I-215 Corridor System Management Plan (CSMP)

Draft Final

Comprehensive Performance Assessment And Causality Report

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097473002

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EXECUTIVE SUMMARY

This final Comprehensive Performance Assessment and Causality Report represents the 5th and 6th milestones of the Corridor System Management Plan (CSMP) development process. It expands upon the Preliminary Performance Assessment milestone by providing updated corridor performance data, finalizing a list of bottleneck locations through field observations and identifying the causes of each bottleneck.

Background

The I-215 Freeway has been the focus of major development growth for many years. I-215 is one of western Riverside and San Bernardino County's primary north-south routes. Because of the many acres of flat topography adjoining I-215, it is expected that a substantial amount of future development will occur along I-215. Every day thousands of commuters are experiencing increasing congestion along the I-215 route.

Spurred by the need to meet the County's growing demands, voters in Riverside County approved a 30 year extension of Measure A in November 2002, which will provide a significant amount of funding for improvements to I-215. In San Bernardino County, the voters approved an extension of Measure I in 2004 which will also provide substantial amounts of funding for improvements to I-215.

The extent of the I-215 study corridor defined for this CSMP is a 54.5-mile stretch from I-15 in Murrieta in Riverside County (PM 8.99 – 45.01) to I-15 in Devore in San Bernardino County (PM 0.00 – 17.75).

Corridor-wide Performance

Mobility, reliability, safety, productivity and pavement condition were used as measures to determine how the I-215 study corridor is currently performing. These measures were evaluated based on available data from the Freeway Performance Measurement System (PeMS), data provided by Caltrans District 8 and data collected by the CSMP team.

PeMS data was available for approximately 14 miles of the study corridor between Box Springs Road in Riverside County and 4th Street in San Bernardino County (PM 30.59 to PM 44.43). The data in this CSMP report was supplemented with data published in the Caltrans State Highway Congestion Monitoring Program (HICOMP) report (2007), and the Caltrans Traffic Accident Surveillance and Analysis System (TASAS); and new counts and travel time runs conducted in late 2008 and early 2009.

The mobility, reliability and productivity measures were evaluated using the available PeMS data, which represents the northern extents of the corridor between San Bernardino and Riverside. Sufficient safety and pavement condition data was available to reflect the entire study corridor. The following section summarizes each of the performance measures.

Mobility

PeMS data revealed that the average daily total delay on the I-215 corridor has decreased from 6,870 vehicle hours in 2006 to 4,086 vehicle hours in 2008. Severe delay accounts for 37% - 44% of the total delay. I-215 southbound has the highest vehicle-hours of total delay during the PM peak hour. I-215 northbound has the highest vehicle-hours of severe delay during the PM peak hour.

Reliability (between Riverside and San Bernardino)

The December 2008 PeMS data revealed that there was very little travel time variability on a typical day with the exception of the PM peak period. On 90% of the days, during the evening peak period drivers experience a travel time between 35 minutes and 43 minutes.

One measure that can be used for reliability is the buffer index. The buffer index represents the extra time (or time cushion) that travelers must add to their average travel time when planning trips to ensure on-time arrival. On-time arrival assumes the 95th percentile of travel time distribution.

I-215 PM southbound has the highest value in both average travel time (approximately 1 hour) and buffer index (22%). Therefore, the traveler should allow at least 12 extra minutes (1 hour × 0.22 = 12 minutes) for the trip in order to ensure on-time arrival.

Safety

Caltrans typically analyzes the latest three years worth of safety data. Traffic accident data is compiled and reported by Caltrans using the Traffic and Surveillance Analysis System (TASAS) The latest TASAS data available from PeMS is December 31, 2008; therefore, safety data from January 1, 2006 to December 31, 2008 for the entire I-215 corridor was analyzed. The following summarizes the types and occurrence of incidents for the reporting period:

- The highest occurrence of incidents happened on Fridays (17.27%). The lowest occurrence of incidents happened on Sundays (11.33%).
- More incidents occurred during the PM peak period; 8% percent of the total incidents happened between 5:00 PM and 6:00 PM.
- More than 40% of the traffic accidents that occurred in the past three years on I-215 were caused by speeding.
- About 45% of the total incidents were classified as “rear-end” incidents.
- On I-215 northbound for the entire corridor, the segment that experienced the highest occurrence of incidents during that period is located between PM 30 and PM 35.
- On I-215 southbound for the entire corridor, the segment with the highest occurrence of incidents is located near PM 35.

Productivity

Productivity was measured in terms of lost lane-miles for the month of December 2008. The northbound direction had more lost lane-miles compared to the southbound direction.

Pavement

The 2007 Pavement Condition Survey (PCS) identified 86.837 lane miles of I-215 as distressed pavement.

Bottleneck Locations and Causality

Bottlenecks were initially identified using the Highway Congestion Monitoring Program (HICOMP) report, vehicle probe data and PeMS. The bottlenecks were then confirmed by field observations throughout the study corridor. The data and the recent field observations were used to develop a revised list of bottlenecks that reflect conditions in 2009.

The following section provides a descriptive summary of the bottleneck locations and the likely causes of the bottleneck.

- ***Bottleneck #1: Northbound bottleneck near the I-215/SR-60 Interchange***
  A northbound and westbound bottleneck exists near the I-215/SR-60 Interchange in the Moreno Valley area. From westbound SR-60, queues can extend to Day Street. In the northbound direction, queues can extend to Allesandro Blvd. This bottleneck occurs in the AM peak period.

- ***Bottleneck #2: Northbound bottleneck coming from the SR-215/SR-60 northbound connector at the SR-60/SR-91/I-215 Interchange.***
  A northbound bottleneck exists as traffic merges into a single auxilary lane from the northbound connector, forming a weaving section with traffic exiting at Columbia Avenue. This bottleneck occurs in the AM and PM peak periods.

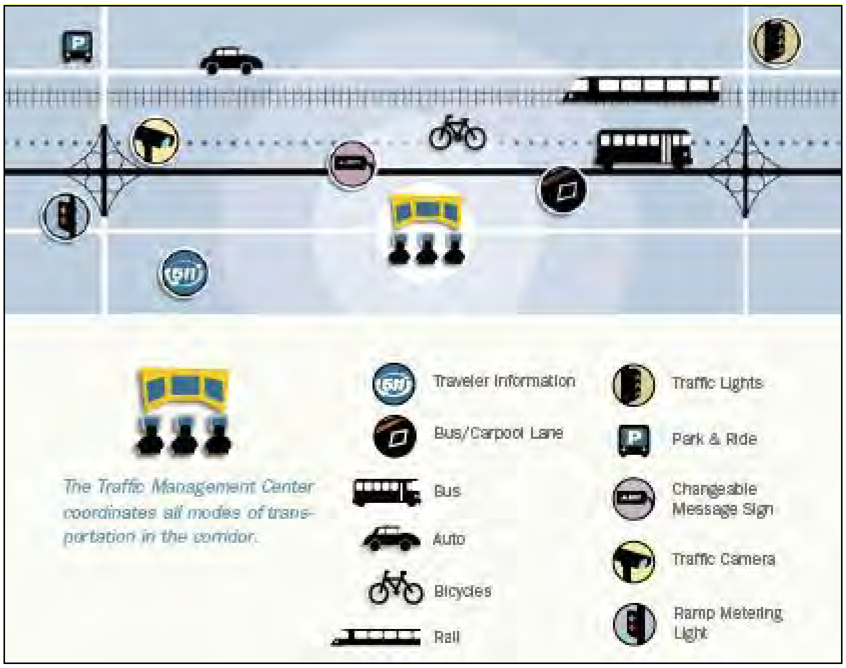
- ***Bottleneck #3: Southbound I-215/SR-60 bottleneck east of the SR-60/SR-91/I-215 Interchange***
  A southbound bottleneck exists on I-215/SR-60 as traffic from eastbound SR-91 and southbound I-215 merge in close proximity to lane drops at Spruce Street and 3rd Street/Blaine Street. This bottleneck occurs in the PM peak period.

- ***Bottleneck #4: Northbound bottlenecks between Clinton Keith Road and the I-15/I-215 Junction***
  Northbound bottlenecks exist at interchanges at Murrieta Springs Road, Los Alamos Road, and Clinton Keith Road. The bottlenecks are caused by platoons of merging vehicles at on-ramp locations. These bottlenecks occur in the PM peak period.

- ***Bottleneck #5: Northbound bottleneck at the I-215/I-10 connector***
  The northbound bottleneck is caused by a major weaving segment that is formed at the eastbound I-10/northbound I-215 freeway connector and the Auto Plaza Drive off-ramp. Traffic from eastbound I-10 merges onto an auxiliary lane that is dropped approximately 1,600 feet later at the Auto Plaza Drive off-ramp. This bottleneck occurs in the PM peak period.

1. INTRODUCTION

A Corridor System Management Plan (CSMP) is a comprehensive, integrated management plan for increasing transportation options, decreasing congestion, and improving travel times in a transportation corridor. A CSMP includes all travel modes in a defined corridor -- highways and freeways, parallel and connecting roadways, public transit (bus, bus rapid transit, light rail, intercity rail) and bikeways, along with intelligent transportation technologies (which could include ramp metering, coordinated traffic signals, changeable message signs for traveler information, incident management, bus/carpool lanes and carpool/vanpool programs, and transit strategies). A CSMP incorporates both capital and operational improvements. **Figure 1-1** depicts the concept of a CSMP.



Source: Caltrans.

Figure 1-1: CSMP Concept

The goal of a CSMP is to define how a travel corridor is performing, understand why it is performing that way, and recommend system management strategies to address problems within the context of a long-range planning vision. Guided by the system management pyramid (**Figure 1-2**), a CSMP seeks to incorporate operational analysis into more traditional transportation planning processes at the corridor level. This is accomplished by conducting comprehensive performance assessments, analysis and evaluations leading to recommending system management strategies for the corridor.

Source: Caltrans.

Figure 1-2: System Management Pyramid

1.1 Report Contents

This report provides documentation of an assessment of the I-215 corridor in terms of the current performance. This report is comprised of the following sections:

Section 1: **Introduction** – provides an overview of the CSMP program and the report contents.

Section 2: **Corridor Description** – description of the I-215 corridor assessed in this report and the subsequent modeling efforts.

Section 3: **Existing Conditions** – an assessment of the existing traffic conditions based on currently available traffic performance data.

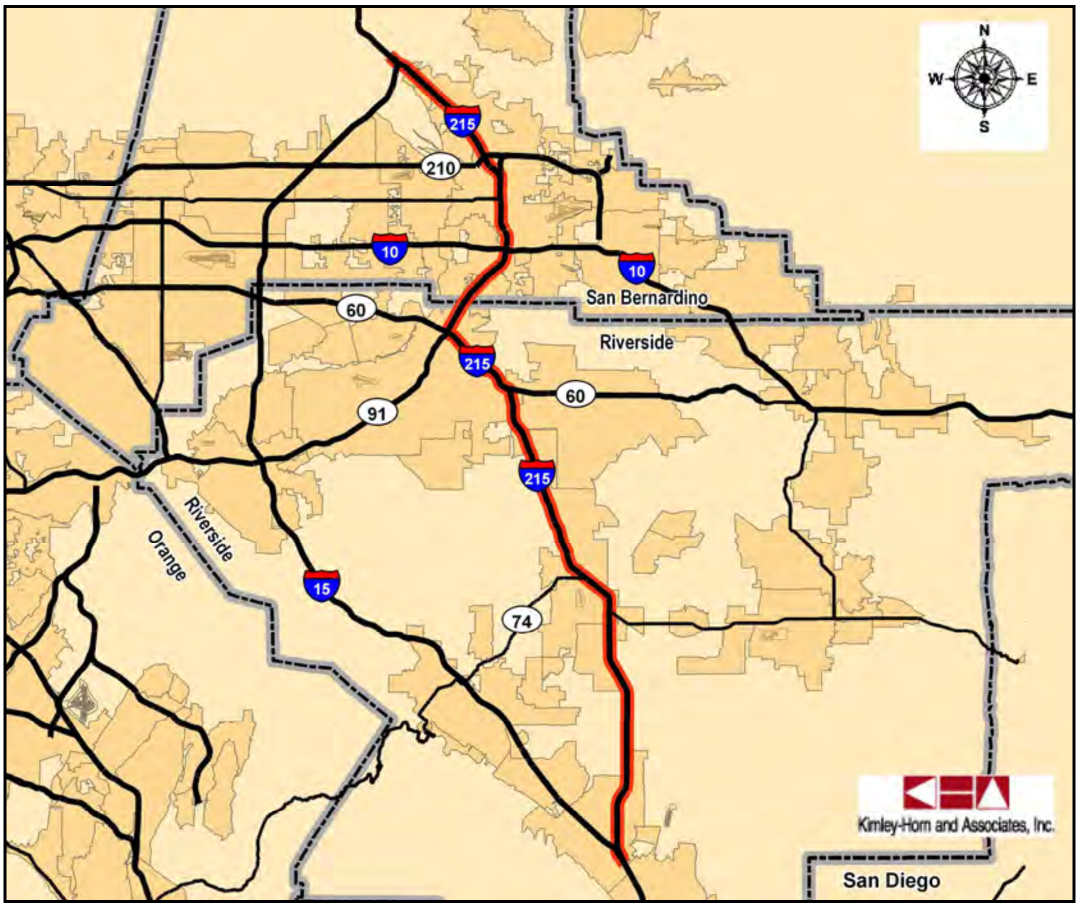
Section 4: **Bottleneck Analysis** – an evaluation of existing recurrent traffic congestion in the corridor. Freeway bottleneck locations that create mobility constraints are identified and their relative contribution to corridor-wide congestion is reported.

Section 5: **Bottleneck Causality** – an assessment of the causes of corridor performance degradation.

Section 6: Summary of Findings – a concise overview of the results of the overall analysis

2. CORRIDOR DESCRIPTION

I-215 is a 54.5-mile long north-south Interstate Highway that traverses through the Counties of Riverside and San Bernardino. The southern terminus of I- 215 is at the junction of Interstate 15 in the City of Murrieta in southern Riverside County. It then runs north through Perris before joining SR-60 in Moreno Valley. I-215 splits from SR-60 at SR-91 in Riverside, where it then bisects a portion of the City of San Bernardino before terminating at I-15 near the small community of Devore. **Figure 2-1** depicts the study area.



Source: Kimley-Horn and Associates, Inc., Inc.

Figure 2-1: I-215 CSMP Study Area

This route is an alternative to I-15 for drivers traveling through the region, for example from Las Vegas or San Bernardino to the San Diego metropolitan area. The route also provides for intraregional mobility between the Cities of Temecula, Sun City, Perris, Moreno Valley, Riverside, Grand Terrace, Colton and San Bernardino. I-215 also provides access to California State University San Bernardino, University of California Riverside, Loma Linda Medical Center, March Air Reserve Base, Glen Helen Regional Park, Riverside National Cemetery and major employment centers in both counties.

Construction is currently underway to widen the northern section of I-215. The project will add a general use lane and a carpool lane in both directions between I-10 and I-210, and flyover connectors from I-215 to I-210. Auxiliary lanes will also be constructed along the corridor. Because the route is under construction, existing conditions data is not available for the northern section of I-215, and as such, this section will need to be studied at a future date.

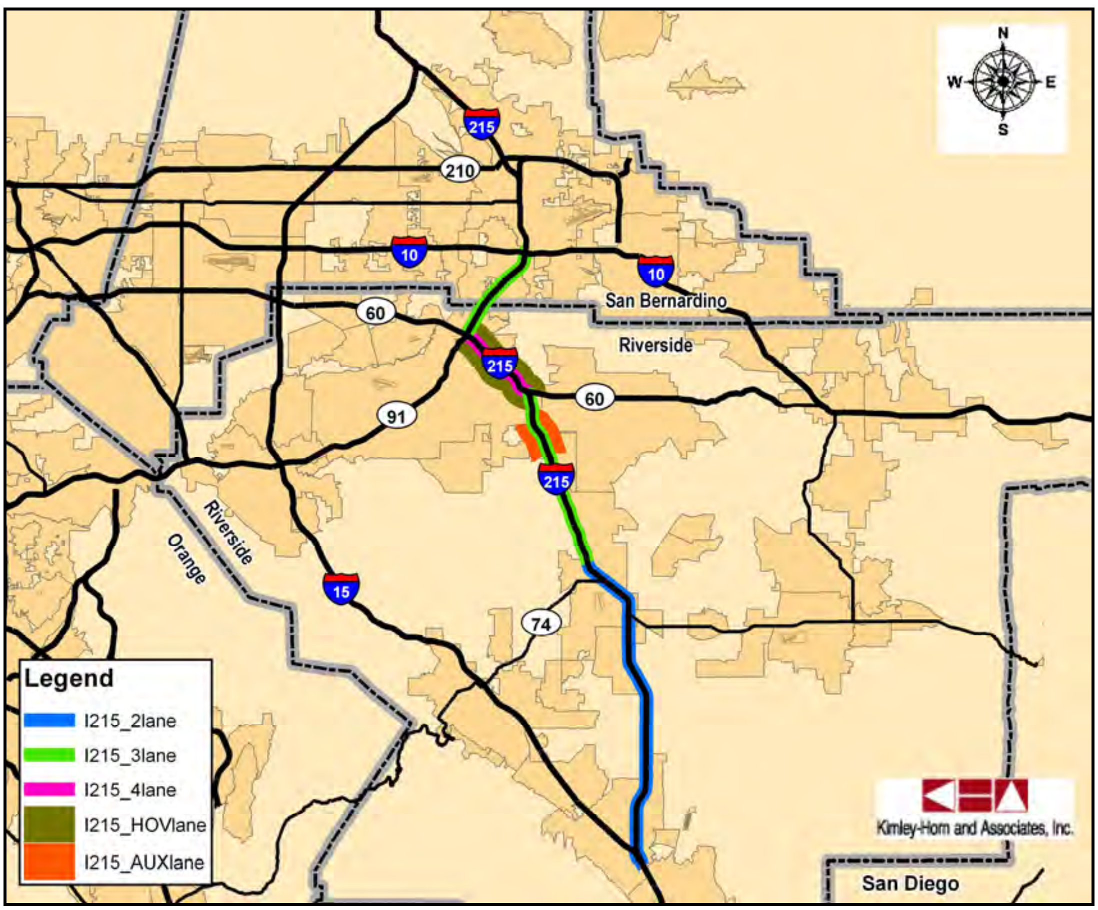
2.1 Roadway Facility

I-215 is currently a four-lane freeway from I-15 in Murrieta to "D" Street in Perris, and a six-lane freeway from "D" Street to its merge with SR-60 in eastern Riverside. Through the area where I-215 and SR-60 share the same roadway, the freeway has recently been expanded to include four general purpose lanes and one high occupancy vehicle (HOV) lane in each direction. From the SR-60/SR-91/I-215 interchange near downtown Riverside north to I-10, I-215 has six lanes. North of I-10 to Inland Center Drive, it currently has eight lanes.

Auxiliary lanes are in place in the following locations.

- Between Alessandro Boulevard and Cactus Avenue,
- Between I-10 and Washington Street.

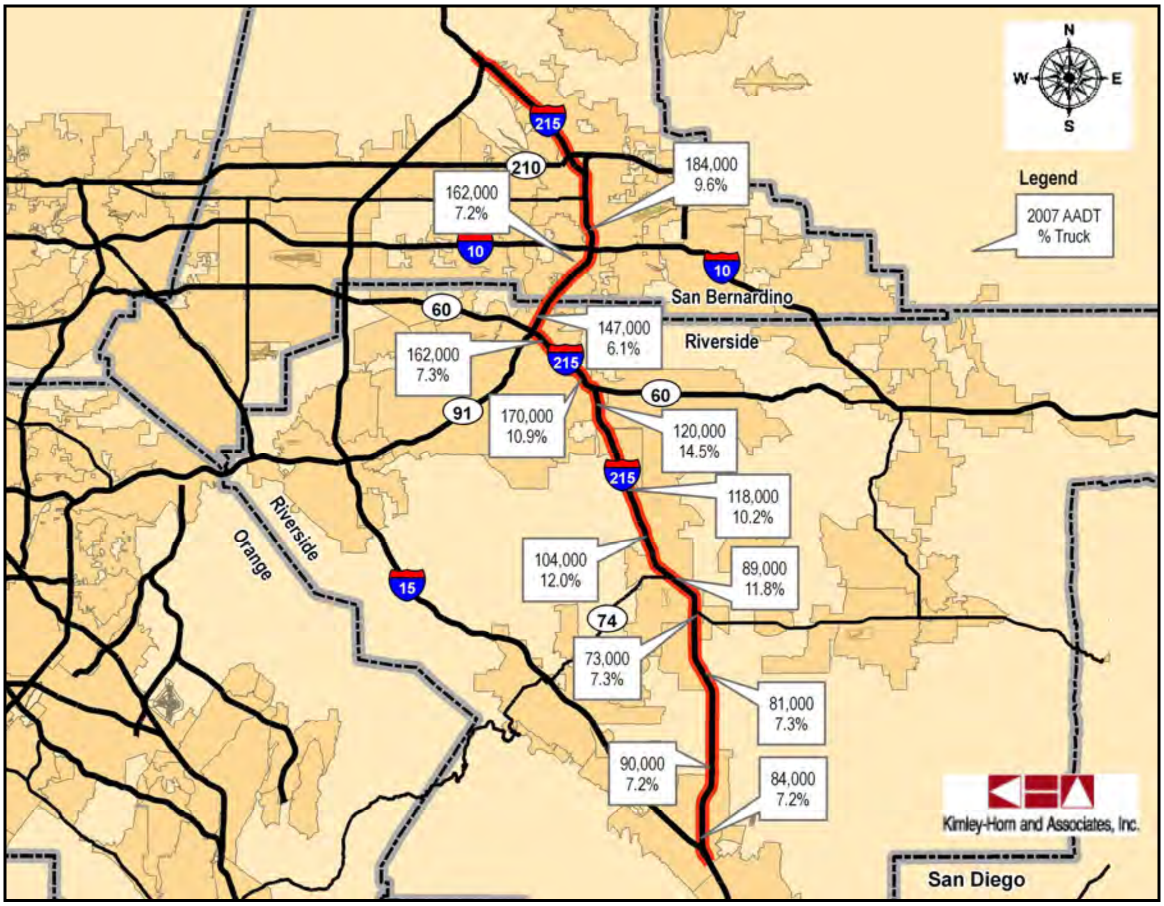
Figure 2-2 depicts the lane configuration along the I-215 corridor.



Source: Kimley-Horn and Associates, Inc., Inc.

Figure 2-2: I-215 Lane Configuration

Figure 2-3 shows the Average Annual Daily Traffic (AADT) on I-215 in 2007 as reported by Caltrans, and the percentage of trucks along the corridor. The AADT in the corridor ranges from 84,000 cars just north of I-15 in Murrieta to 170,000 cars just north of where I-215 and SR-60 merge together in east Riverside. The percentage of trucks ranges from a low of 7.2% north of I-15 in Murrieta to a high of 14.5% just south of the merge with SR-60. I-215 is part of the Surface Transportation Assistance Act (STAA) National Truck Network.[1] To provide a comparison, the percentage of trucks is generally lower on I-215 than on the parallel I-15.



Source: Kimley-Horn and Associates, Inc., Inc.

Figure 2-3: 2007 Average Annual Daily Traffic (AADT) on I-215

[1] Truck Networks on California State Highways, District 8, 7/6/2007

2.2 Intersecting Freeways and State Highways

As shown in **Table 2-1**, I-215 intersects several freeways and state highways that provide connecting access to other parts of the region.

Table 2-1: Intersecting Freeways and State Highways

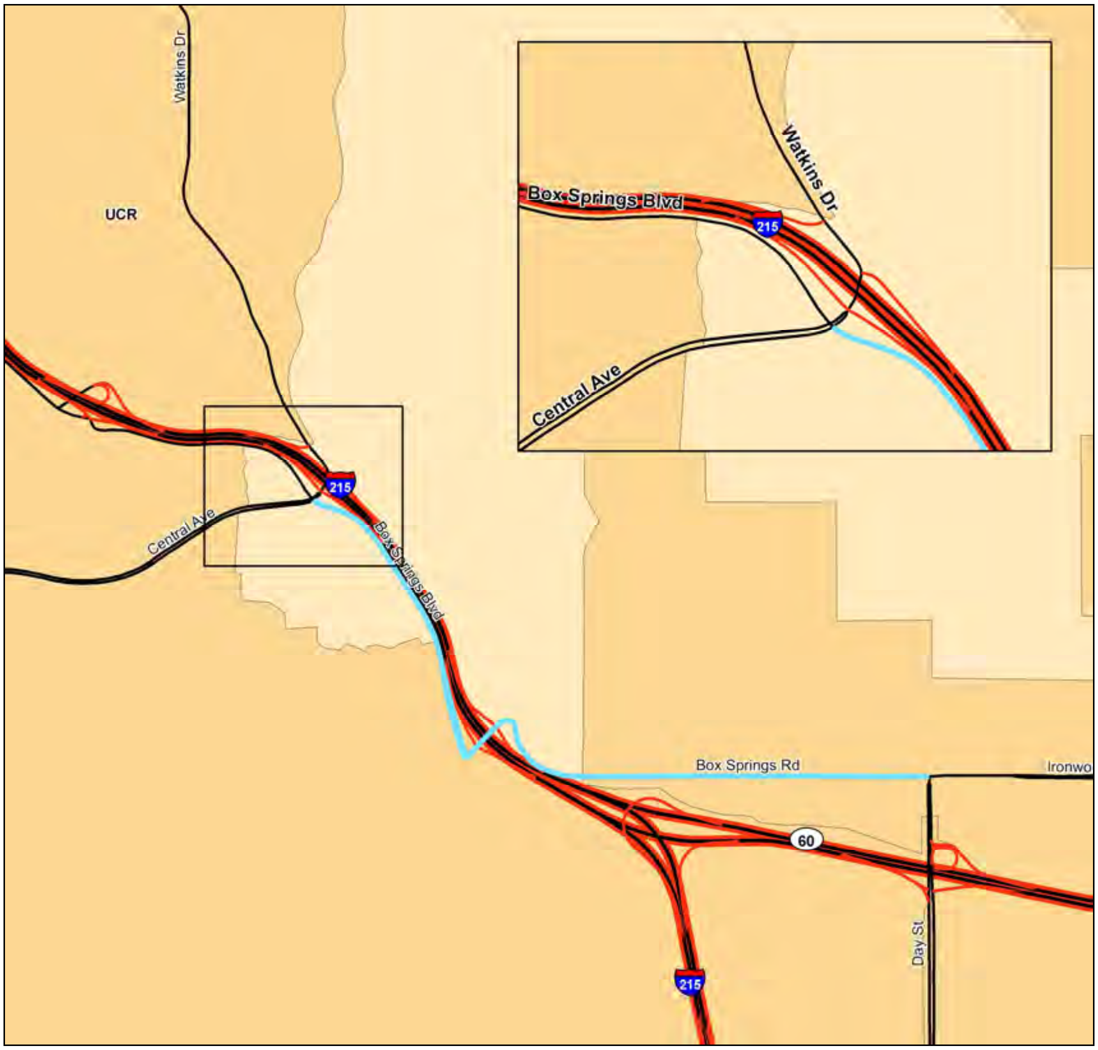
Intersecting Freeways and State Highways			
Route	**Location of Interchange with I-215**	**East Destination**	**West Destination**
SR 74	City of Perris	Hemet	Lake Elsinore, Orange County
SR-60	Intersects I-215 and operates on same route through City of Riverside	Beaumont	Los Angeles
SR-91	City of Riverside	--	Orange County
I-10	City of San Bernardino	Arizona	Los Angeles
I-210	City of San Bernardino	Redlands	Pasadena

Source: Caltrans.

