on ramp traffic volume (SR-76)	

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Oceanside Blvd to Vandergrift
Time Duration	AM peak
Analysis Type	congestion analysis with braid+aux

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	3450
Oceanside on (veh/hr)	500
Mission off (veh/hr)	1400
Mission on (veh/hr)*	500
SR-76 off (veh/hr)**	1600
Vandergrift off (veh/hr)	2500
SR-76 on (veh/hr)	2200

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m
Lane 1	1368	1309	1607	1522	1518	1615
Lane 2	1368	1309	1607	1522	1518	1615
Lane 3	1368	1309	1607	1522	1518	1615
Lane 4	1368	1309	1039	1209	1185	1054
Lane 5	1168	1906	1281	1365	1400	0
Lane 6	0	0	0	0	0	0
	6640	7140	7140	7140	7140	5900

oside on

mission off

600 m	lane drop	700 m (lan

segment	seg vol
oceanside - mission	7140
mission - sr 76	6400
SR 76 - Vandergrift	7000

Calculated Data

Thru Volume	Value
10%	524

*metered down from 800

**SR-76 off ramp options off 15% of off ramp volume from lane 5

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Oceanside Blvd to Vandergrift
Time Duration	PM peak
Analysis Type	congestion analysis with braid+aux

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	3450
Oceanside on (veh/hr)*	400
Mission off (veh/hr)	2050
Mission on (veh/hr)	450
SR-76 off (veh/hr)**	2300
Vandergrift off (veh/hr)	1550
SR-76 on (veh/hr)	1650

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m
Lane 1	1705	1617	1894	1765	1726	1803
Lane 2	1705	1617	1894	1765	1726	1803
Lane 3	1705	1617	1894	1765	1726	1803
Lane 4	1705	1617	1188	1361	1403	1342
Lane 5	1412	2161	1760	1976	2050	0
Lane 6	0	0	0	0	0	0
	8230	8630	8630	8630	8630	6750

oside on

mission off

600 m	lane drop	700 m (lan

segment	seg vol
oceanside - mission	8630
mission - SR 76	7200
SR 76 - Vandergrift	6550

Calculated Data

Thru Volume	Value
10%	469

*metered down from 600

**SR-76 off ramp options off 15% of off ramp volume from lane 5

900 m	1050 m	1200 m	1300 m	1450 m	1600 m	1650 m	1800 m	1950 m	1950-3150	3150 m	3300 m	3450 m
1525	1393	1242	1165	1050	628	615	590	575	575	575	575	913
1525	1393	1242	1165	1050	628	615	590	575	575	575	575	913
1525	1393	1242	1165	1050	628	615	590	575	575	575	575	913
1326	920	1150	1125	1150	1250	765	655	575	575	575	1675	1760
0	800	1024	1280	903	1905	2430	2375	2500	0	0	1100	0
0	0	0	500	1197	1360	1360	0	0	0	0	0	0
5900	5900	5900	6400	6400	6400	6400	4800	4800	2300	2300	4500	4500
			mission on			SR76 off		vandergrift off			SR76 on	
e 5 opens up at 1050 mark)			350 m	aux lane				300 m	1200 m	300 m; 150 aux for SR76 on		

900 m	1050 m	1200 m	1300 m	1450 m	1600 m	1650 m	1800 m	1950 m	1950-3150	3150 m	3300 m	3450 m
1672	1552	1375	1329	1246	992	971	938	838	838	838	838	1227
1672	1552	1375	1329	1246	992	971	938	838	838	838	838	1227
1672	1552	1375	1329	1246	992	971	938	838	838	838	838	1227
1733	945	1153	925	713	775	571	613	838	838	838	1663	1320
0	1150	1472	1840	1097	1537	1763	1473	1550	0	0	825	0
0	0	0	450	1654	1912	1955	0	0	0	0	0	0
6750	6750	6750	7200	7200	7200	7200	4900	4900	3350	3350	5000	5000
			mission on			SR76 off		vandergrift off			SR76 on	
e 5 opens up at 1050 mark)			350 m	aux lane				300 m	1200 m	300 m; 150 aux for SR76 on		

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Oceanside Blvd to Vandergrift
Time Duration	AM peak
Analysis Type	congestion analysis with braid + aux

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)					
	0	150	300	450	600	750
1	1368	1309	1607	1522	1518	1615
2	1368	1309	1607	1522	1518	1615
3	1368	1309	1607	1522	1518	1615
4	1368	1309	1039	1209	1185	1054
5	1168	**1906**	1281	1365	1400	

500
on ramp traffic volume
(Oceanside Blvd)

1400
off ramp traffic volume
(Mission Ave)

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Oceanside Blvd to Vandergrift
Time Duration	PM peak
Analysis Type	congestion analysis with braid + aux

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)					
	0	150	300	450	600	750
1	1705	1617	1894	1765	1726	1803
2	1705	1617	1894	1765	1726	1803
3	1705	1617	1894	1765	1726	1803
4	1705	1617	1188	1361	1403	1342
5	1412	**2161**	**1760**	**1976**	**2050**	

400
on ramp traffic volume
(Oceanside Blvd)
(metered down from 600 veh/hr)

2050
off ramp traffic volume
(Mission Ave)

900	1050	1200	1300	1450	1600
1525	1393	1242	1165	1050	628
1525	1393	1242	1165	1050	628
1525	1393	1242	1165	1050	628
1326	920	1150	1125	1150	1250
	800	1024	1280	903	**1905**
			500	1197	1360

500

on ramp traffic volume
(Mission Ave)
(metered down from 800 veh/hr)

900	1050	1200	1300	1450	1600
1672	1552	1375	1329	1246	992
1672	1552	1375	1329	1246	992
1672	1552	1375	1329	1246	992
1733	945	1153	925	713	775
	1150	1472	**1840**	1097	1537
			450	1654	**1912**

450

on ramp traffic volume
(Mission Ave)

1650	1800	1950	1950-3150	3150	3300
615	590	575	575	575	575
615	590	575	575	575	575
615	590	575	575	575	575
765	655	575	575	575	1675
2430	**2375**	**2500**			1100
1360		**2500**		**2200**	

1600
off ramp traffic volume
(SR-76)
(lane 5 options off 15% or 345)

off ramp traffic volume
(Vandergrift)

on ramp traffic volume
(SR-76)

1650	1800	1950	1950-3150	3150	3300
971	938	838	838	838	838
971	938	838	838	838	838
971	938	838	838	838	838
571	613	838	838	838	1663
1763	1473	1550			825
1955			1650	1650	
	2300				

off ramp traffic volume (SR-76)
(lane 5 options off 15% or 345)

off ramp traffic volume (Vandergrift)

on ramp traffic volume (SR-76)

3450
913
913
913
1760

3450
1227
1227
1227
1320

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Oceanside Blvd to Vandergrift
Time Duration	AM peak
Analysis Type	congestion analysis with braid and elephant tracks

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	3300
Oceanside on (veh/hr)	500
Mission off (veh/hr)	1400
Mission on (veh/hr)*	500
SR-76 off (veh/hr)	1600
Vandergrift off (veh/hr)	2500
SR-76 on (veh/hr)	2200

segment	seg vol
oceanside - mission	7140
mission - sr 76	6400
SR 76 - Vandergrift	7000

Calculated Data

Thru Volume	Value
10%	524

*(metered down from 800)

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m
Lane 1	1368	1309	1607	1522	1518	1615
Lane 2	1368	1309	1607	1522	1518	1615
Lane 3	1368	1309	1607	1522	1518	1615
Lane 4	1368	1309	1039	1209	1185	1054
Lane 5	1168	1906	1281	1365	1400	0
	6640	7140	7140	7140	7140	5900

oside on

mission off

600 m lane drop	

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Oceanside Blvd to Vandergrift
Time Duration	PM peak
Analysis Type	congestion analysis with braid and elephant tracks

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	3300
Oceanside on (veh/hr)	600
Mission off (veh/hr)	2050
Mission on (veh/hr)	450
SR-76 off (veh/hr)	2300
Vandergrift off (veh/hr)	1550
SR-76 on (veh/hr)	1650

segment	seg vol
oceanside - mission	8630
mission - SR 76	7200
SR 76 - Vandergrift	6550

Calculated Data

Thru Volume	Value
10%	449

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m
Lane 1	1660	1572	1849	1715	1697	1803
Lane 2	1660	1572	1849	1715	1697	1803
Lane 3	1660	1572	1849	1715	1697	1803
Lane 4	1660	1572	1253	1495	1489	1342
Lane 5	1392	2341	1830	1990	2050	0
	8030	8630	8630	8630	8630	6750

oside on

mission off

600 m	lane drop	

900 m	1050 m	1200 m	1300 m	1450 m	1600 m	1750 m	1950 m	1950-3150	3150 m	3300 m
1525	1522	1596	1403	1163	1163	1150	1035	575	575	575
1525	1522	1596	1403	1163	1163	1150	1035	575	575	575
1525	1522	1445	1575	1975	2475	2500	230	575	575	575
1326	1335	1264	1520	784	528	0	0	575	575	2775
0	0	0	500	1316	1072	0	0	0	0	0
5900	5900	5900	6400	6400	6400	4800	2300	2300	2300	4500
			mission on		SR76 off		vandergrift off			SR76 on

700 m	300 m	2 aux lane exit	350 m	1200 m	150 m

900 m	1050 m	1200 m	1300 m	1450 m	1600 m	1750 m	1950 m	1950-3150	3150 m	3300 m
1672	1639	1963	1794	1613	1669	1675	1508	838	838	838
1672	1639	1963	1794	1613	1669	1675	1508	838	838	838
1672	1639	1008	977	1225	1563	1550	335	838	838	838
1733	1833	1817	2185	912	759	0	0	838	838	2488
0	0	0	450	1838	1541	0	0	0	0	0
6750	6750	6750	7200	7200	7200	4900	3350	3350	3350	5000
			mission on		SR76 off		vandergrift off			SR76 on
700 m			300 m	2 aux lane exit			350 m	1200 m	150 m	

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Oceanside Blvd to Vandergrift
Time Duration	AM peak
Analysis Type	congestion analysis with braid and stripping

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)					
	0	150	300	450	600	750
1	1368	1309	1607	1522	1518	1615
2	1368	1309	1607	1522	1518	1615
3	1368	1309	1607	1522	1518	1615
4	1368	1309	1039	1209	1185	1054
5	1168	**1906**	1281	1365	1400	

500
on ramp traffic volume
(Oceanside Blvd)

1400
off ramp traffic volume
(Mission Ave)

Design Year	2030
Freeway & Direction	I-5 Northbound
Freeway Segment	Oceanside Blvd to Vandergrift
Time Duration	PM peak
Analysis Type	congestion analysis with braid and stripping

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)					
	0	150	300	450	600	750
1	1660	1572	1849	1715	1697	1803
2	1660	1572	1849	1715	1697	1803
3	1660	1572	1849	1715	1697	1803
4	1660	1572	1253	1495	1489	1342
5	1392	**2341**	**1830**	**1990**	**2050**	

600
on ramp traffic volume
(Oceanside Blvd)

2050
off ramp traffic volume
(Mission Ave)

900	1050	1200	1300	1450	1600
1525	1522	1596	1403	1163	1163
1525	1522	1596	1403	1163	1163
1525	1522	1445	1575	**1975**	**2475**
1326	1335	1264	1520	784	528
			500	1316	1072

500

1600

on ramp traffic volume
(Mission Ave)
(metered down from 800 veh/hr)

off ramp traff

900	1050	1200	1300	1450	1600
1672	1639	1963	1794	1613	1669
1672	1639	1963	1794	1613	1669
1672	1639	1008	977	1225	1563
1733	**1833**	**1817**	**2185**	912	759
			450	**1838**	1541

450

2300

on ramp traffic volume
(Mission Ave)
(metered down from 800 veh/hr)

off ramp traff

1750	1950	1950-3150	3150	3300
1150	1035	575	575	575
1150	1035	575	575	575
2500	230	575	575	575
		575	575	**2775**

2500

off ramp traffic volume

(Vandergrift)

2200

on ramp traffic volume

(SR-76)

ic volume

(SR-76)

1750	1950	1950-3150	3150	3300
1675	1508	837.5	838	838
1675	1508	837.5	838	838
1550	335	837.5	838	838
		837.5	838	**2488**

