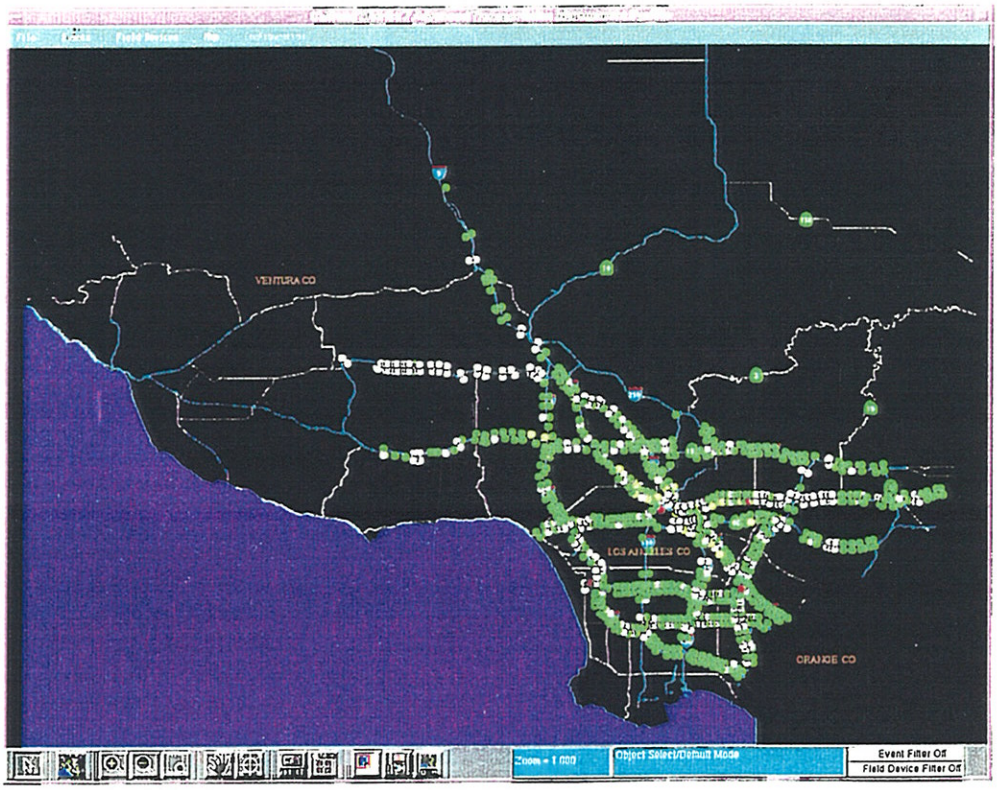
PRELIMINARY SWARM STUDY REPORT

ON W/B FOOTHILL FREEWAY (W/B LA-210)

From Vernon Avenue to Lake Avenue
(January 30, 2001 - May 2, 2001)



CALTRANS DISTRICT 7
DIVISION OF OPERATIONS
OFFICE OF FREEWAY OPERATIONS
RAMP METERING BRANCH

November 2001

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FROM VERNON AVENUE TO LAKE AVENUE

(PM R38.87-PM R26.14)

(January 30, 2001 - May 2, 2001)

This Preliminary SWARM Study Report has been prepared under the direction of the following registered civil engineer. The registered civil engineer attests to the technical information contained therein and has judged the qualifications of any technical specialists providing engineering data upon which recommendations, conclusions, and decisions are based.

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1. INTRODUCTION

Ramp metering is a freeway management technique. By regulating ramp access, and controlling vehicle output onto the mainline, on-ramp metering aims to eliminate, or at least reduce operational problems resulting from freeway demand exceeding capacity. A properly implemented system improves freeway operation while causing excessive traffic to divert to the surface street network.

Currently, in Los Angeles area, the ramp meter operations are in one of two modes: fixed-time operation and local mainline responsive operation. See Section 3, Existing Traffic Control and Freeway Conditions on the Testing Corridor.

System Wide Adaptive Ramp Metering (SWARM) is a ramp metering tool developed by National Engineering Technology (NET) and previously tested by District 12 (Orange County). However, the current version of SWARM is a modified version of the one tested in District 12.

Purpose of SWARM Testing

SWARM is a new ramp meter operating system that will look at the entire freeway system and predicts when and where congestion will occur. It then adjusts upstream meter rates to avoid freeway congestion. SWARM needs to be tested to confirm that it works. If it does work, SWARM will be a great improvement over the existing ramp meter operations.

Test Location

The westbound Route 210 Freeway, from Vernon Avenue (PM R38.87) to Lake Avenue (PM R26.14), was selected as the site for the SWARM study. See Fig. 1.1 (Test Location), Fig. 1.2 (Testing Corridor), and Fig. 1.3 (Testing Corridor Geometrics).

This location was chosen because:

- There was freeway congestion during the AM commute period.
- Most of the freeway loop system was in good working order.
- Most of the on-ramps had good storage to store vehicles if meter rates were decreased.

The study covered the AM peak period from 5:00 to 10:00 AM. It started on Tuesday, January 30, 2001, and ended on Wednesday, May 2, 2001.

2. SWARM BACKGROUND

There are various types of ramp metering methodologies being used to control on-ramp vehicle output onto the mainline. SWARM testing in District 7 is intended to explore an alternative upgrade to the existing system.

SWARM – System Wide Adaptive Ramp Metering

SWARM is a new ramp metering operational system that develops metering rates based on real time traffic conditions. It looks at the complete freeway system and forecasts traffic conditions at bottlenecks n minutes into the future. SWARM will change metering rates upstream of bottlenecks to avoid predicted future traffic congestion.

In order for SWARM to work properly, most or preferably all ramp control and traffic surveillance devices must be operational and connected to a central computer. In District 7, the Advanced Transportation Management System (ATMS) is connected to field controllers at most freeway on-ramps. Data from the mainline and on/off ramps are fed into the central computer.

SWARM seeks to optimize traffic flow on the mainline and is responsive to actual conditions throughout the system and to non-recurring congestion.

Types of SWARM

There are three types of SWARM: SWARM 1 operates system wide to predict congestion, SWARM 2a and SWARM 2b operates locally and are based on headway and storage respectively.

SWARM 1

SWARM 1 is system wide adaptive based on a freeway network divided into SWARM sections. Each section begins and ends at a mainline vehicle detection station system (VDS) identified as a bottleneck. The SWARM 1 algorithm operates at bottleneck locations and controls the flow of all upstream locations in the section.

Since density is directly related to congestion, it is monitored at each bottleneck location. The algorithm requires a nominal saturation density threshold value for each mainline VDS in the network.

The algorithm attempts to estimate the density n minutes in the future. If the estimated density exceeds the bottleneck saturation density then ramp meter rates will be computed in an attempt to head off the predicted onset of congestion.

Starting at the bottleneck and working upstream, the computer calculates new metering rates based on current ramp volumes and the required volume reductions. Actual metering rates are subject to maximum and minimum rates. Since reductions may be positive or negative, excess or surplus values are propagated upstream.

SWARM 2a

SWARM 2a is local responsive based on headway (time between consecutive vehicles). It uses density function to compute local metering rates and attempts to maintain headway such that maximum flow can be obtained.

SWARM 2b

SWARM 2b is local responsive based on storage. It computes the number of vehicles stored between two VDS stations and compares it to a maximum storage value. Metering rates are computed to maintain level of service (LOS) D as long as possible.

This SWARM study will cover SWARM 1, 2b and combination of 1/2b.

Advantages of SWARM:

- It maximizes traffic flow on the mainline.
- It is responsive to actual traffic conditions throughout the system.
- It is responsive to non-recurring congestion.

Disadvantages of SWARM:

- Ramp control and traffic surveillance devices must be connected to a computerized communications center.
- SWARM requires accurate data from mainline and on and off ramp detectors in order to work effectively.
- It is more complicated than traffic responsive and fixed-time metering.

3. EXISTING TRAFFIC CONTROL AND FREEWAY CONDITIONS ON THE TESTING CORRIDOR

Ramp metering is a very important component of corridor traffic control and has been used in District 7 since 1967 on the Hollywood Freeway. The primary goal of ramp metering is to reduce accidents and traffic congestion.

3.1 Existing Ramp Metering Operations

There are currently two most common ramp meter operations in District 7: fixed-time operation and local mainline responsive operation. Both operations use almost the same ramp metering equipment: inductive detector loops on mainline, queue, demand, passage and count loops on ramps, signal heads, meter-on signs, and controllers. Although both modes of operations are presented here, only local mainline responsive operation is implemented on Freeway 210 testing corridor.

Fixed-Time Operation

Fixed-time ramp metering is the simplest form of metering which breaks up platoons of entering vehicles onto the freeway. Although detectors are installed on the ramp to actuate and terminate the metering cycle, the metering rate is fixed, based on historically averaged traffic conditions. A time of day (TOD) table in the controller sets the metering schedule and rates. Fixed-time metering reduces accidents due to merging conflicts and reduces congestion and delay on the freeway compared to no control. The primary criticism of fixed- time operation is that it is non-responsive to actual conditions, including non-recurring congestion.

Advantages of Fixed-Time Operation:

- It is a simple and relatively easy form of control.
- It reduces congestion and delay on mainline compared to no control.

Disadvantages of Fixed-Time Operation:

- It is not responsive to actual site conditions; metering is independent of field conditions.
- It is not responsive to non-recurring congestion.

Local Mainline Responsive Operation

Local mainline responsive ramp metering is based on traffic conditions just upstream of the on-ramp. Mainline traffic detectors are usually located adjacent to the on-ramp meter head.

As in fixed-time operation, a TOD table controls the metering operation most of the time. However, if the controller detects that mainline freeway volumes have dropped below the set critical volume and critical occupancy, the controller can override the TOD tables and allow more cars on the freeway up to the point of turning the meter to rest in green. The actual numbers would be calculated by the controller and would be dependent on how far the freeway volumes are below the set critical volume. The controller can never allow less vehicles on the freeway than the rate set in the TOD table. Queue detectors are placed at the entrance of the ramp near city streets. If the queue detectors are activated, the controller will allow more vehicles onto the freeway when ramp storage approaches capacity in order to prevent back up onto city streets. The primary criticism of local mainline responsive operation is that it reacts only to traffic adjacent to the ramp and does not consider what is happening on the rest of the freeway system.

Advantages of Local Mainline Responsive Operation:

- It responds to actual mainline traffic conditions adjacent to freeway.
- It responds to local non-recurring congestion.

Disadvantages of Local Mainline Responsive Operation:

- It requires detectors on the mainline.
- It is more complex than fixed-time metering.
- It is responsive to local conditions.

3.2 Existing Traffic Conditions

Along W/B LA-210 corridor and within the SWARM testing limits, from Vernon Avenue to Lake Avenue, there are at least 4 bottlenecks, which vary from location to location depending on daily traffic patterns. The most critical bottlenecks are at the connector of N/B LA-605 to W/B LA-210, between Myrtle Avenue and Santa Anita 2, between Baldwin 1 and Rosemead 2, and between Hill Avenue and Fair Oaks Avenue (downstream of Lake).

The speed plots of the Westbound Route 210 Mainline (ML) taken from October 24, 2000 to December 12, 2000 indicate that the ML speed is reduced from above 35 mph to less than 20 mph starting at 7:00 AM from Mount Olive Drive to Santa Anita Avenue. The lower speed lasts till 9:30 AM. Also congestion on the freeway from Vernon Avenue to Michillinda Avenue occurs from 7:00 AM to 9:30 AM.

All 20 local-mainline responsive ramp meters on this testing freeway corridor are equipped with Q loops installed at ramp entrance. The ramps operate according to preset metering rates, set in the TOD tables programmed in the 170 controllers. In the case of traffic backing up to city streets, Q loops will override the TOD from its set rate to the maximum rate of 15

vehicles per min per lane (vpmpl) in order to help relieve ramp congestion and prevent further back up onto city streets. Please note that the Q loop detectors do not work in conjunction with SWARM operation during the testing period.

4. SWARM TESTING

Although the actual testing began on January 30, 2001 and ended on May 2, 2001, test preparation began 3 months in advance. Aside from technical training of the ramp metering staff, the preparation focused mainly on checking ramp meter equipments and collecting pre-test field data.

4.1 Preparation

Field preparation consisted of properly setting parameters on the corridor where the test would be conducted, so that accurate data could be collected from individual ramp controller devices: loops, sensor detectors, communication modems. A few ramps were identified to have ramp metering personnel posted for manual counts, to verify the data transmitted to the Transportation Management Center (TMC) by communication lines.

Some locations were detected as not working properly due to open loops and/or communication line problems, so data exchange between these locations and TMC was either interrupted or incomplete.

Normal TOD tables were replaced by temporary TOD tables. With temporary TOD tables, the ramp controllers were scheduled to start metering one hour before and end one hour after regular TOD time. This served as a way to increase the testing window for SWARM and help field and TMC personnel identify and respond to unforeseen failures.

The controller hardware was upgraded from the old SATMS 1 to SATMS C during the 2nd phase of testing.

All communication units were checked by TMC Support with the help of CAMCO, a communication contractor, before and during the test, simultaneously with Caltrans Ramp Metering personnel.

Caltrans Electrical Maintenance (San Gabriel and Pomona) was requested to check and monitor all ramp meter loops before and during the test. Few loops on mainline and on-ramps were found defective and noted to be discarded for data collection (Rosemead 2 and Irwindale 1). Several loop sensors and field controllers were also replaced by Maintenance due to hardware and communication failures.

4.2 Testing Progression

The SWARM study can be categorized into three main testing phases. All three phases have similar testing parameters and data collection. However, each phase is distinguished by its specific noted issues and enhancements.

1st phase of testing (January 30 through March 8, 2001)

During this phase, official testing was conducted and data recorded for 2 modes of SWARM: SWARM 1 and SWARM 2b. SWARM 1 was tested for five days and SWARM 2b for one day. (See Table 4.2a, SWARM Test Schedule). The testing was conducted during the morning congestion period (5:00 to 10:00 AM). However ATMS collected data was limited to the hours of 6:00 to 9:00 AM.

This initial testing represents the first time SWARM has been officially implemented and closely monitored on a large designated section of freeway. Field monitoring related to the effect of SWARM on the overall traffic flow as well as office observations and ATMS generated data and reports were being recorded. Thus, the following issues were noted:

1. SWARM is highly dependable on communication status between field and TMC: unforeseen brief failures in communication seem to severely impact the operation of the system, as field controllers keep changing modes between SWARM and TOD, therefore, confusing the drivers.

2. System's operation is not limited to TOD hours of operation, even though selected parameters specify these limits.

3. SWARM reaction to traffic congestion seems to be unjustifiable and inconsistent with freeway traffic conditions: metering rates at upstream on-ramps do not reflect traffic conditions at downstream VDSs. We observed on several occasions a Green Ball rate on an upstream on-ramp while downstream VDS speed is less than 10 mph or an upstream on-ramp metering at minimum rate while downstream mainline speed is above 60 mph. Both of these incidents lasted throughout most of the morning peak congestion period.