- SR-74 is a regional east-west state highway that provides connections to Hemet and San Jacinto to the east and to Lake Elsinore and Orange County to the west. The east leg of SR-74 intersects I-215 at the Matthews Road interchange, and the west leg intersects I-215 at the 4th Street interchange.
- SR-60 is an east-west freeway that runs through Moreno Valley and connects to I-10 in Beaumont in the east, and runs through the City of Riverside to the west. SR-60 also provides connections to several cities including Ontario, Diamond Bar, Industry, and Montebello before connecting with I-10 in East Los Angeles.
- SR- 91 an east-west freeway that provides connections to the west through the Cities of Riverside and Corona and into Orange County.
- I-10 is an east-west freeway that provides connections to the east through Redlands and Banning to the Coachella Valley, Arizona, and across the United States. It provides connections to the west through Fontana and Ontario and into Los Angeles County to downtown Los Angeles and Santa Monica.
- I-210 is an east-west freeway that provides connections to the east through Highland and turns south to intersect I-10 in Redlands. It provides connections to the west through Fontana and Rancho Cucamonga and into Los Angeles County through several cities including Azusa, Pasadena, and La Canada-Flintridge before connecting into I-5 in Sylmar.

2.3 Parallel Arterial

The CSMP concept extends beyond the study of the mainline lanes to include parallel or adjacent arterials to the extent that they are used as alternates to the mainline. For this study's purposes, one parallel arterial: Box Spring Road/Ironwood Avenue is included. This adjacent arterial is regularly used as an alternate through the depicted section of I-215/SR-60 corridor. **Figure 2-4** depicts the location and limits of the parallel arterial that will be used in the subsequent steps of the CSMP microsimulation modeling.



Source: Kimley-Horn and Associates, Inc., Inc.

Figure 2-4: I-215 Parallel Arterial

2.4 Recent Roadway Improvements

Recently, the combined segment of I-215 and SR-60 (between the SR-60/SR-91/I-215 interchange near downtown Riverside and the SR-60/I-215 interchange in eastern Riverside) has been improved from a six-lane freeway to include six general purpose lanes and two HOV lanes. A southbound truck climbing lane and truck bypass was recently completed. This project has included construction of two new high-speed freeway-to-freeway connector ramps at the SR-60/SR-91/I-215 interchange (westbound SR-60/I-215 to southbound SR-91 and southbound I-215 to eastbound SR-60/I-215), as well as truck bypass ramps for eastbound trucks through the SR-60/I-215 interchange.

2.5 Transit

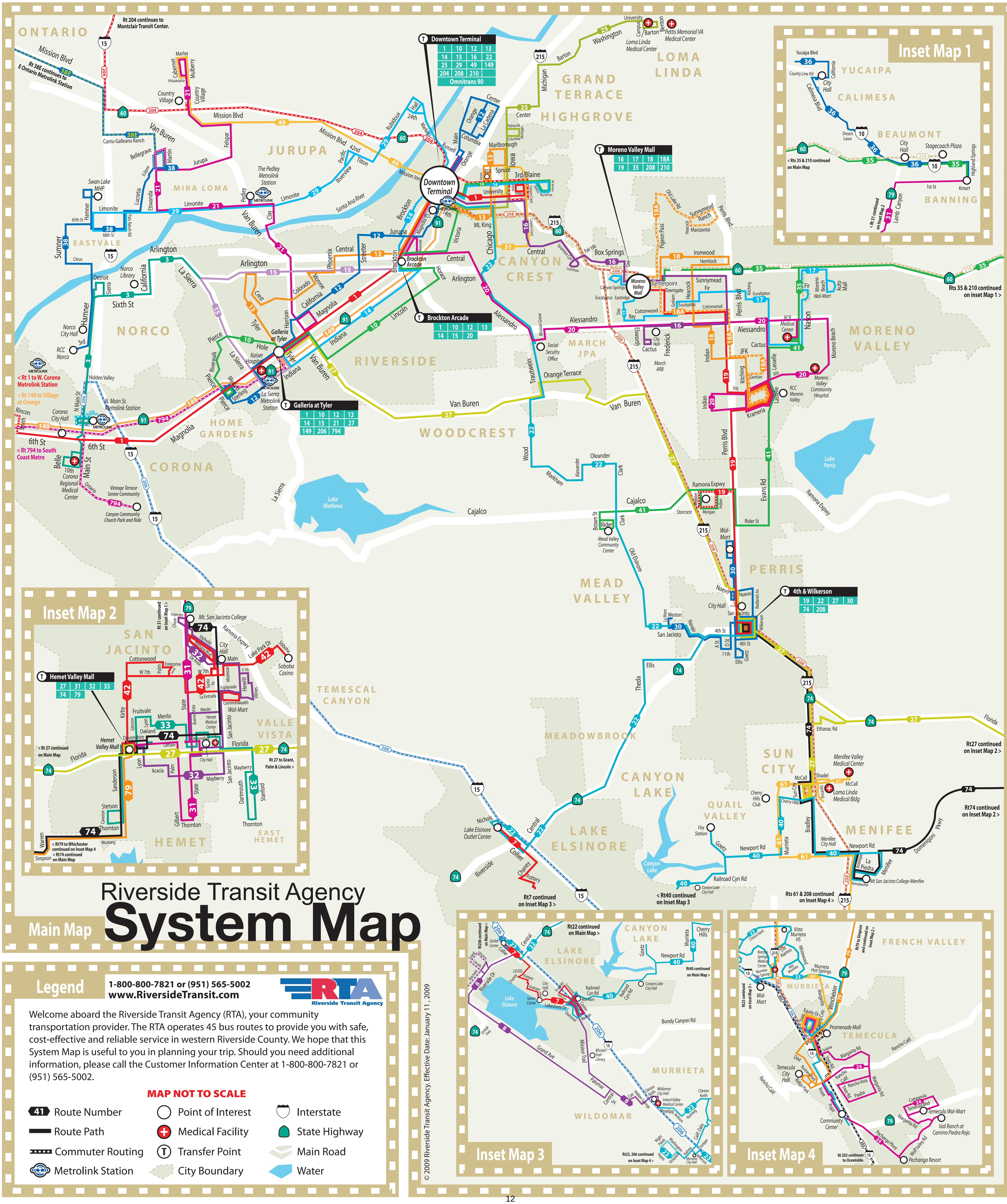
Within the corridor, the Riverside Transit Agency (RTA) operates bus service in Riverside County, Omnitrans operates bus service in San Bernardino County, and the Southern California Regional Rail Authority (SCRRA) operates a commuter rail service known as Metrolink. The RTA system map is shown in **Figure 2-5**. The Omnitrans system map is shown in **Figure 2-6**. The Metrolink system map is shown in **Figure 2-7**.

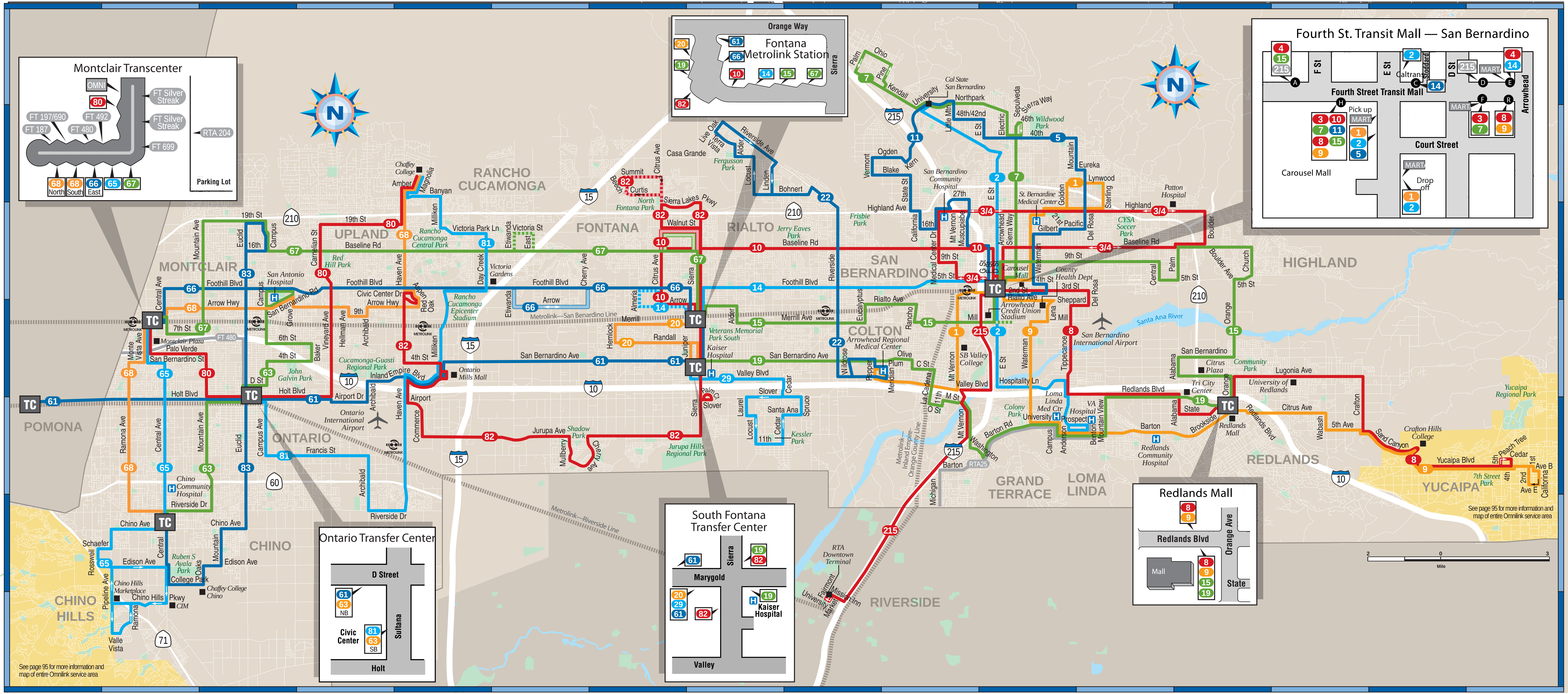
The two Metrolink commuter rail lines operating within the CSMP limits include the Riverside Line and the Inland Empire - Orange County Line. The Riverside Line has seven stops along its 59-mile route to Los Angeles. Ten trains operate on the route on weekdays carrying 4,416 passengers per day. The Inland Empire – Orange County (IEOC) Line covers 100 miles of track and connects San Bernardino to Oceanside via Riverside and the SR-91 corridor. The six daily trains serve 14 stations and an average of 3,737 passengers. An expansion is planned to add two trains by 2010.

In addition, a Metrolink extension from Riverside to the Perris Valley is planned. This service will use the existing rail line (the San Jacinto Branch Line) that is adjacent to I-215 from Central Avenue (north of the SR-60/215 interchange) all the way to "D" Street in Perris. The project's environmental document is currently out for public review. Service is projected to open in 2011.

By 2025 the proposed Metrolink extension is projected to serve 5,700 riders daily, saving them an estimated 3,800 hours of travel time per day (Source: SCRRA).

Figure 5: RTA System Map





Route Listing

Route	Route Name
1	ARMC – San Bernardino Del Rosa
2	Cal St – E St – Loma Linda
3/4	Baseline – Highland – San Bdno
5	San Bernardino – Del Rosa – Cal State
7	N San Bdno – Sierra Way – San Bdno
8	San Bernardino – Mentone – Yucaipa
9	San Bernardino – Redlands – Yucaipa
10	Fontana – Baseline – San Bernardino
11	San Bernardino – Muscoy – Cal State
14	Fontana – Foothill – San Bernardino
15	Fontana – San Bernardino/Highland – Redlands
19	Fontana – Colton – Redlands
20	Fontana – Metrolink – Via Hemlock – Kaiser
22	North Rialto – Riverside Ave – ARMC
29	Bloomington – Valley Blvd – Kaiser
61	Fontana – Ontario Mills – Pomona
63	Chino – Ontario – Upland
65	Montclair – Chino Hills
66	Fontana – Foothill Blvd – Montclair
67	Montclair – Baseline – Fontana
68	Chino – Montclair – Chaffey College
80	Montclair – Ont Conv Ctr – Chaffey College
81	Ontario – Ontario Mills – Chaffey College
82	Rancho Cucamonga – Fontana – Sierra Lakes
83	Upland – Euclid – Chino
215	San Bernardino – Riverside

Routes and schedules are subject to change without notice.

LEGEND

- Bus Route
- Tripper Service
- Long-term Detour
- Metrolink
- Metrolink Station
- TransCenter (Timed Transfers)
- Landmark
- Hospital
- Interstate
- State Highway
- OmniLink Service Area (Demand Reponse Service) For more information, call Chino Hills: 1-800-336-6424 or Yucaipa: 1-800-990-2406

Effective: September 2008

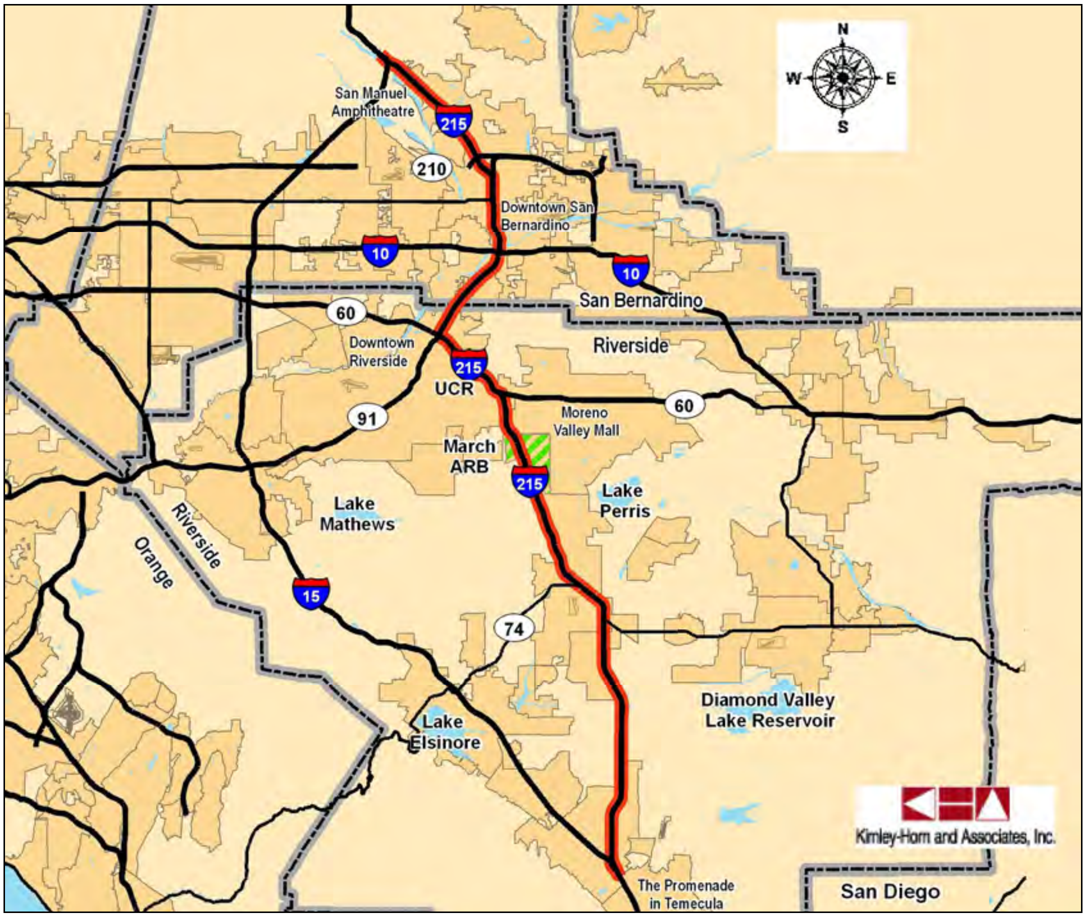
Figure 6: Omni Transit System Map

Figure 7: Metrolink System Map

2.6 Major Trip Generators

There are several major institutions, activity centers, and recreational facilities that generate a substantial number of trips along the I-215 corridor. Their locations are shown on **Figure 2-8**.

- The Promenade in Temecula ("The Promenade Mall") is a regional shopping center located in Temecula, California, near the southern terminus of I-215. It has approximately one million square feet of shopping area on a 102-acre site.
- Diamond Valley Lake is located a few miles east of I-215 in the southern portion of the corridor, with its primary freeway access from I-215 via the Newport Road interchange. Operated by the Metropolitan Water District (MWD) and opened to the public in 2003, this reservoir is a regional recreational facility for boating, fishing, and hiking.
- Lake Perris is a state recreation area located east of I-215, with its primary access from the Ramona Expressway. Activities at this reservoir include camping and water sports as well as boating, fishing, and hiking.
- The March Air Reserve Base (ARB) and March Inland Port is located adjacent to I-215 between the Oleander Avenue and Cactus Avenue interchanges. A former Air Force Base, the March ARB now accommodates Air Reserve activities and shares runways with the Inland Port, a cargo airport with an operating cargo terminal operated by DHL. Development plans for the surrounding area envision a major employment center linked with and supporting expanded air cargo operations.
- The Moreno Valley Mall at Towngate is a shopping mall located on the former site of the Riverside International Raceway in Moreno Valley, California. This is another regional shopping center located near the I-215 corridor. It has over 140 stores and more than one million square feet of shopping area.
- The University of California, Riverside (UCR) campus straddles the combined I-215/SR-60 freeway in Riverside. UCR is projected to be one of the UC system's high growth campuses. The current enrollment is over 17,000 students with an expected population of almost 25,000 students by 2015.
- Downtown Riverside is located southwest of the SR-60/SR-91/I-215 interchange, and houses a concentration of government offices (city and county), as well as other businesses and offices and the main campus of Riverside Community College.
- Downtown San Bernardino is located east of I-215, and houses a concentration of government offices (City, County, and State of California) as well as other offices and commercial centers. San Bernardino Valley College is located on the west side of I-215, near the Inland Center Drive interchange.
- San Manuel Outdoor Amphitheatre in Devore can also be a major trip generator during special events.



Source: Kimley-Horn and Associates, Inc., Inc.

Figure 2-8: Major Trip Generators

3. EXISTING CONDITIONS

This section summarizes the existing conditions of the I-215 corridor. The primary objective is to provide a sound technical basis for describing current traffic performance on the corridor.

Five key measures are used to describe existing conditions in the corridor.

- **Mobility** describes how well the corridor moves people and freight.
- **Reliability** captures the relative variability of travel time.
- **Safety** captures the safety characteristics in the corridor.
- **Productivity** describes the lost lane miles due to inefficiencies.
- **Pavement Preservation** describes the location of distressed pavement and quantity in lane-miles.

3.1 Mobility

Mobility describes how well the corridor moves people and freight. The mobility performance measures need to be readily measurable and straightforward for both documenting current conditions and being useful for future comparisons. Two primary measures are typically used to quantify mobility: delay and travel time.

3.1.1 Delay

Delay is defined as the total observed travel time less the travel time under non-congested conditions. Total delay is computed as the difference in travel time between actual congested conditions and free flow conditions (assumed to reflect speeds of 60 miles per hour).

Delay is reported as vehicle-hours of delay. The following formula is used to calculate total delay:

(Vehicles Affected per Hour)×(Distance)×(Duration)×[1/(Congested Speed)-1/60mph]

The ‘vehicles affected’ portion of the formula is dependent on the methodology used. Some methods assume a fixed flow rate (e.g., 2,000 vehicles per hour per lane), while others use a measured or estimated flow rate. The distance is the length in which the congested speed prevails and the duration is the hours of congestion experienced below the threshold speed.

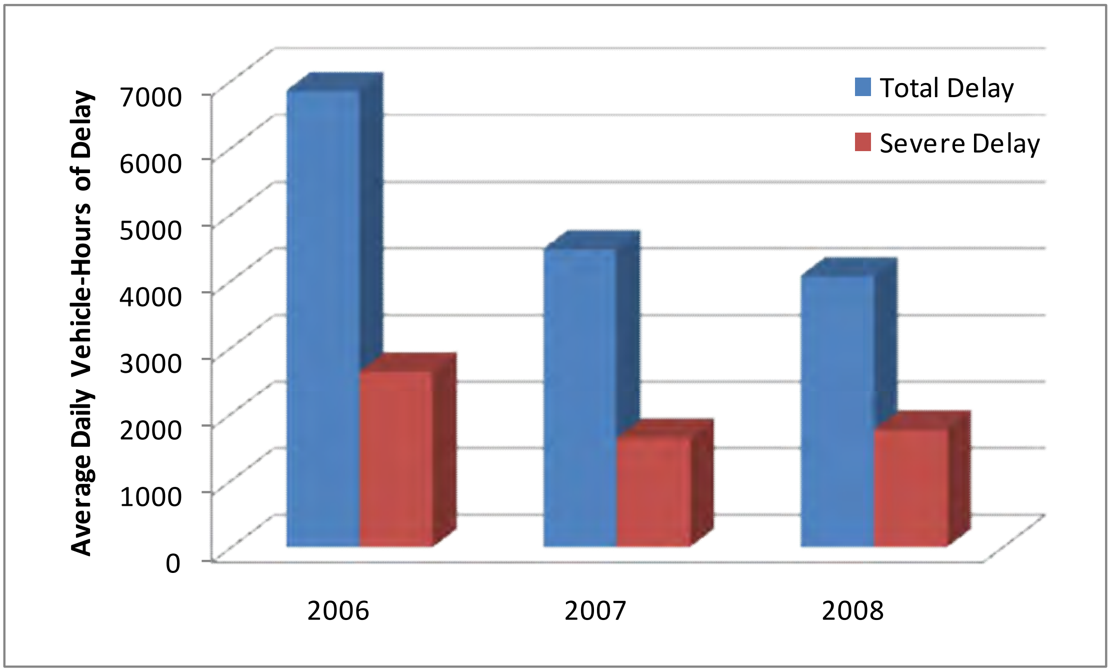
Total delay can be segmented into two components:

- Severe delay – delay that occurs when speeds are below 35 miles per hour
- Other delay – delay that occurs when speeds are between 35 miles per hour and 60 miles per hour

Severe delay represents breakdown conditions and is generally the focus of congestion mitigation strategies. “Other” delay represents conditions approaching the breakdown congestion, leaving the breakdown conditions, or areas that do not cause wide-spread breakdowns, but cause at least temporary slowdowns.

In order to combat congestion a focus on severe congestion is necessary, it is also important to review "other" congestion and understand its trends. This could allow for proactive intervention before the "other" congestion turns into severe congestion.

Figure 3-1 shows the average daily delay trends from 2006 to 2008 for the I-215 corridor.

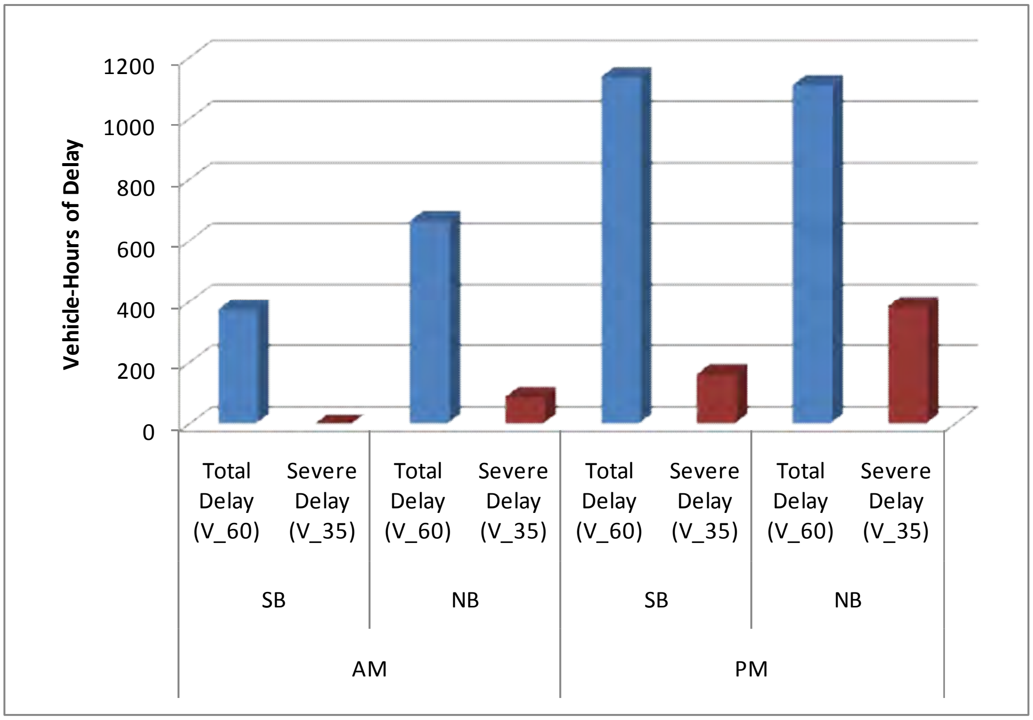


Source: Freeway Performance Measurement System (PeMS)

Figure 3-1: Average Daily Vehicle-Hours of Delay (2006-2008)

As shown on the figure, the average daily total delay on the I-215 corridor has decreased from 6,870 vehicle-hours in 2006 to 4,086 vehicle-hours in 2008. Severe delay accounts for 37% - 44% of the total delay.