1550
off ramp traffic volume
(Vandergrift)

1650
on ramp traffic volume
(SR-76)

ic volume
(SR-76)

SB 2030 10+4 Traffic Analysis Ramp Metered
May 2007

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Poinsettia Lane to La Costa Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	300-1550*	1550	1700
1	1586	1586	1646	1613	1609	1609
2	1586	1586	1646	1613	1609	1609
3	1586	1586	1646	1613	1609	1609
4	1586	1586	1646	1613	1609	1609
5	970	1570	1480	1613	1660	810
	750	150				

750
on ramp traffic volume

850
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Poinsettia Lane to La Costa Ave
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	300-1550*	1550	1700
1	1525	1525	1607	1605	1565	1565
2	1525	1525	1607	1605	1565	1565
3	1525	1525	1607	1605	1565	1565
4	1525	1525	1607	1605	1565	1565
5	900	1720	1597	1605	1807	807
	1025	205				

1025
on ramp traffic volume

1000
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

(off ramp traffic percentage in weave lane)

Percentage of Traffic Exiting (in outter most lane) per distance from on ramp

distance (m)	0	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
900	29	34.7	40.3	46	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0
850	34.7	40.3	46	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0	
800	40.3	46	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0		
750	46	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0			
700	51.7	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0				
650	57.3	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0					
600	63	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0						
550	68.3	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0							
500	73.6	79	84.3	89.6	95	96.7	98.3	100	100	100	0								
450	79	84.3	89.6	95	96.7	98.3	100	100	100	0									
400	84.3	89.6	95	96.7	98.3	100	100	100	0										
350	89.6	95	96.7	98.3	100	100	100	0											
300	95	96.7	98.3	100	100	100	0												

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Vandergrift to SR-76
Time Duration	AM peak
Analysis Type	weave with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	700
volume on (veh/hr)	1100
volume off WB (veh/hr)	260
volume off EB (veh/hr)	1250
total volume (veh/hr)	5580

on ramp meter rate	100

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	500 m	700 m
Lane 1	1109	1050	1034	1066	1095	1166
Lane 2	1109	1050	1034	1066	1095	1166
Lane 3	1109	1050	1034	1066	1095	1166
Lane 4	1152	1123	1237	1074	958	572
Aux Lane	1100	1308	1242	1309	1079	1250
	5580	5580	5580	5580	5320	5320

Calculated Data

Thru Volume	Value
10%	297

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Vandergrift to SR-76
Time Duration	PM peak
Analysis Type	weave with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	700
volume on (veh/hr)	1850
volume off WB (veh/hr)	300
volume off EB (veh/hr)	1700
total volume (veh/hr)	6830

on ramp meter rate	150

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	500 m	700 m
Lane 1	1186	1109	1106	1181	1231	1357
Lane 2	1186	1109	1106	1181	1231	1357
Lane 3	1186	1109	1106	1181	1231	1357
Lane 4	1421	1539	1792	1528	1349	761
Aux Lane	1850	1965	1722	1759	1488	1700
	6830	6830	6830	6830	6530	6530

Calculated Data

Thru Volume	Value
10%	298

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Vandergrift to SR-76
Time Duration	AM peak
Analysis Type	weave with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	500	700
1	1109	1050	1034	1066	1095	1166
2	1109	1050	1034	1066	1095	1166
3	1109	1050	1034	1066	1095	1166
4	1152	1123	1237	1074	958	572
	1100	1308	1242	1309	1079	1250

1100 on ramp traffic volume

260 WB off ramp traffic volume

1250 EB off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Vandergrift to SR-76
Time Duration	PM peak
Analysis Type	weave with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	500	700
1	1186	1109	1106	1181	1231	1357
2	1186	1109	1106	1181	1231	1357
3	1186	1109	1106	1181	1231	1357
4	1421	1539	1792	1528	1349	761
	1850	**1965**	1722	1759	1488	1700

1850 on ramp traffic volume

300 WB off ramp traffic volume

1700 EB off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	SR-76 to Mission Ave
Time Duration	AM peak
Analysis Type	weave with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	400
volume on (veh/hr)	2200
volume off (veh/hr)	400
total volume (veh/hr)	6270

on ramp meter rate	300

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	400 m
Lane 1	1122	1117	1226	1460
Lane 2	1122	1117	1226	1460
Lane 3	1122	1117	1226	1460
Lane 4	703	2023	2003	1489
Aux lane	2200	896	590	400
	6270	6270	6270	6270

Calculated Data

Thru Volume	Value
10%	367

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	SR-76 to Mission Ave
Time Duration	PM peak
Analysis Type	weave with aux lane

Data Entry

Parameter	Input Value
number of lanes	4
weave length (m)	400
volume on (veh/hr)	1800
volume off (veh/hr)	600
total volume (veh/hr)	6630

on ramp meter rate	100

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	400 m
Lane 1	1301	1293	1371	1563
Lane 2	1301	1293	1371	1563
Lane 3	1301	1293	1371	1563
Lane 4	927	1857	1797	1341
Aux lane	1800	894	720	600
	6630	6630	6630	6630

Calculated Data

Thru Volume	Value
10%	423

NOTES

Lane 4 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	SR-76 to Mission Avenue
Time Duration	AM peak
Analysis Type	weave with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	400
1	1122	1117	1226	1460
2	1122	1117	1226	1460
3	1122	1117	1226	1460
4	703	**2023**	**2003**	1489
	2200	896	590	400

2200
on ramp traffic volume

400
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	SR-76 to Mission Avenue
Time Duration	PM peak
Analysis Type	weave with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	400
1	1301	1293	1371	1563
2	1301	1293	1371	1563
3	1301	1293	1371	1563
4	927	**1857**	1797	1341
	1800	894	720	600

1800
on ramp traffic volume

600
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Mission Ave to Oceanside Blvd
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment

Data Entry

Parameter	Input Value
number of lanes	4 to 5
weave length (m)	1050
volume on (veh/hr)	1400
volume off (veh/hr)	400
total volume (veh/hr)	6850

on ramp meter rate	50

Segment Lengths

merge length (m)	550
fwy segment length (m)	350
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1363	1370
Lane 2	1363	1370
Lane 3	1363	1370
Lane 4	1363	1370
Lane 5	1400	1370
	6850	6850

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1370	1370
Lane 2	1370	1370
Lane 3	1370	1370
Lane 4	1370	1370
Lane 5	1370	970
	6850	6450

NOTES

Lane 5 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Mission Ave to Oceanside Blvd
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment

Data Entry

Parameter	Input Value
number of lanes	4 to 5
weave length (m)	1050
volume on (veh/hr)	1550
volume off (veh/hr)	650
total volume (veh/hr)	7180

on ramp meter rate	50

Segment Lengths

merge length (m)	550
fwy segment length (m)	350
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1408	1436
Lane 2	1408	1436
Lane 3	1408	1436
Lane 4	1408	1436
Lane 5	1550	1436
	7180	7180

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1436	1436
Lane 2	1436	1436
Lane 3	1436	1436
Lane 4	1436	1436
Lane 5	1436	786
	7180	6530

NOTES

Lane 5 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Mission Ave to Oceanside Blvd
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)				
Number	0	150	150-900*	900	1050
1	1363	1370	1370	1370	1370
2	1363	1370	1370	1370	1370
3	1363	1370	1370	1370	1370
4	1363	1370	1370	1370	1370
	1400	1370	1370	1370	970

1400
WB on ramp traffic volume

400
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Mission Ave to Oceanside Blvd
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)				
Number	0	150	150-900*	900	1050
1	1408	1436	1436	1436	1436
2	1408	1436	1436	1436	1436
3	1408	1436	1436	1436	1436
4	1408	1436	1436	1436	1436
	1550	1436	1436	1436	786

1550
WB on ramp traffic volume

650
off ramp traffic volume

nnnnnn nnnnnn nnnnnn

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Oceanside Blvd to Cassidy St
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment

Data Entry

Parameter	Input Value
number of lanes	5 to 6
weave length (m)	1200
volume on (veh/hr)	1250
volume off (veh/hr)	250
total volume (veh/hr)	7700
on ramp meter rate	50

Segment Lengths

merge length (m)	150
fwy segment length (m)	900
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1290	1210
Lane 2	1290	1210
Lane 3	1290	1210
Lane 4	1290	1210
Lane 5	1290	1210
Lane 6	1250	1650
	7700	7700

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1283	1283
Lane 2	1283	1283
Lane 3	1283	1283
Lane 4	1283	1283
Lane 5	1283	1283
Lane 6	1283	1033
	7700	7450

NOTES

Lane 6 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 5 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 5 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (6 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Oceanside Blvd to Cassidy St
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment

Data Entry

Parameter	Input Value
number of lanes	5 to 6
weave length (m)	1200
volume on (veh/hr)	950
volume off (veh/hr)	280
total volume (veh/hr)	7480
on ramp meter rate	50

Segment Lengths

merge length (m)	150
fwy segment length (m)	900
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1306	1226
Lane 2	1306	1226
Lane 3	1306	1226
Lane 4	1306	1226
Lane 5	1306	1226
Lane 6	950	1350
	7480	7480

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1247	1247
Lane 2	1247	1247
Lane 3	1247	1247
Lane 4	1247	1247
Lane 5	1247	1247
Lane 6	1247	967
	7480	7200

NOTES

Lane 6 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 5 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 5 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (6 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Oceanside Blvd to Cassidy St
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)				
Number	0	150	150-1050*	1050	1200
1	1290	1210	1283	1283	1283
2	1290	1210	1283	1283	1283
3	1290	1210	1283	1283	1283
4	1290	1210	1283	1283	1283
5	1290	1210	1283	1283	1283
	1250	1650	1283	1283	1033

1250
on ramp traffic volume

250
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Oceanside Blvd to Cassidy St
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)				
Number	0	150	150-1050*	1050	1200
1	1306	1226	1247	1247	1247
2	1306	1226	1247	1247	1247
3	1306	1226	1247	1247	1247
4	1306	1226	1247	1247	1247
5	1306	1226	1247	1247	1247
	950	1350	1247	1247	967

950
on ramp traffic volume

280
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Cassidy St to SR-78
Time Duration	AM peak
Analysis Type	weave with 2 lane drop

Data Entry

Parameter	Input Value
number of lanes	6 to 4
weave length (m)	300
volume on (veh/hr)	400
volume off (veh/hr)	2800
total volume (veh/hr)	7850

on ramp meter rate	50

Calculated Data

Thru Volume	Value
10%	785

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m
Lane 1	1221	1176	1295
Lane 2	1221	1176	1295
Lane 3	1221	1176	1295
Lane 4	1221	1176	1165
Lane 5	1221	1625	1260
Lane 6	1345	1520	1540
	7450	7850	7850

NOTES

Lanes 5 and 6 not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Cassidy St to SR-78
Time Duration	PM peak
Analysis Type	weave with 2 lane drop

Data Entry

Parameter	Input Value
number of lanes	6 to 4
weave length (m)	300
volume on (veh/hr)	370
volume off (veh/hr)	2500
total volume (veh/hr)	7570

on ramp meter rate	50

Calculated Data

Thru Volume	Value
10%	757

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m
Lane 1	1189	1173	1321
Lane 2	1189	1173	1321
Lane 3	1189	1173	1321
Lane 4	1189	1173	1109
Lane 5	1189	1507	1125
Lane 6	1257	1370	1375
	7200	7570	7570

NOTES

Lanes 5 and 6 not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Cassidy St to SR-78
Time Duration	AM peak
Analysis Type	weave with 2 lane drop

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300
1	1221	1176	1295
2	1221	1176	1295
3	1221	1176	1295
4	1221	1176	1165
5	1221	1625	1260
6	1345	1520	1540

400
on ramp traffic volume

2800
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Cassidy St to SR-78
Time Duration	PM peak
Analysis Type	weave with 2 lane drop

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300
1	1189	1173	1321
2	1189	1173	1321
3	1189	1173	1321
4	1189	1173	1109
5	1189	1507	1125
6	1257	1370	1375

370
on ramp traffic volume

2500
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	SR-78 to Las Flores Drive
Time Duration	AM peak
Analysis Type	weave with 2 lane addition