4. Queue Override does not affect SWARM set rate at the 170 controller in the field; metering history report shows Queue Override mode, however, metering rate never changes to maximum rate. Therefore, buildup traffic on the ramp caused major backup onto city streets.

5. Rate selection drastically varies from fast to slow rate or vice versa with no smoothing factor, which lead to confusion among motorists.

6. SWARM turns meter signal head Off during TOD hours of operation if freeway is in free flow condition; it will be less confusing to motorists and more helpful to engineers and maintenance crew if meter signal head rested in Green Ball.

These issues were reported to the consultant (NET) shortly after the initial phase of official testing has ended. NET began working to correct some of the problems while unofficial testing of SWARM resumed, in order to ensure smoother field implementation and accurate office data collection during the second phase of official testing.

On Thursday, March 8, 2001, NET completed the fixes on items 2, 5 and 6. Thus, the second phase of testing started on March 13, 2001.

2nd phase of testing (March 13 through March 20, 2001)

During this phase, official testing was conducted and data recorded for 2 modes of SWARM: SWARM 1 and SWARM 2b. SWARM 1 was tested for three days while SWARM 2b for one day. (See Table 4.2a, SWARM Test Schedule). Field observations and office data were noted and recorded similarly to the first phase of testing. However, this 2nd phase carried on the enhancements made by NET to SWARM as a result of phase 1 testing. These enhancements are:

1. SWARM's implementation is limited to TOD period, when selected parameters specify these limits.

2. Rate selection smoothly varies from fast to slow rate or vice versa with no drastic variation in cycle length time (See Table 4.2b, Rate and Cycle Length Variations).

3. When traffic conditions change to free flow, SWARM reverts to Green Ball mode instead of turning the signal head off, during TOD hours of operation.

Due to extensive backup onto city streets as a result of the SWARM study, which generated numerous complaints by motorists, this second phase of testing added manual Queue counts in the field at the most affected on-ramp locations. The purpose of this count was to capture the effect and time frame of this backup onto city streets. The manual Q count was performed with the aid of other Freeway Operations Branches, hence the need for additional personnel. The manual count was performed on March 13, 14, 15, 20 and on April 10, 2001.

As testing progressed, a solution was still needed for the remaining issues recorded in Phase 1. Thus, in order to reduce the impact of sudden brief communication losses on SWARM's operation and ensure that Queue Override mode engages when ramp backup occurs during SWARM implementation, a proposal was made to the existing SATMS chip within the 170

controllers in the field. This proposal is currently being studied and evaluated by TMC Support group.

No additional issues were noted during this phase. However, some design changes related to SWARM were needed in order to make it more responsive to real-time traffic congestion (Issue # 3, Phase 1). Thus, on April 4, 2001, NET made some revisions to SWARM algorithm. These design changes were aimed to enhance SWARM performance and make it more responsive to traffic conditions.

3rd phase of testing (April 10 through May 2, 2001)

During this phase, official testing was conducted and data recorded for 3 modes of SWARM: SWARM 1, SWARM 2b and SWARM 1/2b combination. Field observations and office data were noted and recorded similarly to the previous two phases. However, this final testing phase carried on the latest design revisions made by NET to SWARM algorithm. These changes are:

1. SWARM prediction for future traffic congestion based on past collected data is changed from:
   Past 15 minutes collected data used to predict future 15 minutes traffic conditions.
   to:
   Past 15 minutes collected data used to predict future 8 minutes traffic conditions.

2. SWARM 2b formula was modified to disregard off-ramp traffic and based the calculation solely on mainline occupancy and on-ramp volume, when computing metering rates.

SWARM testing following these changes did not reveal any apparent improvements; the results for most locations relating to SWARM suggested metering rates were still inconsistent with freeway traffic conditions. In addition, two new issues were observed:

1. Meter head is disabled in the field (due to a tripped Watch-Dog light switch), however, the status screen in the ATMS shows that the meter is operating normally on SWARM mode. On the other hand, if a Watch-Dog light switch tripped in the field during TOD mode, the ATMS status screen would have indicated a disabled mode.

2. Major difference in suggested rates, for the same location, between SWARM 1 and SWARM 2b (SWARM 1: Minimum rate, SWARM 2b: Green Ball). This major contradiction in SWARM suggested rates was not apparent before NET latest changes.

Due to the need for additional enhancements to SWARM, and in waiting for the update on the SATMS chip, the study was officially terminated on May 2, 2001.

5. EVALUATION AND DATA ANALYSIS

All collected data during the sixteen days of SWARM testing was studied. However, for consistency purpose, only data taken during the last phase of testing, when NET had addressed most issues and completed design revisions to SWARM's operation, was analyzed and evaluated. Therefore, data collected during 2 days of official testing for each SWARM mode in the period from 4/10/01 to 5/02/01 was compared to TOD mode data. ATMS reports and plots were utilized to comprehend different aspects of traffic congestion including freeway mainline and on-ramps, where SWARM was determining meter rates according to real time mainline traffic conditions.

5.1 Mainline Volume

The recorded volumes varied largely from station to station (See Table 5.1a, Mainline Volume from 6:00 AM to 9:00 AM). In some instances, the volume at one station was twice the volume at another, as was the case of Lake and Mount Olive. This drastic change in mainline volumes between an upstream and a downstream count station occurred in all three SWARM testing modes.

According to Fig. 5.1 and Table 5.1b (Average Mainline Volumes from 6:00 AM to 9:00 AM), the TOD mode average volume varied from 29,799 at Lake to 14,723 at Mount Olive. This reduction in mainline traffic volume at Mount Olive was mainly due to the diversion of a large portion of the W/B Route 210 traffic to S/B Route 605 at the connector upstream of Mount Olive.

It was noted that SWARM 1, when compared with TOD, reduced traffic volumes by up to 10% on the mainline at Vernon, Irwindale 1, Mount Olive, Buena Vista, Myrtle, Huntington, Santa Anita 2, Baldwin 1, Michillinda, Rosemead 1, Sierra Madre Villa, San Gabriel, Altadena and Lake. Volumes were increased up to 10% at Irwindale 2, Mountain, and Hill.

During SWARM 2b testing, mainline traffic volumes, when compared with TOD, increased most of the times. At Irwindale 2, Sierra Madre Villa, Altadena, traffic volumes increased by 3%, Huntington and Hill, by 12%, Buena Vista and Mountain, by 18%.

In the case of SWARM 1/2b, mainline average volumes mostly increased up to 16%, except for Rosemead 1 and Lake, where the volumes slightly decreased between 1 and 6%.

5.2 Mainline Speed

Mainline speeds, between the hours of 6:00 and 9:00 AM, recorded during all 3 modes of SWARM testing were generally higher than the speeds recorded during TOD mode at the same stations (See Table 5.2a, Mainline Speed from 6:00 AM to 9:00 AM). However, in SWARM 1, the mainline average speed from Vernon to Mount Olive and at Michillinda was reduced 5% to 15% compared to TOD mode (See Fig. 5.2a and Table 5.2b, Average Mainline Speed from 6:00 AM to 9:00 AM). But at various other stations, mainline speeds were 3% to 46% higher than TOD mode.

In SWARM 2b, mainline average speeds were largely improved at all locations over TOD mode. For instance, mainline speed was increased by 54% at Mountain, 64% at Buena Vista, and 97% at Mount Olive. (See Fig. 5.2a and Table 5.2b, Average Mainline Speed from 6:00 AM to 9:00 AM).

Similarly, during SWARM 1/2b testing, mainline speeds were higher than TOD mode. The numbers showed an improvement of 5% to 49%. These results place SWARM 1/2b in the middle between SWARM 1 and SWARM 2b modes. (See Fig. 5.2a and Table 5.2b, Average Mainline Speed from 6:00 AM to 9:00 AM).

Analyzing mainline speed for a 15 minutes interval during morning peak hours, 7:30 AM to 7:45 AM (Table 5.2c, Mainline Speed from 7:30 AM to 7:45 AM, and Fig. 5.2b and Table 5.2d, Average Mainline Speed from 7:30 AM to 7:45 AM) revealed that in TOD mode, mainline speed is normally below 35 mph, except at Rosemead 1 and Lake. In SWARM 1, the results were mixed. The speeds were improved at most locations, however a slight reduction was noticed at the section between Vernon and Mount Olive and at San Gabriel. During SWARM 2b, a net improvement of mainline speed was observed at all locations. The speed increase ranged from 21% at Lake to 247% at Mount Olive. In the case of SWARM 1/2b, the mainline speed was either similar to TOD mode (Myrtle and Baldwin 2), or increased up to 84% at other locations.

5.3 Mainline Occupancy

Mainline occupancy is indirectly proportional to speed (See Table 5.3a, Mainline Occupancy from 6:00 AM to 9:00 AM). Fig. 5.3 and Table 5.3b, Average Mainline Occupancy from 6:00 AM to 9:00 AM, show a reduction, over TOD mode, in mainline occupancy during SWARM testing. However, few isolated increases in occupancy were noticed at some locations. These increases occurred at Irwindale 2, Irwindale 1, Mount Olive, Baldwin1 and Michillinda during SWARM 1, at Irwindale 1, during SWARM 2b, and at Irwindale 2, during SWARM 1/2b.

5.4 Freeway Delay

Due to hard failed loop sensors and occasional loss of communication to/from TMC for one or more testing days, Freeway Delay data related to 5 locations (Buena Vista, Baldwin 2, Michillinda, Rosemead 2, and Sierra Madre Villa) were not available. The missing data affected all 3 SWARM tested modes. Therefore, the actual freeway delay, which should include the delays related to the 5 above stations, may be in reality much higher. However, as the figures used for comparison are not equally available for all modes and all testing days, it was decided to discard data related to the 5 above stations.

Table 5.4, Freeway Delay from Vernon to Lake, shows that SWARM 2b mode generates the smallest freeway delay. Numerically, the delay caused by SWARM 2b is estimated to be 21% of the TOD mode delay. During SWARM 1 testing, the delay was 92%, while in SWARM 1/2b, the delay registered at 48% of TOD mode delay.

5.5 Mode of Operation

Table 5.5, Mode of Operation from 6:00 AM to 9:00 AM, shows that only few controllers worked full time (100%) from 6:00 AM to 9:00 AM under the assigned mode.

In case of communication failure, field controllers are programmed to switch back to locally controlled TOD mode if the failure last for more than one cycle or approximately 30 seconds.

If a field controller is operating on TOD mode and a communication failure is experienced, no data will be reported to the office. However, the field controller will remain operating the same way as before the failure. Meantime the mode of operation report will show a less than 100% operation under TOD mode due to the communication loss (See Pre-SWARM data in Table 5.5).
If a field controller is operating on a SWARM mode and a communication failure occurs, the controller will default back to locally controlled TOD. Thus, the metering rate will change and the Mode of Operation Report will show a reduced percentage of operation under SWARM mode (See SWARM 1, SWARM 2b, and SWARM 1/2b data in Table 5.5).

5.6 Travel Time

Travel time is the reconstituted travel time from the 15-Minute Station Data. The distance between 2 consecutive stations is the difference of their Post Miles. The speed used for travel time between 2 consecutive stations is the average of the speeds at these stations. In case of unavailable speed data at one station, the missing speed will be replaced with the average of the speeds at its 2 closest stations.

Travel times for the three tested modes (SWARM 1, 2b and 1/2b) and TOD (pre-SWARM) mode are reconstituted at the same starting time: 7:30 AM, when the mainline showed a recurrent congestion for every mode. (See calculation in Tables A5.6.1 to A5.6.15 in Appendix). All travel times are calculated from Vernon to Lake. When the cumulative travel times exceeds 15 minutes, the mainline speed used for calculation of travel time in the next segment is provided by the following 15-minute interval.

The reconstituted travel times for all modes are shown in Table 5.6, Travel Time from Vernon to Lake. The observed travel times are as follows:

- Travel times for TOD mode varies largely from 28.65 minutes to 41.10 minutes, with an average of 36.41 minutes.
- Travel times for SWARM 1 mode are similar to TOD average (34.43 and 35.85 minutes), with an average of 35.14 minutes (97% of TOD mode travel time).
- Travel times for SWARM 1/2b mode are less than TOD average (25.91 and 26.39 minutes), with an average of 26.15 minutes (72% of TOD mode travel time).
- Travel times of SWARM 2b mode present the best improvement over TOD (19.15 and 24.55 minutes), with an average of 21.85 minutes (60% of TOD mode travel time).

5.7 On-Ramp Volumes

Of the 20 on-ramps studied, 19 have 2 lanes: 6 ramps have both lanes metered, and 13 ramps have one lane metered, the other lane is an HOV by-pass. Sierra Madre Villa on-ramp is the only one-lane ramp in the testing corridor. Similarly to mainline volumes, the on-ramp volumes varied largely from one ramp to another. Available data in Table 5.7a, On-Ramp Volumes (including volumes from HOV by-pass if any), from 6:00 AM to 9:00 AM, show that the traffic volumes on the on-ramps at Mount Olive and Buena Vista were below 900 vehicles from 6:00 AM to 9:00 AM, while at Rosemead 2 and Lake these volumes were more than double this number.

Fig. 5.7 and Table 5.7b, Average On-Ramp Volumes from 6:00 AM to 9:00 AM, show that on-ramp volumes in SWARM 1 mode were similar to TOD correspondent values. Discarding 5 missing on-ramp data, 5 on-ramp volumes registered below TOD mode values, while 10 on-ramp volumes were above.

In SWARM 2b mode, all on-ramp volumes were similar to TOD correspondent values. Discarding 4 missing on-ramp data, 5 on-ramp volumes registered above TOD mode values, while 11 on-ramp volumes were below their correspondent TOD mode values.

SWARM 1/2b mode had mixed results. Similarly to SWARM 1: 7 on-ramp volumes were higher than their correspondent TOD mode values, 7 other on-ramp volumes were lower than their TOD mode values.

The large variations of on-ramp volumes cannot be solely attributed to implemented SWARM modes. Of the 20 on-ramps on the tested corridor, there are 13 on-ramps with HOV by-pass. And the access to the freeway from these HOV by-passes is unaffected by any SWARM mode.

5.8 On-Ramp Queue Counts

Due to the unavailability of field personnel, on-ramp queue counts for SWARM 1/2b could not be conducted. Only data for SWARM 1 and SWARM 2b modes was available. During the pre-test data collection, TOD mode queue counts were conducted for all 20 ramps. However, due to shortage in field personnel, only on-ramps with critical demand were chosen for queue counts, during SWARM 1 and SWARM 2b modes.

Table 5.8, On-Ramp Queue Counts, shows that:

- In SWARM 1 mode, except for N/B Baldwin and Lake, all observed on-ramps experienced addition in queue length, ranging from 20 to 150%, when compared to TOD mode.