Figure 3-2 shows the peak hour vehicle-hours of delay for the I-215 corridor from I-15/I-215 interchange in the south to Auto Plaza Drive north of I-10.



Source: Kimley-Horn and Associates, Inc., Inc.

Figure 3-2: Peak Hour Vehicle-Hours Delay

As shown in **Figure 3-2**, I-215 southbound has the highest vehicle-hours of total delay during the PM peak hour. I-215 northbound has the highest vehicle-hours of severe delay during the PM peak hour.

The Caltrans State Highway Congestion Monitoring Program (HICOMP) report has been published by Caltrans annually since 1987. Delay is presented as average daily vehicle-hours of delay (DVHD), which represents the sum of all the delay experienced by commuters on the corridor.

For the HICOMP report, probe vehicle runs are performed at most on two to four days during the year. Ideally, two days of data collection are conducted in the spring and in the fall of the year, but resource constraints may affect the number of runs performed during a given year. Congestion levels also vary from day to day and depend on any number of factors including accidents, weather, and special events.

Figures 3-3 and **3-4** provide maps illustrating congested segments during the AM and PM peak commute periods summarized from 2007 data reported in the latest 2008 Caltrans HICOMP report. The approximate locations of the congested segments, the duration of that congestion, and the reported recurrent daily delay are also shown. The congested segments shown in the maps were verified in subsequent field observations to identify current bottleneck locations as described in Chapter 5 of this report.

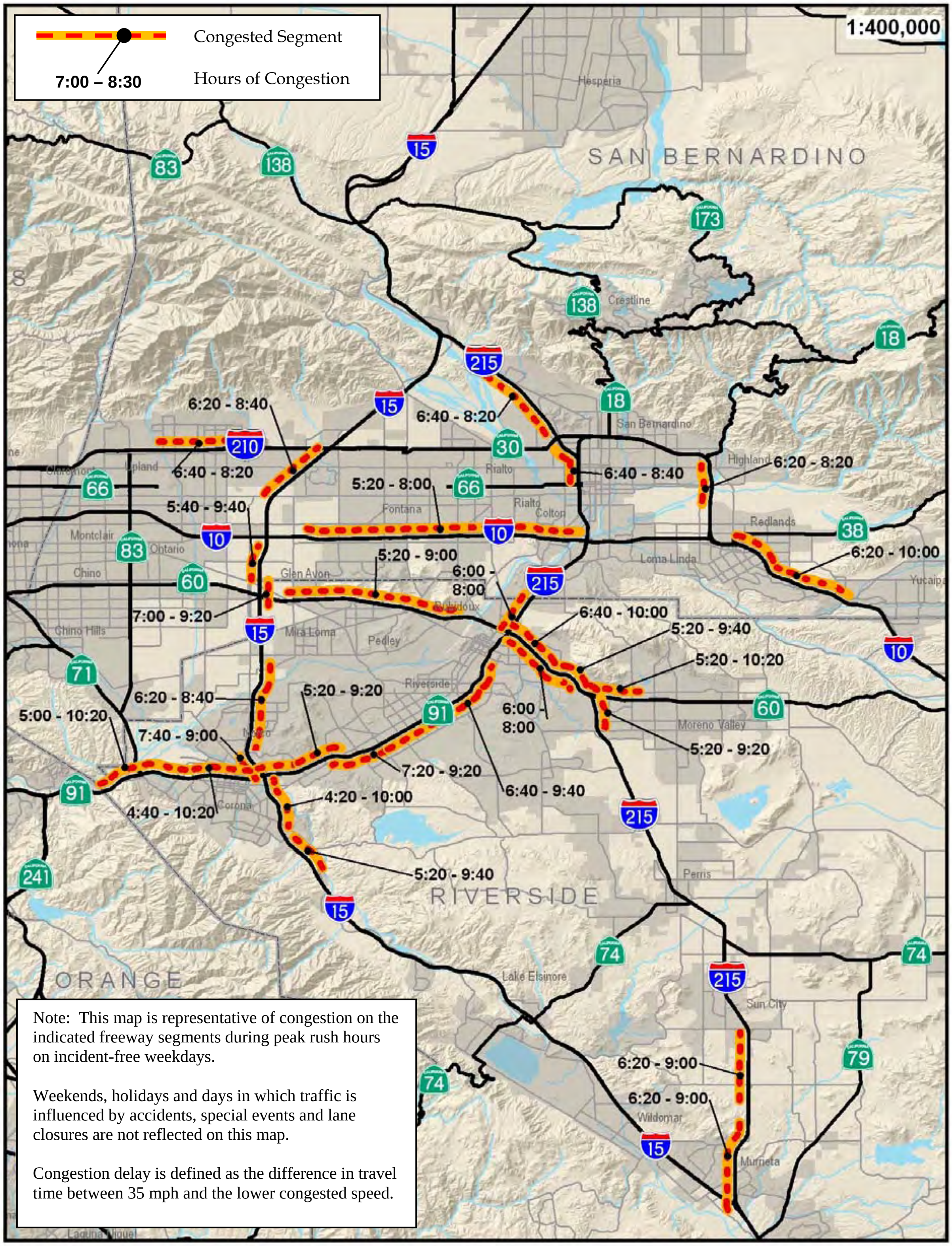


Figure 3-3: 2007 Congested Segments during the AM peak on I-215

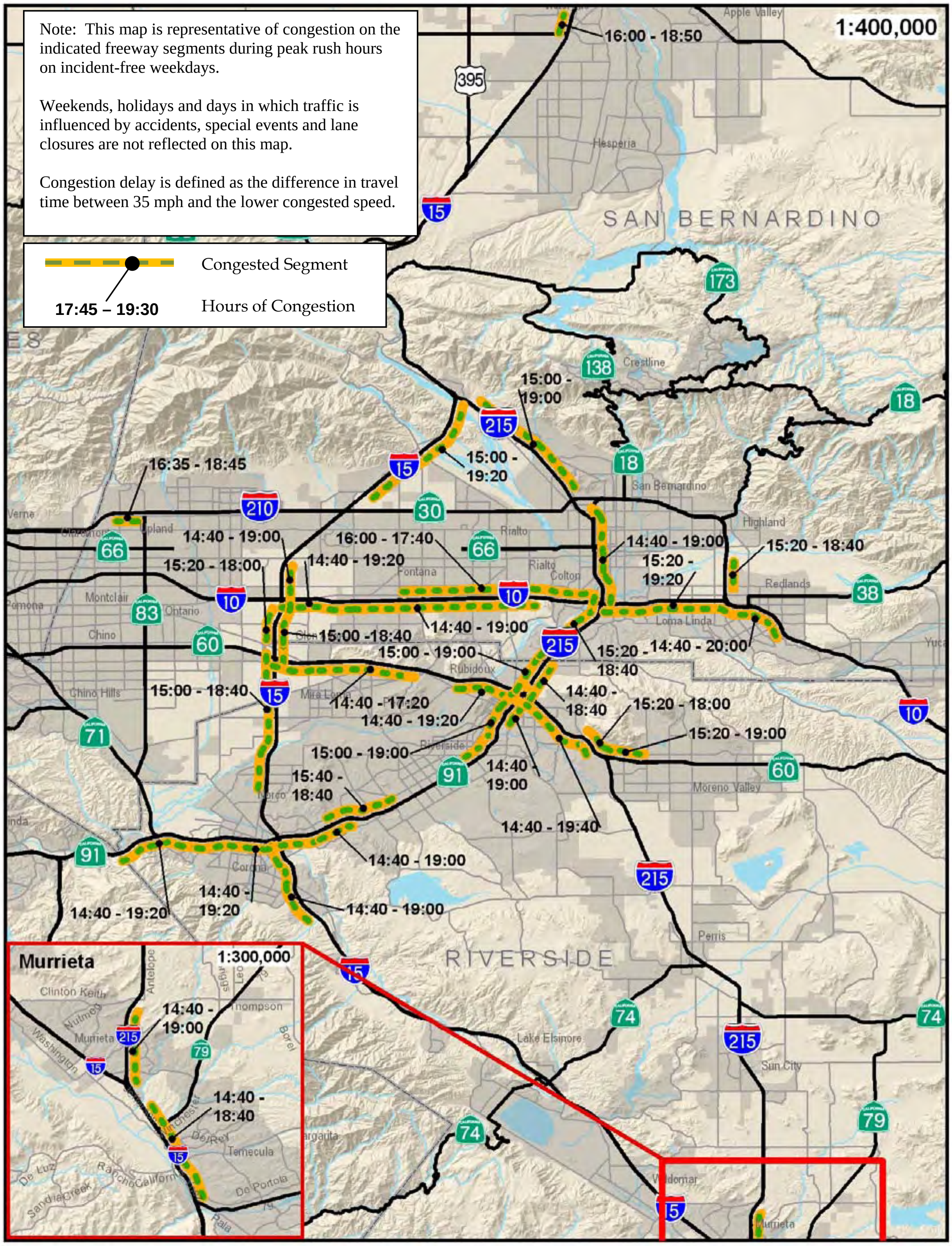
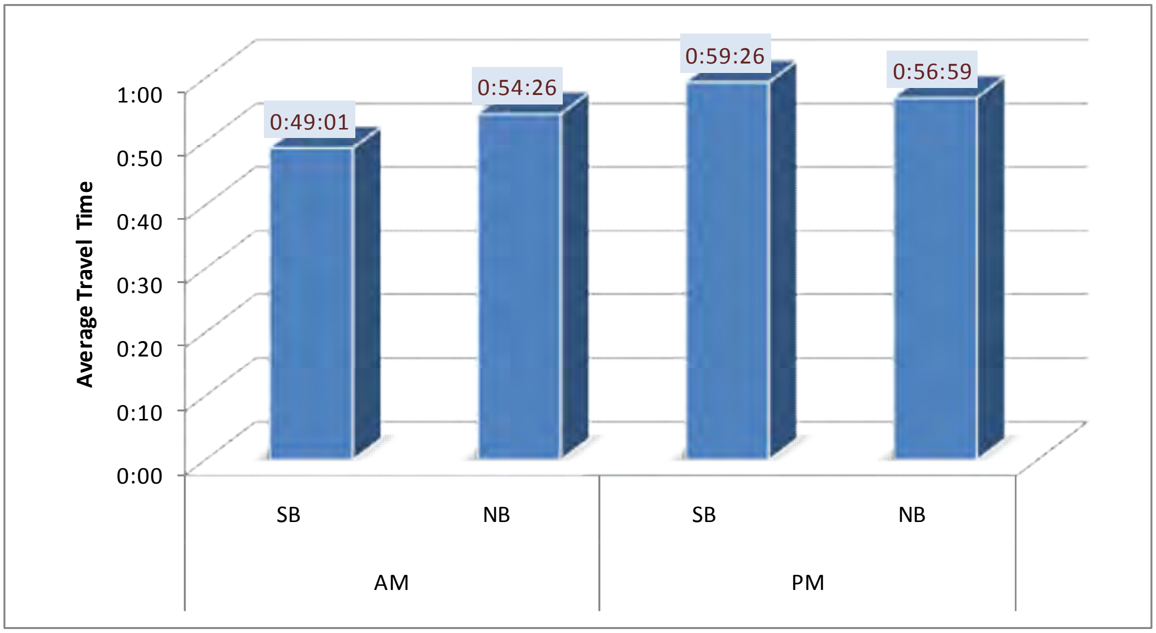


Figure 3-4: 2007 Congested Segments during the PM peak on I-215

3.1.2 Travel Time

Travel time is measured as the amount of time it takes for a vehicle to traverse between two points on a roadway. The following figure shows the average peak period travel time on I-215 corridor from I-15/I-215 interchange in the south to Auto Plaza Drive north of I-10 – approximately 42 miles. Due to ongoing construction, the portion of the I-215 north of Auto Plaza Drive was not included in the travel time runs conducted by the CSMP team in January 2009.



Source: Kimley-Horn and Associates, Inc., Inc.

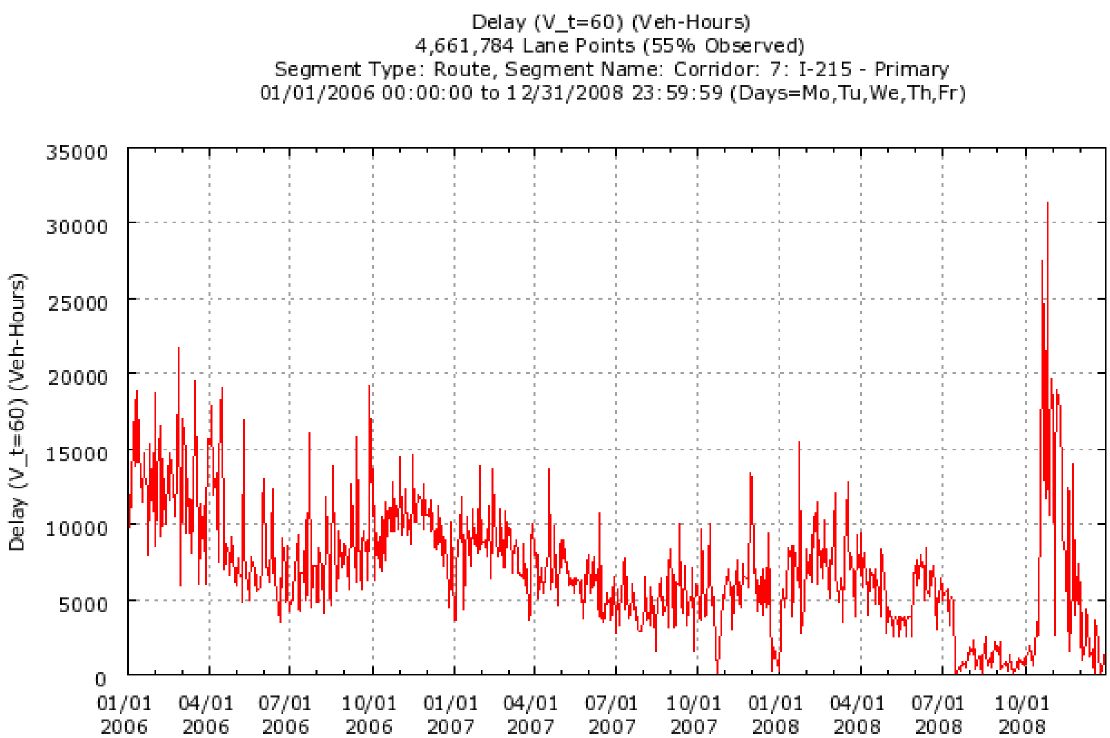
Figure 3-5: Average Peak Period Travel Time (2009)

The aggregated results show that the average travel times do not vary greatly from AM to PM or from SB to NB.

3.2 Reliability

Reliability captures the relative variability of travel time for a given segment. Unlike mobility, which measures how many people are moving at what rate, the reliability measure identifies to what extent travel time varies from day to day. The delay experienced by drivers in the corridor is directly related to the variability of travel time. The existing delay characteristics are described below.

Figure 3-6 shows total delay (measured using a free flow speed of 60 mph) for each weekday along the entire I-215 corridor from 2006 to 2008. The data reveals that there is no such thing as a "typical" day. From the beginning of 2006 to late 2008, it generally showed a decreasing trend on total delay. In early October 2008, a dramatic increase in total delay is likely caused by construction on the corridor.



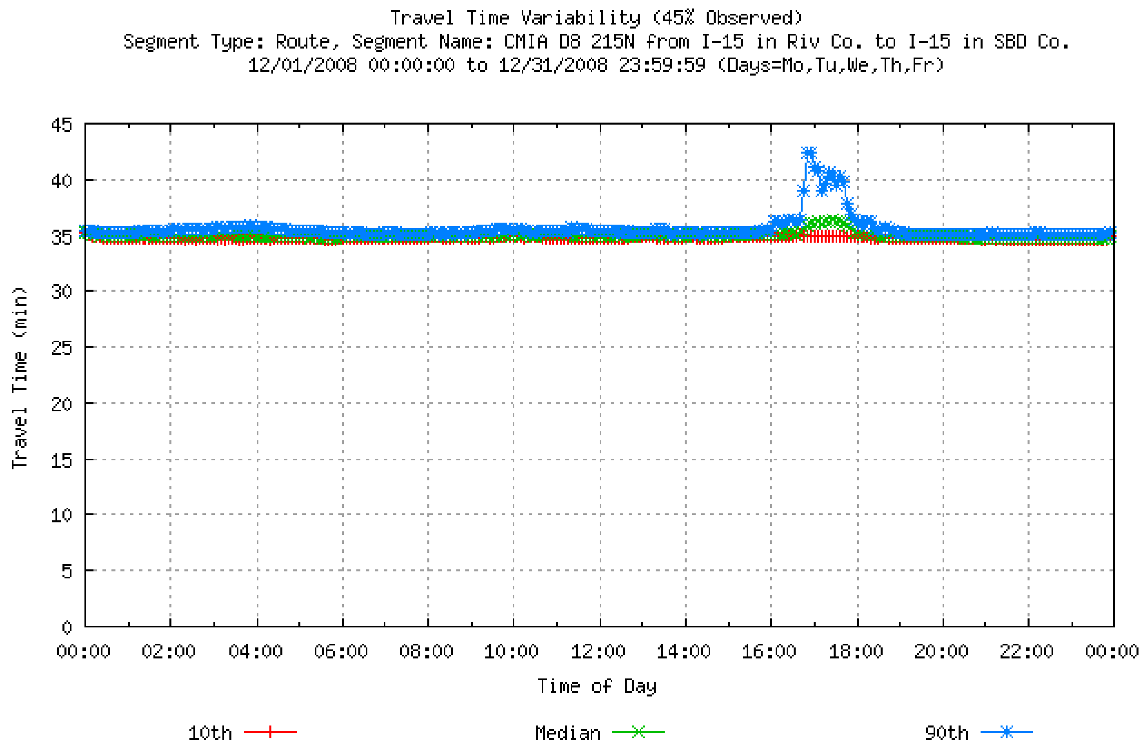
Source: Freeway Performance Measurement System (PeMS)

Figure 3-6: Total Weekday Daily Delay (2006-2008)

PeMS was used to calculate travel time variability. For the wide range of travel times from average to the maximum, the 90th percentile provides a reasonable expected peak travel time on any given day.

Figure 3-7 shows the northbound travel time variability for the segment of I-215 from 10th/Temple Street in the north to Scott Road in the south. Travel time variability is presented in the 10th, 50th and 90th percentiles of the travel time distribution for all weekdays from 12/1/08 until 12/31/08.

Generally the chart shows that there is very little travel time variability on a typical day with the exception of the PM peak period. On 90% of the days the drivers at 5pm will see a travel time between 35 minutes and 43 minutes.



Source: Freeway Performance Measurement System (PeMS)

Figure 3-7: Travel Time Variability on I-215 NB (December 2008)

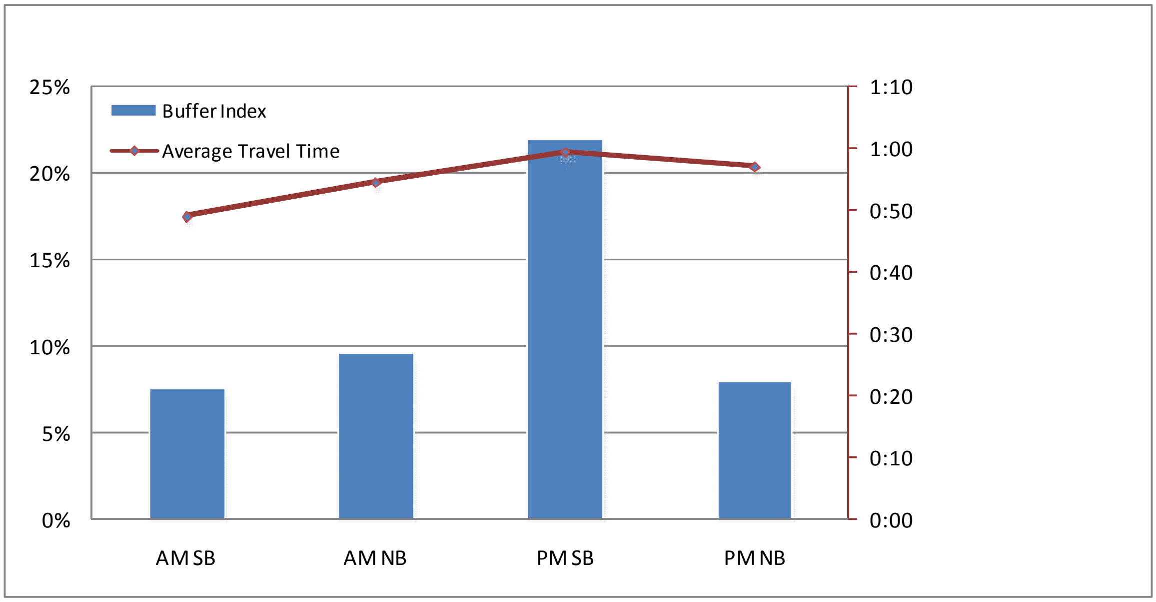
One measure that can be used for reliability is the buffer index. The *buffer index* represents the extra time (or time cushion) that travelers must add to their average travel time when planning trips to ensure on-time arrival. On-time arrival assumes the 95th percentile of travel time distribution.

For example, a buffer index of 40 percent means that for a trip that usually takes 20 minutes a traveler should budget an additional 8 minutes to ensure on-time arrival most of the time.

Average travel time = 20 minutes
Buffer index = 40 percent
Buffer time = 20 minutes × 0.40 = 8 minutes

The 8 extra minutes is called the buffer time. Therefore, the traveler should allow 28 minutes for the trip in order to ensure on-time arrival 95 percent of the time.

Figure 3-8 illustrates the average travel time and the buffer index by peak period by direction.



Source: Travel Time Runs.

Figure 3-8: Average Peak Period Travel Time and Buffer Index

I-215 PM southbound has the highest value in both average travel time (approximately 1 hour) and buffer index (over 22%). Therefore, the traveler should allow at least 13 extra minutes (1 hour × 0.22 = 13 minutes) for the trip in order to ensure on-time arrival.

3.3 Safety

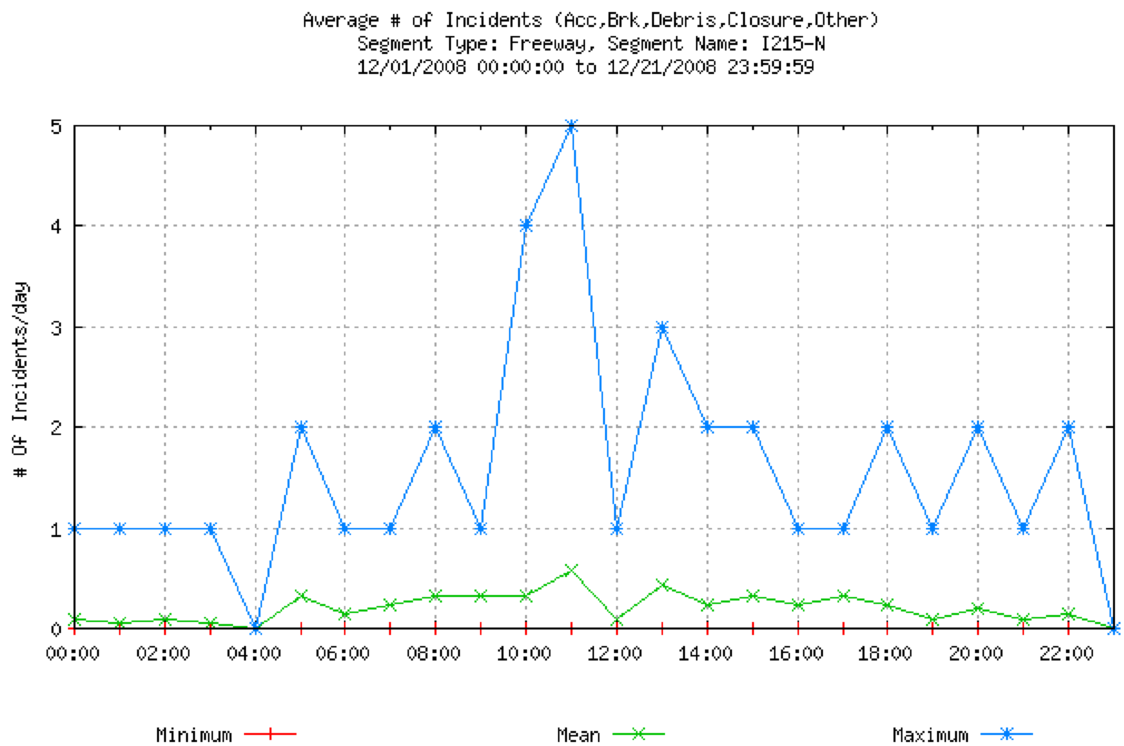
The adopted performance measures to assess safety are the number of incidents and incident rates computed from the Caltrans Traffic Accident Surveillance and Analysis System (TASAS).

TASAS is a traffic record system containing an incident database linked to a highway database. The highway database contains description of highway segments, intersections and ramps, access control, traffic volumes and other data. TASAS contains specific data for incidents on state highways. Incidents on non-state highways (e.g., local streets and roads) are not included.

The safety assessment is intended to characterize the overall incident history and trends in the corridor, and to highlight notable incident concentration locations or patterns that are readily apparent. It is not intended to supplant more detailed safety investigations routinely performed by Caltrans staff.