Data Entry

Parameter	Input Value
number of lanes	4 to 6
weave length (m)	250
volume on (veh/hr)	3600
volume off (veh/hr)	400
total volume (veh/hr)	8650

on ramp meter rate	0

Calculated Data

Thru Volume	Value
10%	865

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	250 m
Lane 1	1262	1375	1442
Lane 2	1262	1375	1442
Lane 3	1262	1375	1442
Lane 4	1265	1375	1442
Lane 5	1800	1415	1442
Lane 6	1800	1735	1042
	8650	8650	8250

NOTES

Lanes 4 - 6 not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	SR-78 to Las Flores Drive
Time Duration	AM peak
Analysis Type	weave with 2 lane addition

Data Entry

Parameter	Input Value
number of lanes	4 to 6
weave length (m)	250
volume on (veh/hr)	2500
volume off (veh/hr)	500
total volume (veh/hr)	7570

on ramp meter rate	0

Calculated Data

Thru Volume	Value
10%	757

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	250 m
Lane 1	1271	1178	1262
Lane 2	1271	1178	1262
Lane 3	1271	1178	1262
Lane 4	1257	1178	1262
Lane 5	1250	1228	1262
Lane 6	1250	1628	762
	7570	7570	7070

NOTES

Lanes 4 - 6 not to exceed 1800 veh/hr

Lanes 1 - 3 not to exceed 2000 veh/hr

Lanes 1 - 3 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	SR-78 to Las Flores Drive
Time Duration	AM peak
Analysis Type	weave with 2 lane addition

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	250
1	1262	1375	1442
2	1262	1375	1442
3	1262	1375	1442
4	1265	1375	1442
	1800	1415	1442
	1800	**1735**	1042

3600
on ramp traffic volume

400
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	SR-78 to Las Flores Drive
Time Duration	PM peak
Analysis Type	weave with 2 lane addition

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	250
1	1271	1178	1262
2	1271	1178	1262
3	1271	1178	1262
4	1257	1178	1262
	1250	1228	1262
	1250	1628	762

2500
on ramp traffic volume

500
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Las Flores Dr to Carlsbad Village Dr
Time Duration	AM peak
Analysis Type	weave analysis with lane drop

Data Entry

Parameter	Input Value
number of lanes	6 to 5
weave length (m)	400
volume on (veh/hr)	280
volume off (veh/hr)	550
total volume (veh/hr)	8530
on ramp meter rate	50

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	400 m
Lane 1	1403	1390	1519	1734
Lane 2	1403	1390	1519	1734
Lane 3	1403	1390	1519	1734
Lane 4	1403	1390	1519	1734
Lane 5	1403	1390	1077	1043
Lane 6	1234	1582	1376	550
	8250	8530	8530	8530

Calculated Data

Thru Volume	Value
10%	770

6 thru lanes at Las Flores
5 thru lanes at Carlsbad Village Drive

NOTES

Lane 6 not to exceed 1800 veh/hr
Lanes 1 - 5 not to exceed 2000 veh/hr
Lanes 1 - 5 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Las Flores Dr to Carlsbad Village Dr
Time Duration	PM peak
Analysis Type	weave analysis with lane drop

Data Entry

Parameter	Input Value
number of lanes	6 to 5
weave length (m)	400
volume on (veh/hr)	200
volume off (veh/hr)	700
total volume (veh/hr)	7270
on ramp meter rate	50

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	400 m
Lane 1	1169	1151	1252	1427
Lane 2	1169	1151	1252	1427
Lane 3	1169	1151	1252	1427
Lane 4	1169	1151	1252	1427
Lane 5	1169	1151	887	863
Lane 6	1227	1514	1377	700
	7070	7270	7270	7270

Calculated Data

Thru Volume	Value
10%	637

6 thru lanes at Las Flores
5 thru lanes at Carlsbad Village Drive

NOTES

Lane 6 not to exceed 1800 veh/hr
Lanes 1 - 5 not to exceed 2000 veh/hr
Lanes 1 - 5 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Las Flores Dr to Carlsbad Village Dr
Time Duration	AM peak
Analysis Type	weave analysis with lane drop

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	400
1	1403	1390	1519	1734
2	1403	1390	1519	1734
3	1403	1390	1519	1734
4	1403	1390	1519	1734
5	1403	1390	1077	1043
6	1234	1582	1376	550

280
on ramp traffic volume

550
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Las Flores Dr to Carlsbad Village Dr
Time Duration	PM peak
Analysis Type	weave analysis with lane drop

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	400
1	1169	1151	1252	1427
2	1169	1151	1252	1427
3	1169	1151	1252	1427
4	1169	1151	1252	1427
5	1169	1151	887	863
6	1227	1514	1377	700

200
on ramp traffic volume

700
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Carlsbad Village Dr to Tamarack Ave
Time Duration	AM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	5
weave length (m)	750
volume on (veh/hr)	655
volume off (veh/hr)	450
total volume (veh/hr)	8635

on ramp meter rate	75

Calculated Data

Thru Volume	Value
10%	753

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m
Lane 1	1755	1736	1783	1815	1827	1835
Lane 2	1755	1736	1783	1815	1827	1835
Lane 3	1755	1736	1783	1815	1827	1835
Lane 4	1755	1736	1783	1815	1827	1835
Lane 5	960	1692	1502	1377	1327	845
	7980	8635	8635	8635	8635	8185

NOTES

Lane 5 not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Carlsbad Village Dr to Tamarack Ave
Time Duration	PM peak
Analysis Type	weave analysis without aux lane

Data Entry

Parameter	Input Value
number of lanes	5
weave length (m)	750
volume on (veh/hr)	700
volume off (veh/hr)	600
total volume (veh/hr)	7270

on ramp meter rate	50

Calculated Data

Thru Volume	Value
10%	597

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m
Lane 1	1424	1399	1445	1473	1485	1494
Lane 2	1424	1399	1445	1473	1485	1494
Lane 3	1424	1399	1445	1473	1485	1494
Lane 4	1424	1399	1445	1473	1485	1494
Lane 5	873	1675	1491	1377	1330	695
	6570	7270	7270	7270	7270	6670

NOTES

Lane 5 not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Carlsbad Village Dr to Tamarack Ave
Time Duration	AM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	750
1	1755	1736	1783	1815	1827	1835
2	1755	1736	1783	1815	1827	1835
3	1755	1736	1783	1815	1827	1835
4	1755	1736	1783	1815	1827	1835
5	960	1692	1502	1377	1327	845

655
on ramp traffic volume

450
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Carlsbad Village Dr to Tamarack Ave
Time Duration	PM peak
Analysis Type	weave analysis without auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	750
1	1424	1399	1445	1473	1485	1494
2	1424	1399	1445	1473	1485	1494
3	1424	1399	1445	1473	1485	1494
4	1424	1399	1445	1473	1485	1494
5	873	1675	1491	1377	1330	695

700
on ramp traffic volume

600
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Tamarack Avenue to Cannon Road
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1500
volume on (veh/hr)	825
volume off (veh/hr)	1450
segment volume (veh/hr)	9140

on ramp meter rate	75

Segment Lengths

merge length (m)	150
fwy segment length (m)	1200
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1821	1821
Lane 2	1821	1821
Lane 3	1821	1821
Lane 4	1821	1821
Lane 5	1030	1112
Aux Lane	825	743
	9140	9140

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1634	1634
Lane 2	1634	1634
Lane 3	1634	1634
Lane 4	1634	1634
Lane 5	1270	1154
Aux lane	1334	1450
	9140	9140

NOTES

Lane 5 and Deceleration Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Tamarack Avenue to Cannon Road
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1500
volume on (veh/hr)	800
volume off (veh/hr)	980
segment volume (veh/hr)	7380

on ramp meter rate	50

Segment Lengths

merge length (m)	150
fwy segment length (m)	1200
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1435	1435
Lane 2	1435	1435
Lane 3	1435	1435
Lane 4	1435	1435
Lane 5	840	920
Aux Lane	800	720
	7380	7380

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1360	1360
Lane 2	1360	1360
Lane 3	1360	1360
Lane 4	1360	1360
Lane 5	1038	960
Aux lane	902	980
	7380	7380

NOTES

Lane 5 and Deceleration Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Tamarack Avenue to Cannon Road
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1350*	1350	1500
1	1821	1821	1601	1634	1634
2	1821	1821	1601	1634	1634
3	1821	1821	1601	1634	1634
4	1821	1821	1601	1634	1634
5	1030	1112	1601	1270	1154
	825	743	1138	1334	1450

825
on ramp traffic volume

1450
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Tamarack Avenue to Cannon Road
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-900*	1350	1500
1	1435	1435	1298	1360	1360
2	1435	1435	1298	1360	1360
3	1435	1435	1298	1360	1360
4	1435	1435	1298	1360	1360
5	840	920	1298	1038	960
	800	720	890	902	980

800
on ramp traffic volume

980
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Cannon Road to Palomar Airport Road
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	5
weave length (m)	800
volume on (veh/hr)	525
volume off (veh/hr)	2500
total volume (veh/hr)	8215

on ramp meter rate	75

Calculated Data

Thru Volume	Value
10%	519

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	800 m
Lane 1	1543	1443	1318	1253	1207	1237	1270
Lane 2	1543	1443	1318	1253	1207	1237	1270
Lane 3	1543	1443	1318	1253	1207	1237	1270
Lane 4	1543	1443	1318	1253	1207	1237	1270
Lane 5	1519	1344	1324	1257	1230	877	635
Aux lane	525	1098	1621	1947	2157	2391	2500
	8215	8215	8215	8215	8215	8215	8215

NOTES

Lane 5 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Cannon Road to Palomar Airport Road
Time Duration	PM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	5
weave length (m)	800
volume on (veh/hr)	900
volume off (veh/hr)	1900
total volume (veh/hr)	7300

on ramp meter rate	50

Calculated Data

Thru Volume	Value
10%	450

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	800 m
Lane 1	1298	1235	1150	1129	1104	1149	1188
Lane 2	1298	1235	1150	1129	1104	1149	1188
Lane 3	1298	1235	1150	1129	1104	1149	1188
Lane 4	1298	1235	1150	1129	1104	1149	1188
Lane 5	1210	1267	1352	1261	1216	872	648
Aux lane	900	1095	1347	1525	1669	1832	1900
	7300	7300	7300	7300	7300	7300	7300

NOTES

Lane 5 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Cannon Road to Palomar Airport Road
Time Duration	AM peak
Analysis Type	weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)						
Number	0	150	300	450	600	750	800
1	1543	1443	1318	1253	1207	1237	1270
2	1543	1443	1318	1253	1207	1237	1270
3	1543	1443	1318	1253	1207	1237	1270
4	1543	1443	1318	1253	1207	1237	1270
5	1519	1344	1324	1257	1230	877	635
	525	1098	**1621**	**1947**	**2157**	**2391**	**2500**

525
on ramp traffic volume

2500
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Cannon Road to Palomar Airport Road
Time Duration	PM peak
Analysis Type	Weave analysis with auxiliary lane

Traffic Volume Distribution (vehicles per hour)

Lane	Distance from on Ramp (m)						
Number	0	150	300	450	600	750	800
1	1298	1235	1150	1129	1104	1149	1188
2	1298	1235	1150	1129	1104	1149	1188
3	1298	1235	1150	1129	1104	1149	1188
4	1298	1235	1150	1129	1104	1149	1188
5	1210	1267	1352	1261	1216	872	648
	900	1095	1347	1525	1669	**1832**	**1900**

900
on ramp traffic volume

1900
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Palomar Airport Road to Poinsettia Lane
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1950
volume on WB (veh/hr)	2000
volume on EB (veh/hr)	350
volume off (veh/hr)	750
segment volume (veh/hr)	8065
approach volume (veh/hr)	5715

WB on ramp meter rate	200
EB on ramp meter rate	50

Segment Lengths

merge length (m)	900
fwy segment length (m)	900
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	900 m
Lane 1	1286	1286	1336	1490	1455	1599	1677
Lane 2	1286	1286	1336	1490	1455	1599	1677
Lane 3	1286	1286	1336	1490	1455	1599	1677
Lane 4	1286	1286	1336	1490	1455	1599	1677
Lane 5	572	1072	1732	1807	1754	1541	1357
Acc lane	2000	1500	640	300	490	130	0
	7715	7715	7715	8065	8065	8065	8065