- Similarly in SWARM 2b mode, except for S/B Santa Anita, Michillinda and Lake, the rest of the on-ramps showed their queue lengths largely increasing between 11% and 243%.

6. REMAINING ISSUES, CONCLUSION AND RECOMMENDATIONS

This study represents the first time SWARM was tested on a freeway corridor in District 7. The existing ramp metering equipments were not always adequate to accommodate all SWARM features. Thus, during this Preliminary Study, SWARM presented noted improvements to mainline traffic condition, when compared to TOD. However, few issues and constraints remain unresolved.

6.1 Remaining Issues

As indicated in Section 4, some issues remained unsolved during the last phase of testing. In addition, few other observations were noted throughout the testing period.

Queue Override

SWARM is not compatible with the existing controller software. Unlike in TOD mode, Queue Override in SWARM mode does not change any metering rate. Although Metering History Report shows a SWARM Queue Override mode, metering rate generated by SWARM never increases to maximum rate as in TOD mode. However, it is anticipated that, once the controller software is made compatible with SWARM, SWARM Queue Override will increase metering rate up to a maximum of 15 vehicles per minute per lane when ramp backup reaches the Queue loop.

Wrong ATMS Status

Although a meter head was found disabled in the field (mainly due to a tripped Watch-Dog light switch), the status screen in the ATMS shows that the meter is operating normally on SWARM mode. This false status report does not occur during TOD mode where the ATMS screen would indicate a disabled mode.

Smoothing Trend Inconsistency

The rate inconsistency was noticed in SWARM 1 mode.

- On 4/24/01, at 7:44:30 AM at San Gabriel on-ramp, the rate decreased suddenly from 10 vpm to 7 vpm, which was not in compliance with the smoothing trend set up by NET (Table 4.2b, Rate and Cycle Length Variations). The allowed minimum rate should be 8vpm (See Table 6.1a).

- On 4/25/01, at 8:58:30 AM, the on-ramp meter at San Gabriel jumped from 7 vpm to 12 vpm, which was not allowed by NET smoothing trend. The allowed maximum rate should be 9 vpm, according to Table 4.2b (See Table 6.1b).

Difference in Suggested Rates

It is noticed that for the same location, there is a major difference in suggested rates between SWARM 1 and SWARM 2b modes. While SWARM 1 indicates a minimum rate, SWARM

2b sets the rate to Green Ball. This contradiction was not apparent before NET made the changes for the last testing phase.

There is also contradiction between mainline status and the upstream on-ramp metering rate:

- On 4/10/01, at 6:20:30 AM, in SWARM 2b mode, the mainline speed at Irwindale 2 was 16.3 mph, the upstream on-ramp (Vernon) indicated the maximum rate of 15 vpm into the W/B direction (See Tables 6.1c and 6.1d).

- On 4/11/01, at 9:15 AM, again in SWARM 2b mode, the mainline speeds were 14.5 mph and 14 mph at Santa Anita 2 and Huntington respectively, and Huntington on-ramp shows Green Ball (See Tables 6.1e and 6.1f).

Bottleneck Assignment

Although the freeway corridor geometrics remain unchanged during the whole testing period, bottleneck assignments for the test changed many times.

- On 01/30/01, in the first test, the corridor bottlenecks were: Vernon, Buena Vista, Huntington, Rosemead 2, and Lake.

- On 2/07/01, Baldwin 1 was added to the above 5 bottlenecks.

- On 3/14/01, the new set of bottlenecks was: Vernon, Buena Vista, Huntington, Baldwin 1, Rosemead 2, and Marengo (mainline station immediately downstream of Lake).

- On 4/10/01, another set of bottlenecks was adopted: Mount Olive, Santa Anita 2, Rosemead 2, and Hill.

Undoubtedly, all these above bottleneck changes might have caused considerable impacts on the study, especially in SWARM 1 and SWARM 1/2b modes.

Lane Capacity

On the first day of testing (1/30/01), lane capacity was determined to be 2,000 vphpl. The next day, the capacity was reduced to 1,800 vphpl. This value was used throughout the test duration. How will SWARM tests be responsive with another lane capacity?

Way to Change to SWARM Modes

Changing from TOD mode to SWARM modes or from a SWARM mode to another was done manually for each on-ramp during the test duration. The manual change in the TMC is not only time-consuming (an on-ramp needs at least 2 minutes to change from one mode to another), but also subject to errors (an on-ramp can be skipped mistakenly and remains in an undesirable mode during the test). It would be very beneficial if the change could be done systematically for a freeway or a segment of freeways.

6.2 Conclusion

As stated before, this Preliminary Report cannot assess all SWARM features, because our existing ramp metering system is not fully compatible with SWARM. However, a few findings have been drawn from this preliminary SWARM testing:

Mixed Impacts on Mainline Traffic Volumes

The traffic flow observed during SWARM testing varied from one mode to another:

When compared to TOD, SWARM 1 mode unfortunately decreased mainline traffic volume by 2 %.

However, two other SWARM modes improved mainline traffic volumes over TOD significantly:

- SWARM 2b mode increased mainline traffic volume by 8 %,
- SWARM 1/2b mode increased mainline traffic volume by 6 %.

Improvement of Mainline Speed

As already shown in Section 5, Evaluation and Data Analysis, all three SWARM modes generated a net improvement to mainline speed.

Observing mainline speed from 6:00 AM to 9:00 AM:

- SWARM 1 mode generated a mainline speed 6 % higher than TOD mode value,
- SWARM 2b mode increased TOD mode speed value by 39 %,
- SWARM 1/2b mode increased that same value by 21 %.

However, the impacts of different SWARM modes were more pronounced during morning congestion time (7:30 AM to 7:45 AM):

- SWARM 1 mode mainline speed was slightly higher than TOD mode value (by 1 %),
- SWARM 2b mode generated a mainline speed 68 % higher than TOD mode mainline speed,
- SWARM 1/2b mode increased TOD mode value by 32 %.

Reduction of Travel Time

All three SWARM modes reduced travel time on the testing corridor. As shown in Section 5, Evaluation and Data Analysis, the travel time was especially studied during the recurrent congestion, after 7:30 AM:

- SWARM 1 mode reduced TOD mode travel time by 3%,
- SWARM 2b mode reduced it by 40%,
- SWARM 1/2b mode reduced it by 28%.

Reduction of Freeway Delay

All three SWARM modes reduced freeway delay:

- SWARM 1 mode reduced TOD mode freeway delay by 8%,
- SWARM 2b mode reduced it by 79%,
- SWARM 1/2b mode reduced it by 52%.

Mixed Impacts on On-Ramps

While SWARM 1 mode increased TOD mode on-ramp volume by 9%, two other SWARM modes were more restrictive when it came to freeway access:

- SWARM 2b mode decreased TOD mode on-ramp volume by 3%,
- SWARM 1/2b mode decreased it by 1%.

Finally, on-ramp queues were longer in SWARM modes: SWARM 1 and SWARM 2b modes generated queues 47% and 68% respectively longer than TOD mode queues. Even though no queue counts were conducted for SWARM 1/2b mode, it is likely that its queues would be comprised between SWARM 1 and SWARM 2b modes values.

6.3 Recommendations

In waiting for a supplementary testing when ramp metering controllers are fully compatible with SWARM, we offer the following recommendations:

1. Among the 3 SWARM modes tested, SWARM 2b seemed to maximize the most mainline traffic flow in terms of mainline volume, speed, travel time and freeway delay.

2 SWARM 2b generated also highest mainline speed in traffic congestion conditions.

3. In the future, more SWARM tests should be conducted during freeway congestion periods, in order to select the best-suited mode to faster relieve the traffic demand.

ATTACHMENTS

1. FIGURES

Fig. 1.1	Test Location
Fig. 1.2	Testing Corridor
Fig. 1.3	Testing Corridor Geometrics (6 Sheets)
Fig. 5.1	Average ML Volume from 6:00 AM to 9:00 AM
Fig. 5.2a	Average ML Speed from 6:00 AM to 9:00 AM
Fig. 5.2b	Average ML Speed from 7:30 AM to 7:45 AM
Fig. 5.3	Average ML Occupancy from 6:00 AM to 9:00 AM
Fig. 5.7	Average On-Ramp Volumes from 6:00 AM to 9:00 AM

2. TABLES

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Table 4.2b	Rate and Cycle Length Variations
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Table 5.1b	Average Mainline Volume
Table 5.2a	Mainline Speed from 6:00 AM to 9:00 AM
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Table 5.2c	Mainline Speed from 7:30 AM to 7:45 AM
Table 5.2d	Average Mainline Speed from 7:30 AM to 7:45 AM
Table 5.3a	Mainline Occupancy
Table 5.3b	Average Mainline Occupancy
Table 5.4	Freeway Delay
Table 5.5	Mode of Operation
Table 5.6	Travel Time
Table 5.7a	On-Ramp Volumes
Table 5.7b	Average On-Ramp Volumes
Table 5.8	On-Ramp Queue Counts
Table 6.1a	Ramp Metering Report of 4/24/01
Table 6.1b	Ramp Metering Report of 4/25/01
Table 6.1c	Adjacent VDS Data of 4/10/01
Table 6.1d	RMS Control of 4/10/01
Table 6.1e	Adjacent VDS Data of 4/11/01
Table 6.1f	RMS Control of 4/11/01

FIG. 1.1 TEST LOCATION

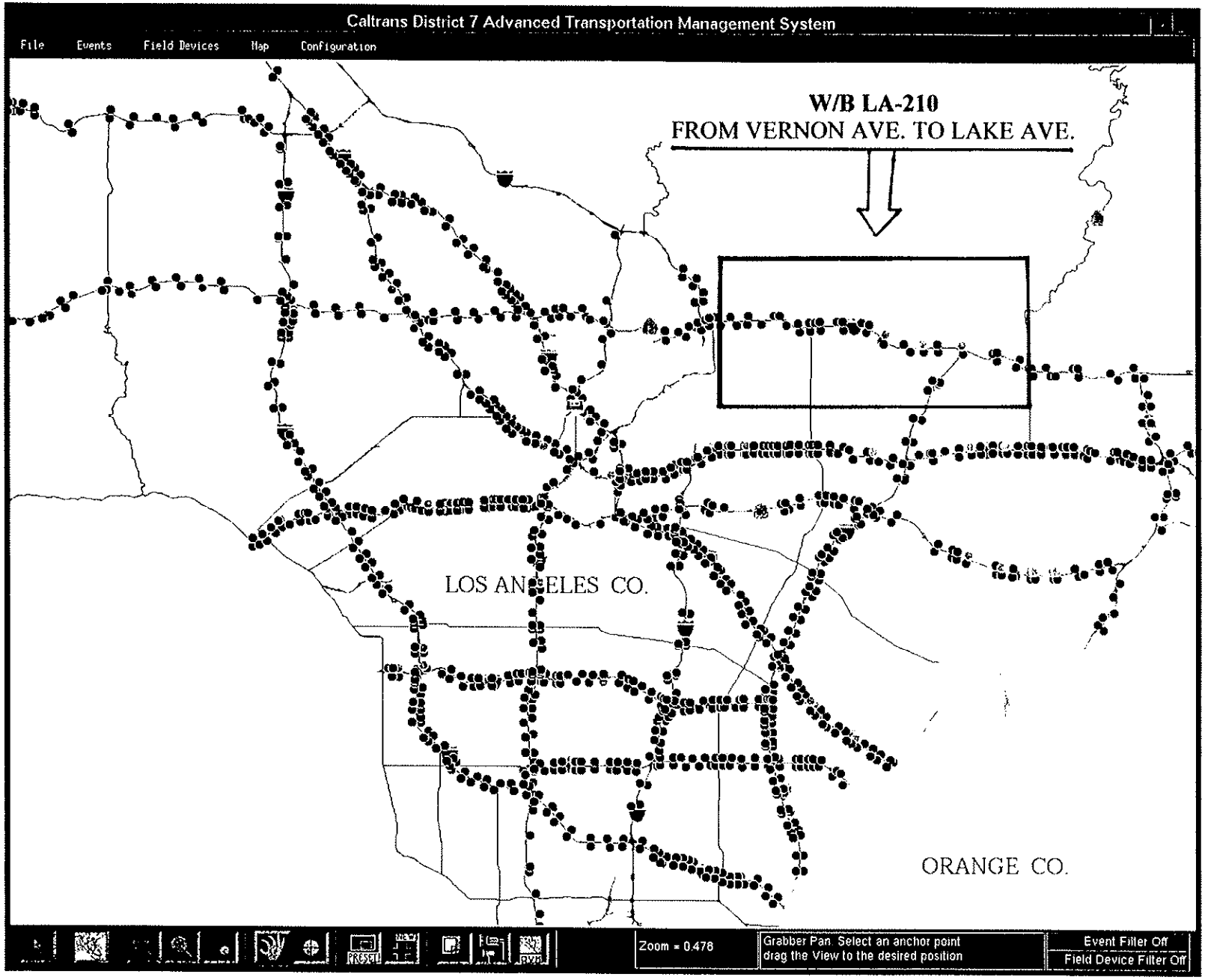


FIG. 1.2 TESTING CORRIDOR (WITH 20 ON-RAMPS IN CIRCLES)