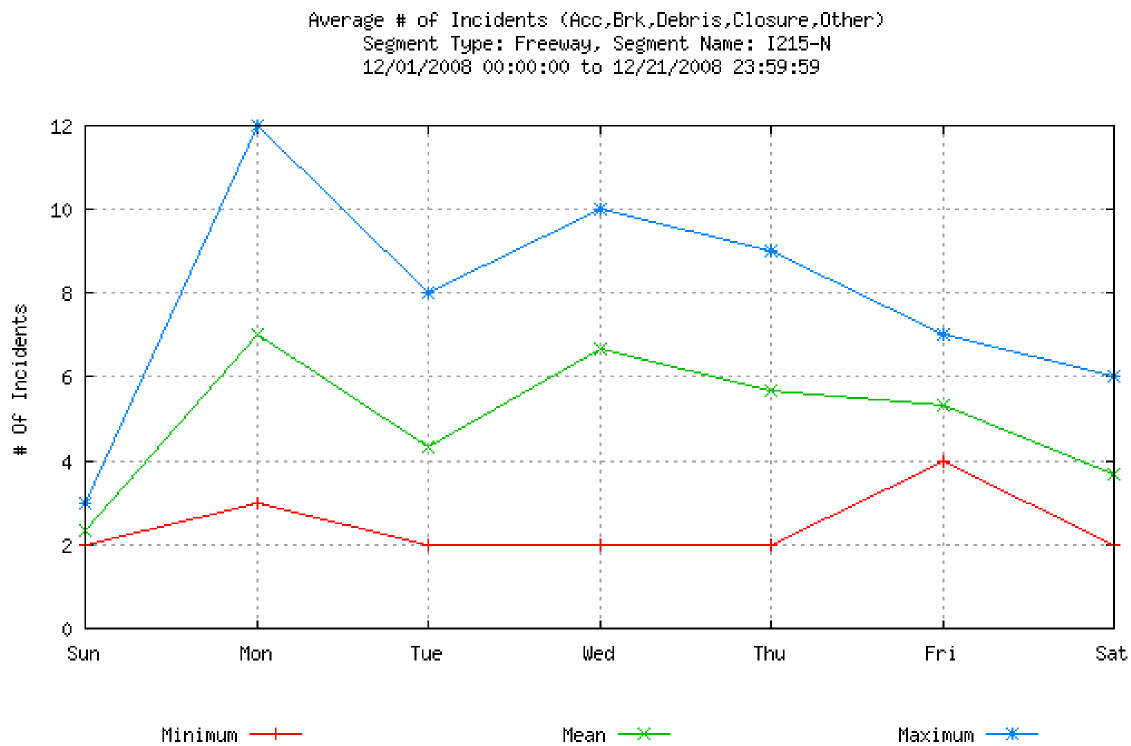
PeMS is used to show the number of incidents on I-215. PeMS displays details about incidents based on information retrieved in real-time from the California Highway Patrol (CHP) website.

Figures 3-9and 3-10 illustrate the average number of incidents on I-215 northbound, from Route SR-60 in the north to Box Springs Road in the south, by time of day and day of the week, respectively, for the month of December, 2008.



Source: Freeway Performance Measurement System (PeMS)

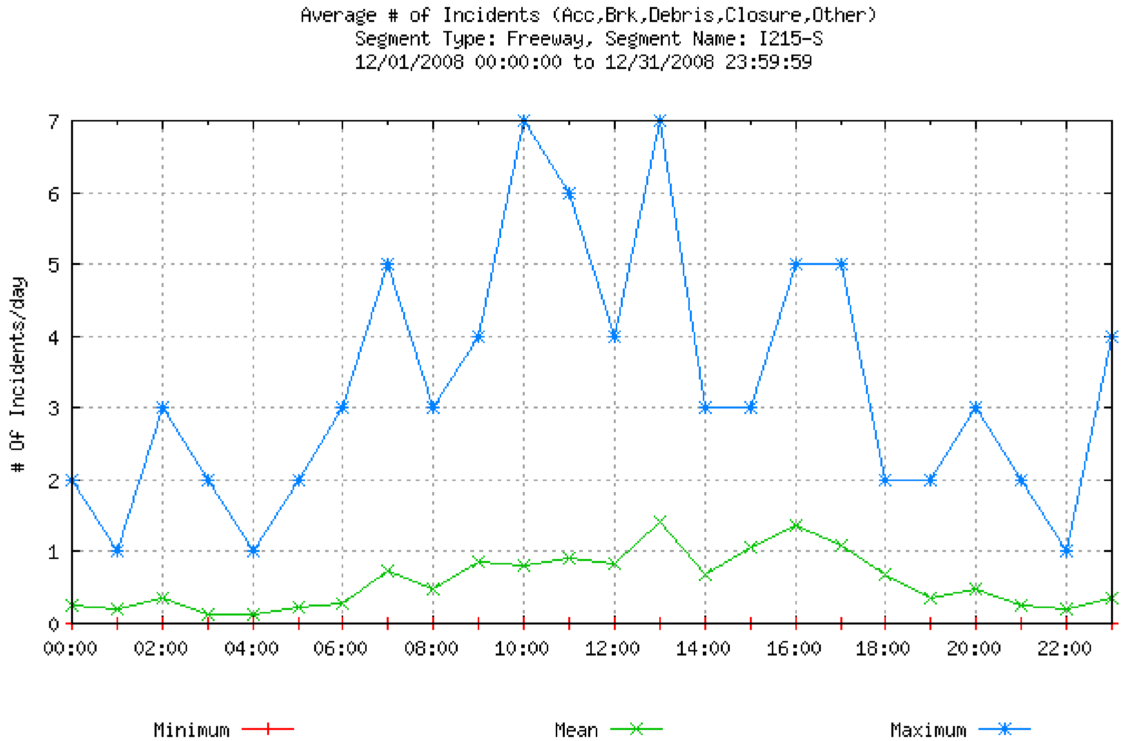
Figure 3-9: Average Number of Incidents on I-215 NB by time of the day (December 2008)



Source: Freeway Performance Measurement System (PeMS)

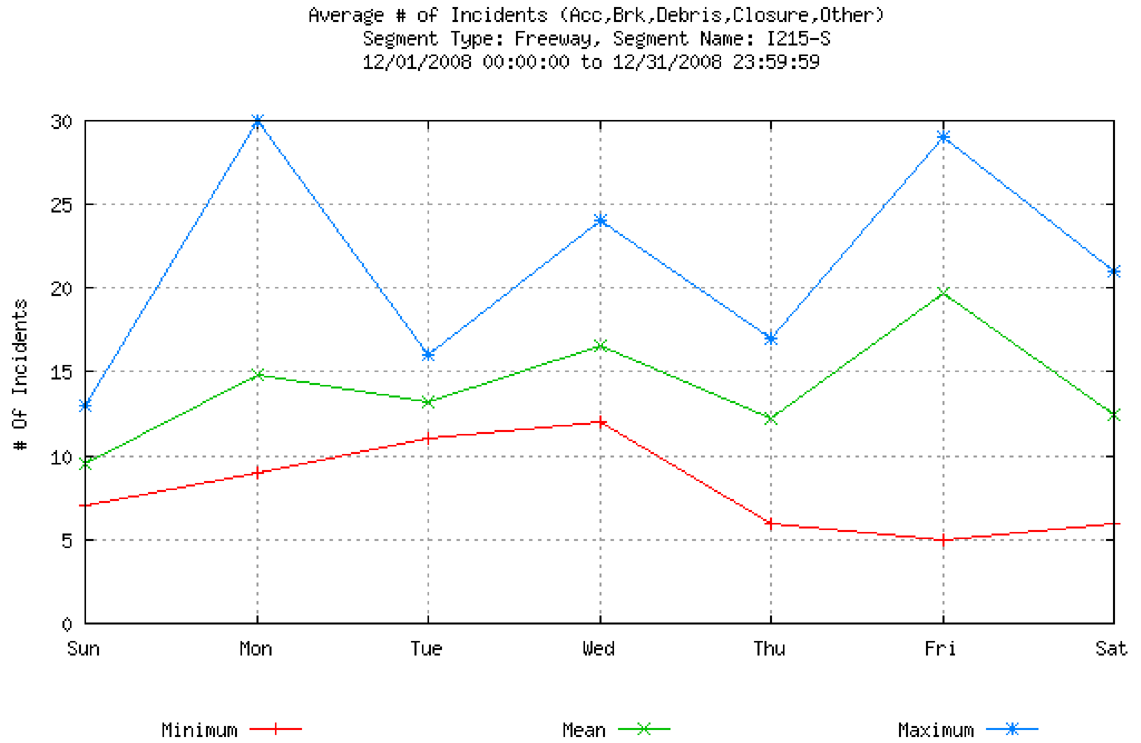
Figure 3-10: Average Number of Incidents on I-215 NB by day of the week (December 2008)

Figure 3-11 and 3-12 illustrate the average number of incidents on I-215 southbound, from Route SR-60 in the north to Box Springs Road in the south, by time of the day and day of the week, respectively, for the month of December, 2008.



Source: Freeway Performance Measurement System (PeMS)

Figure 3-11: Average Number of Incidents on I-215 SB by time of the day (December 2008)



Source: Freeway Performance Measurement System (PeMS)

Figure 3-12: Average Number of Incidents on I-215 SB by day of the week

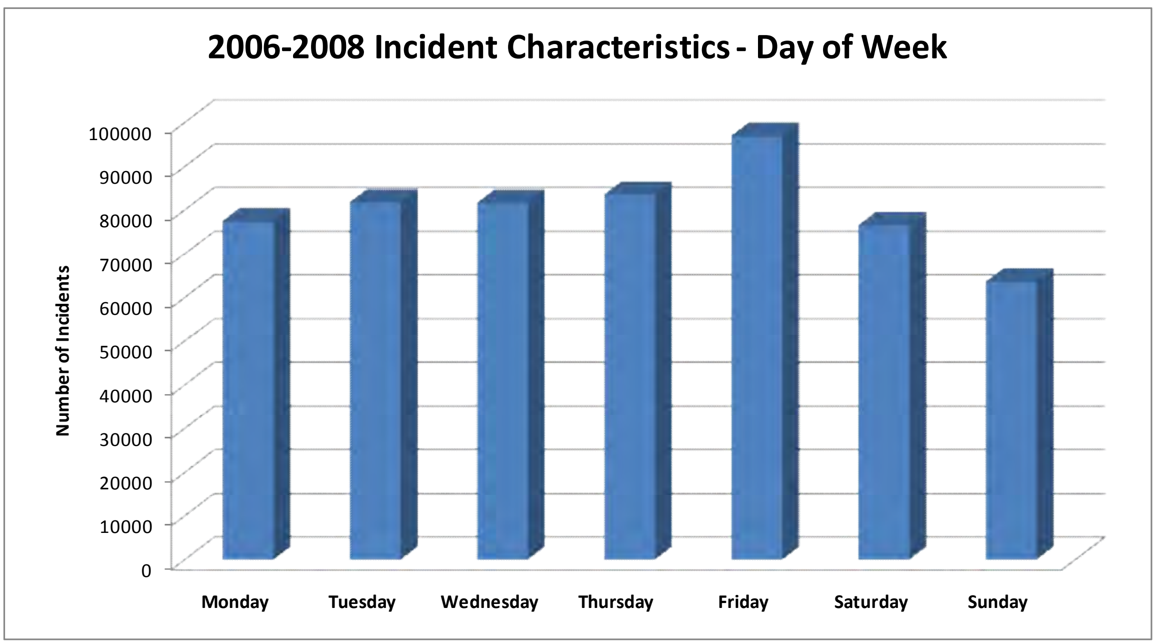
(December 2008)

Caltrans typically analyzes the latest three years of safety data. The latest available TASAS data from PeMS is December 31, 2008; therefore, safety data from January 1, 2006 to December 31, 2008 for the entire I-215 corridor was analyzed. The results are summarized numerically and graphically on the following tables and figures.

Table 3-1: 2006-2008 Incident Characteristics – Day of Week

Day of Week	# Incidents	Percentage
Monday	77,644	13.80%
Tuesday	81,929	14.56%
Wednesday	81,766	14.53%
Thursday	83,687	14.87%
Friday	97,159	17.27%
Saturday	76,775	13.64%
Sunday	63,753	11.33%
Total	562,713	100.00%

Source: Freeway Performance Measurement System (PeMS)



Source: Freeway Performance Measurement System (PeMS)

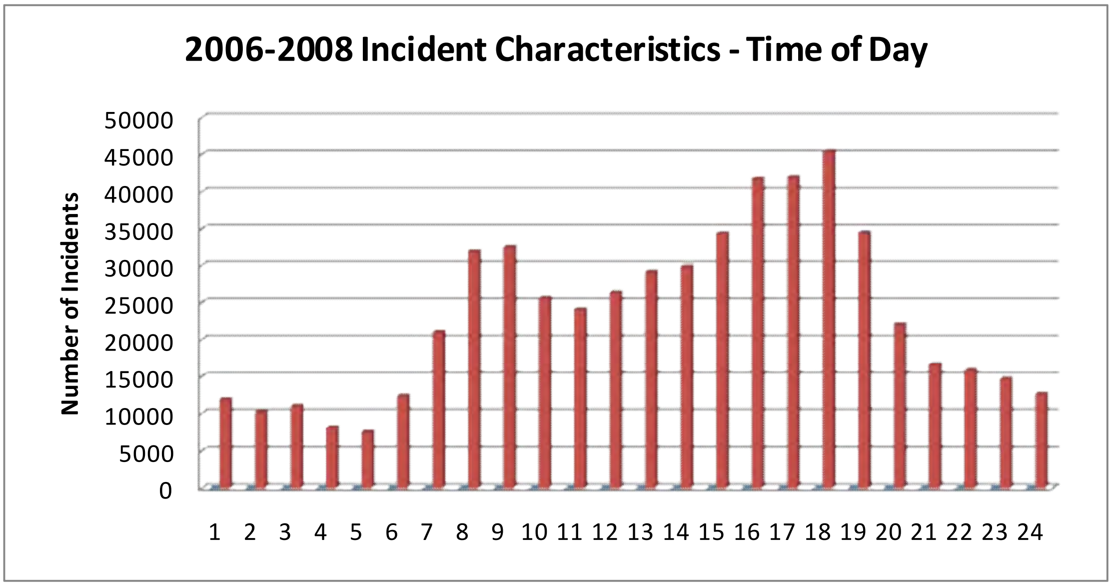
Figure 3-13: 2006-2008 Incident Characteristics – Day of Week

The highest occurrence of Incidents happened on Fridays (17.27%), the lowest ccurrence of incidents happened on Sundays (11.33%).

Table 3-2: 2006-2008 Incident Characteristics – Time of Day

Time of Day	# Incidents	Percentage
00:00	11,916	2.12%
01:00	10,273	1.83%
02:00	11,068	1.97%
03:00	8,131	1.44%
04:00	7,600	1.35%
05:00	12,389	2.20%
06:00	21,085	3.75%
07:00	31,931	5.67%
08:00	32,538	5.78%
09:00	25,649	4.56%
10:00	24,158	4.29%
11:00	26,403	4.69%
12:00	29,153	5.18%
13:00	29,885	5.31%
14:00	34,419	6.12%
15:00	41,857	7.44%
16:00	42,064	7.48%
17:00	45,460	8.08%
18:00	34,577	6.14%
19:00	22,153	3.94%
20:00	16,680	2.96%
21:00	15,889	2.82%
22:00	14,771	2.62%
23:00	12,664	2.25%
Total	562,713	100.00%

Source: Freeway Performance Measurement System (PeMS)



Source: Freeway Performance Measurement System (PeMS)

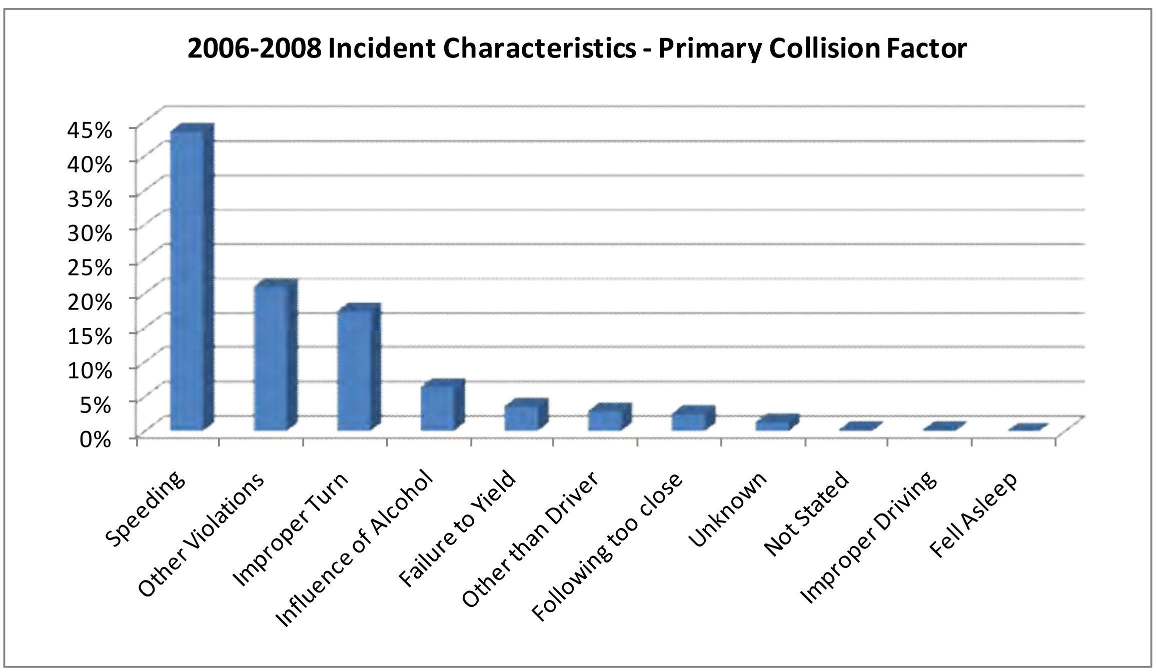
Figure 3-14: 2006-2008 Incident Characteristics – Time of Day

As shown on **Figure 3-14 and Table 3-2**, the highest rate of incidents occurred during the PM peak period: 8.08% percent of the total incidents happened between 17:00 PM to 18:00 PM.

Table 3-3: 2006-2008 Incident Characteristics – Primary Collision Factor

Primary Collision Factor	# Incidents	Percent
Speeding	245,453	43.62%
Other Violations	118,503	21.06%
Improper Turn	98,660	17.53%
Influence of Alcohol	36,500	6.49%
Failure to Yield	20,658	3.67%
Other than Driver	16,969	3.02%
Following too close	14,726	2.62%
Unknown	8,016	1.42%
Not Stated	1,692	0.30%
Improper Driving	1,434	0.25%
Fell Asleep	102	0.02%
Total	**562,713**	**100.00%**

Source: Freeway Performance Measurement System (PeMS)



Source: Freeway Performance Measurement System (PeMS)

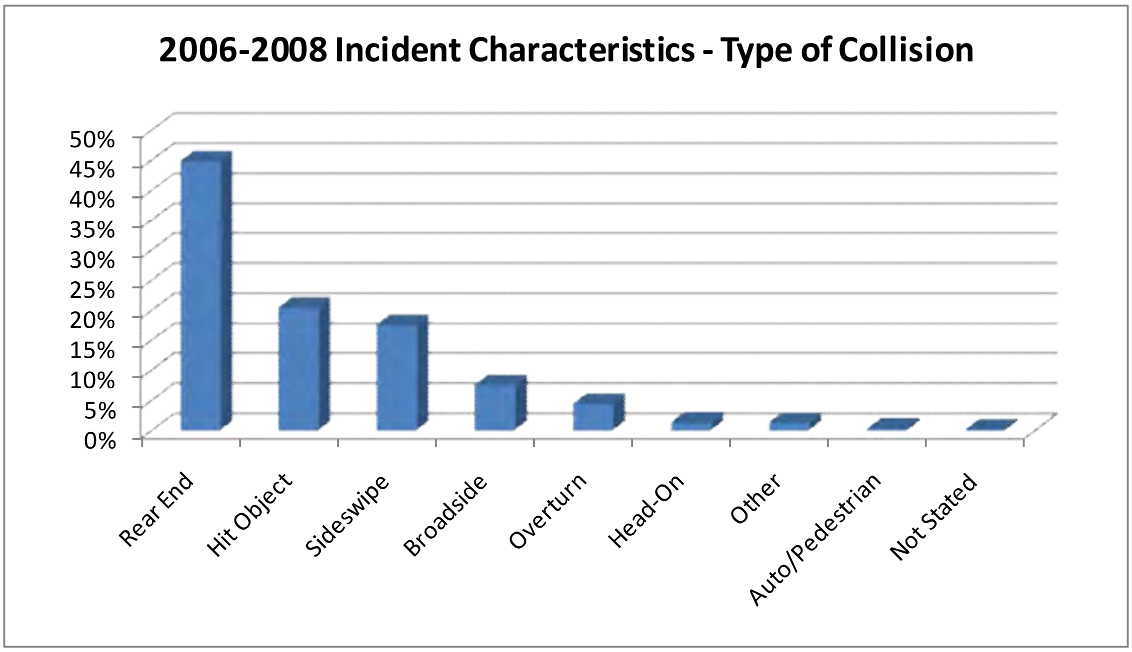
Figure 3-15: 2006-2008 Incident Characteristics – Primary Collision Factor

The data shows that more than 40% of the traffic accidents that occurred in the past three years on I-215 were caused by speeding.

Table 3-4: 2006-2008 Incident Characteristics – Type of Collision

Type of Collision	# Incidents	Percent
Rear End	253,281	45.01%
Hit Object	116,470	20.70%
Sideswipe	100,424	17.85%
Broadside	43,623	7.75%
Overturn	26,146	4.65%
Head-On	8,708	1.55%
Other	8,534	1.52%
Auto/Pedestrian	3,278	0.58%
Not Stated	2,249	0.40%
Total	562,713	100.00%

Source: Freeway Performance Measurement System (PeMS)

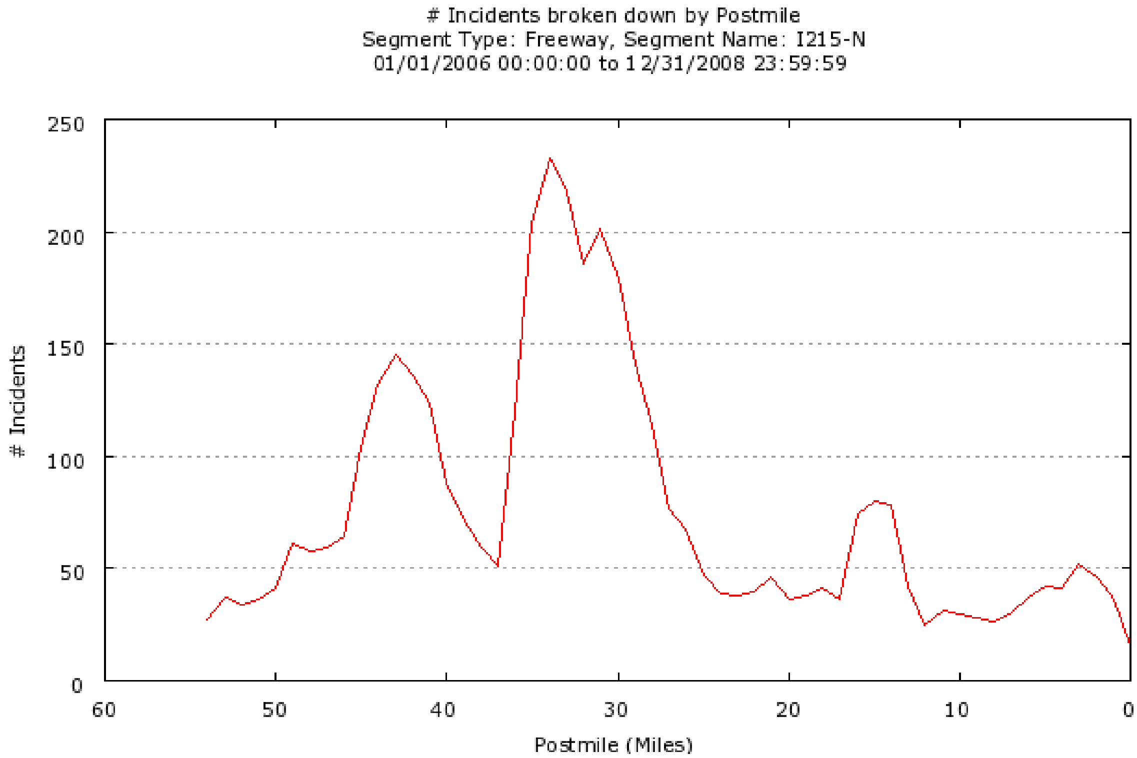


Source: Freeway Performance Measurement System (PeMS)

Figure 3-16: 2006-2008 Incident Characteristics – Type of Collision

The data shows that about 45% of the total incidents were classified as "rear-end" incidents.

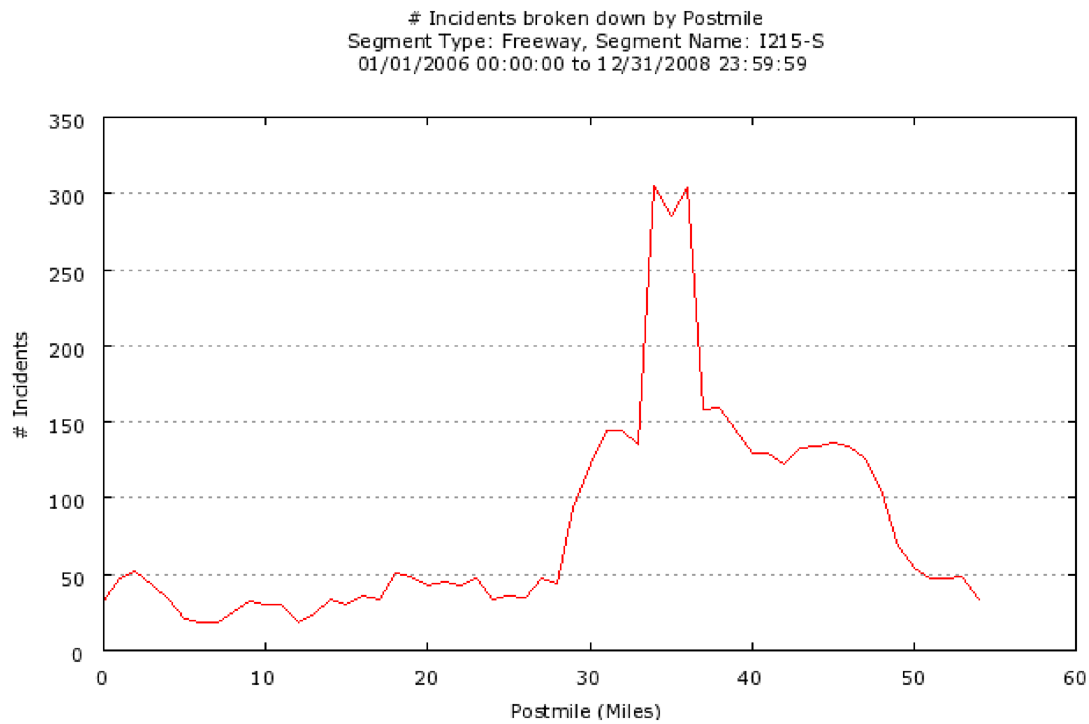
Figure 3-17 depicts the number of incidents over a three year period from 2006 to 2008 by postmile on I-215 northbound for the entire corridor. The segment that experienced the highest occurance of incidents during that period is located between PM 30 and PM 35.