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1613	1613
Lane 2	1613	1613
Lane 3	1613	1613
Lane 4	1613	1613
Lane 5	1613	863
	8065	7315

NOTES

Lane 5 and Acceleration Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Palomar Airport Road to Poinsettia Lane
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1950
volume on WB (veh/hr)	2000
volume on EB (veh/hr)	450
volume off (veh/hr)	850
segment volume (veh/hr)	7850
approach volume (veh/hr)	5400

WB on ramp meter rate	300
EB on ramp meter rate	50

Segment Lengths

merge length (m)	900
fwy segment length (m)	900
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	900 m
Lane 1	1215	1215	1265	1441	1366	1528	1618
Lane 2	1215	1215	1265	1441	1366	1528	1618
Lane 3	1215	1215	1265	1441	1366	1528	1618
Lane 4	1215	1215	1265	1441	1366	1528	1618
Lane 5	540	1040	1700	1785	1798	1587	1379
Acc lane	2000	1500	640	300	590	150	0
	7400	7400	7400	7850	7850	7850	7850

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1570	1570
Lane 2	1570	1570
Lane 3	1570	1570
Lane 4	1570	1570
Lane 5	1570	720
	7850	7000

NOTES

Lane 5 and Acceleration Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Palomar Airport Road to Poinsettia Lane
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	750	900	900-1800*	1800	1950
1	1286	1286	1336	1490	1455	1599	1677	1613	1613	1613
2	1286	1286	1336	1490	1455	1599	1677	1613	1613	1613
3	1286	1286	1336	1490	1455	1599	1677	1613	1613	1613
4	1286	1286	1336	1490	1455	1599	1677	1613	1613	1613
5	572	1072	**1732**	**1807**	**1754**	1541	1357	1613	1613	863
	2000	1500	640	300	490	130				

2000
on ramp traffic volume

350
on ramp traffic volume

750
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Palomar Airport Road to Poinsettia Lane
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	750	900	900-1800*	1800	1950
1	1215	1215	1265	1441	1366	1528	1618	1570	1570	1570
2	1215	1215	1265	1441	1366	1528	1618	1570	1570	1570
3	1215	1215	1265	1441	1366	1528	1618	1570	1570	1570
4	1215	1215	1265	1441	1366	1528	1618	1570	1570	1570
5	540	1040	**1700**	**1785**	**1798**	1587	1379	1570	1570	720
	2000	1500	640	300	590	150				

2000
on ramp traffic volume

450
on ramp traffic volume

850
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Poinsettia Lane to La Costa Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1700
volume on (veh/hr)	750
volume off (veh/hr)	850
segment volume (veh/hr)	8065
segment volume (veh/hr)	8095

on ramp meter rate	50

Segment Lengths

merge length (m)	150
fwy segment length (m)	1400
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m
Lane 1	1586	1586	1646
Lane 2	1586	1586	1646
Lane 3	1586	1586	1646
Lane 4	1586	1586	1646
Lane 5	970	1570	1480
Acc Lane	750	150	0
	8065	8065	8065

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1609	1609
Lane 2	1609	1609
Lane 3	1609	1609
Lane 4	1609	1609
Lane 5	1660	810
	8095	7245

NOTES

Lane 5 and Acceleration Lane not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Poinsettia Lane to La Costa Ave
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1700
volume on (veh/hr)	1025
volume off (veh/hr)	1000
segment volume (veh/hr)	8025
segment volume (veh/hr)	8065

on ramp meter rate	75

Segment Lengths

merge length (m)	150
fwy segment length (m)	1400
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m
Lane 1	1525	1525	1607
Lane 2	1525	1525	1607
Lane 3	1525	1525	1607
Lane 4	1525	1525	1607
Lane 5	900	1720	1597
Acc Lane	1025	205	0
	8025	8025	8025

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1565	1565
Lane 2	1565	1565
Lane 3	1565	1565
Lane 4	1565	1565
Lane 5	1807	807
	8065	7065

NOTES

Lane 5 and Acceleration Lane not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	La Costa Ave to Leucadia Blvd
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1500
volume on (veh/hr)	1075
volume off (veh/hr)	900
segment volume (veh/hr)	8320
approach volume (veh/hr)	7245

on ramp meter rate	75

Segment Lengths

merge length (m)	150
fwy segment length (m)	1200
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1630	1630
Lane 2	1630	1630
Lane 3	1630	1630
Lane 4	1630	1630
Lane 5	725	1800
	7245	8320

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1647	1647
Lane 2	1647	1647
Lane 3	1647	1647
Lane 4	1647	1647
Lane 5	1732	832
	8320	7420

NOTES

Lane 5 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	La Costa Ave to Leucadia Blvd
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1500
volume on (veh/hr)	850
volume off (veh/hr)	1000
segment volume (veh/hr)	7915
approach volume (veh/hr)	7065

on ramp meter rate	50

Segment Lengths

merge length (m)	150
fwy segment length (m)	1200
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1590	1590
Lane 2	1590	1590
Lane 3	1590	1590
Lane 4	1590	1590
Lane 5	707	1557
	7065	7915

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1531	1531
Lane 2	1531	1531
Lane 3	1531	1531
Lane 4	1531	1531
Lane 5	1792	792
	7915	6915

NOTES

Lane 5 not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	La Costa Ave to Leucadia Blvd
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1350*	1350	1500
1	1630	1630	1664	1647	1647
2	1630	1630	1664	1647	1647
3	1630	1630	1664	1647	1647
4	1630	1630	1664	1647	1647
5	725	1800	1664	1732	832

1075
on ramp traffic volume

900
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	La Costa Ave to Leucadia Blvd
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1350*	1350	1500
1	1590	1590	1583	1531	1531
2	1590	1590	1583	1531	1531
3	1590	1590	1583	1531	1531
4	1590	1590	1583	1531	1531
5	707	1557	1583	**1792**	792

850
on ramp traffic volume

1000
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Leucadia Blvd to Encinitas Blvd
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1200
volume on (veh/hr)	850
volume off (veh/hr)	1100
segment volume (veh/hr)	8270
approach volume (veh/hr)	7420

on ramp meter rate	50

Segment Lengths

merge length (m)	150
fwy segment length (m)	900
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1670	1670
Lane 2	1670	1670
Lane 3	1670	1670
Lane 4	1670	1670
Lane 5	742	1592
	7420	8270

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1635	1635
Lane 2	1635	1635
Lane 3	1635	1635
Lane 4	1635	1635
Lane 5	1732	632
	8270	7170

NOTES

Lane 5 not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Leucadia Blvd to Encinitas Blvd
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1200
volume on (veh/hr)	850
volume off (veh/hr)	1000
segment volume (veh/hr)	7765
approach volume (veh/hr)	6915

on ramp meter rate	50

Segment Lengths

merge length (m)	150
fwy segment length (m)	900
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1556	1556
Lane 2	1556	1556
Lane 3	1556	1556
Lane 4	1556	1556
Lane 5	692	1542
	6915	7765

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1543	1543
Lane 2	1543	1543
Lane 3	1543	1543
Lane 4	1543	1543
Lane 5	1592	592
	7765	6765

NOTES

Lane 5 not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Leucadia Blvd to Encinitas Blvd
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1050*	1050	1200
1	1670	1670	1654	1635	1635
2	1670	1670	1654	1635	1635
3	1670	1670	1654	1635	1635
4	1670	1670	1654	1635	1635
5	742	1592	1654	**1732**	632

850
on ramp traffic volume

1100
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Leucadia Blvd to Encinitas Blvd
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1050*	1050	1200
1	1556	1556	1553	1543	1543
2	1556	1556	1553	1543	1543
3	1556	1556	1553	1543	1543
4	1556	1556	1553	1543	1543
5	692	1542	1553	**1592**	592

850
on ramp traffic volume

1000
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Encinitas Blvd to Santa Fe Dr
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	850
volume on (veh/hr)	750
volume off (veh/hr)	500
segment volume (veh/hr)	7920

on ramp meter rate	50

Calculated Data

Thru Volume (lane 5)	Value
10%	667

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	850 m
Lane 1	1592	1561	1552	1570	1598	1626	1648
Lane 2	1592	1561	1552	1570	1598	1626	1648
Lane 3	1592	1561	1552	1570	1598	1626	1648
Lane 4	1592	1561	1552	1570	1598	1626	1648
Lane 5	802	902	1120	1157	1049	909	830
Aux Lane	750	773	591	482	479	506	500
	7920	7920	7920	7920	7920	7920	7920

NOTES

Lane 5 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Encinitas Blvd to Santa Fe Dr
Time Duration	PM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	850
volume on (veh/hr)	850
volume off (veh/hr)	600
segment volume (veh/hr)	7615

on ramp meter rate	50

Calculated Data

Thru Volume (lane 5)	Value
10%	617

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m	750 m	850 m
Lane 1	1497	1460	1448	1467	1498	1530	1554
Lane 2	1497	1460	1448	1467	1498	1530	1554
Lane 3	1497	1460	1448	1467	1498	1530	1554
Lane 4	1497	1460	1448	1467	1498	1530	1554
Lane 5	779	890	1136	1178	1054	892	801
Aux Lane	850	886	686	568	570	605	600
	7615	7615	7615	7615	7615	7615	7615

NOTES

Lane 5 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Encinitas Blvd to Santa Fe Dr
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	750	850
1	1592	1561	1552	1570	1598	1626	1648
2	1592	1561	1552	1570	1598	1626	1648
3	1592	1561	1552	1570	1598	1626	1648
4	1592	1561	1552	1570	1598	1626	1648
5	802	902	1120	1157	1049	909	830
	750	773	591	482	479	506	500

750
on ramp traffic volume

500
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Encinitas Blvd to Santa Fe Dr
Time Duration	PM peak
Analysis Type	weave analysis with aux lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600	750	850
1	1497	1460	1448	1467	1498	1530	1554
2	1497	1460	1448	1467	1498	1530	1554
3	1497	1460	1448	1467	1498	1530	1554
4	1497	1460	1448	1467	1498	1530	1554
5	779	890	1136	1178	1054	892	801
	850	886	686	568	570	605	600

850
on ramp traffic volume

600
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Santa Fe Dr to Birmingham Dr
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	600
volume on (veh/hr)	550
volume off (veh/hr)	450
segment volume (veh/hr)	7800
on ramp meter rate	50

Calculated Data

Thru Volume (lane 5)	Value
10%	680

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m
Lane 1	1572	1554	1563	1600	1626
Lane 2	1572	1554	1563	1600	1626
Lane 3	1572	1554	1563	1600	1626
Lane 4	1572	1554	1563	1600	1626
Lane 5	964	1086	1129	969	845
Aux Lane	550	500	419	431	450
	7800	7800	7800	7800	7800

NOTES

Lane 5 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Santa Fe Dr to Birmingham Dr
Time Duration	PM peak
Analysis Type	weave analysis with aux lane

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	600
volume on (veh/hr)	500
volume off (veh/hr)	550
segment volume (veh/hr)	7395
on ramp meter rate	0

Calculated Data

Thru Volume (lane 5)	Value
10%	635

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	600 m
Lane 1	1479	1457	1460	1491	1616
Lane 2	1479	1457	1460	1491	1616
Lane 3	1479	1457	1460	1491	1616
Lane 4	1479	1457	1460	1491	1616
Lane 5	981	1044	1069	909	785
Aux Lane	500	525	488	521	550
	7395	7395	7395	7395	7800

NOTES

Lane 5 and Auxiliary Lane not to exceed 1800 veh/hr

Lanes 1 - 4 not to exceed 2000 veh/hr

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Santa Fe Dr to Birmingham Dr
Time Duration	AM peak
Analysis Type	weave analysis with aux lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600
1	1572	1554	1563	1600	1626
2	1572	1554	1563	1600	1626
3	1572	1554	1563	1600	1626
4	1572	1554	1563	1600	1626
5	964	1086	1129	969	845
	550	500	419	431	450

550
on ramp traffic volume

450
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Santa Fe Dr to Birmingham Dr
Time Duration	PM peak
Analysis Type	weave analysis with aux lane