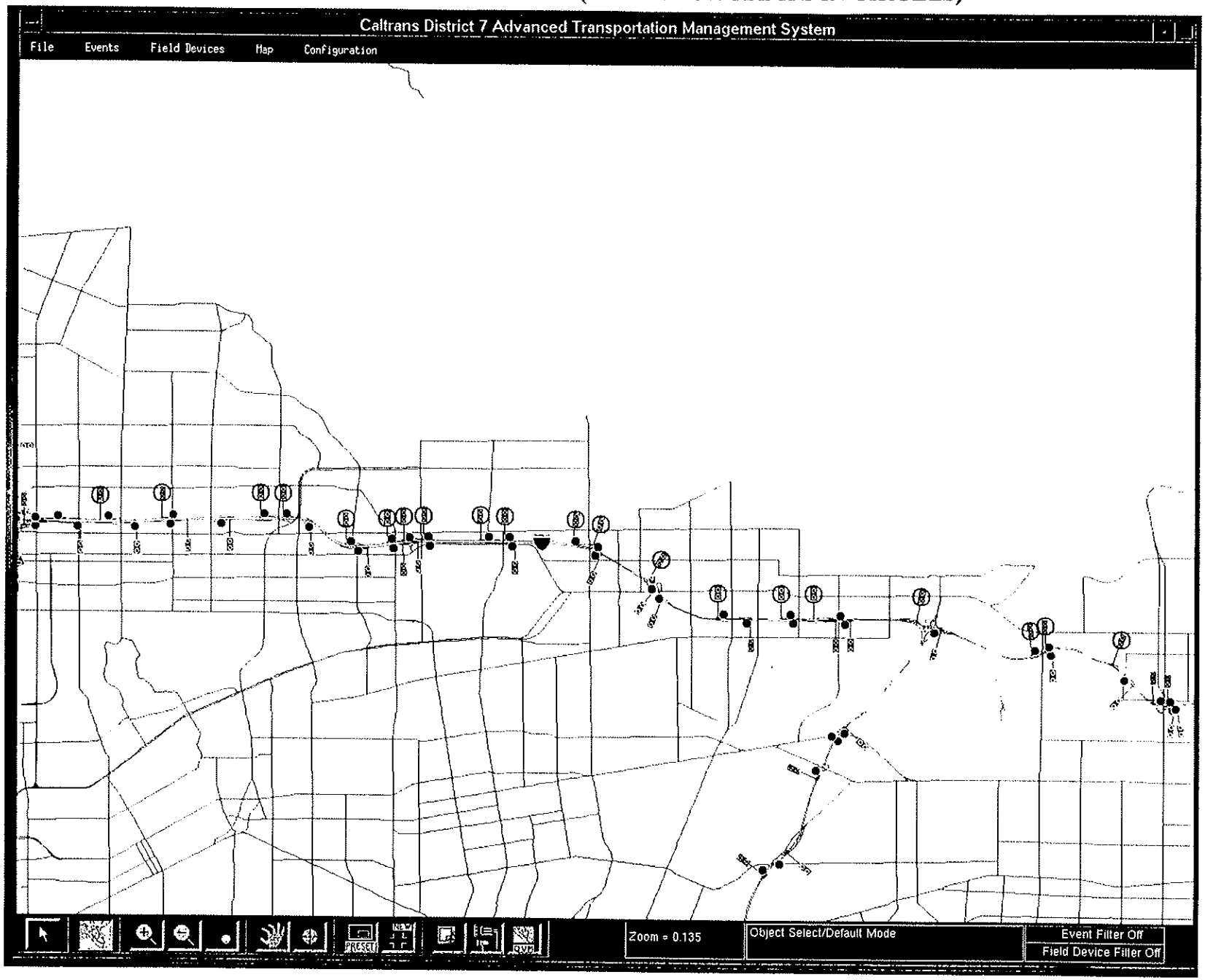


FIG. 1.3 TESTING CORRIDOR GEOMETRICS (SHEET 1 OF 6)

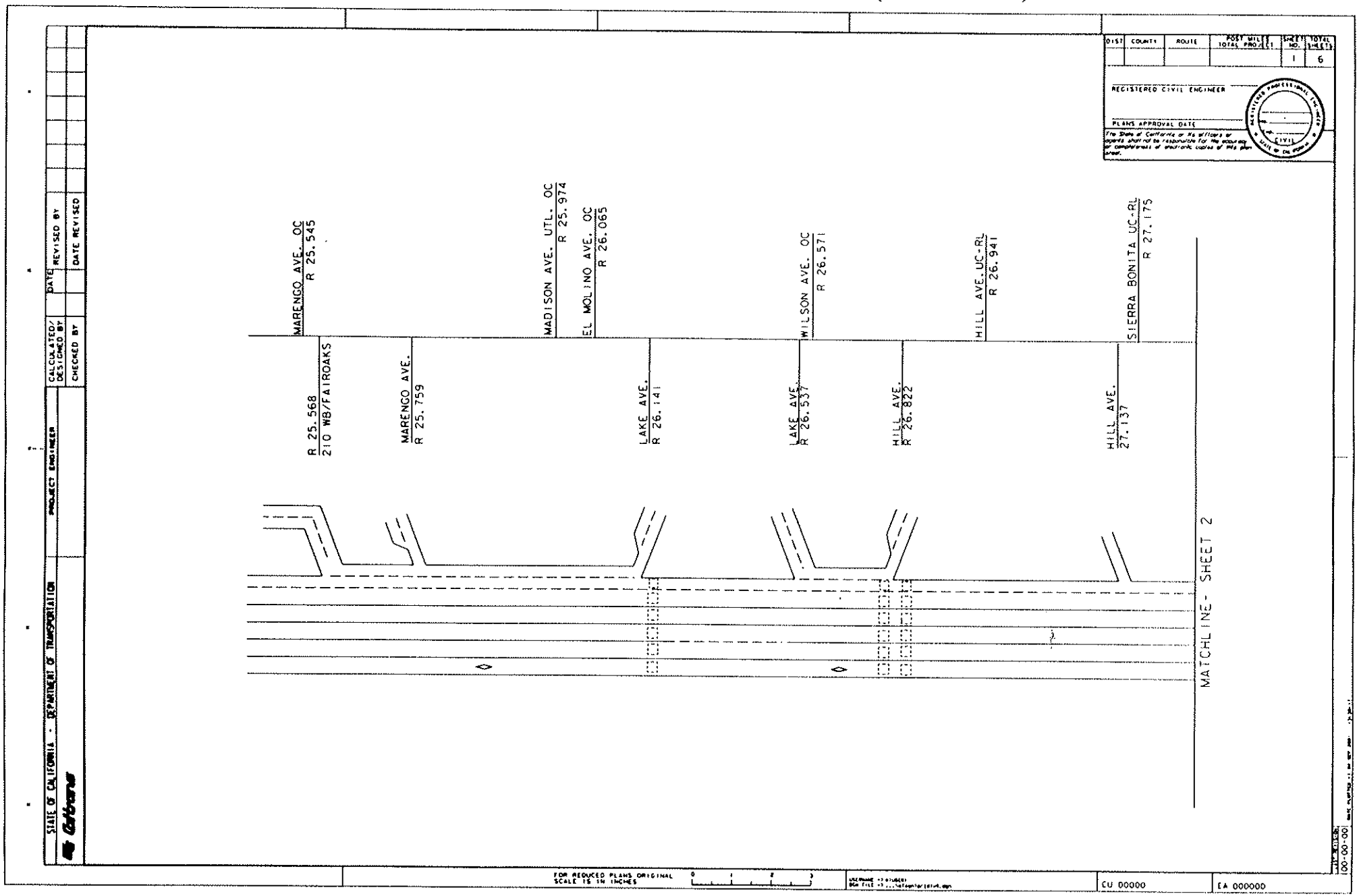


FIG. 1.3 TESTING CORRIDOR GEOMETRICS (SHEET 2 OF 6)

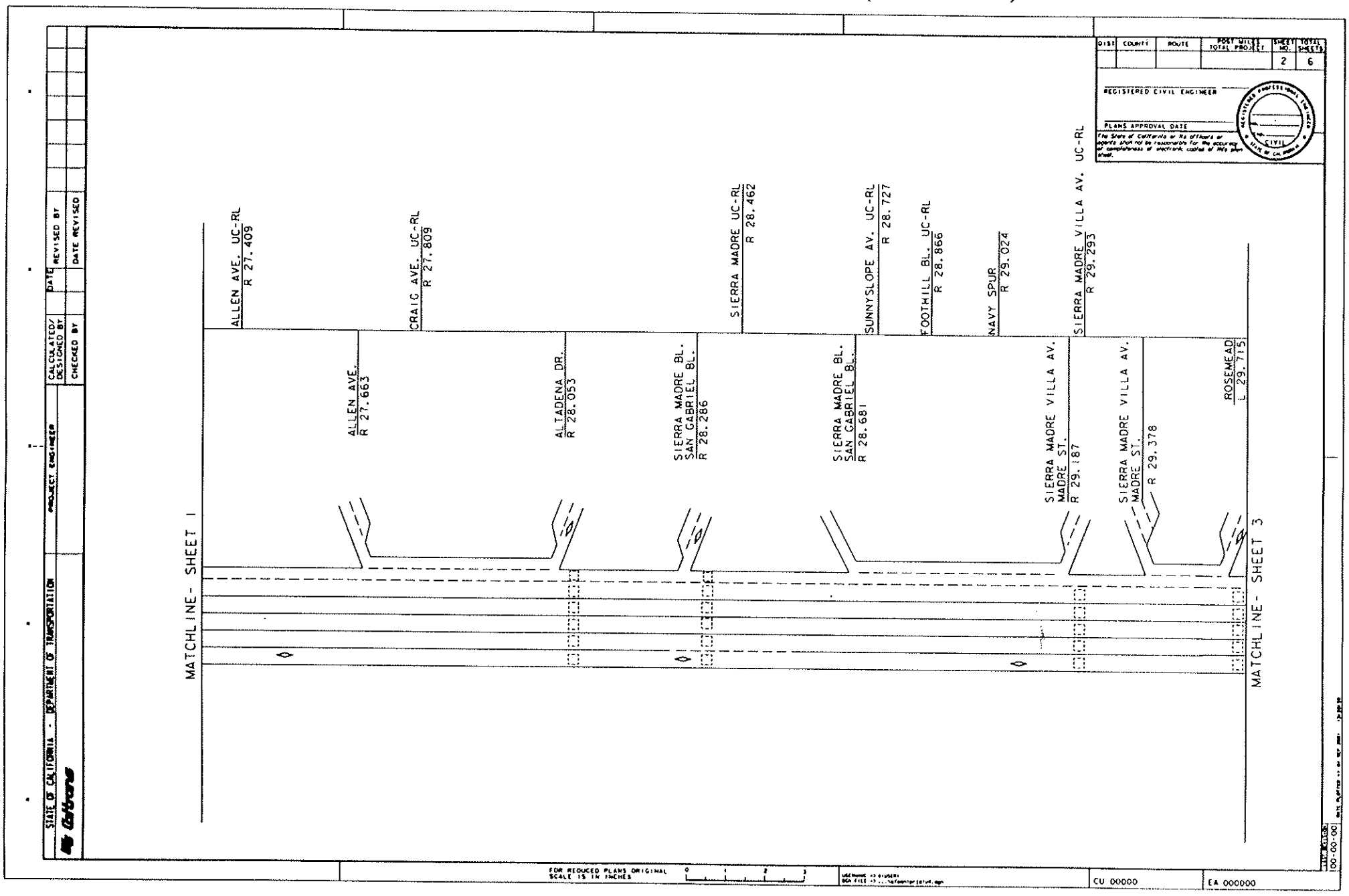


FIG. 1.3 TESTING CORRIDOR GEOMETRICS (SHEET 3 OF 6)

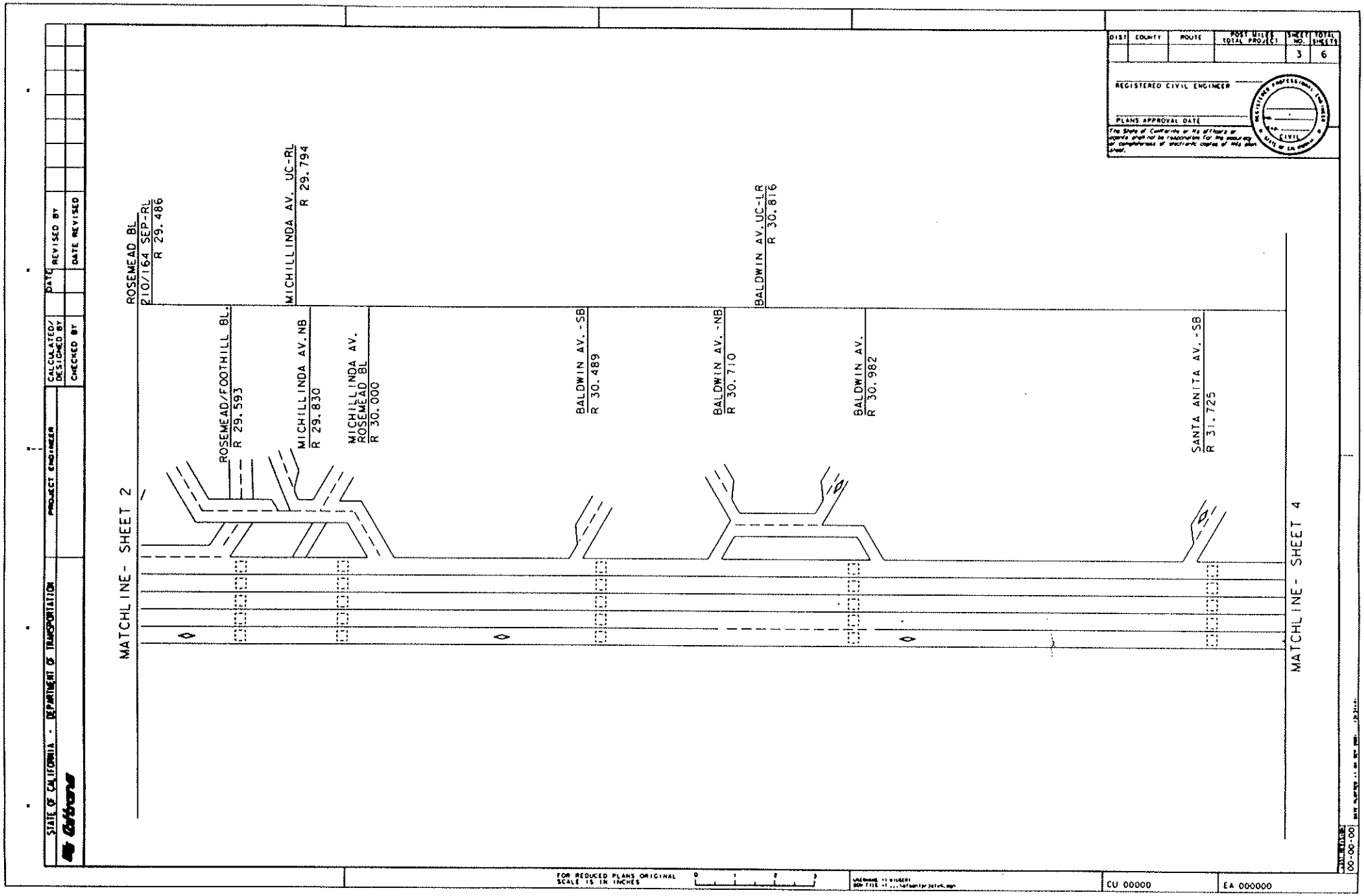


FIG. 1.3 TESTING CORRIDOR GEOMETRICS (SHEET 4 OF 6)