Source: Freeway Performance Measurement System (PeMS)

Figure 3-17: I-215 Northbound Number of Incidents by Postmile

Figure 3-18 depicts the number of incidents over a three year period from 2006 – 2008 by postmile on I-215 southbound for the entire corridor. The segment with the highest occurence of incidents is located near PM 35.



Source: Freeway Performance Measurement System (PeMS)

Figure 3-18: I-215 Southbound Number of Incidents by Postmile

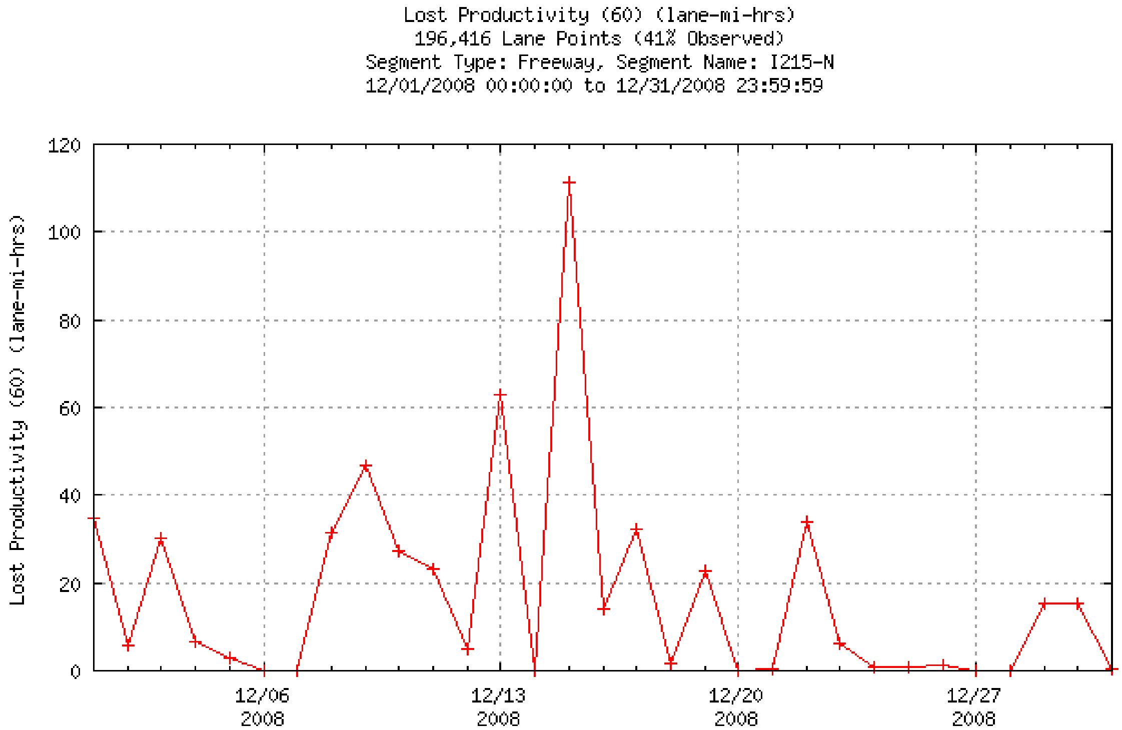
3.4 Productivity

Productivity is a system efficiency measure used to analyze the effective capacity of the corridor. The highway productivity performance measure is calculated as the actual volume divided by the capacity of the highway.

As traffic flow approaches the capacity limits of a roadway, speeds decline and throughput drops dramatically. This loss in throughput is the lost productivity of the system. There are several ways to communicate productivity losses. The most common approach is to show lost productivity in terms of "equivalent lost lane-miles."

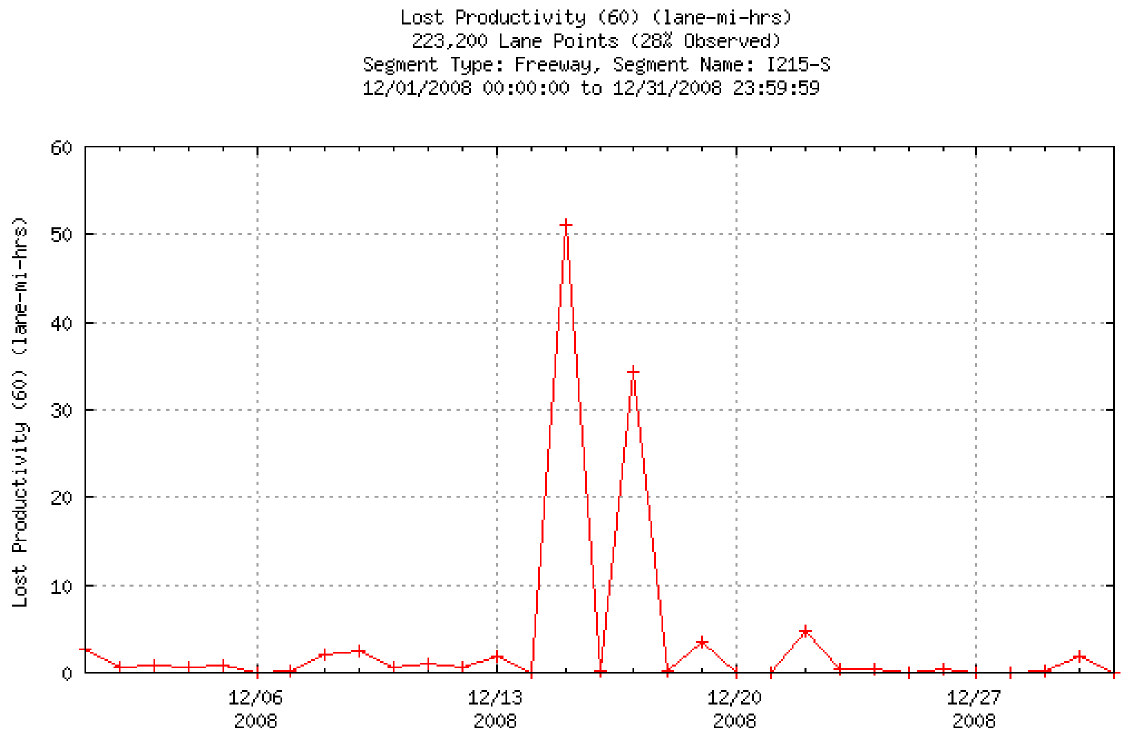
Lost lane-miles represent a theoretical level of capacity that would have to be added in order to achieve maximum productivity. For example, losing six lane-miles implies that adding a new lane along a six-mile section of freeway would improve productivity.

Figures 3-19 and 3-20 show the lost lane-miles on I-215 northbound and southbound in December 2008. This shows the number of lane-mile-hours lost due to the freeway operating under congested conditions. Generally, the northbound direction shows more congestion. This is to be addressed over the next several years in one segment of the corridor through the major widening project that is ongoing for I-215 through much of the City of San Bernardino from just north of I-10 to SR-210.



Source: Freeway Performance Measurement System (PeMS)

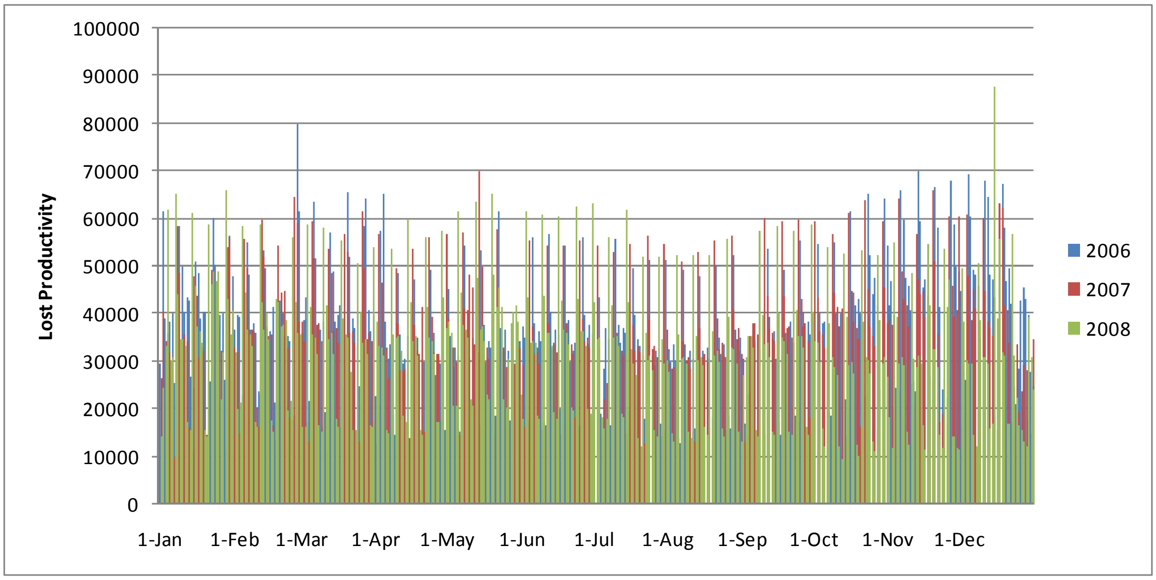
Figure 3-19: Lost Lane Miles on I-215 NB (December 2008)



Source: Freeway Performance Measurement System (PeMS)

Figure 3-20: Lost Lane Miles on I-215 SB (December 2008)

Figure 3-21 illustrates the productivity loss on the I-215 corridor for the three years from 2006 to 2008.



Source: Freeway Performance Measurement System (PeMS)

Figure 3-21: Lost Productivity from 2006 to 2008

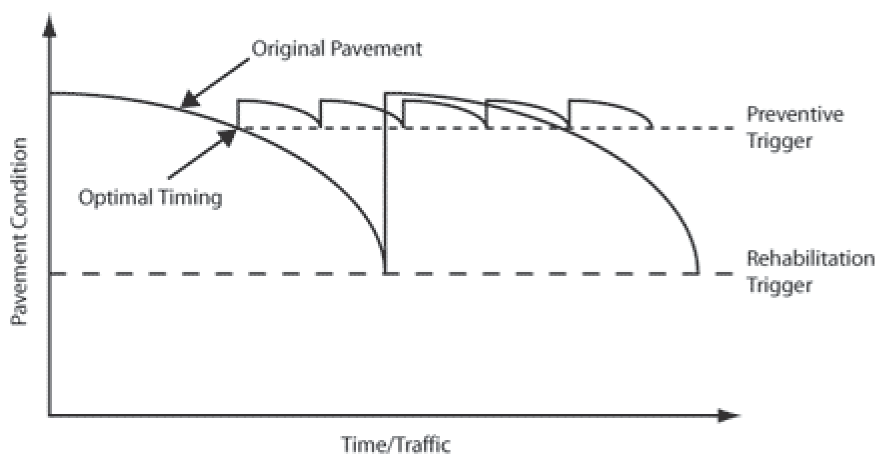
3.5 Pavement Preservation

Pavement preservation is the sum of all the activities to provide and maintain serviceable roadways, including corrective and preventive maintenance, as well as minor rehabilitation. Pavement preservation does not include new pavement or pavement that requires major rehabilitation or reconstruction.

A pavement preservation program extends pavement life, enhances pavement performance, thereby ensuring cost-effectiveness and reducing user delays. In short, the goal is to meet customer needs.

Pavement preservation is an economical approach to addressing pavement needs. With pavement preservation, Caltrans gains the ability to improve pavement conditions and extend pavement life and performance without having to focus on more costly major rehabilitation work. The focus is on preserving the pavement asset while maximizing the economic efficiency of the investment. Pavement preservation provides greater value to the highway system and improves the satisfaction of highway users.

Figure 3-22 shows the basic concept of pavement preservation.



Source: FHWA

Figure 3-22: Pavement Preservation Concept

One of the primary criteria for evaluating pavement condition is pavement roughness. Pavement roughness is measured using a standardized scale, called the International Ride Index (IRI). The IRI is reported as inches of surface roughness per mile of pavement. A pavement with an IRI score of greater than 200 inches of surface roughness per mile is considered by most motorists to be uncomfortable or “unacceptable”. New or recently rehabilitated pavement should provide an “excellent” ride to the motorist, which corresponds to less than 75 inches of surface roughness per mile.

The 2007 Pavement Condition Survey (PCS) identified 86.837 lane miles of I-215 as distressed pavement. **Table 3-5** depicts the nine most distressed segments on I-215. Appendix A includes the 2007 I-215 Pavement Condition Survey.

	County	Begin PM	End PM	Length
1	RIV	24.581	24.731	0.150
2	RIV	36.833	37.983	1.150
3	RIV	37.983	38.149	0.166
4	RIV	38.149	38.485	0.336
5	RIV	38.693	38.833	0.140
6	RIV	38.833	38.930	0.097
7	RIV	39.514	39.526	0.012
8	SBD	8.338	8.693	0.355
9	SBD	8.693	9.193	0.500

Source: Caltrans.

Table 3-5: Most Distressed Pavement Segments on I-215

4. BOTTLENECK ANALYSIS

A bottleneck is a road element on which demand exceeds capacity. The following could be the major causes behind these congestions/delays/bottlenecks:

- Merging freeways/Interchange
- Growth
- Lane drops
- Travel Demand
- Missing Auxiliary Lanes
- Geometric Constraints
- Interchange design
- Construction

This section discusses known bottlenecks within the corridor with respect to corridor performance measures presented in the previous sections of this report.

4.1 Congestion Characteristics

For a given facility, congestion is typically the result of either a regular demand surge, or a capacity drop due to traffic incidents. The former is termed recurrent congestion, while the latter is non-recurrent congestion. At various times congestion has been defined in one or more of these following ways:

- A significant constraint in the overall flow rate (volume)
- A significant drop in average speeds
- A significant reduction in travel times
- A “level of service” drop beyond a certain threshold, or others.

In HICOMP, congestion is defined as a “condition lasting for 15 minutes or longer when travel demand exceeds highway capacity and vehicular speeds decline to 35 mph or less during peak commute periods on a typical incident free weekday.” HICOMP monitors only recurrent congestion.

4.2 Methodologies

Two principal methods are used at Caltrans to collect congestion data on urban highways. The first method is to drive specially equipped tachograph vehicles at regular intervals along highways during the hours of recurrent peak-period congestion. This is called the floating car method. A tachograph is an electronic device attached to the transmission of a vehicle. This device is connected to a laptop computer that records the number of rotations of the wheels of the vehicle. A software program on the onboard computer then translates this data into meaningful time, distance and travel-speed information. Each round trip is called a tachograph run, or “tach run”. The second method is to collect data using permanent inductive loop detectors embedded in the pavement at regular intervals of 0.5 mile or less along a highway segment.

4.2.1 *The floating car-based method*

The “tach run” methodology utilizes information collected by tachograph cars travelling in the traffic stream to estimate recurring travel time delay, or recurrent congestion. Survey vehicles traverse the predetermined congested segments of a facility in one designated lane during typical weekday peak periods, 6:00 to 9:00 AM and 3:00 to 6:00 PM, Tuesdays through Thursdays. Depending on the length of the monitored segment and the level of congestion, at least two cars are needed to maintain the desired 15-20 minute headways. For each segment, the observations are conducted four times a year, one for each peak period (morning and afternoon peak) and for each season (spring and fall). Since only recurrent congestion is of interest, runs are aborted if traffic incidents occur. No runs are scheduled during inclement weather, special events, or public and school holidays. After the field runs, the raw data is downloaded and processed, so that the speed, travel time and delay can be determined for each run. The delay measured by each run is calculated using vehicle speed profiles.

Based on this method, a congestion map for a specific geographical area can be produced. For example, **Figures 3-3 and 3-4** (presented in Section 3 above) depict existing patterns of network congestion for the Riverside-San Bernardino area.

4.2.2 *Loop detector-based method*

Some Caltrans districts, such as District 7 in Los Angeles, now rely exclusively on loop detectors for congestion monitoring. Districts 3, 4, 7, 8, 11 and 12 use loop detector data in conjunction with tachometer data.

Aggregation of the congestion delay measured at consecutive data aggregation intervals produces congestion estimations for any time duration. Currently, this procedure has been automated with PeMS.

4.3 Bottleneck Analysis

This section discusses bottlenecks in the I-215 corridor. A variety of sources were used to identify freeway bottlenecks, including the following:

- Caltrans Highway Congestion Monitoring Program (HICOMP) 2006 report;
- Probe vehicle runs − Caltrans District 8 tach runs
- Freeway Performance Measurement System (PeMS) − Speed contour plots
- Aerial Photography (Google Earth, Live Search map)
- Field observations.

The Caltrans 2006 HICOMP Report was consulted to isolate corridor bottlenecks. From an information gathering perspective, the 2006 update to the HICOMP Report is particularly important because the majority of I-215 is not currently equipped with vehicle detection systems. This report revealed a total of seven consistent bottlenecks locations along the I-215 route. These bottleneck locations were verified through Probe vehicle runs conducted by District 8. **Table 4-1** shows major congestion and delays on I-215 caused by these bottlenecks.

Table 4-1: Congestion Chart on I-215 Showing Delays - 2006

Data Method	Co.	Dir	Congestion Start Location	Congestion End Location	Lanes	Start Cal PM	End Cal PM	Period	Start Time	End Time	Time	Tach Seconds Below 35MPH	Tach Seconds in Delay	DELAY
Probes	RIV	N	Cactus Avenue	60/215 Interchange	3	35.9	38.4	A	5:45	9:30	3.75	8,317	6,073	2,711
Probes	RIV	N	60/91 Interchange	.20 miles south of University Avenue	3	38.4	41.3	A	5:00	10:15	5.25	6,409	2,580	1,129
Probes	RIV	S	Newport Road	South of Keller Road	2	14.4	18.4	A	6:15	8:15	2.00	694	232	57
Probes	SBD	S	Washington Avenue	Iowa Avenue & Barton Road	3	0.8	2.7	A	6:30	8:45	2.25	171	39	18
Probes	SBD	S	North of Route 66	Route 30	3	7.6	10.0	A	6:30	9:00	2.50	2,994	1,570	727
Probes	SBD	S	Route 30	.3 miles south of Palm Avenue	3	10.1	13.8	A	6:30	8:30	2.00	2,001	989	471
Probes	RIV	N	I-15/I-215 Interchange	.6 miles south of Clinton Keith Road	2	9.0	11.9	P	15:00	18:00	3.00	1,541	624	260
Probes	RIV	N	Clinton Keith Road	.3 miles south of Scott Road	2	12.5	15.2	P	15:15	19:00	3.75	527	171	65
Probes	SBD	N	SBD/RIV County Line	Barton Road	3	0.0	1.1	P	14:45	17:15	2.50	442	113	53
Probes	SBD	N	.4 miles north of Washington Street	Baseline Street	3	3.1	8.1	P	15:00	18:45	3.75	6,410	3,264	1,457
PeMS	SBD	N	.55 miles north of I-10	.4 miles north of SR-66	3	4.6	7.6	P	15:05	18:50	3.75			929
Probes	RIV	S	.5 miles south of University Avenue	60/91 Interchange	3	41.0	43.3	P	14:45	19:00	4.25	8,355	4,335	1,919
Probes	RIV	S	60/91 Interchange	SBD/RIV County Line	3	43.3	45.3	P	15:15	18:15	3.00	4,366	2,102	955

Source: Caltrans District 8 Traffic Operations

Due to limited functional deployment of loop detectors on I-215, PeMS was of little use in verifying bottlenecks. Only about 14 miles (from PM 30.59 to PM 44.43) of the 54-mile corridor are currently equipped with loop detection.

Bottleneck locations and their durations can be visually recognized from speed contour plots provided by PeMS. On speed contour plots, the dark areas represent the areas with lower speed, and also correspond with locations where traffic streams merge and diverge at local street and freeway to freeway interchanges, and at lane reduction areas on the mainline. The severity of a bottleneck is measured by the associated congestion delay.

There has also been considerable discussion related to deployment of wireless loop detection for the portion of I-215 in Riverside County that is south of the SR-60/I-215 Interchange in Moreno Valley and Riverside. At this time, deployment of wireless loop detection is planned for summer 2009.

Table 4-2 summarizes bottleneck results from PeMS. During the month of December 2008, three northbound bottlenecks were identified on this segment of I-215 (**PM 30.59 – PM 44.43)** where PeMS data is available. The bottleneck near Second Street was evident on 15 days, causing on average a delay of 179.1 vehicle-hours, lasting 75 minutes, and creating a 2.3 mile-long queue.

Table 4-2: I-215 NB Bottleneck

Name	Shift	Abs PM	# Days Active	Avg Extent (Miles)	Avg Delay (veh-hrs)	Avg Duration (min)
COLUMBIA WB ON	PM	37.03	1	5.9	555.3	40
SECOND ST NB ON	AM	44.23	1	3	220.4	35
SECOND ST NB ON	PM	44.23	15	2.31	179.1	75
4TH ST NB ON	AM	44.41	1	2.6	49.9	20
4TH ST NB ON	PM	44.41	5	2.6	16.92	8

Source: Freeway Performance Measurement System (PeMS)

For the same month, there was only one southbound bottleneck identified on this segment as shown on **Table 4-3**. The bottleneck near Orange Show Road was evident on five days, causing an average delay of 10.1 vehicle-hours, lasting 23 minutes, and creating a 0.5 mile-long queue.

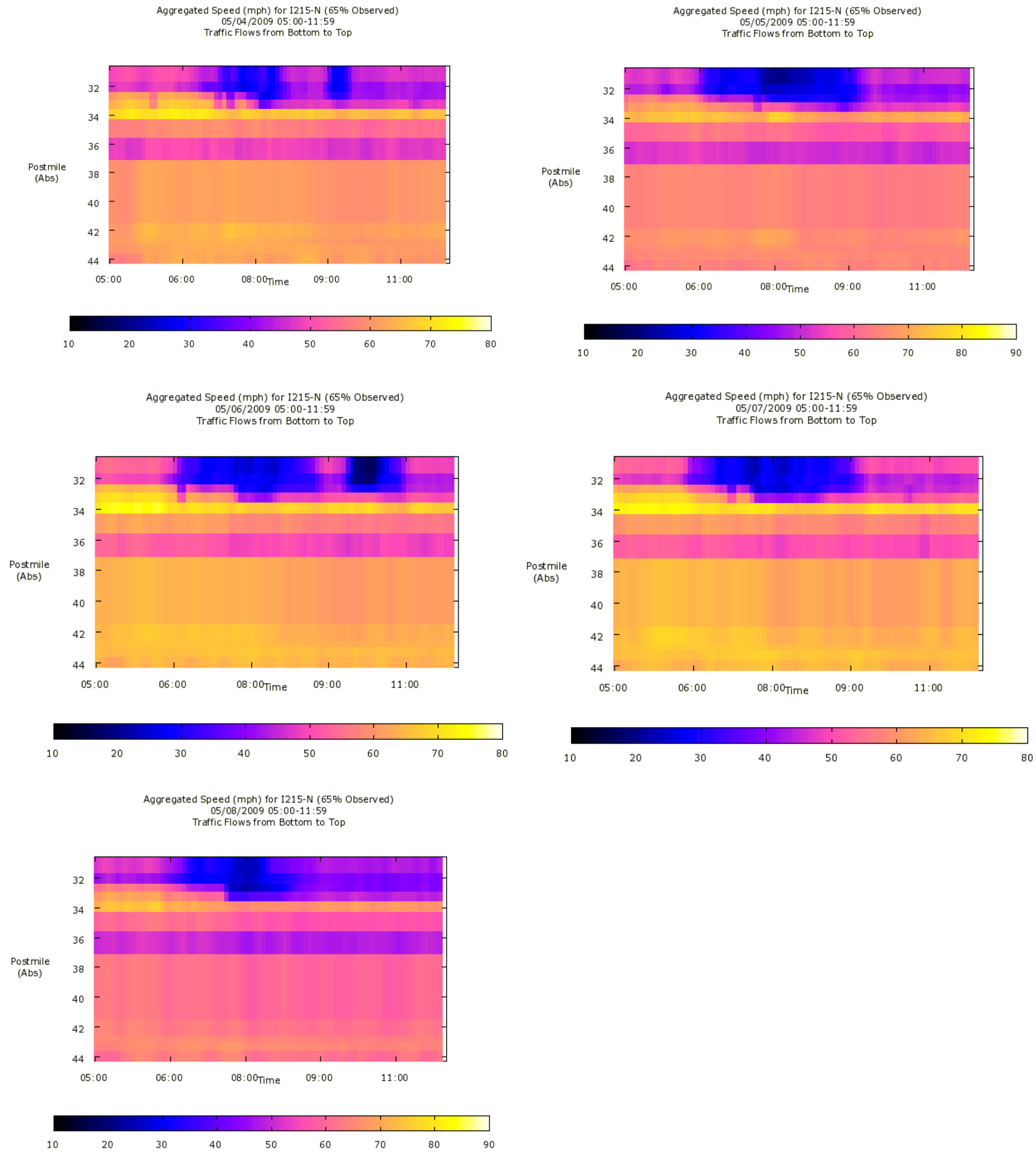
Table 4-3: I-215 SB Bottleneck

Name	Shift	Abs PM	# Days Active	Avg Extent (Miles)	Avg Delay (veh-hrs)	Avg Duration (min)
ORANGE SHOW SB ON	PM	42.16	5	0.5	10.08	23

Source: Freeway Performance Measurement System (PeMS)

Figures 4-1 through 4-4 show speed contour plots provided by PeMS for the segment of I-215 from the Riverside/San Bernardino County Line area north to 2nd Street in San Bernardino. The data was collected for a typical week in the Spring of 2009 (May 4th to May 8th), and is depicted on one graph per day.