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	600
1	1479	1457	1460	1491	1616
2	1479	1457	1460	1491	1616
3	1479	1457	1460	1491	1616
4	1479	1457	1460	1491	1616
5	981	1044	1069	909	785
	500	525	488	521	550

500
on ramp traffic volume

550
off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Birmingham Dr to Manchester Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1200
volume on (veh/hr)	850
volume off (veh/hr)	200
segment volume (veh/hr)	8200
on ramp meter rate	50

Segment Lengths

merge length (m)	150
fwy segment length (m)	900
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1470	1470
Lane 2	1470	1470
Lane 3	1470	1470
Lane 4	1470	1470
Lane 5	1470	1555
Aux Lane	850	765
	8200	8200

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1600	1600
Lane 2	1600	1600
Lane 3	1600	1600
Lane 4	1600	1600
Lane 5	1600	1600
Aux Lane	200	200
	8200	8200

NOTES

Aux Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 5 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 5 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Birmingham Dr to Manchester Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1200
volume on (veh/hr)	450
volume off (veh/hr)	230
segment volume (veh/hr)	7295
on ramp meter rate	0

Segment Lengths

merge length (m)	150
fwy segment length (m)	900
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1369	1369
Lane 2	1369	1369
Lane 3	1369	1369
Lane 4	1369	1369
Lane 5	1369	1414
Aux Lane	450	405
	7295	7295

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1413	1413
Lane 2	1413	1413
Lane 3	1413	1413
Lane 4	1413	1413
Lane 5	1413	1413
Aux Lane	230	230
	7295	7295

NOTES

Aux Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 5 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 5 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Birmingham Dr to Manchester Ave
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1050*	1050	1200
1	1470	1470	1640	1600	1600
2	1470	1470	1640	1600	1600
3	1470	1470	1640	1600	1600
4	1470	1470	1640	1600	1600
5	1470	1555	1640	1600	1600
		765	1640	200	

850
on ramp traffic volume

200
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Birmingham Dr to Manchester Ave
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1050*	1050	1200
1	1369	1369	1459	1413	1413
2	1369	1369	1459	1413	1413
3	1369	1369	1459	1413	1413
4	1369	1369	1459	1413	1413
5	1369	1414	1459	1413	1413
		405	1459	230	

450
on ramp traffic volume

230
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Manchester Ave to Lomas Santa Fe
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1450
volume on (veh/hr)	1250
volume off (veh/hr)	940
segment volume (veh/hr)	9250
on ramp meter rate	100

Segment Lengths

merge length (m)	150
fwy segment length (m)	1150
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1682	1682
Lane 2	1682	1682
Lane 3	1682	1682
Lane 4	1682	1682
Lane 5	1271	1521
Aux Lane	1250	1000
	9250	9250

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1662	1662
Lane 2	1662	1662
Lane 3	1662	1662
Lane 4	1662	1662
Lane 5	1662	1662
Aux Lane	940	940
	9250	9250

NOTES

Lane 5 and Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Manchester Ave to Lomas Santa Fe
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1450
volume on (veh/hr)	1120
volume off (veh/hr)	1130
segment volume (veh/hr)	8185
on ramp meter rate	50

Segment Lengths

merge length (m)	150
fwy segment length (m)	1150
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1499	1499
Lane 2	1499	1499
Lane 3	1499	1499
Lane 4	1499	1499
Lane 5	1068	1292
Aux Lane	1120	896
	8185	8185

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1411	1411
Lane 2	1411	1411
Lane 3	1411	1411
Lane 4	1411	1411
Lane 5	1411	1411
Aux Lane	1130	1130
	8185	8185

NOTES

Lane 5 and Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment
Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment
Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)
fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln
Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Manchester Ave to Lomas Santa Fe
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1300*	1300	1450
1	**1682**	**1682**	**1756**	1662	1662
2	**1682**	**1682**	**1756**	1662	1662
3	**1682**	**1682**	**1756**	1662	1662
4	**1682**	**1682**	**1756**	1662	1662
5	1271	1521	**1756**	1662	1662
	1250	1000	470	940	940

1250 on ramp traffic volume

940 off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Manchester Ave to Lomas Santa Fe
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-1300*	1300	1450
1	1499	1499	1524	1411	1411
2	1499	1499	1524	1411	1411
3	1499	1499	1524	1411	1411
4	1499	1499	1524	1411	1411
5	1068	1292	1524	1411	1411
	1120	896	565	1130	1130

1120 on ramp traffic volume

1130 off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Lomas Santa Fe to Via de la Valle
Time Duration	AM peak
Analysis Type	

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1350
WB volume on (veh/hr)	340
EB volume on (veh/hr)	380
volume off (veh/hr)	1100
segment volume (veh/hr)	9350

WB on ramp meter rate	50
EB on ramp meter rate	50

Segment Lengths

merge length (m)	500
fwy segment length (m)	700
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	500 m
Lane 1	1834	1834	1838	1855
Lane 2	1834	1834	1838	1855
Lane 3	1834	1834	1838	1855
Lane 4	1834	1834	1838	1855
Lane 5	1295	1329	1346	1363
Aux Lane	340	306	272	567
	8970	8970	8970	9350

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1650	1650
Lane 2	1650	1650
Lane 3	1650	1650
Lane 4	1650	1650
Lane 5	1650	1650
Aux Lane	1100	1100
	9350	9350

NOTES

Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 5 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 5 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Lomas Santa Fe to Via de la Valle
Time Duration	PM peak
Analysis Type	

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	1350
WB volume on (veh/hr)	340
EB volume on (veh/hr)	360
volume off (veh/hr)	1100
segment volume (veh/hr)	8245

WB on ramp meter rate	50
EB on ramp meter rate	50

Segment Lengths

merge length (m)	500
fwy segment length (m)	700
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	500 m
Lane 1	1603	1603	1608	1625
Lane 2	1603	1603	1608	1625
Lane 3	1603	1603	1608	1625
Lane 4	1603	1603	1608	1625
Lane 5	1132	1166	1183	1200
Aux Lane	340	306	272	547
	7885	7885	7885	8245

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1429	1429
Lane 2	1429	1429
Lane 3	1429	1429
Lane 4	1429	1429
Lane 5	1429	1429
Aux Lane	1100	1100
	8245	8245

NOTES

Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 5 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 5 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Lomas Santa Fe to Via de la Valle
Time Duration	AM peak
Analysis Type	

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	500	500-1200*	1200	1350
1	**1834**	**1834**	**1838**	**1855**	**1760**	**1650**	**1650**
2	**1834**	**1834**	**1838**	**1855**	**1760**	**1650**	**1650**
3	**1834**	**1834**	**1838**	**1855**	**1760**	**1650**	**1650**
4	**1834**	**1834**	**1838**	**1855**	**1760**	**1650**	**1650**
5	1295	1329	1346	1363	1760	1650	1650
	340	306	272	567	550	1100	1100

340 WB on ramp traffic volume

380 EB on ramp traffic volume

1100 off ramp traffic volume

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Lomas Santa Fe to Via de la Valle
Time Duration	PM peak
Analysis Type	

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	500	500-1200*	1200	1350
1	1603	1603	1608	1625	1539	1429	1429
2	1603	1603	1608	1625	1539	1429	1429
3	1603	1603	1608	1625	1539	1429	1429
4	1603	1603	1608	1625	1539	1429	1429
5	1132	1166	1183	1200	1539	1429	1429
	340	306	272	547	550	1100	1100

340 WB on ramp traffic volume

360 EB on ramp traffic volume

1100 off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Via de la Valle to Del Mar Heights Road
Time Duration	AM peak
Analysis Type	

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	3050
WB volume on (veh/hr)	750
EB volume on (veh/hr)	930
volume off (veh/hr)	1370
segment volume (veh/hr)	9930

WB on ramp meter rate	50
EB on ramp meter rate	50

Segment Lengths

merge length (m)	700
fwy segment length (m)	2200
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	550 m	700 m
Lane 1	1753	1743	1735	1740	1727	1715
Lane 2	1753	1743	1735	1740	1727	1715
Lane 3	1753	1743	1735	1740	1727	1715
Lane 4	1753	1743	1735	1740	1727	1715
Lane 5	1238	1354	1419	1446	1525	1589
Aux Lane	750	675	641	594	568	1480
	9000	9000	9000	9000	9000	9930

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1712	1712
Lane 2	1712	1712
Lane 3	1712	1712
Lane 4	1712	1712
Lane 5	1712	1712
Aux Lane	1370	1370
	9930	9930

NOTES

Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 5 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 5 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Via de la Valle to Del Mar Heights Road
Time Duration	PM peak
Analysis Type	

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	3050
WB volume on (veh/hr)	700
EB volume on (veh/hr)	770
volume off (veh/hr)	1280
segment volume (veh/hr)	8615

WB on ramp meter rate	50
EB on ramp meter rate	50

Segment Lengths

merge length (m)	700
fwy segment length (m)	2200
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m	550 m	700 m
Lane 1	1518	1509	1501	1506	1494	1483
Lane 2	1518	1509	1501	1506	1494	1483
Lane 3	1518	1509	1501	1506	1494	1483
Lane 4	1518	1509	1501	1506	1494	1483
Lane 5	1072	1180	1241	1266	1340	1400
Aux Lane	700	630	598	554	531	1283
	7845	7845	7845	7845	7845	8615

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1467	1467
Lane 2	1467	1467
Lane 3	1467	1467
Lane 4	1467	1467
Lane 5	1467	1467
Aux Lane	1280	1280
	8615	8615

NOTES

Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 5 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 5 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Via de la Valle to Del Mar Heights Road
Time Duration	AM peak
Analysis Type	

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	550	700	700-2900*	2900	3050
1	1753	1743	1735	1740	1727	1715	1849	1712	1712
2	1753	1743	1735	1740	1727	1715	1849	1712	1712
3	1753	1743	1735	1740	1727	1715	1849	1712	1712
4	1753	1743	1735	1740	1727	1715	1849	1712	1712
5	1238	1354	1419	1446	1525	1589	1849	1712	1712
	750	675	641	594	568	1480	685	1370	1370

750 WB on ramp traffic volume

930 EB on ramp traffic volume

1370 off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Via de la Valle to Del Mar Heights Road
Time Duration	PM peak
Analysis Type	

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	300	450	550	700	700-2900*	2900	3050
1	1518	1509	1501	1506	1494	1483	1586	1467	1467
2	1518	1509	1501	1506	1494	1483	1586	1467	1467
3	1518	1509	1501	1506	1494	1483	1586	1467	1467
4	1518	1509	1501	1506	1494	1483	1586	1467	1467
5	1072	1180	1241	1266	1340	1400	1586	1467	1467
	700	630	598	554	531	1283	685	1280	1280

700 WB on ramp traffic volume

770 EB on ramp traffic volume

1280 off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	I-5
Time Duration	AM peak
Analysis Type	

Data Entry

Parameter	Input Value
I-5 (veh/hr)	8560
Bypass off (veh/hr)	3380
I-5 (veh/hr)	5180
Carmel Valley on (veh/hr)	1300
ramp meter (veh/hr)	100
I-5 (veh/hr)	6480
HOV ingress/egress (veh/hr)	6080
I-5 to I-805 (veh/hr)	4200
I-5 (veh/hr)	1880
Bypass on (veh/hr)	1490
I-5 (veh/hr)	3370
Roselle St on (veh/hr)	1280
ramp meter (veh/hr)	50
I-5 (veh/hr)	4650

this color denotes linked values

meter rates

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	I-5
Time Duration	PM peak
Analysis Type	

Data Entry

Parameter	Input Value
I-5 (veh/hr)	7335
Bypass off (veh/hr)	3090
I-5 (veh/hr)	4245
Carmel Valley on (veh/hr)	1000
ramp meter (veh/hr)	50
I-5 (veh/hr)	5245
HOV ingress/egress (veh/hr)	4845
I-5 to I-805 (veh/hr)	3450
I-5 (veh/hr)	1395
Bypass on (veh/hr)	2580
I-5 (veh/hr)	3975
Roselle St on (veh/hr)	1700
ramp meter (veh/hr)	100
I-5 (veh/hr)	5675

this color denotes linked values

meter rates

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Bypass
Time Duration	AM peak
Analysis Type	