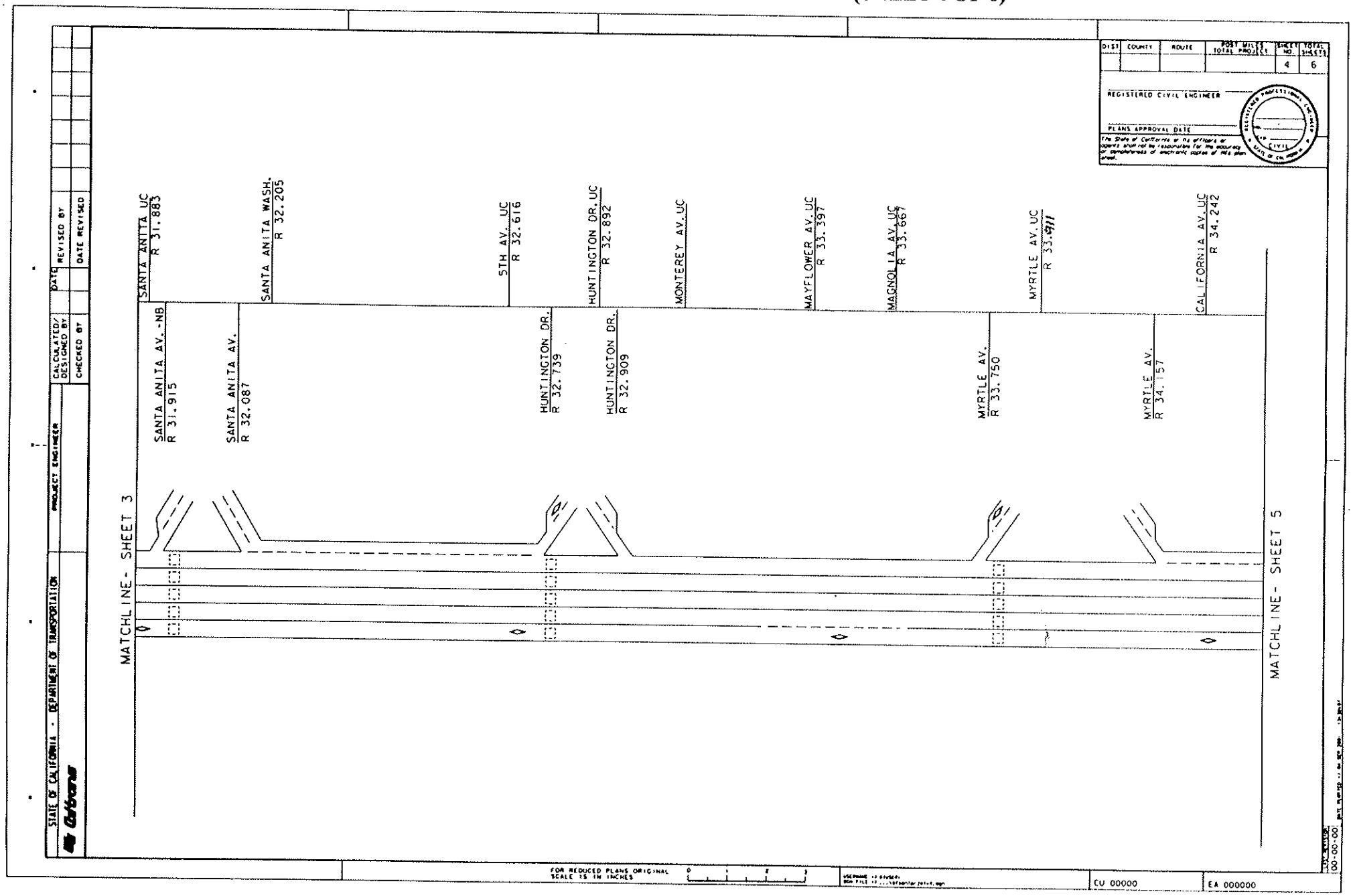


FIG. 1.3 TESTING CORRIDOR GEOMETRICS (SHEET 5 OF 6)

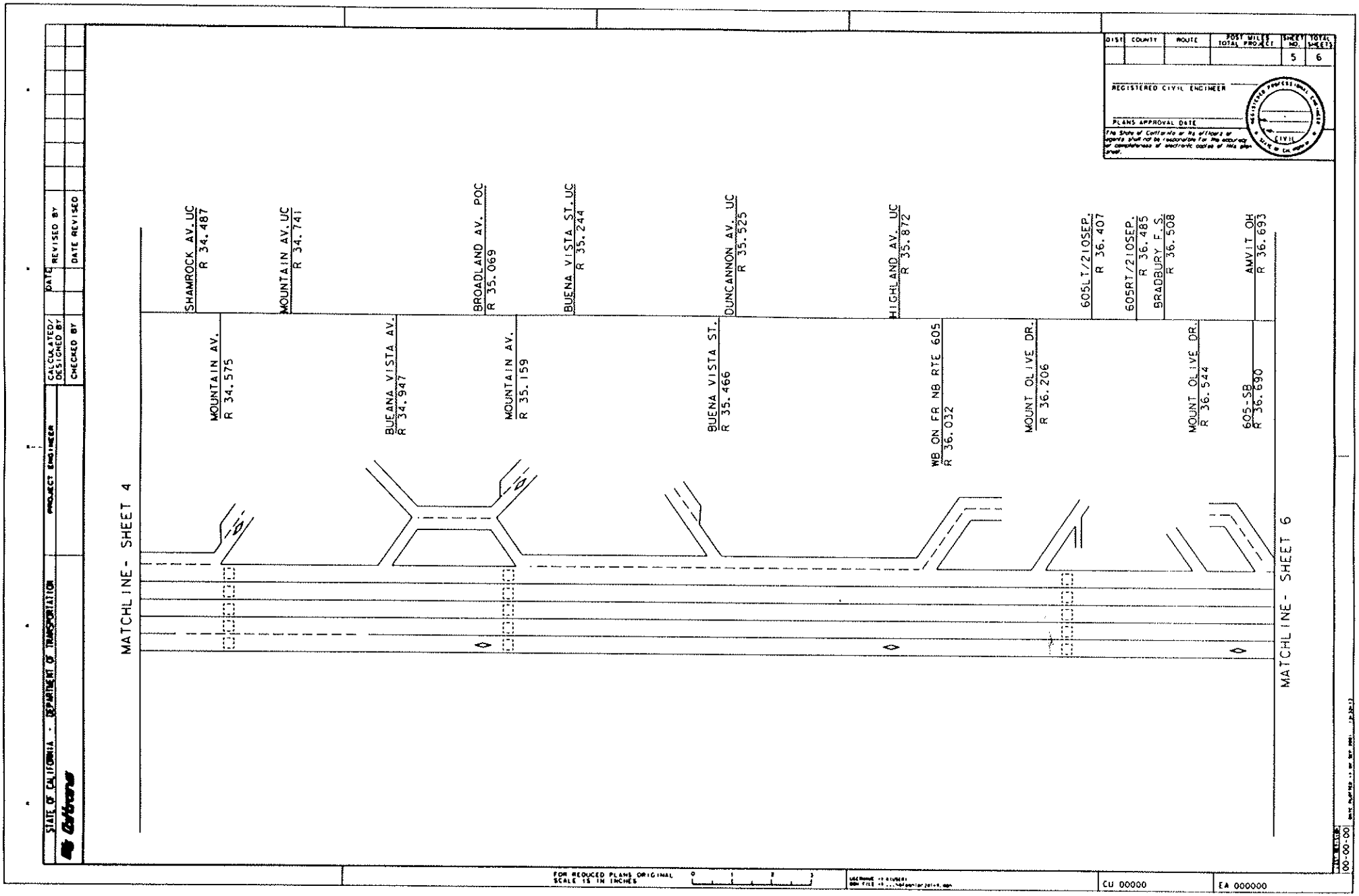
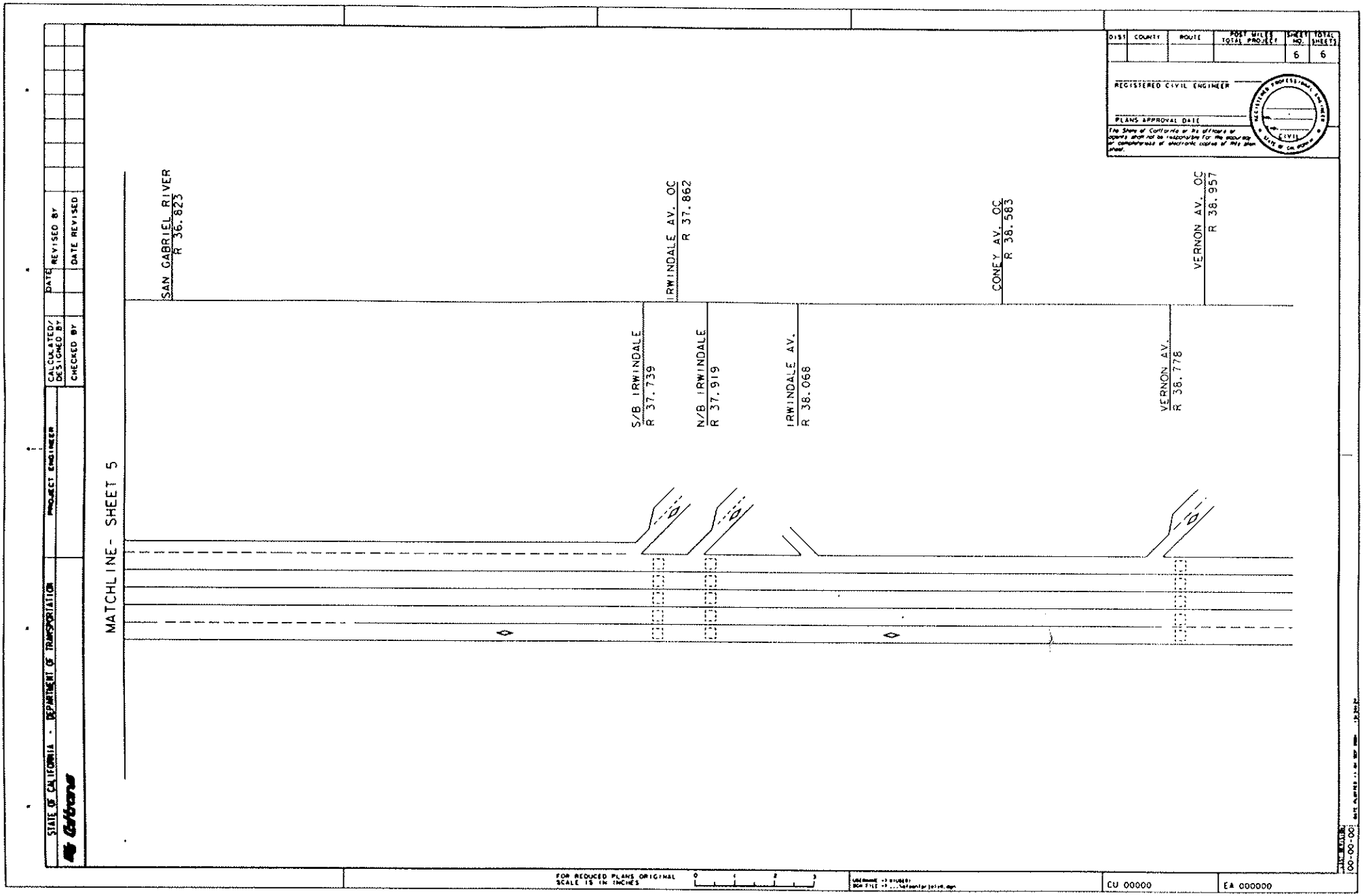


FIG. 1.3 TESTING CORRIDOR GEOMETRICS (SHEET 6 OF 6)



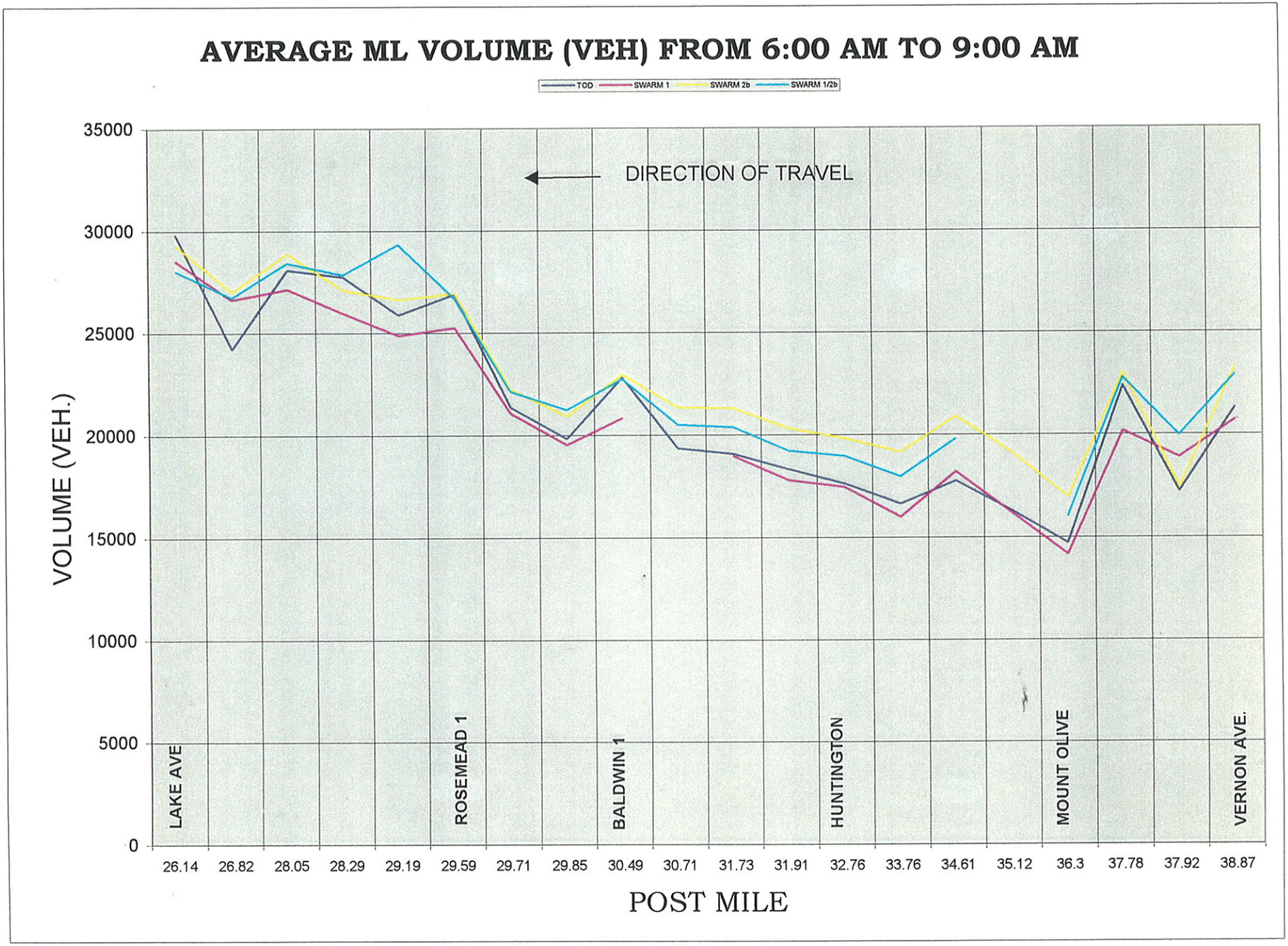

AVERAGE ML VOLUME (VEH) FROM 6:00 AM TO 9:00 AM
TOD
SWARM 1
SWARM 2b
SWARM 1/2b
DIRECTION OF TRAVEL
VOLUME (VEH.)
35000
30000
25000
20000
15000
10000
5000
0
LAKE AVE
ROSEMEAD 1
BALDWIN 1
HUNTINGTON
MOUNT OLIVE
VERNON AVE.
26.14
26.82
28.05
28.29
29.19
29.59
29.71
29.85
30.49
30.71
31.73
31.91
32.76
33.76
34.61
35.12
36.3
37.78
37.92
38.87
POST MILE