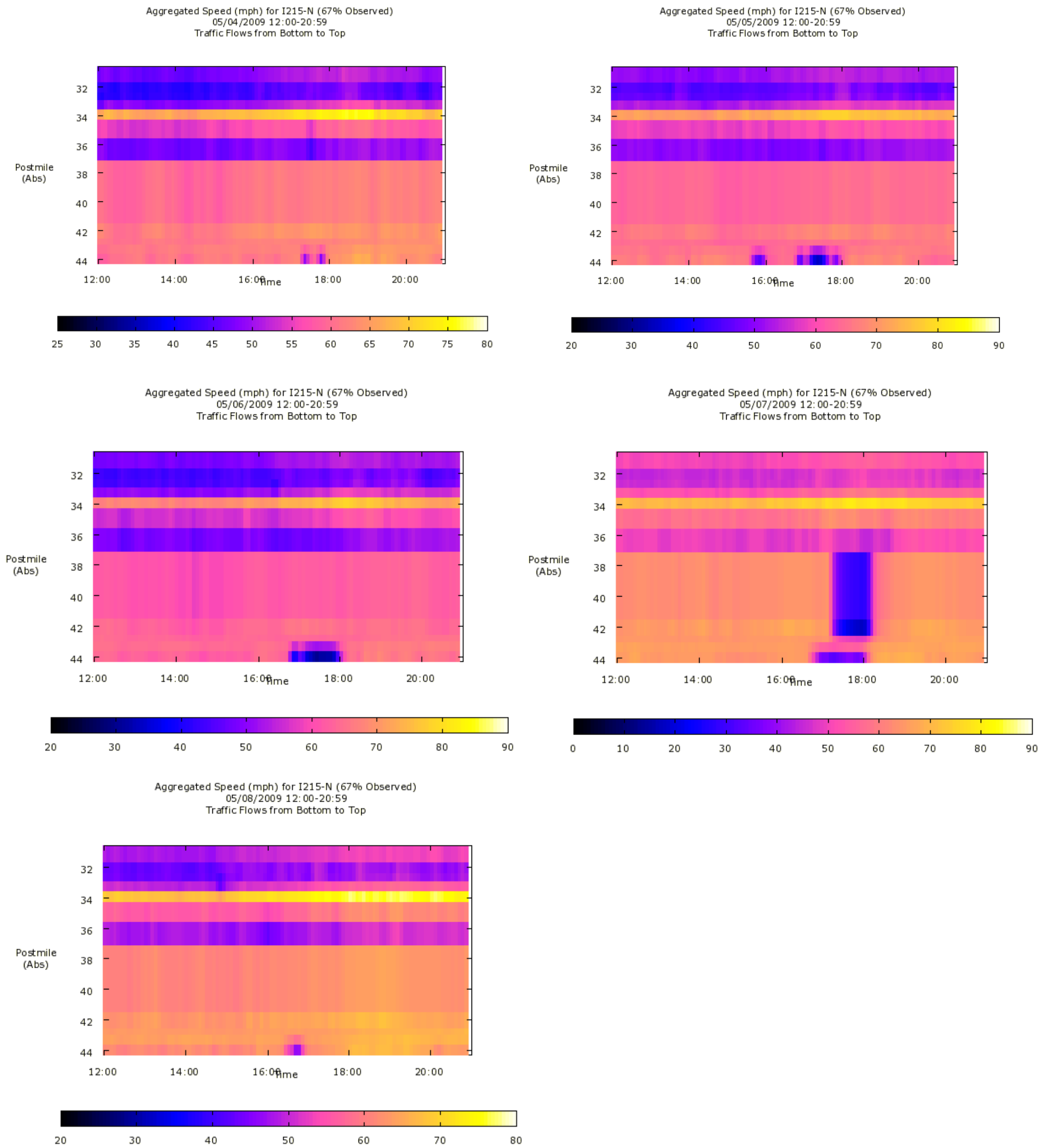
Figure 4-1 shows a location where speeds consistently drop to 25 – 30 mph, indicating recurrent congestion in the I-215 northbound direction in the AM peak period.



Source: Freeway Performance Measurement System (PeMS)

Figure 4-1: I-215 NB AM Peak Speed Contour Plots

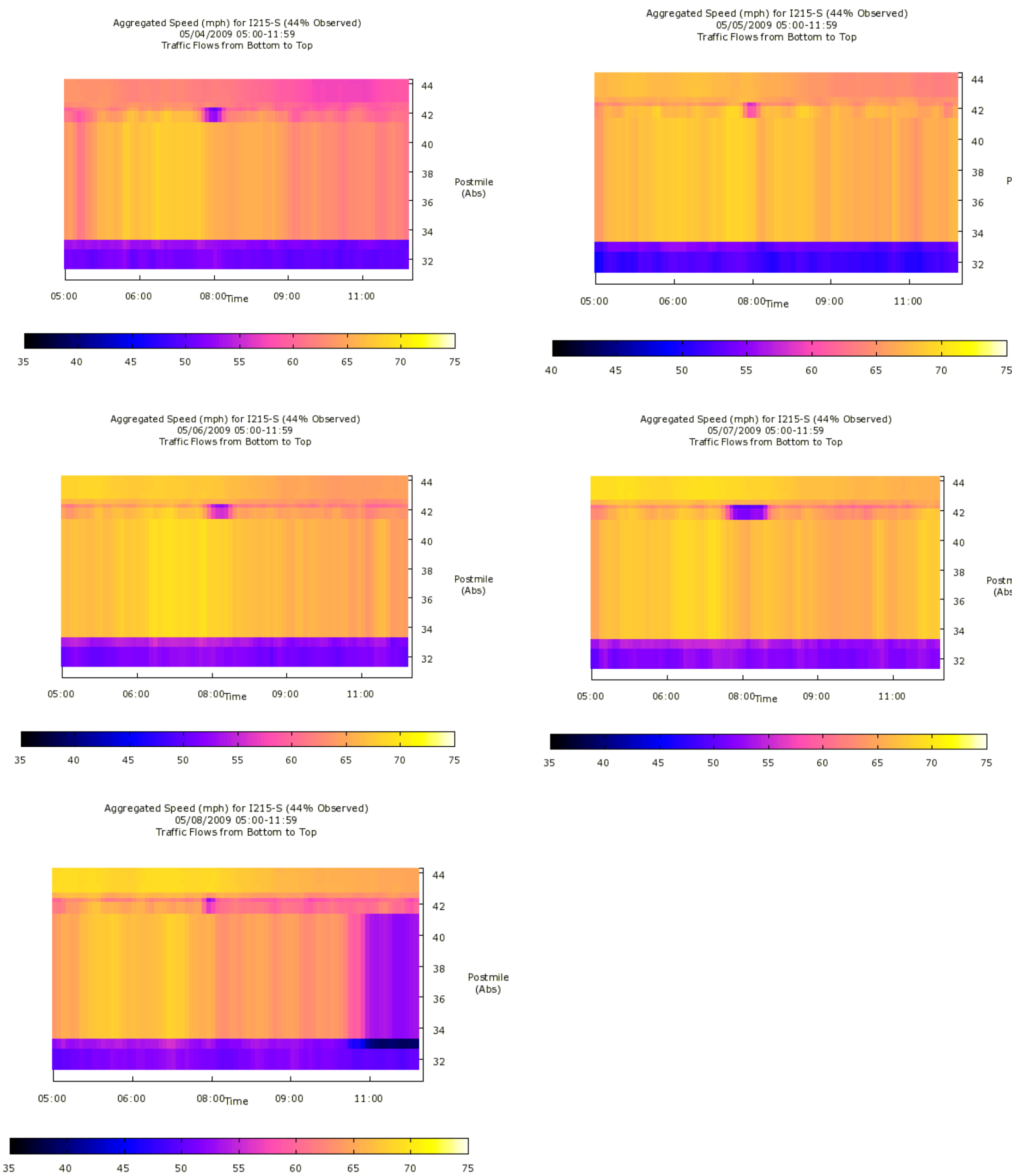
Figure 4-2 shows some bands of lower speeds, in the 30 to 40 mph range, indicating some recurrent congestion on I-215 in the PM peak period in the northbound direction.



Source: Freeway Performance Measurement System (PeMS)

Figure 4-2: I-215 NB PM Peak Speed Contour Plots

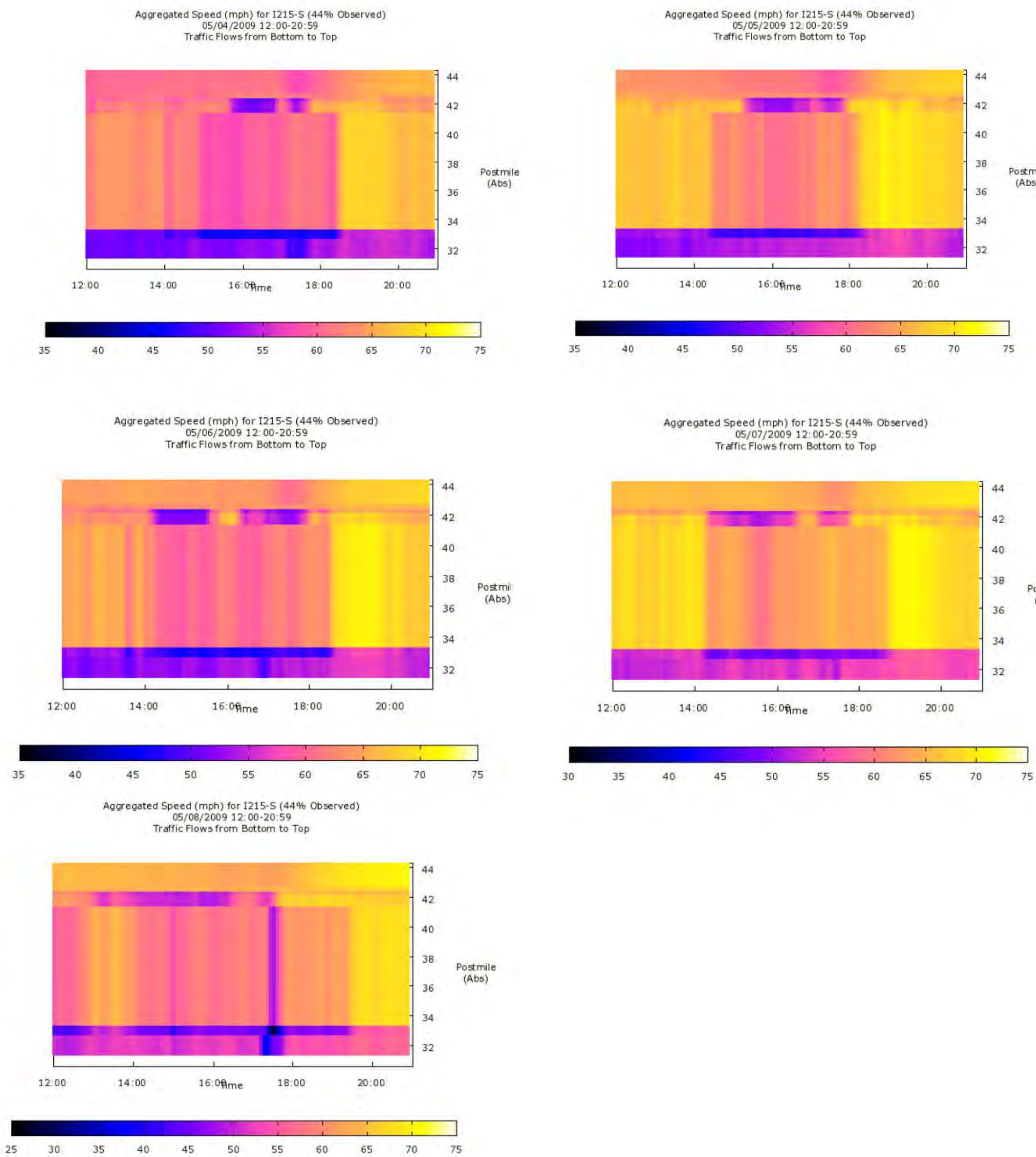
Figure 4-3 shows speeds above 40mph on all days. This indicates little or no recurrent congestion on I-215 southbound direction in the AM peak period.



Source: Freeway Performance Measurement System (PeMS)

Figure 4-3: I-215 SB AM Peak Speed Contour Plots

Figure 4-4 shows most speeds above 40 mph indicating no major recurrent congestion in I-215 southbound direction in the PM peak period.



Source: Freeway Performance Measurement System (PeMS)

Figure 4-4: I-215 SB PM Peak Speed Contour Plots

5. BOTTLENECK CAUSALITY

Simply stated, by definition, a bottleneck is a condition where traffic demand exceeds the capacity of the roadway facility. The causes in most cases are either a sudden reduction in capacity for various reasons, such as roadway geometry, heavy merging, weaving, and driver distractions, or demand increases that the facility cannot accommodate. In many cases, it is a combination of demand increases and capacity reductions.

The following bottleneck locations, shown on **Figure 5-1**, were confirmed for both AM and PM peak periods by combining the results of the bottleneck analysis with field observations conducted by the CSMP team.

Bottleneck #1: Northbound bottleneck near the I-215/SR-60 Interchange

A northbound and westbound bottleneck exists near the I215/SR-60 Interchange in the Moreno Valley area. From westbound SR-60, queues can extend to Day Street. In the northbound direction, queues can extend to Allesandro Blvd. This bottleneck occurs in the AM peak period.

Bottleneck #2: Northbound bottleneck coming from the SR-215/SR-60 northbound connector at the SR-60/SR-91/I-215 Interchange

A northbound bottleneck exists as traffic merges into a single auxilary lane from the northbound connector, forming a weaving section with traffic exiting at Columbia Avenue. This bottleneck occurs in the AM and PM peak periods.

Bottleneck #3: Southbound I-215/SR-60 bottleneck east of the SR-60/SR-91/I-215 Interchange

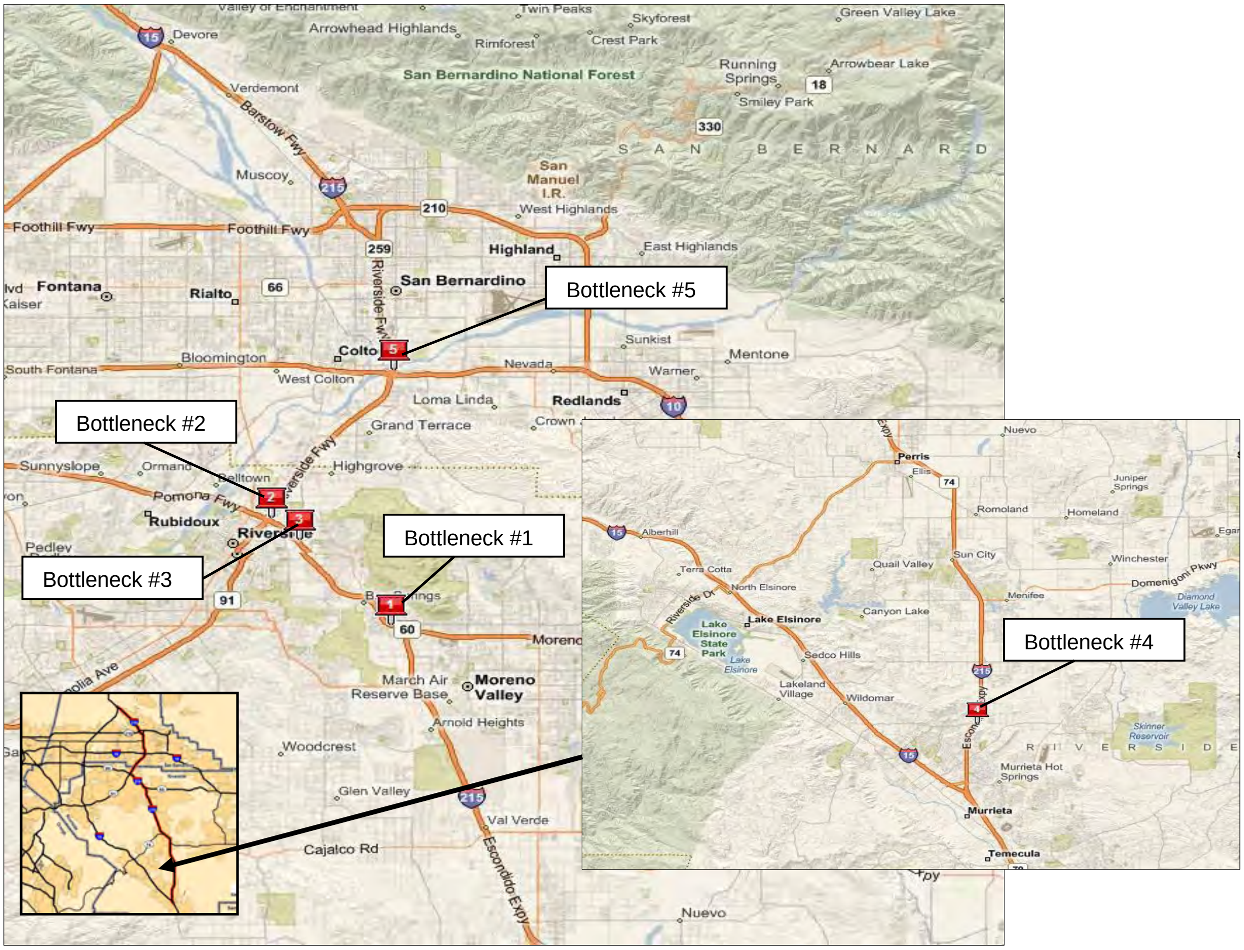
A southbound bottleneck exist on I-215/SR-60 as traffic from eastbound SR-91 and southbound I-215 merge in close proximity to lane drops at Spruce Street and 3rd Street/Blaine Street. This bottleneck occurs in the PM peak period.

Bottleneck #4: Northbound bottlenecks between Clinton Keith Road and the I-15/I-215 Junction

Northbound bottlenecks exist at interchanges at Murrieta Springs Road, Los Alamos Road, and Clinton Keith Road. The bottlenecks are caused by platoons of merging vehicles at on-ramp locations. These bottlenecks occur in the PM peak period.

Bottleneck #5: Northbound bottleneck at the I-215/I-10 connector

The northbound bottleneck is caused by a major weaving segment that is formed at the eastbound I-10/northbound I-215 freeway connector and the Auto Plaza Drive off-ramp. Traffic from eastbound I-10 merges onto an auxiliary lane that is dropped approximately 1,600 feet later at the Auto Plaza Drive off-ramp. This bottleneck occurs in the PM peak period.



Source: Kimley-Horn and Associates, Inc., Microsoft Live

Figure 5-1: I-215 Bottlenecks

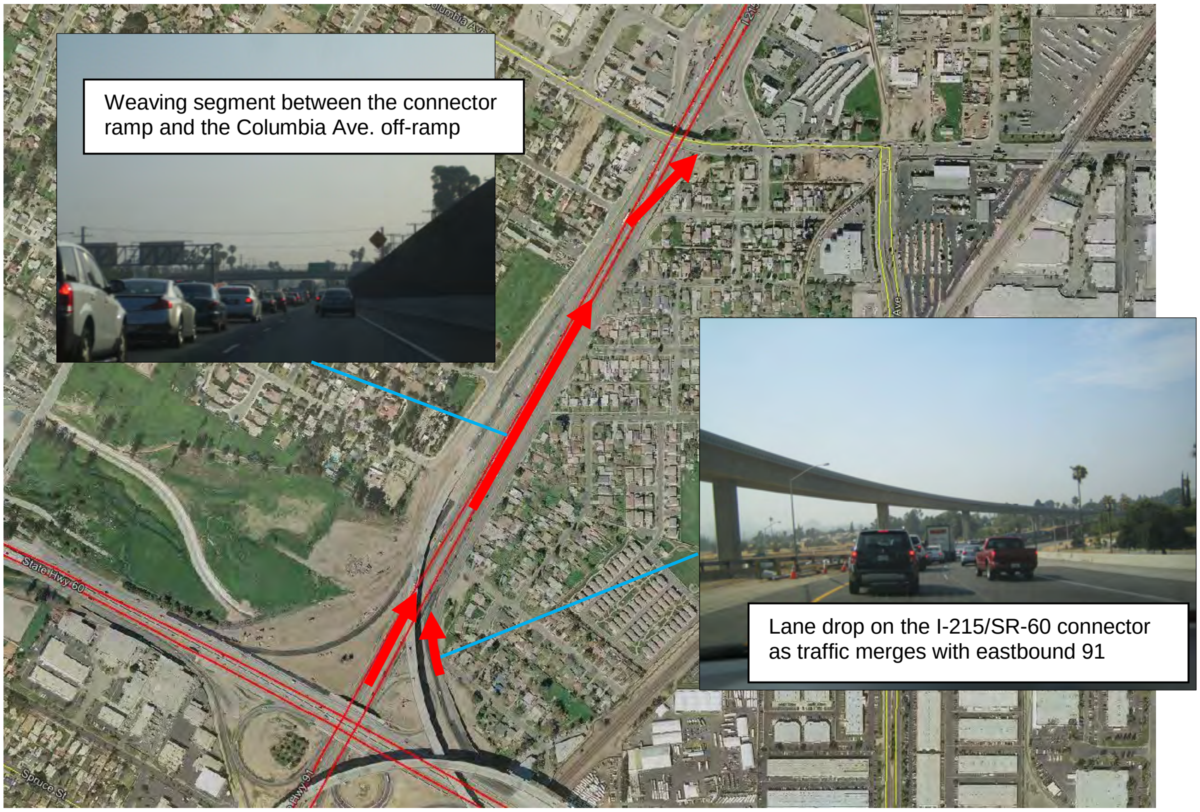
Each bottleneck location and their causes are described in more detail in the following section.

Source: Kimley-Horn and Associates, Inc., Caltrans District 8

Figure 5-2: Bottleneck #1

In the AM peak period in the northbound direction, a bottleneck is identified at the SR-60/I-215 freeway interchange. The congestion is caused by traffic merging from westbound SR-60, causing queues to form on northbound I-215 south to Alessandro Boulevard. A bottleneck also exists on westbound SR-60 caused by the HOV lane drop that reduces freeway capacity from two general-purpose lanes and one HOV lane to two general-purpose lanes. On northbound I-215, three general-purpose lanes are reduced to two mixed flow lanes at the SR-60/I-215 Interchange.

Congestion at this bottleneck exists from approximately 7:30 AM to 9:00 AM along SR-60 and from approximately 6:40 AM to 9:00 AM along NB I-215. Also in the AM peak period in the northbound direction, pockets of reduced speed occur between Box Springs Road and Martin Luther King Boulevard. The reduced traffic flow is likely caused by hilly terrain and weaving segments between Box Springs Road/Fair Isle Drive and Central Avenue/Watkins Drive and Martin Luther King Drive and University Avenue. Congestion at this location occurs from approximately 7:30 AM to 8:30 AM.



Source: Kimley-Horn and Associates, Inc., Caltrans District 8

Figure 5-3: Bottleneck #2

In the AM and PM peak periods, a northbound bottleneck is identified at the I-215/SR-60 connector ramp to eastbound SR-91 at the SR-60/SR-91/I-215 interchange.

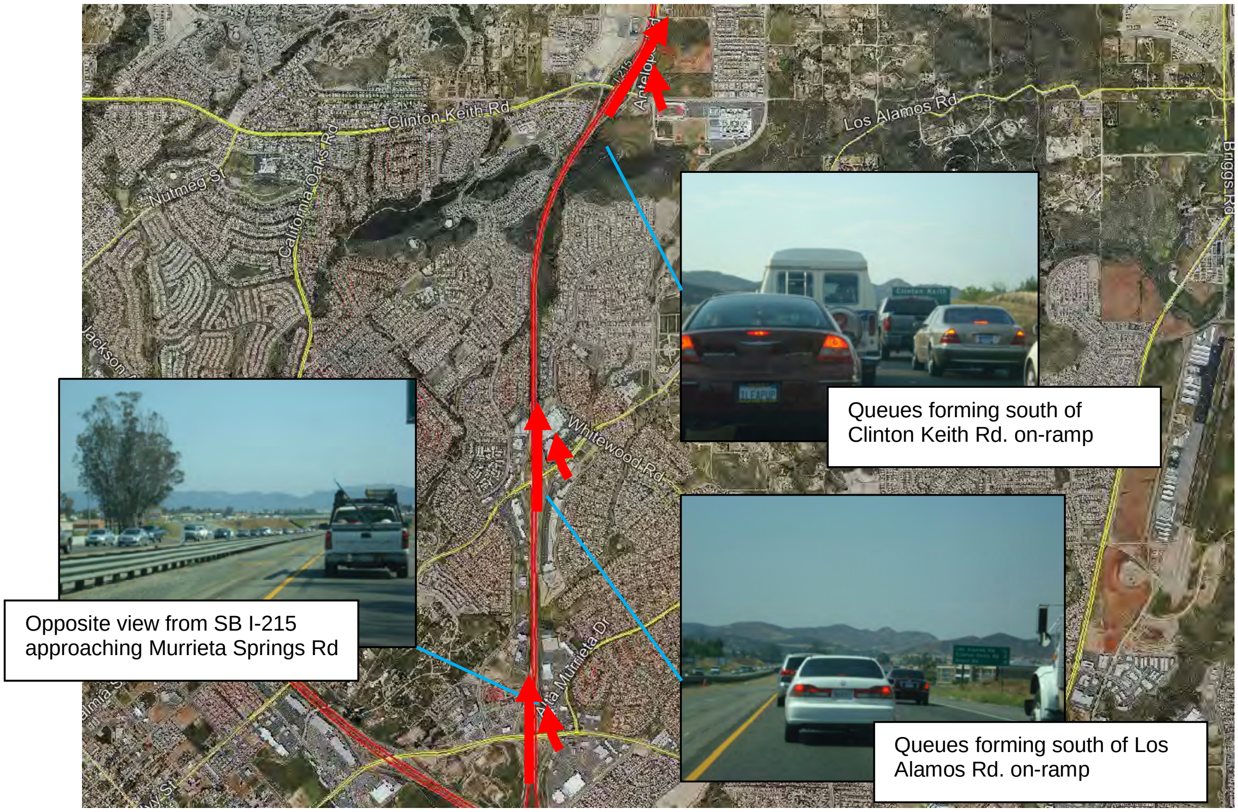
A lane drop on the connector ramp forces traffic to begin merging onto I-215 via an auxiliary lane that connects to the Columbia Avenue off-ramp. Weaving was observed between traffic from the I-215/SR-60 connector ramp and at the Columbia Avenue off-ramp. The restricted capacity on the connector ramp and the weaving segment at Columbia Avenue cause queuing to form on eastbound SR-91 south of the 215/60/91 interchange. Eastbound SR-91 approaching the interchange also has a lane drop. The bottleneck exists from approximately 7:00 to 8:30 AM in the morning commute period and from approximately 3:30 to 6:00 PM in the evening commute period.

North of the Columbia interchange, pockets of congestion were observed north towards Washington Street. The congestion is likely attributed to the traffic entering the freeway from Washington Street, La Cadena Drive, Barton Road, and Columbia Avenue, which are loading vehicles onto a segment of I-215 that only has three general purpose lanes in each direction.