Data Entry

Parameter	Input Value
I-5 to Bypass (veh/hr)	3380
DMH WB on (veh/hr)	740
ramp meter (veh/hr)	50
DMH EB on (veh/hr)	1175
ramp meter (veh/hr)	75
Bypass (veh/hr)	5295
SR-56 EB off (veh/hr)	1100
Carmel Valley off (veh/hr)	480
Bypass (veh/hr)	3715
SR-56 WB on (veh/hr)	3500
ramp meter (veh/hr)	500
Bypass (veh/hr)	7215
Carmel Mnt off (veh/hr)	960
Carmel Mnt on (veh/hr)	1045
ramp meter (veh/hr)	75
Bypass (veh/hr)	7300
Bypass to I-805 (veh/hr)	3760
Bypass to I-5 (veh/hr)	3540
Genesee off (veh/hr)	2050
Bypass to I-5 (veh/hr)	1490

this color denotes linked values

meter rates

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Bypass
Time Duration	PM peak
Analysis Type	

Data Entry

Parameter	Input Value
I-5 to Bypass (veh/hr)	3090
DMH WB on (veh/hr)	550
ramp meter (veh/hr)	50
DMH EB on (veh/hr)	750
ramp meter (veh/hr)	50
Bypass (veh/hr)	4390
SR-56 EB off (veh/hr)	1650
Carmel Valley off (veh/hr)	350
Bypass (veh/hr)	2390
SR-56 WB on (veh/hr)	1800
ramp meter (veh/hr)	200
Bypass (veh/hr)	4190
Carmel Mnt off (veh/hr)	760
Carmel Mnt on (veh/hr)	830
ramp meter (veh/hr)	50
Bypass (veh/hr)	4260
Bypass to I-805 (veh/hr)	1400
Bypass to I-5 (veh/hr)	2860
Genesee off (veh/hr)	280
Bypass to I-5 (veh/hr)	2580

this color denotes linked values

meter rates

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Genesee Ave to La Jolla Village Drive
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	950
volume on (veh/hr)	490
volume off (veh/hr)	1700
segment volume (veh/hr)	5140
segment volume (veh/hr)	4620

on ramp meter rate	50

Segment Lengths

merge length (m)	150
fwy segment length (m)	650
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	988	988
Lane 2	988	988
Lane 3	988	988
Lane 4	988	988
Lane 5	698	820
Aux Lane	490	368
	5140	5140

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	584	584
Lane 2	584	584
Lane 3	584	584
Lane 4	584	584
Lane 5	584	584
Aux Lane	1700	1700
	4620	4620

NOTES

Lane 5 and Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Genesee Ave to La Jolla Village Drive
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	950
volume on (veh/hr)	2000
volume off (veh/hr)	1100
segment volume (veh/hr)	7675
segment volume (veh/hr)	7295

on ramp meter rate	100

Segment Lengths

merge length (m)	150
fwy segment length (m)	650
diverge length (m)	150

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1206	1206
Lane 2	1206	1206
Lane 3	1206	1206
Lane 4	1206	1206
Lane 5	851	1351
Aux Lane	2000	1500
	7675	7675

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1239	1239
Lane 2	1239	1239
Lane 3	1239	1239
Lane 4	1239	1239
Lane 5	1239	1239
Aux Lane	1100	1100
	7295	7295

NOTES

Lane 5 and Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 4 not to exceed 2000 veh/hr for Merge/Diverge segment

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2000 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Genesee Ave to La Jolla Village Drive
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-800*	800	950
1	988	988	858	584	584
2	988	988	858	584	584
3	988	988	858	584	584
4	988	988	858	584	584
5	698	820	858	584	584
	490	368	850	1700	1700

490
on ramp traffic volume

1700
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design Year	2030
Freeway & Direction	I-5 Southbound
Freeway Segment	Genesee Ave to La Jolla Village Drive
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m) 0	150	150-800*	800	950
1	1206	1206	1425	1239	1239
2	1206	1206	1425	1239	1239
3	1206	1206	1425	1239	1239
4	1206	1206	1425	1239	1239
5	851	1351	1425	1239	1239
	2000	**1500**	550	1100	1100

2000
on ramp traffic volume

1100
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

NB 8+4 Bypass Weaving

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Del Mar Heights Rd to Via de la Valle
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	2600
volume on (veh/hr)	1050
volume off (veh/hr)	1400
segment volume (veh/hr)	8200

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1430	1436
Lane 2	1430	1436
Lane 3	1430	1436
Lane 4	1430	1436
Lane 5	1430	1436
Aux Lane	1050	1022
	8200	8200

Diverge

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1360	1495
Lane 2	1360	1495
Lane 3	1360	1495
Lane 4	1360	1495
Lane 5	1360	1450
Aux Lane	1400	770
	8200	8200

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Northbound
Freeway Segment	Del Mar Heights Rd to Via de la Valle
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	2600
volume on (veh/hr)	1350
volume off (veh/hr)	1700
segment volume (veh/hr)	10620

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1854	1864
Lane 2	1854	1864
Lane 3	1854	1864
Lane 4	1854	1864
Lane 5	**1854**	**1864**
Aux Lane	1350	1301
	10620	10620

Diverge

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1784	1965
Lane 2	1784	1965
Lane 3	1784	1965
Lane 4	1784	1965
Lane 5	1784	**1827**
Aux Lane	1700	935
	10620	10620

Design	**8 + 4 BYPASS**
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee and I-5 to Roselle St (Merge)
Time Duration	AM peak
Analysis Type	merge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	3 to 2
total segment length (m)	450
I-5 volume on (veh/hr)	1870
Genesee volume on (veh/hr)	800
segment volume (veh/hr)	2670

MERGE

Traffic Volume Distribution (vehicles per hour)

	Distance	**0 m**	**150 m**	**300 m**	**450 m**
From I-5	**Lane 1**	1029	1193	1340	1473
From I-5 and Genesee	**Lane 2**	1642	1477	1330	1197
		2670	2670	2670	2670

NOTES

Design	**8 + 4 BYPASS**
Freeway & Direction	I-5 Northbound
Freeway Segment	Genesee and I-5 to Roselle St (Merge)
Time Duration	PM peak
Analysis Type	merge w/ fwy segment analysis

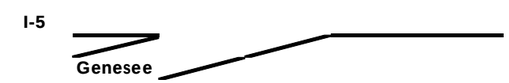
Data Entry

Parameter	Input Value
number of lanes	3 to 2
total segment length (m)	450
I-5 volume on (veh/hr)	1320
Genesee volume on (veh/h	800
segment volume (veh/hr)	2120

MERGE

Traffic Volume Distribution (vehicles per hour)

	Distance	**0 m**	**150 m**	**300 m**	**450 m**
From I-5	**Lane 1**	726	865	991	1104
From I-5 and Genesee	**Lane 2**	1394	1255	1129	1016
		2120	2120	2120	2120



NOTES

Design	**8 + 4 BYPASS**
Freeway & Direction	I-5 Northbound
Freeway Segment	I-5 to Roselle St (Merge)
Time Duration	AM peak
Analysis Type	merge w/ fwy segment analysis

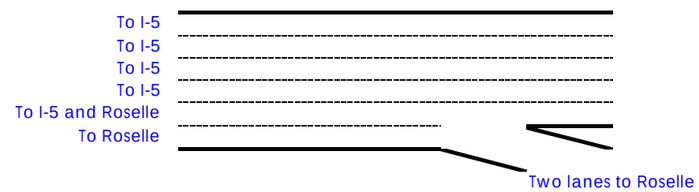
Data Entry

Parameter	Input Value
number of lanes	6 to 2
total segment length (m)	450
I-5 volume (veh/hr)	5630
I-5 to Roselle (veh/hr)	1870
segment volume (veh/hr)	5630

DIVERGE

Traffic Volume Distribution (vehicles per hour)

	Distance	450 m	300 m	150 m	0 m
To I-5	Lane 1	938	799	799	752
To I-5	Lane 2	938	799	799	752
To I-5	Lane 3	938	799	799	752
To I-5	Lane 4	938	799	799	752
To I-5 and Roselle	Lane 5	938	1498	1124	752
To Roselle	Lane 6	938	935	1309	561
To Roselle	Lane 7	0	0	0	1309
		5630	5630	5630	5630



NOTES

Design	**8 + 4 BYPASS**
Freeway & Direction	I-5 Northbound
Freeway Segment	I-5 to Roselle St (Merge)
Time Duration	PM peak
Analysis Type	merge w/ fwy segment analysis

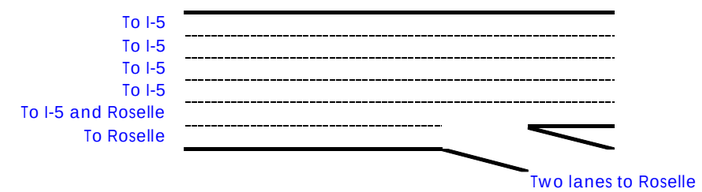
Data Entry

Parameter	Input Value
number of lanes	6 to 2
total segment length (m)	450
I-5 volume (veh/hr)	6000
I-5 to Roselle (veh/hr)	1320
segment volume (veh/hr)	6000

DIVERGE

Traffic Volume Distribution (vehicles per hour)

	Distance	450 m	300 m	150 m	0 m
To I-5	Lane 1	1000	1029	1029	936
To I-5	Lane 2	1000	1029	1029	936
To I-5	Lane 3	1000	1029	1029	936
To I-5	Lane 4	1000	1029	1029	936
To I-5 and Roselle	Lane 5	1000	1223	959	936
To Roselle	Lane 6	1000	660	924	396
To Roselle	Lane 7	0	0	0	924
		6000	6000	6000	6000



NOTES

Design	**8 + 4 BYPASS**
Freeway & Direction	I-5 Northbound
Freeway Segment	I-5 to Bypass (Split)
Time Duration	AM peak
Analysis Type	merge w/ fwy segment analysis

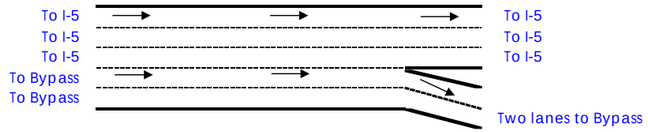
Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	450
I-5 volume (veh/hr)	2130
I-5 to Bypass (veh/hr)	1630
segment volume (veh/hr)	3760

DIVERGE

Traffic Volume Distribution (vehicles per hour)

	Distance	450 m	300 m	150 m	0 m
To I-5	Lane 1	752	585	585	710
To I-5	Lane 2	752	585	585	710
To I-5	Lane 3	752	585	585	710
To Bypass	Lane 4	752	1191	865	489
To Bypass	Lane 5	752	815	1141	1141
		3760	3760	3760	3760



NOTES

Design	**8 + 4 BYPASS**
Freeway & Direction	I-5 Northbound
Freeway Segment	I-5 to Bypass (Split)
Time Duration	AM peak
Analysis Type	merge w/ fwy segment analysis

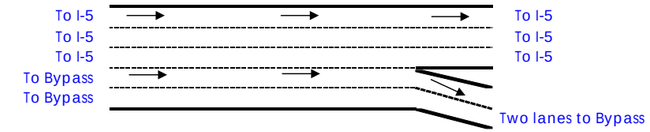
Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	450
I-5 volume (veh/hr)	3050
I-5 to Bypass (veh/hr)	1630
segment volume (veh/hr)	4680

DIVERGE

Traffic Volume Distribution (vehicles per hour)

	Distance	450 m	300 m	150 m	0 m
To I-5	Lane 1	936	861	861	1017
To I-5	Lane 2	936	861	861	1017
To I-5	Lane 3	936	861	861	1017
To Bypass	Lane 4	936	1283	957	489
To Bypass	Lane 5	936	815	1141	1141
		4680	4680	4680	4680



NOTES

Design	**8 + 4 BYPASS**
Freeway & Direction	I-5 Northbound
Freeway Segment	I-5 and Genesee to Bypass
Time Duration	AM peak
Analysis Type	merge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	3 to 2
total segment length (m)	450
I-5 volume (veh/hr)	1630
Genesee volume (veh/hr)	230
segment volume (veh/hr)	1860

I-805 On ramp to Bypass (veh/hr)	2140
I-5 volume to Bypass (veh/hr)	1860
segment volume (veh/hr)	4000

NOTES

MERGE

Traffic Volume Distribution (vehicles per hour)