FIG. 5.1

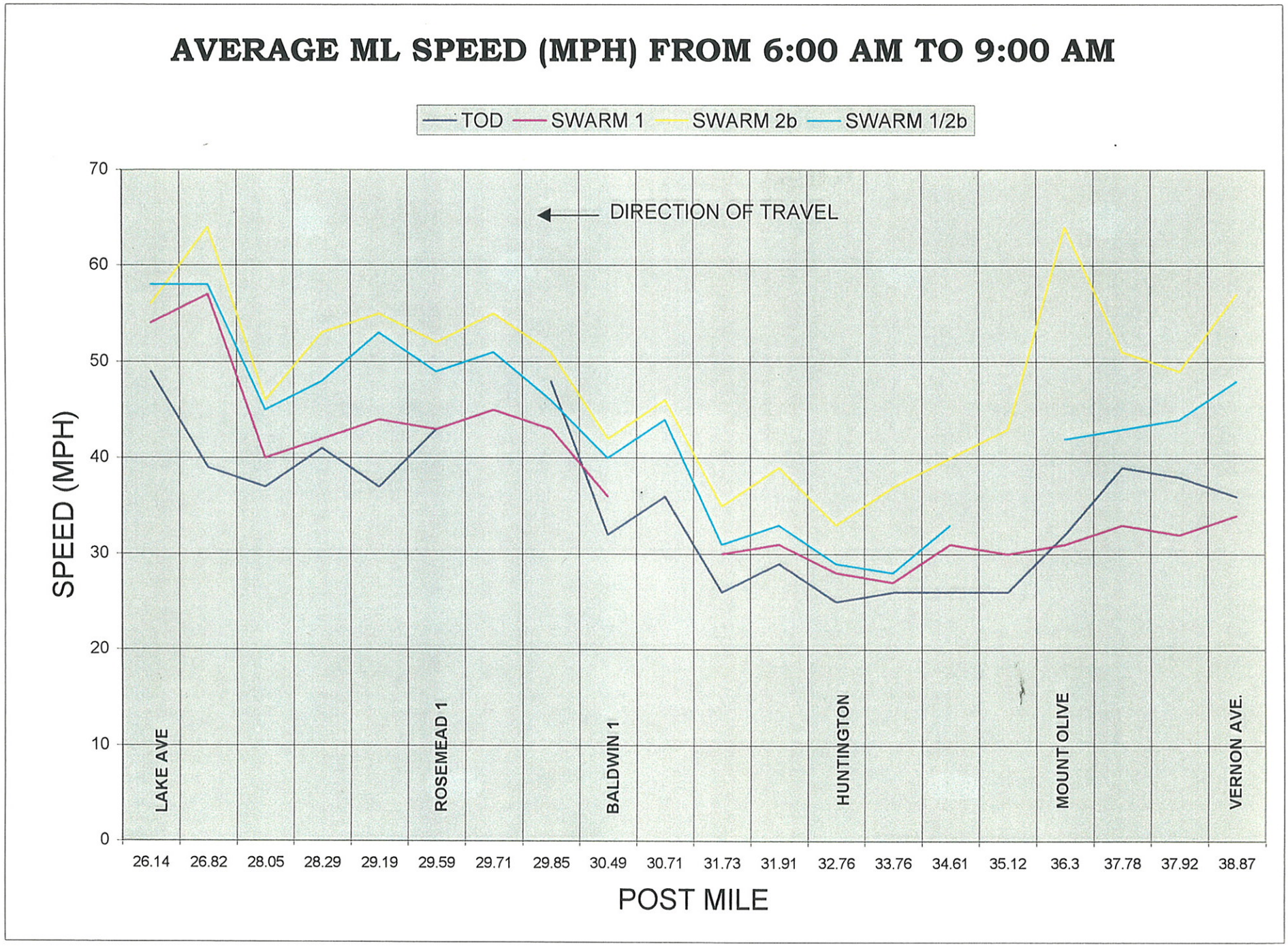

AVERAGE ML SPEED (MPH) FROM 6:00 AM TO 9:00 AM
TOD
SWARM 1
SWARM 2b
SWARM 1/2b
DIRECTION OF TRAVEL
SPEED (MPH)
70
60
50
40
30
20
10
0
LAKE AVE
ROSEMEAD 1
BALDWIN 1
HUNTINGTON
MOUNT OLIVE
VERNON AVE.
26.14
26.82
28.05
28.29
29.19
29.59
29.71
29.85
30.49
30.71
31.73
31.91
32.76
33.76
34.61
35.12
36.3
37.78
37.92
38.87
POST MILE

FIG. 5.2a

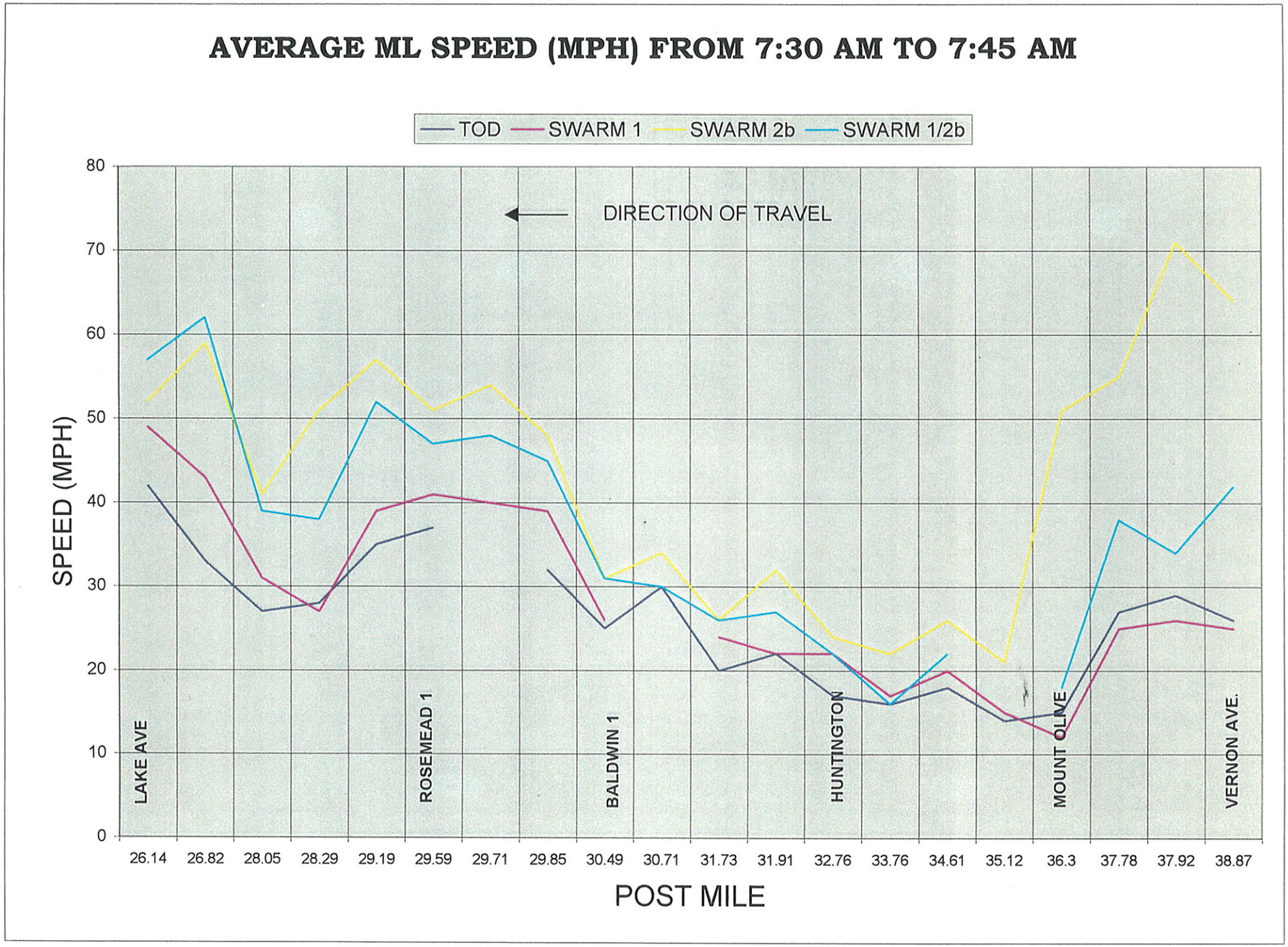

AVERAGE ML SPEED (MPH) FROM 7:30 AM TO 7:45 AM
TOD
SWARM 1
SWARM 2b
SWARM 1/2b
DIRECTION OF TRAVEL
SPEED (MPH)
0
10
20
30
40
50
60
70
80
LAKE AVE
ROSEMEAD 1
BALDWIN 1
HUNTINGTON
MOUNT OLIVE
VERNON AVE.
26.14
26.82
28.05
28.29
29.19
29.59
29.71
29.85
30.49
30.71
31.73
31.91
32.76
33.76
34.61
35.12
36.3
37.78
37.92
38.87
POST MILE

FIG. 5.2b

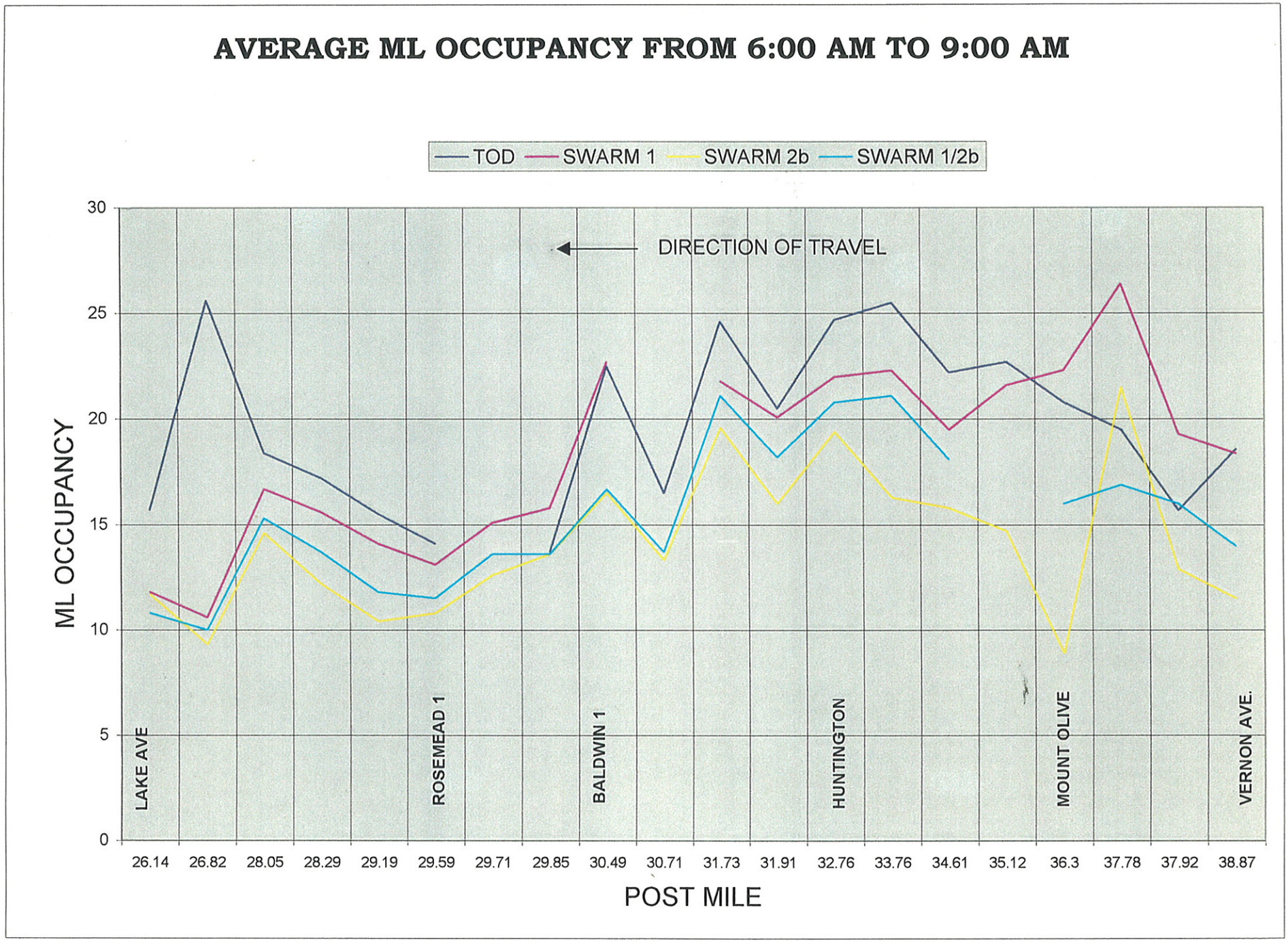

AVERAGE ML OCCUPANCY FROM 6:00 AM TO 9:00 AM
TOD
SWARM 1
SWARM 2b
SWARM 1/2b
DIRECTION OF TRAVEL
ML OCCUPANCY
30
25
20
15
10
5
0
LAKE AVE
ROSEMEAD 1
BALDWIN 1
HUNTINGTON
MOUNT OLIVE
VERNON AVE.
26.14
26.82
28.05
28.29
29.19
29.59
29.71
29.85
30.49
30.71
31.73
31.91
32.76
33.76
34.61
35.12
36.3
37.78
37.92
38.87
POST MILE