Source: Kimley-Horn and Associates, Inc., Caltrans District 8

Figure 5-4: Bottleneck #3

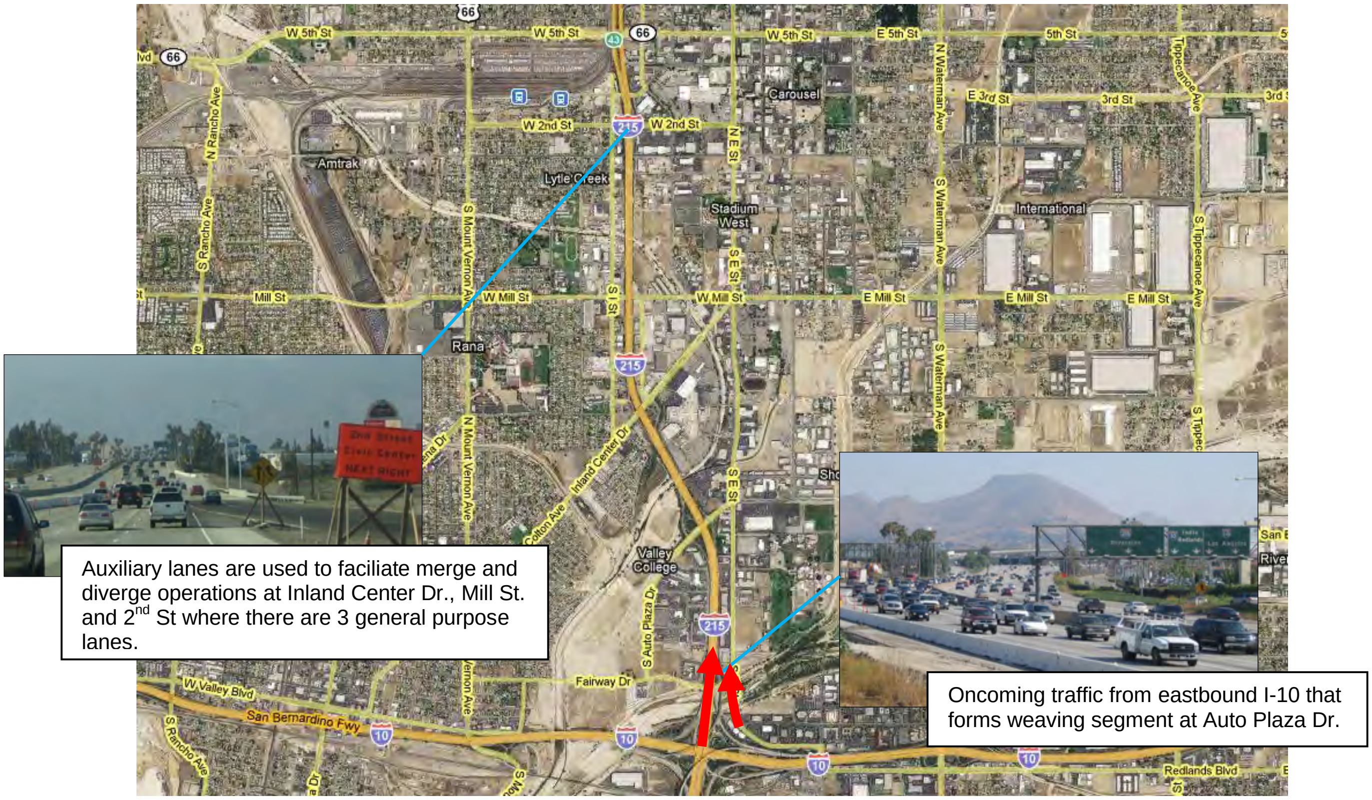
In the PM peak period, a bottleneck is identified on southbound SR-60/I-215, east of the interchange. The bottleneck is caused by merging traffic from the southbound I-215 flyover connector and the eastbound SR-91 on-ramp. The merging occurs in close proximity to lane drops at Spruce Street and 3rd Street/Blaine Street. The bottleneck creates a queue on eastbound SR-60, from University Avenue., pass the SR-91/SR-60/I-215 interchange and on towards Main Street. This bottleneck occurs from approximately 3:00 PM to 6:30 PM.



Source: Kimley-Horn and Associates, Inc., Caltrans District 8

Figure 5-5: Bottleneck #4

In the PM peak period, bottlenecks at Murrieta Springs Road, Los Alamos Road, and Clinton Keith Road lead to congested conditions on northbound I-215 between Clinton Keith Road and the I-15/I-215 junction in Murrieta. The bottlenecks are caused by platoons of merging vehicles at on-ramp locations. A ramp metering system is present, but not observed to be functional at the time of the field review. A likely contributor to the heavy flow of merging vehicles at the three interchanges is due to the land use on either sides of I-215. A high school is located east of Clinton Keith Road and a residential/commercial development is located adjacent to Los Alamos Road and Murrieta Springs Road. These bottlenecks occurs from 3:30 PM to 7:00 PM.



Source: Kimley-Horn and Associates, Inc., Caltrans District 8

Figure 5-6: Bottleneck #5

In the PM peak period, a bottleneck is located on northbound I-215 just north of the I-10/I-215 interchange. Congestion was observed from the bottleneck north towards 5th Street (SR-66). The cause is due to the combination of traffic merging from eastbound I-10 and local interchanges and freeway geometrics.

A major weaving segment is formed at the eastbound I-10/northbound I-215 freeway connector and the Auto Plaza Drive off-ramp. Traffic from eastbound I-10 merges onto an auxiliary lane that is dropped approximately 1,600 feet later at the Auto Plaza Drive off-ramp. The freeway mainline is gradually reduced to three general-purpose lanes near the Auto Plaza Drive on-ramp. Congestion from Auto Center Drive continues northward to 5th Street due to the reduced number of general-purpose lanes and additional weaving that occurs as auxiliary lanes are added and dropped at Inland Center Drive, Mill Street and 2nd Street. The bottleneck occurs from approximately 4:00 PM to 6:45 PM.

Appendix A
2007 I-215 Pavement Condition Survey

Caltrans Maintenance Program
2007 Pavement Summary
Caltrans Drive Order
Rte 215

District 8 County RIV Route 215

Priority	County	Route	Begin PM	-	End PM	Length	Pave Type	Dir.	Trig. Dir.	Trig. Ln Mi	AADT (,000)	MSL	Allig. A	Allig. B	Patching	Bleeding	Rutting	1st St. Crk.	3rd St. Crk.	Corner Crk.	Faulting	Int'l Rough. Index	Defect
													Maximum Observed Values										
99	RIV	215	R 8.430	-	R 8.944	0.514	F	R		0.000	78	1										96	NO DISTRESS OBSERVED
99	RIV	215	R 8.430	-	R 8.944	0.514	F	L		0.000	78	1										182	NO DISTRESS OBSERVED
99	RIV	215	R 8.944	-	R 8.998	0.054	F	R		0.000	78	1										N/A	NO DISTRESS OBSERVED
0	RIV	215	R 8.944	-	R 8.998	0.054	B	L		0.000	78	1										N/A	N/A - Bridge
99	RIV	215	R 8.998	-	R 9.046	0.048	F	R		0.000	78	1										114	NO DISTRESS OBSERVED
0	RIV	215	R 8.998	-	R 9.046	0.048	B	L		0.000	78	1										213	N/A - Bridge
99	RIV	215	R 9.046	-	R 9.130	0.084	F	R		0.000	78	1										113	NO DISTRESS OBSERVED
99	RIV	215	R 9.046	-	R 9.130	0.084	F	L		0.000	78	1										177	NO DISTRESS OBSERVED
99	RIV	215	R 9.130	-	R 9.930	0.800	F	R		0.000	85	1										127	NO DISTRESS OBSERVED
99	RIV	215	R 9.130	-	R 9.930	0.800	F	L		0.000	85	1										170	NO DISTRESS OBSERVED
99	RIV	215	R 9.930	-	R10.630	0.700	F	R		0.000	85	1										86	NO DISTRESS OBSERVED
99	RIV	215	R 9.930	-	R10.630	0.700	F	L		0.000	85	1										164	NO DISTRESS OBSERVED
99	RIV	215	R10.630	-	R11.430	0.800	F	R		0.000	85	1										73	NO DISTRESS OBSERVED
99	RIV	215	R10.630	-	R11.430	0.800	F	L		0.000	85	1										160	NO DISTRESS OBSERVED
99	RIV	215	R11.430	-	R12.130	0.700	F	R		0.000	85	1										87	NO DISTRESS OBSERVED
99	RIV	215	R11.430	-	R12.130	0.700	F	L		0.000	85	1										142	NO DISTRESS OBSERVED
99	RIV	215	R12.130	-	R12.930	0.800	F	R		0.000	85	1										63	NO DISTRESS OBSERVED
99	RIV	215	R12.130	-	R12.930	0.800	F	L		0.000	85	1										140	NO DISTRESS OBSERVED
98	RIV	215	R12.930	-	R13.630	0.700	F	R		0.000	84	1										45	GOOD CONDITION
99	RIV	215	R12.930	-	R13.630	0.700	F	L		0.000	84	1										148	NO DISTRESS OBSERVED
98	RIV	215	R13.630	-	R14.430	0.800	F	R		0.000	84	1										50	GOOD CONDITION
99	RIV	215	R13.630	-	R14.430	0.800	F	L		0.000	84	1										134	NO DISTRESS OBSERVED
98	RIV	215	R14.430	-	R14.503	0.073	F	R		0.000	84	1										N/A	GOOD CONDITION
99	RIV	215	R14.430	-	R14.503	0.073	F	L		0.000	84	1										N/A	NO DISTRESS OBSERVED
0	RIV	215	R14.503	-	R14.526	0.023	B	R		0.000	84	1										103	N/A - Bridge
0	RIV	215	R14.503	-	R14.526	0.023	B	L		0.000	84	1										206	N/A - Bridge
98	RIV	215	R14.526	-	R15.930	1.404	F	R		0.000	84	1										46	GOOD CONDITION
99	RIV	215	R14.526	-	R15.930	1.404	F	L		0.000	84	1										138	NO DISTRESS OBSERVED
98	RIV	215	R15.930	-	R17.430	1.500	F	R		0.000	78	1										99	GOOD CONDITION
99	RIV	215	R15.930	-	R17.430	1.500	F	L		0.000	78	1										120	NO DISTRESS OBSERVED
98	RIV	215	R17.430	-	R18.921	1.491	F	R		0.000	78	1										119	GOOD CONDITION

Note: HA Project locations highlighted in bold typeface.

District 8 County RIV Route 215

------------- Maximum Observed Values -----------------

Prior-ity	County	Route	Begin PM	-	End PM	Length	Pave Type	Dir.	Trig. Dir.	Trig. Ln Mi	AADT (,000)	MSL	Allig. A	Allig. B	Patch-ing	Bleed-ing	Rut-ting	1st St. Crk.	3rd St. Crk.	Corn-er Crk.	Fault-ing	Int'l Rough. Index	Defect
98	RIV	215	R17.430	-	R18.921	1.491	F	L		0.000	78	1										130	GOOD CONDITION
0	RIV	215	R18.921	-	R18.930	0.009	B	R		0.000	74	1										N/A	N/A - Bridge
0	RIV	215	R18.921	-	R18.930	0.009	B	L		0.000	74	1										276	N/A - Bridge
0	RIV	215	R18.930	-	R19.003	0.073	B	R		0.000	74	1										N/A	N/A - Bridge
0	RIV	215	R18.930	-	R19.003	0.073	B	L		0.000	74	1										N/A	N/A - Bridge
98	RIV	215	R19.003	-	R20.430	1.427	F	R		0.000	74	1										71	GOOD CONDITION
98	RIV	215	R19.003	-	R20.430	1.427	F	L		0.000	74	1										135	GOOD CONDITION
98	RIV	215	R20.430	-	R20.875	0.445	F	R		0.000	74	1										48	GOOD CONDITION
98	RIV	215	R20.430	-	R20.875	0.445	F	L		0.000	74	1										143	GOOD CONDITION
98	RIV	215	20.876	-	21.931	1.055	F	R		0.000	69	1										48	GOOD CONDITION
98	RIV	215	20.876	-	21.931	1.055	F	L		0.000	69	1										151	GOOD CONDITION
32	RIV	215	21.931	-	22.326	0.395	F	R	R	0.395	69	1										59	FINE RAVEL
32	RIV	215	21.931	-	22.326	0.395	F	L	L	0.395	69	1	39									137	ALL. A, NO B, OPEN CRKS
0	RIV	215	22.326	-	22.349	0.023	B	R		0.000	69	1										113	N/A - Bridge
0	RIV	215	22.326	-	22.349	0.023	B	L		0.000	69	1	39									165	N/A - Bridge
32	RIV	215	22.349	-	23.081	0.732	F	R	R	0.732	69	1										123	FINE RAVEL
32	RIV	215	22.349	-	23.081	0.732	F	L	L	0.732	69	1	39									157	ALL. A, NO B, OPEN CRKS
32	RIV	215	23.081	-	23.431	0.350	F	R	R	0.350	66	1	37									111	ALL. A, NO B, OPEN CRKS
32	RIV	215	23.081	-	23.431	0.350	F	L	L	0.350	66	1	39									131	ALL. A, NO B, OPEN CRKS
32	RIV	215	23.431	-	23.508	0.077	F	R	R	0.077	66	1	37									N/A	ALL. A, NO B, OPEN CRKS
7	**RIV**	**215**	**23.431**	-	**23.508**	**0.077**	**F**	**L**	**L**	**0.077**	66	1		48								142	HIGH ABC
0	RIV	215	23.508	-	23.555	0.047	B	R		0.000	82	1	37									101	N/A - Bridge
0	**RIV**	**215**	**23.508**	-	**23.555**	**0.047**	**B**	**L**		**0.000**	82	1		48								104	N/A - Bridge
32	RIV	215	23.555	-	24.581	1.026	F	R	R	1.026	82	1	37									68	ALL. A, NO B, OPEN CRKS
7	**RIV**	**215**	**23.555**	-	**24.581**	**1.026**	**F**	**L**	**L**	**1.026**	82	1		48								127	HIGH ABC
7	**RIV**	**215**	**24.581**	-	**24.731**	**0.150**	**F**	**R**	**R**	**0.150**	82	1	39	39								102	HIGH ABC
1	**RIV**	**215**	**24.581**	-	**24.731**	**0.150**	**F**	**L**	**L**	**0.150**	82	1		48								224	HIGH ABC, RIDE
7	**RIV**	**215**	**24.731**	-	**24.907**	**0.176**	**F**	**R**	**R**	**0.176**	82	1	39	39								134	HIGH ABC
7	**RIV**	**215**	**24.731**	-	**24.907**	**0.176**	**F**	**L**	**L**	**0.176**	82	1		59								208	HIGH ABC
0	**RIV**	**215**	**24.907**	-	**24.913**	**0.006**	**B**	**R**		**0.000**	82	1	39	39								N/A	N/A - Bridge
0	**RIV**	**215**	**24.907**	-	**24.913**	**0.006**	**B**	**L**		**0.000**	82	1		59								N/A	N/A - Bridge

Note: HA Project locations highlighted in bold typeface.

Caltrans Maintenance Program
2007 Pavement Summary
Caltrans Drive Order
Rte 215

District 8 County RIV Route 215

Priority	County	Route	Begin PM	-	End PM	Length	Pave Type	Dir.	Trig. Dir.	Trig. Ln Mi	AADT (,000)	MSL	Allig. A	Allig. B	Patching	Bleeding	Rutting	1st St. Crk.	3rd St. Crk.	Corner Crk.	Faulting	Int'l Rough. Index	Defect
													Maximum Observed Values										
7	**RIV**	**215**	**24.913**	-	**25.103**	**0.190**	**F**	**R**	**R**	**0.190**	82	1	39	39								99	HIGH ABC
7	**RIV**	**215**	**24.913**	-	**25.103**	**0.190**	**F**	**L**	**L**	**0.190**	82	1		59								208	HIGH ABC
0	**RIV**	**215**	**25.103**	-	**25.134**	**0.031**	**B**	**R**		**0.000**	82	1	39	39								101	N/A - Bridge
0	**RIV**	**215**	**25.103**	-	**25.134**	**0.031**	**B**	**L**		**0.000**	82	1		59								N/A	N/A - Bridge
7	**RIV**	**215**	**25.134**	-	**25.931**	**0.797**	**F**	**R**	**R**	**0.797**	82	1	39	39								89	HIGH ABC
7	**RIV**	**215**	**25.134**	-	**25.931**	**0.797**	**F**	**L**	**L**	**0.797**	82	1		59								114	HIGH ABC
32	RIV	215	25.931	-	26.031	0.100	F	R	R	0.100	82	1	39									90	ALL. A, NO B, OPEN CRKS
7	**RIV**	**215**	**25.931**	-	**26.031**	**0.100**	**F**	**L**	**L**	**0.100**	82	1		59								118	HIGH ABC
32	RIV	215	26.031	-	27.379	1.348	F	R	R	1.348	90	1	39									72	ALL. A, NO B, OPEN CRKS
7	**RIV**	**215**	**26.031**	-	**27.379**	**1.348**	**F**	**L**	**L**	**1.348**	90	1		39								142	HIGH ABC
98	RIV	215	27.379	-	27.623	0.244	F	R		0.000	90	1										86	GOOD CONDITION
98	RIV	215	27.379	-	27.623	0.244	F	L		0.000	90	1										108	GOOD CONDITION
98	RIV	215	R27.525	-	R27.833	0.308	F	R		0.000	90	1										94	GOOD CONDITION
98	RIV	215	R27.525	-	R27.833	0.308	F	L		0.000	90	1										128	GOOD CONDITION
98	RIV	215	R27.833	-	R28.833	1.000	F	R		0.000	91	1										92	GOOD CONDITION
98	RIV	215	R27.833	-	R28.833	1.000	F	L		0.000	91	1										105	GOOD CONDITION
98	RIV	215	R28.833	-	R29.333	0.500	F	R		0.000	91	1										87	GOOD CONDITION
98	RIV	215	R28.833	-	R29.333	0.500	F	L		0.000	91	1										106	GOOD CONDITION
98	RIV	215	R29.333	-	R30.333	1.000	F	R		0.000	91	1										88	GOOD CONDITION
98	RIV	215	R29.333	-	R30.333	1.000	F	L		0.000	91	1										111	GOOD CONDITION
98	RIV	215	R30.333	-	R30.833	0.500	F	R		0.000	91	1										86	GOOD CONDITION
98	RIV	215	R30.333	-	R30.833	0.500	F	L		0.000	91	1										115	GOOD CONDITION
98	RIV	215	R30.833	-	R31.833	1.000	F	R		0.000	104	1										88	GOOD CONDITION
98	RIV	215	R30.833	-	R31.833	1.000	F	L		0.000	104	1										115	GOOD CONDITION
98	RIV	215	R31.833	-	R32.333	0.500	F	R		0.000	109	1										95	GOOD CONDITION
98	RIV	215	R31.833	-	R32.333	0.500	F	L		0.000	109	1										116	GOOD CONDITION
98	RIV	215	R32.333	-	R33.333	1.000	F	R		0.000	109	1										80	GOOD CONDITION
98	RIV	215	R32.333	-	R33.333	1.000	F	L		0.000	109	1										112	GOOD CONDITION
98	RIV	215	R33.333	-	R33.833	0.500	F	R		0.000	109	1										81	GOOD CONDITION
98	RIV	215	R33.333	-	R33.833	0.500	F	L		0.000	109	1										138	GOOD CONDITION
98	RIV	215	R33.833	-	R34.833	1.000	F	R		0.000	109	1										82	GOOD CONDITION

Note: HA Project locations highlighted in bold typeface.

Caltrans Maintenance Program
2007 Pavement Summary
Caltrans Drive Order
Rte 215

District 8 County RIV Route 215

Priority	County	Route	Begin PM	-	End PM	Length	Pave Type	Dir.	Trig. Dir.	Trig. Ln Mi	AADT (,000)	MSL	Allig. A	Allig. B	Patching	Bleeding	Rutting	1st St. Crk.	3rd St. Crk.	Corner Crk.	Faulting	Int'l Rough. Index	Defect
													------------- Maximum Observed Values -----------------										
98	RIV	215	R33.833	-	R34.833	1.000	F	L		0.000	109	1										125	GOOD CONDITION
98	RIV	215	R34.833	-	R35.313	0.480	F	R		0.000	108	1										77	GOOD CONDITION
98	RIV	215	R34.833	-	R35.313	0.480	F	L		0.000	108	1										159	GOOD CONDITION
99	RIV	215	R35.313	-	R35.333	0.020	F	R		0.000	108	1										N/A	NO DISTRESS OBSERVED
98	RIV	215	R35.313	-	R35.333	0.020	F	L		0.000	108	1										N/A	GOOD CONDITION
98	RIV	215	R35.333	-	R36.333	1.000	F	R		0.000	108	1										118	GOOD CONDITION
98	RIV	215	R35.333	-	R36.333	1.000	F	L		0.000	108	1										160	GOOD CONDITION
98	RIV	215	R36.333	-	R36.833	0.500	F	R		0.000	112	1										96	GOOD CONDITION
98	RIV	215	R36.333	-	R36.833	0.500	F	L		0.000	112	1										148	GOOD CONDITION
98	RIV	215	R36.833	-	R37.983	1.150	F	R		0.000	112	1										120	GOOD CONDITION
1	**RIV**	**215**	**R36.833**	-	**R37.983**	**1.150**	**F**	**L**	**L**	**3.450**	112	1		39								286	HIGH ABC, RIDE
1	**RIV**	**215**	**R37.983**	-	**R38.149**	**0.166**	**F**	**R**	**R**	**0.166**	111	1	39	78			Rut.					262	HIGH ABC, RIDE
1	**RIV**	**215**	**R37.983**	-	**R38.149**	**0.166**	**F**	**L**	**L**	**0.332**	111	1		39								287	HIGH ABC, RIDE
1	**RIV**	**215**	**R38.149**	-	**R38.485**	**0.336**	**F**	**R**	**R**	**0.336**	185	1	39	78			Rut.					248	HIGH ABC, RIDE
1	**RIV**	**215**	**R38.149**	-	**R38.485**	**0.336**	**F**	**L**	**L**	**0.336**	185	1		39			Rut.					298	HIGH ABC, RIDE
7	**RIV**	**215**	**R38.485**	-	**R38.554**	**0.069**	**F**	**R**	**R**	**0.069**	185	1	39	78			Rut.					181	HIGH ABC
7	**RIV**	**215**	**R38.485**	-	**R38.554**	**0.069**	**F**	**L**	**L**	**0.138**	185	1		78			Rut.					158	HIGH ABC
5	**RIV**	**215**	**R38.554**	-	**R38.609**	**0.055**	**F**	**R**	**R**	**0.110**	185	1		39	39							220	RIDE
7	**RIV**	**215**	**R38.554**	-	**R38.609**	**0.055**	**F**	**L**	**L**	**0.110**	185	1		78			Rut.					N/A	HIGH ABC
7	**RIV**	**215**	**R38.609**	-	**R38.643**	**0.034**	**F**	**R**	**R**	**0.068**	185	1		39	39							179	HIGH ABC
0	**RIV**	**215**	**R38.609**	-	**R38.643**	**0.034**	**B**	**L**		**0.000**	185	1		78			Rut.					160	N/A - Bridge
7	**RIV**	**215**	**R38.643**	-	**R38.670**	**0.027**	**F**	**R**	**R**	**0.054**	185	1		39	39							N/A	HIGH ABC
7	**RIV**	**215**	**R38.643**	-	**R38.670**	**0.027**	**F**	**L**	**L**	**0.054**	185	1		78			Rut.					N/A	HIGH ABC
0	**RIV**	**215**	**R38.670**	-	**R38.693**	**0.023**	**B**	**R**		**0.000**	185	1		39	39							N/A	N/A - Bridge
7	**RIV**	**215**	**R38.670**	-	**R38.693**	**0.023**	**F**	**L**	**L**	**0.046**	185	1		78			Rut.					N/A	HIGH ABC
1	**RIV**	**215**	**R38.693**	-	**R38.833**	**0.140**	**F**	**R**	**R**	**0.280**	185	1		39	39							285	HIGH ABC, RIDE
7	**RIV**	**215**	**R38.693**	-	**R38.833**	**0.140**	**F**	**L**	**L**	**0.280**	185	1		78			Rut.					172	HIGH ABC
1	**RIV**	**215**	**R38.833**	-	**R38.930**	**0.097**	**F**	**R**	**R**	**0.194**	192	1		39	39							280	HIGH ABC, RIDE
7	**RIV**	**215**	**R38.833**	-	**R38.930**	**0.097**	**F**	**L**	**L**	**0.194**	192	1		78			Rut.					152	HIGH ABC
7	**RIV**	**215**	**38.623**	-	**39.484**	**0.861**	**F**	**R**	**R**	**1.722**	192	1		39	39							196	HIGH ABC
7	**RIV**	**215**	**38.623**	-	**39.484**	**0.861**	**F**	**L**	**L**	**1.722**	192	1		78			Rut.					184	HIGH ABC

Note: HA Project locations highlighted in bold typeface.