	Distance	0 m	150 m	300 m	450 m	600 m	750 m	900 m
From I-5 to Bypass	Lane 1	897	1060	1223	930	930	930	930
From I-5 to Bypass	Lane 2	734	594	638	930	930	930	930
From Genesee to Bypass	Lane 3	230	207	0	0	0	0	0
From I-805 to Bypass	Lane 4	0	0	0	0	1070	1070	1070
From I-805 to Bypass	Lane 5	0	0	0	0	1070	1070	1070
Total from I-5		1860	1860	1860	1860	1860	1860	1860
Total from I-805		0	0	0	0	2140	2140	2140

Design	**8 + 4 BYPASS**
Freeway & Direction	I-5 Northbound
Freeway Segment	I-5 and Genesee to Bypass
Time Duration	PM peak
Analysis Type	merge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	3 to 2
total segment length (m)	450
I-5 volume (veh/hr)	1630
Genesee volume (veh/hr)	1630
segment volume (veh/hr)	3260

I-805 On ramp to Bypass (ve	3700
I-5 volume to Bypass (veh/h	3230
segment volume (veh/hr)	6930

NOTES

MERGE

Traffic Volume Distribution (vehicles per hour)

	Distance	0 m	150 m	300 m	450 m	600 m	750 m	900 m
From I-5 to Bypass	Lane 1	897	1060	1223	1630	1630	1630	1630
From I-5 to Bypass	Lane 2	734	734	**2038**	1630	1630	1630	1630
From Genesee to Bypass	Lane 3	1630	1467	0	0	0	0	0
From I-805 to Bypass	Lane 4	0	0	0	0	1850	1850	1850
From I-805 to Bypass	Lane 5	0	0	0	0	1850	1850	1850
Total from I-5		3260	3260	3260	3260	3260	3260	3260
Total from I-805		0	0	0	0	3700	3700	3700

Design	**8 + 4 BYPASS**
Freeway & Direction	I-5 Northbound
Freeway Segment	Bypass to Carmel Mountain Road Off Ramp
Time Duration	AM peak
Analysis Type	merge w/ fwy segment analysis

Data Entry

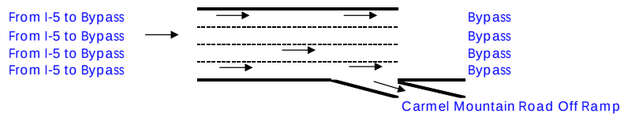
Parameter	Input Value
number of lanes	4
total segment length (m)	300
Bypass volume (veh/hr)	4000
Off ramp volume (veh/hr)	850
segment volume (veh/hr)	4000

DIVERGE

Traffic Volume Distribution (vehicles per hour)

	Distance	300 m	150 m	0 m
From I-5 to Bypass	Lane 1	931	917	917
From I-5 to Bypass	Lane 2	931	917	917
From I-5 to Bypass	Lane 3	931	917	917
From I-5 to Bypass	Lane 4	1208	1250	400
		4000	4000	3150

NOTES



Design	**8 + 4 BYPASS**
Freeway & Direction	I-5 Northbound
Freeway Segment	Bypass to Carmel Mountain Road Off Ramp
Time Duration	PM peak
Analysis Type	merge w/ fwy segment analysis

Data Entry

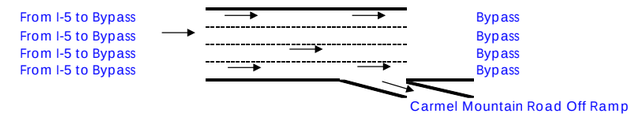
Parameter	Input Value
number of lanes	4
total segment length (m)	300
Bypass volume (veh/hr)	6930
Off ramp volume (veh/hr)	1120
segment volume (veh/hr)	6930

DIVERGE

Traffic Volume Distribution (vehicles per hour)

	Distance	300 m	150 m	0 m
From I-5 to Bypass	Lane 1	1724	1706	1706
From I-5 to Bypass	Lane 2	1724	1706	1706
From I-5 to Bypass	Lane 3	1724	1706	1706
From I-5 to Bypass	Lane 4	1757	**1813**	693
		6930	6930	5810

NOTES



Design	**8 + 4 BYPASS**
Freeway & Direction	I-5 Northbound
Freeway Segment	Carmel Mountain Road On Ramp to Bypass
Time Duration	AM peak
Analysis Type	merge w/ fwy segment analysis

Data Entry

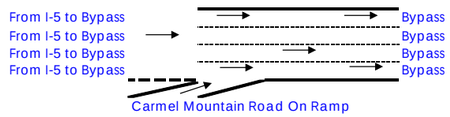
Parameter	Input Value
number of lanes	4
total segment length (m)	300
Bypass volume (veh/hr)	3870
On ramp volume (veh/hr)	720
segment volume (veh/hr)	4590

MERGE

Traffic Volume Distribution (vehicles per hour)

	Distance	0 m	150 m	300 m
From I-5 to Bypass	Lane 1	1161	1161	1148
From I-5 to Bypass	Lane 2	1161	1161	1148
From I-5 to Bypass	Lane 3	1161	1161	1148
From I-5 to Bypass	Lane 4	387	1107	1148
		3870	4590	4590

NOTES



Freeway & Direction	**8+4 Bypass**
Freeway Segment	Carmel Mountain Road On Ramp to Bypass
Time Duration	PM peak
Analysis Type	merge w/ fwy segment analysis

Data Entry

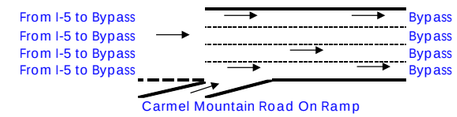
Parameter	Input Value
number of lanes	4
total segment length (m)	300
Bypass volume (veh/hr)	6770
On ramp volume (veh/hr)	960
segment volume (veh/hr)	7730

MERGE

Traffic Volume Distribution (vehicles per hour)

	Distance	0 m	150 m	300 m
From I-5 to Bypass	Lane 1	**2031**	**2031**	**1933**
From I-5 to Bypass	Lane 2	**2031**	**2031**	**1933**
From I-5 to Bypass	Lane 3	**2031**	**2031**	**1933**
From I-5 to Bypass	Lane 4	677	1637	**1933**
		6770	7730	7730

NOTES



Design	**8 + 4 BYPASS**
Freeway & Direction	I-5 Northbound
Freeway Segment	I-5 NB Off Ramp to Carmel Valley Rd
Time Duration	AM peak
Analysis Type	merge w/ fwy segment analysis

Data Entry

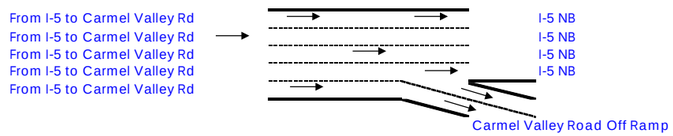
Parameter	Input Value
number of lanes	5
total segment length (m)	300
I-5 volume (veh/hr)	5720
Off ramp volume (veh/hr)	1150
segment volume (veh/hr)	5720

DIVERGE

Traffic Volume Distribution (vehicles per hour)

	Distance	**300 m**	**150 m**	**0 m**	
From I-5 to Carmel Valley Rd	Lane 1	1144	1333	1333	1333
From I-5 to Carmel Valley Rd	Lane 2	1144	1333	1333	1333
From I-5 to Carmel Valley Rd	Lane 3	1144	1333	1333	1333
From I-5 to Carmel Valley Rd	Lane 4	1144	975	1090	572
	Lane 5	1144	748	633	0
		5720	5720	5720	4570

NOTES



Design	**8 + 4 BYPASS**
Freeway & Direction	I-5 Northbound
Freeway Segment	I-5 NB Off Ramp to Carmel Valley Rd
Time Duration	PM peak
Analysis Type	merge w/ fwy segment analysis

Data Entry

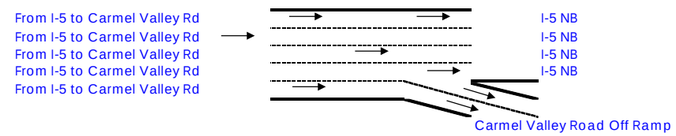
Parameter	Input Value
number of lanes	5
total segment length (m)	300
I-5 volume (veh/hr)	7050
Off ramp volume (veh/hr)	1300
segment volume (veh/hr)	7050

DIVERGE

Traffic Volume Distribution (vehicles per hour)

	Distance	**300 m**	**150 m**	**0 m**	
From I-5 to Carmel Valley Rd	Lane 1	1410	1682	1682	1682
From I-5 to Carmel Valley Rd	Lane 2	1410	1682	1682	1682
From I-5 to Carmel Valley Rd	Lane 3	1410	1682	1682	1682
From I-5 to Carmel Valley Rd	Lane 4	1410	1160	1290	705
	Lane 5	1410	845	715	0
		7050	7050	7050	5750

NOTES



Design	**8 + 4 BYPASS**
Freeway & Direction	I-5 Northbound
Freeway Segment	Carmel Valley Rd to Del Mar Heights
Time Duration	AM peak
Analysis Type	merge w/ fwy segment analysis

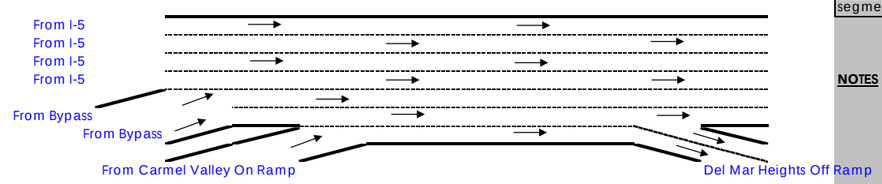
Data Entry

Parameter	Input Value
number of lanes	4 to 7 to 6
total segment length (m)	1250
I-5 volume (veh/hr)	4930
Bypass On (veh/hr)	3820
Carmel Valley On Ramp	360
Del Mar Heights Off Ramp	1600
segment volume (veh/hr)	8750
segment volume with on ramp(ve	

MERGE **DIVERGE**

Traffic Volume Distribution (vehicles per hour)

	Distance	0 m	150 m	300 m	450 m	600 m	750 m	950 m	1100 m	1250 m
From I-5	Lane 1	1233	1233	1143	1325	1253	1255	1255	1255	1255
From I-5	Lane 2	1233	1233	1143	1325	1253	1255	1255	1255	1255
From I-5	Lane 3	1233	1233	1143	1325	1253	1255	1255	1255	1255
From I-5	Lane 4	1233	1233	1143	1325	1253	1255	1255	1255	1255
From Bypass	Lane 5	1910	1910	1910	1325	1253	1255	1255	1255	1255
From Bypass	Lane 6	1910	1910	1910	1325	1253	1755	1675	1595	875
From Carmel Valley On Ramp	Lane 7	0	0	360	798	1235	720	800	880	880
		8750	8750	8750	8750	8750	8750	8750	8750	8030



NOTES

Design	**8 + 4 BYPASS**
Freeway & Direction	I-5 Northbound
Freeway Segment	I-5 and Genesee to Bypass
Time Duration	PM peak
Analysis Type	merge w/ fwy segment analysis

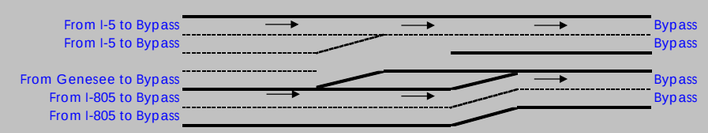
Data Entry

Parameter	Input Value
number of lanes	3 to 2
total segment length (m)	450
I-5 volume (veh/hr)	1630
Genesee volume (veh/hr)	1630
segment volume (veh/hr)	3260
I-805 On ramp to Bypass (ve	3700
I-5 volume to Bypass (veh/h	3230
segment volume (veh/hr)	6930

MERGE

Traffic Volume Distribution (vehicles per hour)

	Distance	0 m	150 m	300 m	450 m	600 m	750 m	900 m
From I-5 to Bypass	Lane 1	897	1060	1223	1630	1630	1630	1630
From I-5 to Bypass	Lane 2	734	734	**2038**	1630	1630	1630	1630
From Genesee to Bypass	Lane 3	1630	1467	0	0	0	0	0
From I-805 to Bypass	Lane 4	0	0	0	0	1850	1850	1850
From I-805 to Bypass	Lane 5	0	0	0	0	1850	1850	1850
Total from I-5		3260	3260	3260	3260	3260	3260	3260
Total from I-805		0	0	0	0	3700	3700	3700