FIG. 5.3

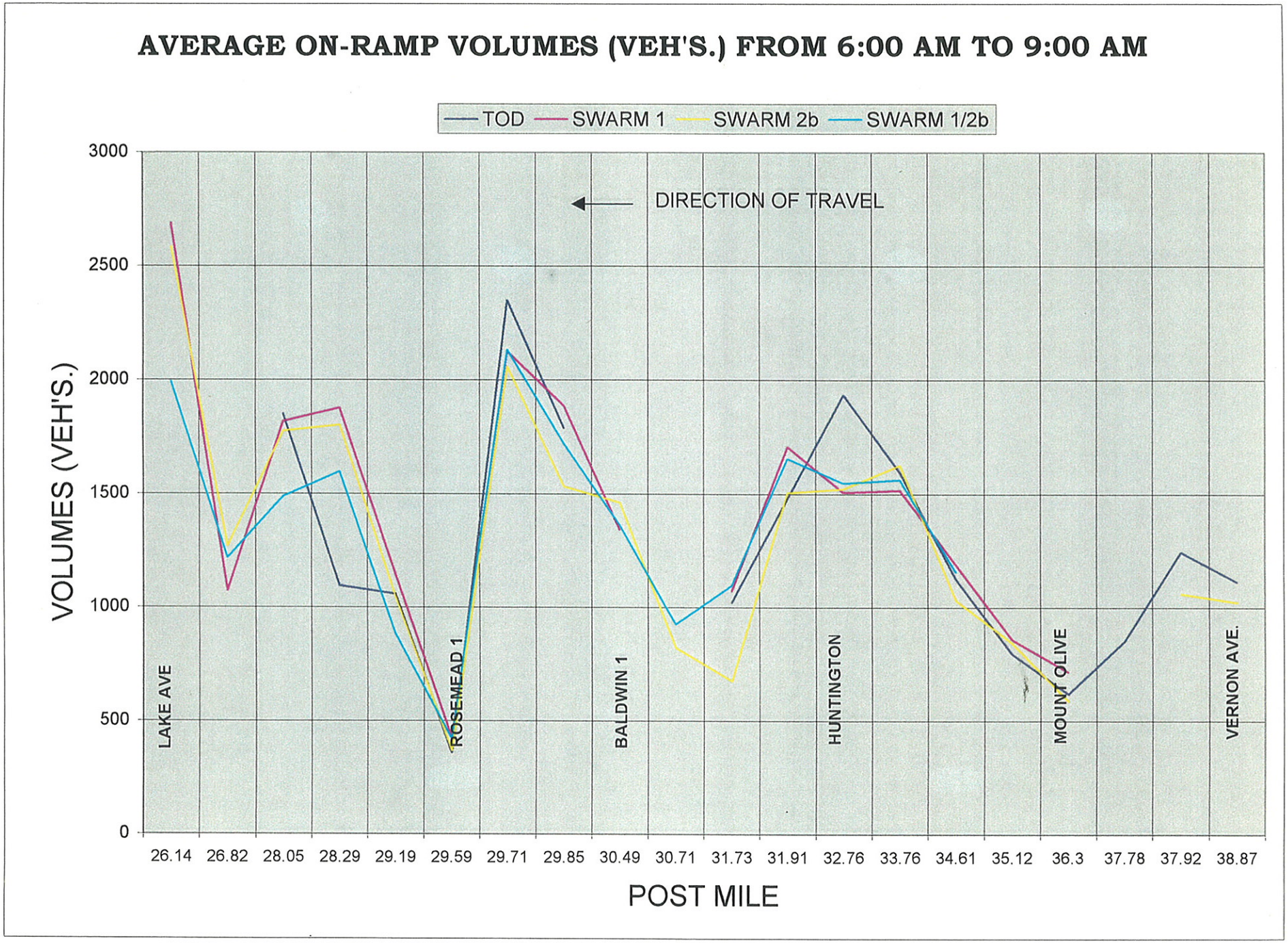

AVERAGE ON-RAMP VOLUMES (VEH'S.) FROM 6:00 AM TO 9:00 AM
TOD
SWARM 1
SWARM 2b
SWARM 1/2b
DIRECTION OF TRAVEL
VOLUMES (VEH'S.)
3000
2500
2000
1500
1000
500
0
LAKE AVE
ROSEMEAD 1
BALDWIN 1
HUNTINGTON
MOUNT OLIVE
VERNON AVE.
26.14
26.82
28.05
28.29
29.19
29.59
29.71
29.85
30.49
30.71
31.73
31.91
32.76
33.76
34.61
35.12
36.3
37.78
37.92
38.87
POST MILE

FIG. 5.7

TABLE 4.2a

SWARM TEST SCHEDULE

W/B LA-210 FROM VERNON AVE TO LAKE AVE

TESTED MODE	TUESDAY	WEDNESDAY	THURSDAY
SWARM 1	**01/30/01** Done	**01/31/01** Done	02/01/01 Postponed (defects)
SWARM 1	**02/06/01** Done	**02/07/01** Done	**02/08/01** Done
SWARM 2b	02/13/01 Postponed (Rainy)	02/14/01 Postponed (Rainy)	**02/15/01** Done
SWARM 2b	02/20/01 Postponed (After holiday)	02/21/01 Postponed (Q Override Problem)	02/22/01 Postponed (Q Override Problem)
SWARM 2b	02/27/01 Postponed (Rainy)	02/28/01 Postponed (Rainy)	03/01/01 NET Fixed Problems
SWARM 2b	03/06/01 Postponed (Rainy)	03/07/01 Postponed (Rainy)	03/08/01 NET Fixed Problems
SWARM 1	**03/13/01** Done	**03/14/01** Done	**03/15/01** Done
SWARM 2b	**03/20/01** Done	03/21/01 Postponed	03/22/01 Postponed
SWARM 1/2b	03/27/01 Postponed	03/28/01 Informal Test	03/29/01 NET Fixed Problems
SWARM 1/2b	04/03/01 Postponed	04/04/01 Informal Test	04/05/01 Informal Test
SWARM 2b	**04/10/01** Done	**04/11/01** Done	04/12/01 Postponed
SWARM 1	04/17/01 Postponed	04/18/01 Postponed	04/19/01 Postponed
SWARM 1	**04/24/01** Done	**04/25/01** Done	04/26/01 Postponed
SWARM 1/2b	**05/01/01** Done	**05/02/01** Done	

TABLE 4.2b

RATE AND CYCLE LENGTH VARIATIONS

OLD METERING RATE (vpm)	CYCLE LENGTH (sec)	DELTA DECREASING	DELTA INCREASING	MINIMUM RATE WHEN RATE IS DECREASING (vpm)	MAXIMUM RATE WHEN RATE IS INCREASING (vpm)
3	20.0	N/A	5.0	3	4
4	15.0	5.0	3.0	3	5
5	12.0	3.0	2.0	4	6
6	10.0	2.0	1.4	5	7
7	8.6	1.4	1.1	6	9
8	7.5	1.1	0.8	7	11
9	6.7	0.8	0.7	7	12
10	6.0	0.7	0.5	8	15
11	5.5	0.5	0.5	8	15
12	5.0	0.5	0.4	9	15
13	4.6	0.4	0.3	10	15
14	4.3	0.3	0.3	10	15
15	4.0	0.3	N/A	10	15

Note: do not change the cycle length more than 2 seconds if possible.

TABLE 5.1a

MAINLINE VOLUME (VEH)

FROM 6:00 AM TO 9:00 AM

STATION	PRE SWARM (TOD)									SWARM 1		SWARM 2b		SWARM 1/2b	
	10/24/00	10/25/00	10/31/00	11/01/00	11/07/00	11/14/00	12/05/00	12/07/00	12/12/00	04/24/01	04/25/01	04/10/01	04/11/01	05/01/01	05/02/01
LAKE	28961	29970	30216	30607	30003	30394	29160	30094	28784	28202	28830	28876	29706	28012	28030
HILL	26799	25424	23637	22683	24084	24862	27749	21618	21030	26053	27203	25709	28332	27149	26314
ALTADENA	28368	28692	27911	27745	27929	28027	27592	28577	28038	26878	27411	28430	29354	28402	28469
SAN GAB	28591	28616	27511	26869	27857	26399	27973	28465	27505	25230	26709	26690	27533	27868	27855
SIERRA MAD V	26006	26008	26784	24258	25902	25513	24544	27206	26749	24415	25327	26232	27053	30069	28598
ROSEMEAD 1	27225	27374	26944	26455	26755	26732	26343	27343	26935	24965	25585	26587	27277	26907	26488
ROSEMEAD 2	NA	NA	NA	NA	NA	NA	NA	NA	21370	20865	21295	22160	22336	22880	21410
MICHILLINDA	19733	19853	19818	19520	19674	19281	19210	NA	21520	19096	19957	21392	20433	21640	20827
BALDWIN 1	22161	22891	25291	24095	23409	23167	21589	24518	18110	20431	21246	22647	23253	22628	22841
BALDWIN 2	19663	19758	19435	18853	19321	18994	18954	19860	19484	NA	NA	21019	21688	NA	20515
SANTA AN 1	19384	19072	19094	18604	18837	18602	18793	20010	19288	18954	19017	20770	21825	20478	20284
SANTA AN 2	18427	18684	18478	18030	18254	17987	17939	18892	18408	17606	17994	20034	20619	19381	19101
HUNTINGTON	17753	17957	17593	17310	17539	17075	17181	18266	17965	17156	17769	19328	20329	19143	18798
MYRTLE	16774	16901	16518	16239	16556	15826	16367	17426	17240	15439	16566	18834	19524	18438	17492
MOUNTAIN	18166	18379	17446	17343	17865	16485	17440	18591	18184	17824	18581	20516	21283	20118	19510
BUENA VISTA	16614	16566	16238	15837	16287	15566	15953	16864	16742	15834	16539	18722	19580	NA	NA
MOUNT OLIVE	15127	15170	14761	14305	14810	13959	14575	15312	14486	13578	14761	16790	17121	16538	15516
IRWINDALE 1	22786	22542	21948	22092	23002	21506	22338	22704	22526	19209	21154	23568	22461	24196	21386
IRWINDALE 2	20026	19757	16169	18027	16154	15662	16419	16430	16322	16080	21679	17413	17483	20143	19773
VERNON	21701	21511	20829	20570	21599	20544	21442	22010	21514	19316	22117	22963	23596	23435	22411

TABLE 5.1b

AVERAGE MAINLINE VOLUME (VEH) FROM 6:00 AM TO 9:00 AM

COMPARISON WITH TOD MODE AVERAGE VOLUME

STATION	TOD	SWARM 1		SWARM 2b		SWARM 1/2b	
			%TOD		% TOD		%TOD
LAKE	29799	28516	**96**	29291	**98**	28021	**94**
HILL	24210	26628	**110**	27021	**112**	26732	**110**
ALTADENA	28098	27145	**97**	28892	**103**	28436	**101**
SAN GAB	27754	25970	**94**	27112	**98**	27862	**100**
SIERRA MAD V	25886	24871	**96**	26643	**103**	29334	**113**
ROSEMEAD 1	26901	25275	**94**	26932	**100**	26698	**99**
ROSEMEAD 2	21370	21080	**NA**	22248	**NA**	22145	**NA**
MICHILLINDA	19826	19527	**98**	20913	**105**	21234	**107**
BALDWIN 1	22803	20839	**91**	22950	**101**	22735	**100**
BALDWIN 2	19369	NA	**NA**	21354	**110**	20515	**106**
SANTA AN 1	19076	18986	**100**	21298	**112**	20381	**107**
SANTA AN 2	18344	17800	**97**	20327	**111**	19241	**105**
HUNTINGTON	17627	17463	**99**	19829	**112**	18971	**108**
MYRTLE	16650	16003	**96**	19179	**115**	17965	**108**
MOUNTAIN	17767	18203	**102**	20900	**118**	19814	**112**
BUENA VISTA	16296	16187	**99**	19151	**118**	NA	**NA**
MOUNT OLIVE	14723	14170	**96**	16956	**115**	16027	**109**
IRWINDALE 1	22383	20182	**90**	23015	**103**	22791	**102**
IRWINDALE 2	17218	18880	**110**	17448	**101**	19958	**116**
VERNON	21302	20717	**97**	23280	**109**	22923	**108**

TABLE 5.2a

MAINLINE SPEED (MILES/HR)

FROM 6:00 AM TO 9:00 AM

STATION	PRE SWARM (TOD)									SWARM 1		SWARM 2b		SWARM 1/2b	
	10/24/00	10/25/00	10/31/00	11/01/00	11/07/00	11/14/00	12/05/00	12/07/00	12/12/00	04/24/01	04/25/01	04/10/01	04/11/01	05/01/01	05/02/01
LAKE	44	46	49	50	48	43	54	53	51	56	53	54	58	57	58
HILL	44	40	47	35	41	39	38	32	37	60	54	61	66	59	57
ALTADENA	36	36	35	35	35	37	40	40	40	39	40	42	49	43	46
SAN GABRIEL	41	40	38	40	39	42	41	44	41	42	42	48	58	45	51
SIERRA MAD V	44	41	40	NA	37	39	42	45	47	44	44	54	56	55	52
ROSEMEAD 1	43	42	41	40	41	42	45	47	47	44	43	52	53	49	49
ROSEMEAD 2	NA	NA	NA	NA	NA	NA	NA	NA	NA	46	45	55	55	52	50
MICHILLINDA	52	53	48	50	51	46	49	NA	84	43	42	51	51	47	44
BALDWIN 1	32	32	31	32	33	31	35	36	26	36	35	41	42	39	40
BALDWIN 2	36	37	35	35	36	31	39	40	37	NA	NA	45	48	NA	44
SANTA AN 1	27	25	25	24	24	24	29	30	28	32	28	32	39	29	33
SANTA AN 2	30	29	28	30	28	25	32	32	30	32	30	36	42	31	35
HUNTINGTON	26	25	22	26	23	23	26	28	23	30	27	32	33	29	29
MYRTLE	24	24	21	22	22	21	33	36	32	27	27	36	38	29	26
MOUNTAIN	27	27	25	24	25	22	27	28	31	31	30	38	43	33	32
BUENA VISTA	27	25	25	24	25	22	27	28	32	30	29	40	46	NA	NA
MOUNT OLIVE	42	31	30	28	32	29	30	36	33	31	30	57	70	45	40
IRWINDALE 1	41	40	36	35	45	32	37	43	42	32	34	51	51	45	41
IRWINDALE 2	39	36	32	24	50	34	37	42	46	28	36	51	47	45	42
VERNON	38	36	34	27	40	28	39	44	43	32	36	56	58	50	47

TABLE 5.2b

AVERAGE MAINLINE SPEED (MPH) FROM 6:00 AM TO 9:00 AM

COMPARISON WITH TOD MOD AVERAGE SPEED

STATION	TOD	SWARM 1		SWARM 2b		SWARM 1/2b	
			% TOD		%TOD		%TOD
LAKE	49	54	**112**	56	**115**	58	**119**
HILL	39	57	**146**	64	**163**	58	**149**
ALTADENA	37	40	**107**	46	**123**	45	**120**
SAN GABRIEL	41	42	**104**	53	**130**	48	**117**
SIERRA MAD V	37	44	**119**	55	**147**	53	**143**
ROSEMEAD 1	43	43	**100**	52	**121**	49	**114**
ROSEMEAD 2	0	45	**NA**	55	**NA**	51	**NA**
MICHILLINDA	48	43	**89**	51	**106**	46	**95**
BALDWIN 1	32	36	**111**	42	**130**	40	**124**
BALDWIN 2	36	NA	**NA**	46	**128**	44	**121**
SANTA AN 1	26	30	**114**	35	**135**	31	**119**
SANTA AN 2	29	31	**107**	39	**133**	33	**113**
HUNTINGTON	25	28	**115**	33	**134**	29	**118**
MYRTLE	26	27	**103**	37	**141**	28	**105**
MOUNTAIN	26	31	**117**	40	**154**	33	**125**
BUENA VISTA	26	30	**113**	43	**164**	NA	**NA**
MOUNT OLIVE	32	31	**95**	64	**197**	42	**131**
IRWINDALE 1	39	33	**85**	51	**132**	43	**111**
IRWINDALE 2	38	32	**85**	49	**130**	44	**116**
VERNON	36	34	**92**	57	**157**	48	**133**