Caltrans Maintenance Program
2007 Pavement Summary
Caltrans Drive Order
Rte 215

District 8 County RIV Route 215

Priority	County	Route	Begin PM	-	End PM	Length	Pave Type	Dir.	Trig. Dir.	Trig. Ln Mi	AADT (,000)	MSL	Allig. A	Allig. B	Patching	Bleeding	Rutting	1st St. Crk.	3rd St. Crk.	Corner Crk.	Faulting	Int'l Rough. Index	Defect
													Maximum Observed Values										
0	RIV	215	39.484	-	39.514	0.030	B	R		0.000	185	1		39	39							259	N/A - Bridge
0	RIV	215	39.484	-	39.514	0.030	B	L		0.000	185	1		78			Rut.					N/A	N/A - Bridge
1	RIV	215	39.514	-	39.526	0.012	F	R	R	0.024	185	1		39	39							259	HIGH ABC, RIDE
7	RIV	215	39.514	-	39.526	0.012	F	L	L	0.024	185	1		78			Rut.					N/A	HIGH ABC
7	RIV	215	39.526	-	40.626	1.100	F	R	R	1.100	185	1	39	78								157	HIGH ABC
5	RIV	215	39.526	-	40.626	1.100	F	L	L	1.100	185	1					Rut.					254	RIDE
7	RIV	215	40.626	-	41.043	0.417	F	R	R	0.834	185	1		39								196	HIGH ABC
5	RIV	215	40.626	-	41.043	0.417	F	L	L	0.834	185	1					Rut.					305	RIDE
0	RIV	215	41.043	-	41.064	0.021	B	R		0.000	181	1		39								N/A	N/A - Bridge
0	RIV	215	41.043	-	41.064	0.021	B	L		0.000	181	1										268	N/A - Bridge
33	RIV	215	41.064	-	41.488	0.424	R	R	R	0.848	181	1										202	UNSEALED CRACKS OR
5	RIV	215	41.064	-	41.488	0.424	R	L	L	1.696	181	1										281	RIDE
0	RIV	215	41.488	-	41.509	0.021	B	R		0.000	174	1										270	N/A - Bridge
0	RIV	215	41.488	-	41.509	0.021	B	L		0.000	174	1										N/A	N/A - Bridge
5	RIV	215	41.509	-	42.632	1.123	R	R	R	1.123	174	1										219	RIDE
5	RIV	215	41.509	-	42.632	1.123	R	L	L	2.246	174	1										260	RIDE
0	RIV	215	42.632	-	42.685	0.053	B	R		0.000	173	1										311	N/A - Bridge
0	RIV	215	42.632	-	42.685	0.053	B	L		0.000	173	1										294	N/A - Bridge
5	RIV	215	42.685	-	42.837	0.152	R	R	R	0.304	173	1										273	RIDE
5	RIV	215	42.685	-	42.837	0.152	R	L	L	0.456	173	1										331	RIDE
0	RIV	215	42.837	-	42.861	0.024	B	R		0.000	186	1										N/A	N/A - Bridge
0	RIV	215	42.837	-	42.861	0.024	B	L		0.000	186	1										N/A	N/A - Bridge
5	RIV	215	42.861	-	43.076	0.215	R	R	R	0.430	186	1										289	RIDE
5	RIV	215	42.861	-	43.076	0.215	R	L	L	0.645	186	1										294	RIDE
0	RIV	215	43.076	-	43.102	0.026	B	R		0.000	186	1										N/A	N/A - Bridge
0	RIV	215	43.076	-	43.102	0.026	B	L		0.000	186	1										221	N/A - Bridge
5	RIV	215	43.102	-	43.247	0.145	R	R	R	0.145	186	1										331	RIDE
5	RIV	215	43.102	-	43.247	0.145	R	L	L	0.290	186	1										276	RIDE
0	RIV	215	43.247	-	43.270	0.023	B	R		0.000	186	1										245	N/A - Bridge
0	RIV	215	43.247	-	43.270	0.023	B	L		0.000	186	1										N/A	N/A - Bridge
9	RIV	215	43.270	-	43.926	0.656	F	R	R	0.656	149	1		19								134	MOD ABC

Note: HA Project locations highlighted in bold typeface.

Caltrans Maintenance Program
2007 Pavement Summary
Caltrans Drive Order
Rte 215

District 8 County RIV Route 215

Priority	County	Route	Begin PM	-	End PM	Length	Pave Type	Dir.	Trig. Dir.	Trig. Ln Mi	AADT (,000)	MSL	Allig. A	Allig. B	Patching	Bleeding	Rutting	1st St. Crk.	3rd St. Crk.	Corner Crk.	Faulting	Int'l Rough. Index	Defect
													------------- Maximum Observed Values								-----------------		
32	RIV	215	43.270	-	43.926	0.656	F	L	L	1.312	149	1										168	FINE RAVEL
9	**RIV**	**215**	**43.926**	-	**44.726**	**0.800**	**F**	**R**	**R**	**0.800**	147	1		19								112	MOD ABC
9	**RIV**	**215**	**43.926**	-	**44.726**	**0.800**	**F**	**L**	**L**	**0.800**	147	1	6	13			Rut.					168	MOD ABC
7	**RIV**	**215**	**44.726**	-	**45.333**	**0.607**	**F**	**R**	**R**	**1.214**	147	1		63								135	HIGH ABC
9	**RIV**	**215**	**44.726**	-	**45.333**	**0.607**	**F**	**L**	**L**	**0.607**	147	1	6	13			Rut.					159	MOD ABC
98	SBD	215	0.000	-	0.793	0.793	F	R		0.000	149	1										109	GOOD CONDITION
98	SBD	215	0.000	-	0.793	0.793	F	L		0.000	149	1										170	GOOD CONDITION
98	SBD	215	0.793	-	1.493	0.700	F	R		0.000	155	1										100	GOOD CONDITION
98	SBD	215	0.793	-	1.493	0.700	F	L		0.000	155	1										170	GOOD CONDITION
98	SBD	215	1.493	-	2.293	0.800	F	R		0.000	155	1										109	GOOD CONDITION
98	SBD	215	1.493	-	2.293	0.800	F	L		0.000	155	1										159	GOOD CONDITION
98	SBD	215	2.293	-	2.993	0.700	F	R		0.000	165	1										115	GOOD CONDITION
32	SBD	215	2.293	-	2.993	0.700	F	L	L	1.400	165	1										165	FINE RAVEL
98	SBD	215	2.993	-	3.719	0.726	F	R		0.000	165	1										161	GOOD CONDITION
32	SBD	215	2.993	-	3.719	0.726	F	L	L	1.452	165	1										173	FINE RAVEL
0	SBD	215	3.719	-	3.861	0.142	B	R		0.000	165	1									Fault.	178	N/A - Bridge
0	SBD	215	3.719	-	3.861	0.142	B	L		0.000	165	1									Fault.	218	N/A - Bridge
9	**SBD**	**215**	**3.861**	-	**4.031**	**0.170**	**R**	**R**	**R**	**0.340**	165	1						1			Fault.	184	FAULTING
9	**SBD**	**215**	**3.861**	-	**4.031**	**0.170**	**R**	**L**	**L**	**0.340**	165	1						5			Fault.	197	FAULTING
0	**SBD**	**215**	**4.031**	-	**4.080**	**0.049**	**B**	**R**		**0.000**	179	1									Fault.	N/A	N/A - Bridge
0	**SBD**	**215**	**4.031**	-	**4.080**	**0.049**	**B**	**L**		**0.000**	179	1									Fault.	N/A	N/A - Bridge
9	**SBD**	**215**	**4.080**	-	**4.206**	**0.126**	**R**	**R**	**R**	**0.252**	179	1						1			Fault.	185	FAULTING
3	**SBD**	**215**	**4.080**	-	**4.206**	**0.126**	**R**	**L**	**L**	**0.252**	179	1						5			Fault.	236	FAULTING, RIDE
9	**SBD**	**215**	**4.206**	-	**4.212**	**0.006**	**R**	**R**	**R**	**0.012**	179	1						1			Fault.	N/A	FAULTING
0	**SBD**	**215**	**4.206**	-	**4.212**	**0.006**	**B**	**L**		**0.000**	179	1									Fault.	N/A	N/A - Bridge
0	**SBD**	**215**	**4.212**	-	**4.345**	**0.133**	**B**	**R**		**0.000**	179	1									Fault.	166	N/A - Bridge
0	**SBD**	**215**	**4.212**	-	**4.345**	**0.133**	**B**	**L**		**0.000**	179	1									Fault.	239	N/A - Bridge
0	**SBD**	**215**	**4.345**	-	**4.347**	**0.002**	**B**	**R**		**0.000**	179	1									Fault.	N/A	N/A - Bridge
9	**SBD**	**215**	**4.345**	-	**4.347**	**0.002**	**R**	**L**	**L**	**0.004**	179	1						5			Fault.	N/A	FAULTING
9	**SBD**	**215**	**4.347**	-	**4.372**	**0.025**	**R**	**R**	**R**	**0.050**	179	1						1			Fault.	N/A	FAULTING

Note: HA Project locations highlighted in bold typeface.

District 8 County SBD Route 215

Prior-ity	County	Route	Begin PM	-	End PM	Length	Pave Type	Dir.	Trig. Dir.	Trig. Ln Mi	AADT (,000)	MSL	Allig. A	Allig. B	Patch-ing	Bleed-ing	Rut-ting	1st St. Crk.	3rd St. Crk.	Corn-er Crk.	Fault-ing	Int'l Rough. Index	Defect
													------------- Maximum Observed Values								-----------------		
9	**SBD**	**215**	**4.347**	-	**4.372**	**0.025**	**R**	**L**	**L**	**0.050**	179	1						5			Fault.	N/A	FAULTING
9	**SBD**	**215**	**4.372**	-	**5.025**	**0.653**	**R**	**R**	**R**	**1.306**	179	1						3			Fault.	185	FAULTING
3	**SBD**	**215**	**4.372**	-	**5.025**	**0.653**	**R**	**L**	**L**	**1.306**	179	1						5			Fault.	232	FAULTING, RIDE
3	**SBD**	**215**	**5.025**	-	**5.091**	**0.066**	**R**	**R**	**R**	**0.132**	167	1						13	2	3	Fault.	248	FAULTING, RIDE
3	**SBD**	**215**	**5.025**	-	**5.091**	**0.066**	**R**	**L**	**L**	**0.132**	167	1						5			Fault.	299	FAULTING, RIDE
0	**SBD**	**215**	**5.091**	-	**5.136**	**0.045**	**B**	**R**		**0.000**	167	1									Fault.	248	N/A - Bridge
0	**SBD**	**215**	**5.091**	-	**5.136**	**0.045**	**B**	**L**		**0.000**	167	1									Fault.	N/A	N/A - Bridge
3	**SBD**	**215**	**5.136**	-	**5.193**	**0.057**	**R**	**R**	**R**	**0.114**	167	1						13	2	3	Fault.	263	FAULTING, RIDE
3	**SBD**	**215**	**5.136**	-	**5.193**	**0.057**	**R**	**L**	**L**	**0.171**	167	1						5			Fault.	378	FAULTING, RIDE
3	**SBD**	**215**	**5.193**	-	**5.231**	**0.038**	**R**	**R**	**R**	**0.076**	167	1						13	2	3	Fault.	263	FAULTING, RIDE
9	**SBD**	**215**	**5.193**	-	**5.231**	**0.038**	**R**	**L**	**L**	**0.076**	167	1						15	6	2	Fault.	N/A	FAULTING
0	**SBD**	**215**	**5.231**	-	**5.259**	**0.028**	**B**	**R**		**0.000**	167	1									Fault.	N/A	N/A - Bridge
0	**SBD**	**215**	**5.231**	-	**5.259**	**0.028**	**B**	**L**		**0.000**	167	1									Fault.	N/A	N/A - Bridge
9	**SBD**	**215**	**5.259**	-	**5.394**	**0.135**	**R**	**R**	**R**	**0.270**	167	1						13	2	3	Fault.	212	FAULTING
3	**SBD**	**215**	**5.259**	-	**5.394**	**0.135**	**R**	**L**	**L**	**0.270**	167	1						15	6	2	Fault.	239	FAULTING, RIDE
3	**SBD**	**215**	**5.394**	-	**6.060**	**0.666**	**R**	**R**	**R**	**1.332**	167	1						15	2	4	Fault.	233	FAULTING, RIDE
3	**SBD**	**215**	**5.394**	-	**6.060**	**0.666**	**R**	**L**	**L**	**1.332**	167	1						15	6	2	Fault.	247	FAULTING, RIDE
0	**SBD**	**215**	**6.060**	-	**6.076**	**0.016**	**B**	**R**		**0.000**	161	1									Fault.	N/A	N/A - Bridge
0	**SBD**	**215**	**6.060**	-	**6.076**	**0.016**	**B**	**L**		**0.000**	161	1									Fault.	N/A	N/A - Bridge
3	**SBD**	**215**	**6.076**	-	**6.193**	**0.117**	**R**	**R**	**R**	**0.234**	161	1						15	2	4	Fault.	241	FAULTING, RIDE
9	**SBD**	**215**	**6.076**	-	**6.193**	**0.117**	**R**	**L**	**L**	**0.234**	161	1						15	6	2	Fault.	209	FAULTING
3	**SBD**	**215**	**6.193**	-	**6.307**	**0.114**	**R**	**R**	**R**	**0.228**	161	1						15	2	4	Fault.	301	FAULTING, RIDE
9	**SBD**	**215**	**6.193**	-	**6.307**	**0.114**	**R**	**L**	**L**	**0.228**	161	1						9	4	2	Fault.	149	FAULTING
0	**SBD**	**215**	**6.307**	-	**6.326**	**0.019**	**B**	**R**		**0.000**	161	1									Fault.	N/A	N/A - Bridge
0	**SBD**	**215**	**6.307**	-	**6.326**	**0.019**	**B**	**L**		**0.000**	161	1									Fault.	144	N/A - Bridge
9	**SBD**	**215**	**6.326**	-	**6.393**	**0.067**	**R**	**R**	**R**	**0.134**	161	1						15	2	4	Fault.	156	FAULTING
9	**SBD**	**215**	**6.326**	-	**6.393**	**0.067**	**R**	**L**	**L**	**0.134**	161	1						9	4	2	Fault.	120	FAULTING
3	**SBD**	**215**	**6.393**	-	**6.592**	**0.199**	**R**	**R**	**R**	**0.398**	161	1						8	2	2	Fault.	257	FAULTING, RIDE
9	**SBD**	**215**	**6.393**	-	**6.592**	**0.199**	**R**	**L**	**L**	**0.398**	161	1						9	4	2	Fault.	135	FAULTING
0	**SBD**	**215**	**6.592**	-	**6.613**	**0.021**	**B**	**R**		**0.000**	161	1									Fault.	N/A	N/A - Bridge
0	**SBD**	**215**	**6.592**	-	**6.613**	**0.021**	**B**	**L**		**0.000**	161	1									Fault.	N/A	N/A - Bridge

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Caltrans Maintenance Program
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Rte 215

District 8 County SBD Route 215

Priority	County	Route	Begin PM	-	End PM	Length	Pave Type	Dir.	Trig. Dir.	Trig. Ln Mi	AADT (,000)	MSL	Allig. A	Allig. B	Patching	Bleeding	Rutting	1st St. Crk.	3rd St. Crk.	Corner Crk.	Faulting	Int'l Rough. Index	Defect
													Maximum Observed Values										
9	**SBD**	**215**	**6.613**	-	**6.658**	**0.045**	**R**	**R**	**R**	**0.090**	161	1						8	2	2	Fault.	N/A	FAULTING
9	**SBD**	**215**	**6.613**	-	**6.658**	**0.045**	**R**	**L**	**L**	**0.090**	161	1						9	4	2	Fault.	202	FAULTING
0	**SBD**	**215**	**6.658**	-	**6.675**	**0.017**	**B**	**R**		**0.000**	161	1									Fault.	N/A	N/A - Bridge
0	**SBD**	**215**	**6.658**	-	**6.675**	**0.017**	**B**	**L**		**0.000**	161	1									Fault.	N/A	N/A - Bridge
9	**SBD**	**215**	**6.675**	-	**6.787**	**0.112**	**R**	**R**	**R**	**0.224**	161	1						8	2	2	Fault.	166	FAULTING
9	**SBD**	**215**	**6.675**	-	**6.787**	**0.112**	**R**	**L**	**L**	**0.224**	161	1						9	4	2	Fault.	155	FAULTING
0	**SBD**	**215**	**6.787**	-	**6.803**	**0.016**	**B**	**R**		**0.000**	145	1									Fault.	N/A	N/A - Bridge
0	**SBD**	**215**	**6.787**	-	**6.803**	**0.016**	**B**	**L**		**0.000**	145	1									Fault.	N/A	N/A - Bridge
3	**SBD**	**215**	**6.803**	-	**6.916**	**0.113**	**R**	**R**	**R**	**0.226**	145	1						8	2	2	Fault.	252	FAULTING, RIDE
9	**SBD**	**215**	**6.803**	-	**6.916**	**0.113**	**R**	**L**	**L**	**0.226**	145	1						9	4	2	Fault.	96	FAULTING
0	**SBD**	**215**	**6.916**	-	**6.932**	**0.016**	**B**	**R**		**0.000**	145	1									Fault.	N/A	N/A - Bridge
0	**SBD**	**215**	**6.916**	-	**6.932**	**0.016**	**B**	**L**		**0.000**	145	1									Fault.	138	N/A - Bridge
3	**SBD**	**215**	**6.932**	-	**7.024**	**0.092**	**R**	**R**	**R**	**0.184**	145	1						8	2	2	Fault.	268	FAULTING, RIDE
3	**SBD**	**215**	**6.932**	-	**7.024**	**0.092**	**R**	**L**	**L**	**0.184**	145	1						9	4	2	Fault.	237	FAULTING, RIDE
0	**SBD**	**215**	**7.024**	-	**7.047**	**0.023**	**B**	**R**		**0.000**	145	1									Fault.	N/A	N/A - Bridge
9	**SBD**	**215**	**7.024**	-	**7.047**	**0.023**	**R**	**L**	**L**	**0.046**	145	1						9	4	2	Fault.	207	FAULTING
9	**SBD**	**215**	**7.047**	-	**7.193**	**0.146**	**R**	**R**	**R**	**0.292**	145	1						8	2	2	Fault.	202	FAULTING
3	**SBD**	**215**	**7.047**	-	**7.193**	**0.146**	**R**	**L**	**L**	**0.292**	145	1						9	4	2	Fault.	223	FAULTING, RIDE
9	**SBD**	**215**	**7.193**	-	**7.693**	**0.500**	**R**	**R**	**R**	**1.000**	144	1						8	2	2	Fault.	183	FAULTING
3	**SBD**	**215**	**7.193**	-	**7.693**	**0.500**	**R**	**L**	**L**	**1.000**	144	1						24	6	3	Fault.	241	FAULTING, RIDE
9	**SBD**	**215**	**7.693**	-	**8.338**	**0.645**	**R**	**R**	**R**	**1.290**	144	1						10		1	Fault.	163	FAULTING
3	**SBD**	**215**	**7.693**	-	**8.338**	**0.645**	**R**	**L**	**L**	**1.290**	144	1						24	6	3	Fault.	274	FAULTING, RIDE
9	**SBD**	**215**	**8.338**	-	**8.693**	**0.355**	**R**	**R**	**R**	**0.710**	130	1						16	2	6	Fault.	176	FAULTING
1	**SBD**	**215**	**8.338**	-	**8.693**	**0.355**	**R**	**L**	**L**	**0.710**	130	1						46	19	4	Fault.	263	THIRD ST.CRKNG, RIDE
9	**SBD**	**215**	**8.693**	-	**9.193**	**0.500**	**R**	**R**	**R**	**1.000**	69	1						16	2	6	Fault.	169	FAULTING
1	**SBD**	**215**	**8.693**	-	**9.193**	**0.500**	**R**	**L**	**L**	**1.500**	69	1						51	10	7	Fault.	220	THIRD ST.CRKNG, RIDE
9	**SBD**	**215**	**9.193**	-	**9.693**	**0.500**	**R**	**R**	**R**	**1.000**	67	1						51	6	7	Fault.	197	FAULTING
7	**SBD**	**215**	**9.193**	-	**9.693**	**0.500**	**R**	**L**	**L**	**1.000**	67	1						51	10	7	Fault.	211	THIRD ST.CRKNG
9	**SBD**	**215**	**9.693**	-	**10.051**	**0.358**	**R**	**R**	**R**	**0.716**	63	1						51	6	7	Fault.	152	FAULTING
7	**SBD**	**215**	**9.693**	-	**10.051**	**0.358**	**R**	**L**	**L**	**0.716**	63	1						73	13	12	Fault.	193	THIRD ST.CRKNG
7	**SBD**	**215**	**10.051**	-	**10.084**	**0.033**	**F**	**R**	**R**	**0.033**	82	1		50								N/A	HIGH ABC

Note: HA Project locations highlighted in bold typeface.

District 8 County SBD Route 215

Prior-ity	County	Route	Begin PM	-	End PM	Length	Pave Type	Dir.	Trig. Dir.	Trig. Ln Mi	AADT (,000)	MSL	Allig. A	Allig. B	Patch-ing	Bleed-ing	Rut-ting	1st St. Crk.	3rd St. Crk.	Corn-er Crk.	Fault-ing	Int'l Rough. Index	Defect
													Maximum Observed Values										
7	**SBD**	**215**	**10.051**	-	**10.084**	**0.033**	**F**	**L**	**L**	**0.033**	82	1		100								152	HIGH ABC
7	**SBD**	**215**	**10.084**	-	**10.993**	**0.909**	**F**	**R**	**R**	**0.909**	82	1		50								50	HIGH ABC
7	**SBD**	**215**	**10.084**	-	**10.993**	**0.909**	**F**	**L**	**L**	**0.909**	82	1		100								77	HIGH ABC
7	**SBD**	**215**	**10.993**	-	**11.293**	**0.300**	**F**	**R**	**R**	**0.300**	82	1		50								92	HIGH ABC
7	**SBD**	**215**	**10.993**	-	**11.293**	**0.300**	**F**	**L**	**L**	**0.600**	82	1		100								70	HIGH ABC
7	**SBD**	**215**	**11.293**	-	**11.634**	**0.341**	**F**	**R**	**R**	**0.341**	82	1		100								132	HIGH ABC
7	**SBD**	**215**	**11.293**	-	**11.634**	**0.341**	**F**	**L**	**L**	**0.682**	82	1		100								85	HIGH ABC
0	**SBD**	**215**	**11.634**	-	**11.654**	**0.020**	**B**	**R**		**0.000**	59	1		100								N/A	N/A - Bridge
0	**SBD**	**215**	**11.634**	-	**11.654**	**0.020**	**B**	**L**		**0.000**	59	1		100								N/A	N/A - Bridge
7	**SBD**	**215**	**11.654**	-	**11.993**	**0.339**	**F**	**R**	**R**	**0.339**	59	1		100								91	HIGH ABC
7	**SBD**	**215**	**11.654**	-	**11.993**	**0.339**	**F**	**L**	**L**	**0.678**	59	1		100								63	HIGH ABC
7	**SBD**	**215**	**11.993**	-	**12.293**	**0.300**	**F**	**R**	**R**	**0.300**	59	1		100								80	HIGH ABC
7	**SBD**	**215**	**11.993**	-	**12.293**	**0.300**	**F**	**L**	**L**	**0.300**	59	1		50								67	HIGH ABC
32	SBD	215	12.293	-	12.816	0.523	F	R	R	1.046	59	1										80	FINE RAVEL
7	**SBD**	**215**	**12.293**	-	**12.816**	**0.523**	**F**	**L**	**L**	**0.523**	59	1		50								71	HIGH ABC
0	SBD	215	12.816	-	12.827	0.011	B	R		0.000	59	1										126	N/A - Bridge
0	**SBD**	**215**	**12.816**	-	**12.827**	**0.011**	**B**	**L**		**0.000**	59	1		50								90	N/A - Bridge
32	SBD	215	12.827	-	13.293	0.466	F	R	R	0.932	59	1										79	FINE RAVEL
7	**SBD**	**215**	**12.827**	-	**13.293**	**0.466**	**F**	**L**	**L**	**0.466**	59	1		50								63	HIGH ABC
32	SBD	215	13.293	-	13.474	0.181	F	R	R	0.362	59	1										108	FINE RAVEL
7	**SBD**	**215**	**13.293**	-	**13.474**	**0.181**	**F**	**L**	**L**	**0.181**	59	1		50								100	HIGH ABC
0	SBD	215	13.474	-	13.500	0.026	B	R		0.000	59	1										N/A	N/A - Bridge
0	**SBD**	**215**	**13.474**	-	**13.500**	**0.026**	**B**	**L**		**0.000**	59	1		50								N/A	N/A - Bridge
32	SBD	215	13.500	-	13.793	0.293	F	R	R	0.586	59	1										87	FINE RAVEL
7	**SBD**	**215**	**13.500**	-	**13.793**	**0.293**	**F**	**L**	**L**	**0.293**	59	1		50								59	HIGH ABC
7	**SBD**	**215**	**13.793**	-	**14.091**	**0.298**	**F**	**R**	**R**	**0.298**	59	1		100								98	HIGH ABC
7	**SBD**	**215**	**13.793**	-	**14.091**	**0.298**	**F**	**L**	**L**	**0.298**	59	1		50								84	HIGH ABC
0	**SBD**	**215**	**14.091**	-	**14.118**	**0.027**	**B**	**R**		**0.000**	59	1		100								N/A	N/A - Bridge
0	**SBD**	**215**	**14.091**	-	**14.118**	**0.027**	**B**	**L**		**0.000**	59	1		50								N/A	N/A - Bridge
7	**SBD**	**215**	**14.118**	-	**14.593**	**0.475**	**F**	**R**	**R**	**0.475**	59	1		100								82	HIGH ABC
7	**SBD**	**215**	**14.118**	-	**14.593**	**0.475**	**F**	**L**	**L**	**0.475**	59	1		50								67	HIGH ABC

Note: HA Project locations highlighted in bold typeface.

Caltrans Maintenance Program
2007 Pavement Summary
Caltrans Drive Order
Rte 215

District 8 County SBD Route 215

Priority	County	Route	Begin PM	-	End PM	Length	Pave Type	Dir.	Trig. Dir.	Trig. Ln Mi	AADT (,000)	MSL	Allig. A	Allig. B	Patching	Bleeding	Rutting	1st St. Crk.	3rd St. Crk.	Corner Crk.	Faulting	Int'l Rough. Index	Defect
													Maximum Observed Values										
7	**SBD**	**215**	**14.593**	-	**14.793**	**0.200**	**F**	**R**	**R**	**0.200**	59	1		100								98	HIGH ABC
32	SBD	215	14.593	-	14.793	0.200	F	L	L	0.400	59	1										96	FINE RAVEL
7	**SBD**	**215**	**14.793**	-	**15.793**	**1.000**	**F**	**R**	**R**	**1.000**	59	1		100								83	HIGH ABC
32	SBD	215	14.793	-	15.793	1.000	F	L	L	2.000	59	1										86	FINE RAVEL
31	SBD	215	15.793	-	16.093	0.300	F	R	R	0.600	59	1										77	COARSE RAVEL
32	SBD	215	15.793	-	16.093	0.300	F	L	L	0.600	59	1										71	FINE RAVEL
31	SBD	215	16.093	-	17.293	1.200	F	R	R	2.400	59	1										84	COARSE RAVEL
31	SBD	215	16.093	-	17.293	1.200	F	L	L	2.400	59	1										72	COARSE RAVEL
9	**SBD**	**215**	**17.293**	-	**17.595**	**0.302**	**F**	**R**	**R**	**0.302**	59	1		25								118	MOD ABC
31	SBD	215	17.293	-	17.595	0.302	F	L	L	0.604	59	1										95	COARSE RAVEL
9	**SBD**	**215**	**17.595**	-	**17.598**	**0.003**	**F**	**R**	**R**	**0.003**	49	1		25								N/A	MOD ABC
31	SBD	215	17.595	-	17.598	0.003	F	L	L	0.006	49	1										145	COARSE RAVEL
33	SBD	215	17.598	-	17.753	0.155	R	R	R	0.310	49	1						24				150	UNSEALED CRACKS OR
9	**SBD**	**215**	**17.598**	-	**17.753**	**0.155**	**R**	**L**	**L**	**0.155**	49	1						22		2	Fault.	123	FAULTING

Total Triggered Lane Miles 86.837