NOTES

SB 8+4 Bypass Weaving

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Genesee Ave to La Jolla Village Drive
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	900
volume on (veh/hr)	480
volume off (veh/hr)	1700
segment volume (veh/hr)	6600
segment volume (veh/hr)	6080

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	1836	1836
Lane 2	1836	1836
Lane 3	1836	1836
Lane 4	612	732
Aux Lane	480	360
	6600	6600

Segment Lengths

merge length (m)	150
fwy segment length (m)	600
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1095	1095
Lane 2	1095	1095
Lane 3	1095	1095
Lane 4	1095	1095
Aux Lane	1700	1700
	6080	6080

NOTES

Lane 5 and Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 4 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Genesee Ave to La Jolla Village Drive
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes	5
total segment length (m)	900
volume on (veh/hr)	2100
volume off (veh/hr)	1100
segment volume (veh/hr)	8950
segment volume (veh/hr)	8570

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m
Lane 1	**2055**	**2055**
Lane 2	**2055**	**2055**
Lane 3	**2055**	**2055**
Lane 4	685	1210
Aux Lane	**2100**	1575
	8950	8950

Segment Lengths

merge length (m)	150
fwy segment length (m)	600
diverge length (m)	150

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	150 m	0 m
Lane 1	1868	1868
Lane 2	1868	1868
Lane 3	1868	1868
Lane 4	**1868**	**1868**
Aux Lane	1100	1100
	8570	8570

NOTES

Lane 5 and Auxiliary Lane not to exceed 1800 veh/hr for Merge/Diverge segment

Lanes 1 - 4 not to exceed 2200 veh/hr for Merge/Diverge segment

Lanes 1 - 4 represent average thru lane volumes (traffic not merging or diverging)

fwy segment analysis done with HCS2000 program (5 thru lanes); traffic not to exceed 2200 veh/hr/ln

Assumed equal distribution of traffic volume in main lanes along freeway segment

the following pages are SB weaving sections between Del Mar Heights Road and La Jolla Village Drive for the 2030 year 8+4 alternative

Design & Year	**8+4 Bypass**
Freeway & Direction	I-5 Southbound
Freeway Segment	Del Mar Heights Road to Bypass
Time Duration	AM peak
Analysis Type	Diverge

Data Entry

Parameter	Input Value
number of lanes	7
total segment length (m)	600
Del Mar Heights off (veh/hr)	1290
Bypass diverge (veh/hr)	3450
segment volume 1 (veh/hr)	10280
segment volume 2 (veh/hr)	8990

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	600 m	450 m	300 m	150 m	0 m
Lane 1	1492	1492	1337	1385	1385
Lane 2	1492	1492	1337	1385	1385
Lane 3	1492	1492	1337	1385	1385
Lane 4	1492	1492	1596	1426	1385
Lane 5	1492	1492	1650	1546	1553
Lane 6	1464	1528	1732	1863	**1898**
Aux Lane	1354	1290	0	0	0
	10280	10280	8990	8990	8990

NOTES

Lanes 5, 6, and Aux Lane not to exceed 1800 veh/hr

Lanes 1-4 not to exceed 2000 veh/hr

Design & Year	**8+4 Bypass**
Freeway & Direction	I-5 Southbound
Freeway Segment	Del Mar Heights Road
Time Duration	PM peak
Analysis Type	Diverge

Data Entry

Parameter	Input Value
number of lanes	7
total segment length (m)	600
Del Mar Heights off (veh/hr)	1270
Bypass diverge (veh/hr)	3230
segment volume 1 (veh/hr)	9110
segment volume 2 (veh/hr)	7840

DIVERGE

Traffic Volume Distribution (vehicles per hour)

Distance	600 m	450 m	300 m	150 m	0 m
Lane 1	1301	1301	1092	1153	1153
Lane 2	1301	1301	1092	1153	1153
Lane 3	1301	1301	1092	1153	1153
Lane 4	1301	1301	1425	1194	1153
Lane 5	1301	1301	1527	1444	1454
Lane 6	1280	1333	1610	1744	1777
Aux Lane	1323	1270	0	0	0
	9110	9110	7840	7840	7840

NOTES

Lanes 5, 6, and Aux Lane not to exceed 1800 veh/hr

Lanes 1-4 not to exceed 2000 veh/hr

Design & Year	**8+4 Bypass**
Freeway & Direction	I-5 Southbound
Freeway Segment	Del Mar Heights to Carmel Valley
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes (bypass)	
total segment length (m)	1600
WB Del Mar Heights on (veh/hr)	790
EB Del Mar Heights on (veh/hr)	1190
Bypass segment volume 1 (veh/hr)	3450
SR-56 EB connector (veh/hr)	1050
Carmel Valley off (veh/hr)	480
Bypass segment volume 2 (veh/hr)	5430
Bypass segment volume 3 (veh/hr)	3900

Bypass
MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	400 m	550 m	700 m	850 m	1000 m	1150 m	1300 m	1450 m	1600 m
Lane 1	1553	1553	1696	1717	1519	1599	1665	1819	**2271**	1979	**2067**	**2145**
Lane 2	1898	1747	1484	1404	1243	1308	1363	1488	1858	1620	1662	1755
Lane 3	790	941	1060	1119	1534	1691	1594	1241	825	781	651	480
Lane 4	0	0	0	1190	1134	832	809	881	477	1050	0	0
	4240	4240	4240	5430	5430	5430	5430	5430	5430	5430	4380	4380

NOTES

All Lanes not to exceed 1800 veh/hr

Design & Year	**8+4 Bypass**
Freeway & Direction	I-5 Southbound
Freeway Segment	Del Mar Heights to Carmel Valley
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Data Entry

Parameter	Input Value
number of lanes (bypass)	
total segment length (m)	1600
WB Del Mar Heights on (veh/hr)	580
EB Del Mar Heights on (veh/hr)	770
Bypass segment volume 1 (veh/hr)	3230
SR-56 EB connector (veh/hr)	1580
Carmel Valley off (veh/hr)	350
Bypass segment volume 2 (veh/hr)	4580
Bypass segment volume 3 (veh/hr)	2650

Bypass
MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	400 m	550 m	700 m	850 m	1000 m	1150 m	1300 m	1450 m	1600 m
Lane 1	1454	1454	1524	1466	1444	1338	1305	1320	1280	1313	1405	1458
Lane 2	1777	1532	1334	1199	1181	1095	1068	1080	1047	1075	1131	1193
Lane 3	580	825	953	1145	1014	1221	1143	925	777	612	465	350
Lane 4	0	0	0	770	941	926	1064	1255	1477	1580	0	0
	3810	3810	3810	4580	4580	4580	4580	4580	4580	4580	3000	3000

NOTES

All Lanes not to exceed 1800 veh/hr

Design & Year	**8+4 Bypass**
Freeway & Direction	I-5 Southbound
Freeway Segment	Carmel Valley Road
Time Duration	AM peak
Analysis Type	merge

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	
Carmel Valley on (veh/hr)	1400
segment volume (veh/hr)	6540

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m
Lane 1	1277	1277	1427
Lane 2	1277	1277	1427
Lane 3	1277	1277	1427
Lane 4	1308	**2428**	**2260**
Aux Lane	1400	280	0
	6540	6540	6540

NOTES

Lane 4 and Aux Lane not to exceed 1800 veh/hr

Lanes 1-3 not to exceed 2000 veh/hr

Design & Year	**8+4 Bypass**
Freeway & Direction	I-5 Southbound
Freeway Segment	Carmel Valley Road
Time Duration	PM peak
Analysis Type	merge

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	
Carmel Valley on (veh/hr)	1050
segment volume (veh/hr)	5260

MERGE

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m
Lane 1	1053	1053	1165
Lane 2	1053	1053	1165
Lane 3	1053	1053	1165
Lane 4	1052	**1892**	1766
Aux Lane	1050	210	0
	5260	5260	5260

NOTES

Lane 4 and Aux Lane not to exceed 1800 veh/hr

Lanes 1-3 not to exceed 2000 veh/hr

Design & Year	**8+4 Bypass**
Freeway & Direction	I-5 Southbound
Freeway Segment	Carmel Mountain Road
Time Duration	AM peak
Analysis Type	diverge

DIVERGE

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	
Carmel Mtn off (veh/hr)	960
segment volume (veh/hr)	7900

Traffic Volume Distribution (vehicles per hour)

Distance	**0 m**	**150 m**
Lane 1	1918	1918
Lane 2	1918	1918
Lane 3	**1918**	**1918**
Lane 4	**2145**	1185
	7900	6940

NOTES

All lanes not to exceed 1800 veh/hr

Design & Year	**8+4 Bypass**
Freeway & Direction	I-5 Southbound
Freeway Segment	Carmel Mountain Road
Time Duration	PM peak
Analysis Type	diverge

DIVERGE

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	
Carmel Mtn off (veh/hr)	760
segment volume (veh/hr)	4650

Traffic Volume Distribution (vehicles per hour)

Distance	**0 m**	**150 m**
Lane 1	1064	1064
Lane 2	1064	1064
Lane 3	1064	1064
Lane 4	1458	698
	4650	3890

NOTES

All lanes not to exceed 1800 veh/hr

Design Year	**8+4 Bypass**
Freeway & Direction	I-5 Southbound
Freeway Segment	Carmel Mountain Road to 5/805 Junction
Time Duration	AM peak
Analysis Type	

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	450
volume on (veh/hr)	1120
To I-5 (veh/hr)	4550
To I-805 (veh/hr)	3510
segment volume (veh/hr)	8060

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m
Lane 1	1995	1995	1995	**2048**
Lane 2	1995	1995	1995	**2503**
Lane 3	1623	1623	**2295**	1755
Lane 4	1328	**2448**	1776	1755
	6940	8060	8060	8060

NOTES

All lanes not to exceed 1800 veh/hr

Lanes 1 & 2 to I-5

Lanes 3 & 4 to I-805

assume 50/50 split of CMR on traffic to I-5 and I-805

Design Year	**8+4 Bypass**
Freeway & Direction	I-5 Southbound
Freeway Segment	Carmel Mountain Road to 5/805 Junction
Time Duration	PM peak
Analysis Type	

Data Entry

Parameter	Input Value
number of lanes	4
total segment length (m)	450
volume on (veh/hr)	880
To I-5 (veh/hr)	3420
To I-805 (veh/hr)	1350
segment volume (veh/hr)	4770

Traffic Volume Distribution (vehicles per hour)

Distance	0 m	150 m	300 m	450 m
Lane 1	1490	1490	1490	1539
Lane 2	1490	1490	1490	1881
Lane 3	501	501	1029	675
Lane 4	410	1290	762	675
	3890	4770	4770	4770

NOTES

All lanes not to exceed 1800 veh/hr

Lanes 1 & 2 to I-5

Lanes 3 & 4 to I-805

assume 50/50 split of CMR on traffic to I-5 and I-805

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Genesee Ave to La Jolla Village Drive
Time Duration	AM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)				
	0	150	150-800*	800	900
1	1836	1836	1320	1095	1095
2	1836	1836	1320	1095	1095
3	1836	1836	1320	1095	1095
4	612	732	1320	1095	1095
	480	360	1320	1700	1700

480
on ramp traffic volume

1700
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment

Design	**8 + 4 WITH BUFFER**
Freeway & Direction	I-5 Southbound
Freeway Segment	Genesee Ave to La Jolla Village Drive
Time Duration	PM peak
Analysis Type	merge/diverge w/ fwy segment analysis

Traffic Volume Distribution (vehicles per hour)

Lane Number	Distance from on Ramp (m)				
	0	150	150-800*	800	900
1	**2055**	**2055**	1790	1868	1868
2	**2055**	**2055**	1790	1868	1868
3	**2055**	**2055**	1790	1868	1868
4	685	1210	1790	**1868**	**1868**
	2100	1575	1790	1100	1100

2100
on ramp traffic volume

1100
off ramp traffic volume

*Assumes equal distribution of traffic volume in main lanes along freeway segment