TABLE 5.2c

MAINLINE SPEED (MPH)

FROM 7:30 AM TO 7:45 AM

STATION	PRE SWARM (TOD)									SWARM 1		SWARM 2b		SWARM 1/2b	
	10/24/00	10/25/00	10/31/00	11/01/00	11/07/00	11/14/00	12/05/00	12/07/00	12/12/00	04/24/01	04/25/01	04/10/01	04/11/01	05/01/01	05/02/01
LAKE	44	48	40	36	43	36	44	44	47	48	50	53	50	60	54
HILL	34	47	48	21	32	33	21	26	39	47	38	63	55	64	59
ALTADENA	28	29	24	24	25	29	27	28	33	28	33	36	46	38	39
SAN GAB	34	30	24	24	24	31	27	27	30	25	28	40	61	33	43
SIERRA MAD V	45	32	22	NA	26	39	41	31	41	39	38	56	57	50	53
ROSEMEAD 1	47	37	31	30	30	34	41	37	43	38	44	50	52	49	44
ROSEMEAD 2	NA	NA	NA	NA	NA	NA	NA	NA	NA	37	43	52	56	49	46
MICHILLINDA	41	32	27	27	31	33	34	NA	NA	35	42	44	51	46	43
BALDWIN 1	25	28	24	21	24	32	28	28	18	24	27	29	33	33	28
BALDWIN 2	28	28	34	21	25	33	30	38	33	NA	NA	30	37	NA	30
SANTA AN 1	20	21	23	17	18	20	18	23	23	25	23	24	28	26	26
SANTA AN 2	23	22	25	20	19	19	22	23	23	23	21	27	36	27	27
HUNTINGTON	16	19	17	16	17	16	16	19	18	24	19	23	25	18	26
MYRTLE	14	19	10	14	16	14	19	18	16	17	16	23	21	14	17
MOUNTAIN	20	19	14	17	19	15	19	19	22	21	19	23	29	21	22
BUENA VISTA	14	15	11	13	16	13	17	15	16	14	16	18	24	NA	NA
MOUNT OLIVE	17	14	13	14	17	12	16	13	15	12	12	23	78	21	15
IRWINDALE 1	35	22	27	27	40	18	21	26	28	24	26	56	54	41	35
IRWINDALE 2	36	28	20	29	37	22	19	39	29	26	26	70	72	38	30

TABLE 5.2d

AVERAGE MAINLINE SPEED (MPH) FROM 7:30 AM TO 7:45 AM

COMPARAISON WITH TOD MODE AVERAGE SPEED

STATION	TOD	SWARM 1		SWARM 2b		SWARM 1/2b	
			% TOD		% TOD		% TOD
LAKE	42	49	**115**	52	**121**	57	**134**
HILL	33	43	**127**	59	**176**	62	**184**
ALTADENA	27	31	**111**	41	**149**	39	**140**
SAN GAB	28	27	**95**	51	**181**	38	**136**
SIERRA MAD V	35	39	**111**	57	**163**	52	**149**
ROSEMEAD 1	37	41	**112**	51	**139**	47	**127**
ROSEMEAD 2	NA	40	**NA**	54	**NA**	48	**NA**
MICHILLINDA	32	39	**120**	48	**148**	45	**138**
BALDWIN 1	25	26	**101**	31	**122**	31	**120**
BALDWIN 2	30	NA	**NA**	34	**112**	30	**100**
SANTA AN 1	20	24	**118**	26	**128**	26	**128**
SANTA AN 2	22	22	**101**	32	**145**	27	**124**
HUNTINGTON	17	22	**126**	24	**140**	22	**129**
MYRTLE	16	17	**106**	22	**141**	16	**100**
MOUNTAIN	18	20	**110**	26	**143**	22	**118**
BUENA VISTA	14	15	**104**	21	**145**	NA	**NA**
MOUNT OLIVE	15	12	**82**	51	**347**	18	**124**
IRWINDALE 1	27	25	**92**	55	**203**	38	**140**
IRWINDALE 2	29	26	**90**	71	**247**	34	**118**
VERNON	26	25	**97**	64	**247**	42	**162**

TABLE 5.3a

MAINLINE OCCUPANCY

FROM 6:00 AM TO 9:00 AM

STATION	PRE SWARM									SWARM 1		SWARM 2b		SWARM 1/2b	
	10/24/00	10/25/00	10/31/00	11/01/00	11/07/00	11/14/00	12/05/00	12/07/00	12/12/00	04/24/01	04/25/01	04/10/01	04/11/01	05/01/01	05/02/01
LAKE	18.5	15.8	13.6	18.9	12.4	19.7	12.6	16.0	14.2	11.3	12.2	12.0	11.3	10.9	10.7
HILL	19.1	23.1	23.8	29.9	24.1	25.1	24.7	30.5	30.2	9.5	11.7	9.3	9.3	9.9	10.1
ALTADENA	18.4	18.6	19.7	19.7	19.0	18.6	17.1	17.5	16.8	16.7	16.6	15.8	13.4	16.0	14.5
SAN GABRIEL	17.3	17.6	18.2	17.9	18.1	16.3	17.3	16.4	16.0	15.5	15.6	13.6	10.7	14.9	12.5
SIERRA MAD V	13.5	14.5	16.0	22.6	16.2	15.6	16.4	13.2	11.9	14.5	13.6	10.3	10.5	11.5	12.1
ROSEMEAD 1	13.9	14.3	15.0	15.5	15.0	14.6	13.4	12.9	12.3	12.8	13.3	10.8	10.8	11.5	11.5
ROSEMEAD 2	NA	NA	NA	NA	NA	NA	NA	NA	4.5	14.8	15.3	12.6	12.5	13.7	13.4
MICHILLINDA	15.2	14.8	16.3	17.0	15.9	15.8	16.1	NA	11.9	16.2	15.4	12.0	15.2	13.0	14.1
BALDWIN 1	22.1	19.3	23.7	24.3	21.9	22.0	19.0	20.6	29.6	18.5	26.8	16.5	16.5	17.3	16.0
BALDWIN 2	16.7	15.8	16.9	18.3	16.9	17.9	15.7	15.1	14.9	NA	NA	13.4	13.1	NA	13.7
SANTA AN 1	24.8	26.4	25.0	26.0	26.3	26.3	22.7	21.6	22.1	20.9	22.6	21.5	17.7	21.9	20.2
SANTA AN 2	20.2	20.4	21.0	21.1	21.2	22.6	19.7	19.0	19.4	19.6	20.5	17.3	14.7	19.2	17.2
HUNTINGTON	23.4	24.7	26.1	25.0	25.8	26.0	24.6	22.5	23.9	20.9	23.0	19.8	19.0	21.2	20.3
MYRTLE	25.6	25.4	27.4	27.5	27.3	28.6	23.9	21.9	22.0	22.1	22.5	16.7	15.9	20.9	21.3
MOUNTAIN	22.4	22.0	24.1	24.3	23.2	24.9	21.0	19.6	18.1	19.1	19.9	17.0	14.6	17.9	18.3
BUENA VISTA	22.1	22.7	23.9	24.9	23.4	25.7	22.1	21.2	18.4	21.3	21.8	16.2	13.2	NA	NA
MOUNT OLIVE	14.2	21.2	22.7	24.4	21.3	25.0	22.7	18.8	16.6	22.0	22.6	10.4	7.4	15.5	16.5
IRWINDALE 1	18.2	18.7	20.6	20.6	16.3	22.9	20.3	20.3	17.5	26.6	26.2	26.2	16.8	17.3	16.4
IRWINDALE 2	15.6	17.5	18.4	22.7	9.7	16.3	15.9	13.7	11.9	20.8	17.7	11.8	13.9	15.9	16.1
VERNON	17.4	18.4	20.2	23.7	17.1	22.4	16.9	15.6	15.9	19.5	17.3	11.9	11.1	13.9	14.0

TABLE 5.3b

AVERAGE MAINLINE OCCUPANCY FROM 6:00 AM TO 9:00 AM

COMPARISON WITH TOD MODE AVERAGE OCCUPANCY

STATION	TOD	SWARM 1		SWARM 2b		SWARM 1/2b	
			%TOD		% TOD		%TOD
LAKE	15.7	11.8	**75**	11.7	**74**	10.8	**69**
HILL	25.6	10.6	**41**	9.3	**36**	10.0	**39**
ALTADENA	18.4	16.7	**91**	14.6	**79**	15.3	**83**
SAN GABRIEL	17.2	15.6	**90**	12.2	**71**	13.7	**79**
SIERRA MAD V	15.5	14.1	**90**	10.4	**67**	11.8	**76**
ROSEMEAD 1	14.1	13.1	**93**	10.8	**77**	11.5	**82**
ROSEMEAD 2	NA	15.1	**NA**	12.6	**NA**	13.6	**NA**
MICHILLINDA	13.7	15.8	**116**	13.6	**100**	13.6	**99**
BALDWIN 1	22.5	22.7	**101**	16.5	**73**	16.7	**74**
BALDWIN 2	16.5	NA	**NA**	13.3	**80**	13.7	**83**
SANTA AN 1	24.6	21.8	**88**	19.6	**80**	21.1	**86**
SANTA AN 2	20.5	20.1	**98**	16.0	**78**	18.2	**89**
HUNTINGTON	24.7	22.0	**89**	19.4	**79**	20.8	**84**
MYRTLE	25.5	22.3	**87**	16.3	**64**	21.1	**83**
MOUNTAIN	22.2	19.5	**88**	15.8	**71**	18.1	**82**
BUENA VISTA	22.7	21.6	**95**	14.7	**65**	NA	**NA**
MOUNT OLIVE	20.8	22.3	**107**	8.9	**43**	16.0	**77**
IRWINDALE 1	19.5	26.4	**135**	21.5	**110**	16.9	**86**
IRWINDALE 2	15.7	19.3	**122**	12.9	**82**	16.0	**102**
VERNON	18.6	18.4	**99**	11.5	**62**	14.0	**75**

TABLE 5.4

FREEWAY DELAY (VEH.HR)

FROM VERNON TO LAKE

MODE	FREEWAY DELAY (1)		
		AVERAGE	% TOD
TOD		**2211**	**100**
10/24/00	1703		
10/25/00	2037		
10/31/00	2609		
11/01/00	3032		
11/07/00	2284		
11/14/00	2953		
12/05/00	2169		
12/07/00	1631		
12/12/00	1483		
SWARM 1		**2041**	**92**
04/24/01	2149		
04/25/01	1933		
SWARM 2b		**454**	**21**
04/10/01	577		
04/11/01	330		
SWARM 1/2b		**1060**	**48**
05/01/01	1086		
05/02/01	1034		

(1) Note: *Data related to 5 Stations: Buena Vista, Baldwin 2, Michillinda, Rosemead 2, and Sierra Madre Villa have been discarded because of non availability in one or more testing days.*

TABLE 5.5

MODE OF OPERATION (%)

FROM 6:00 AM TO 9:00 AM

STATION	PRE SWARM (TOD)									SWARM 1		SWARM 2b		SWARM 1/2b	
	10/24/00	10/25/00	10/31/00	11/01/00	11/07/00	11/14/00	12/05/00	12/07/00	12/12/00	04/24/01	04/25/01	04/10/01	04/11/01	05/01/01	05/02/01
LAKE	94.7	91.7	100.0	100.0	97.2	80.6	97.5	97.2	96.9	99.0	99.7	84.8	76.0	51.5	49.8
HILL	94.4	90.8	98.9	100.0	98.3	80.0	97.5	98.9	96.9	99.0	99.7	98.5	99.2	98.7	40.2
ALTADENA	0.0	0.0	0.0	0.0	96.1	80.3	97.5	99.4	98.3	99.0	99.5	98.7	99.2	82.7	60.0
SAN GAB	10.3	18.1	16.4	11.1	11.9	0.9	28.1	26.4	23.9	99.0	99.7	98.5	99.2	90.0	83.5
SIERRA MAD V	53.6	55.0	40.3	7.2	92.2	78.6	93.6	98.3	96.1	92.7	93.7	98.5	98.8	53.5	87.7
ROSEMEAD 1	0.0	0.0	0.0	0.0	0.0	80.3	97.8	100.0	98.3	98.7	99.3	98.8	99.0	98.3	99.7
ROSEMEAD 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	97.2	99.2	99.3	98.7	99.0	98.0	99.8
MICHILLINDA	83.9	81.4	87.2	87.8	87.2	69.4	83.6	0.0	3.1	98.8	99.3	97.8	99.0	96.3	87.8
BALDWIN 1	95.0	91.7	100.0	100.0	98.3	80.3	97.8	100.0	98.3	98.8	99.2	98.8	99.0	98.0	99.7
BALDWIN 2	95.0	91.7	100.0	100.0	98.6	80.3	97.8	100.0	98.3	0.0	0.0	91.7	96.5	0.0	91.5
SANTA AN 1	95.0	91.4	100.0	100.0	98.9	80.3	97.2	100.0	97.5	98.8	99.3	98.7	99.0	98.2	99.0
SANTA AN 2	76.7	86.1	100.0	100.0	92.5	66.1	91.4	99.2	98.3	98.5	98.8	97.5	98.7	96.8	91.8
HUNTINGTON	93.1	88.3	98.6	97.2	98.3	76.1	83.1	81.9	88.9	98.8	99.3	83.3	95.2	87.2	79.8
MYRTLE	86.7	86.1	94.7	93.3	88.3	72.2	90.0	91.9	97.8	98.8	99.3	98.5	94.8	86.3	69.7
MOUNTAIN	88.6	86.9	86.7	86.7	88.3	61.4	90.6	91.9	88.1	95.3	99.3	85.3	99.0	88.8	99.7
BUENA VISTA	95.0	91.7	100.0	100.0	98.9	80.3	97.8	100.0	98.3	98.7	99.3	98.8	99.0	0.0	0.0
MOUNT OLIVE	79.4	79.2	93.9	93.6	94.7	78.1	95.3	87.2	78.3	99.0	98.8	98.0	98.8	98.8	98.7
IRWINDALE 1	94.4	90.8	99.7	99.2	97.8	79.4	97.2	99.7	96.4	98.8	98.5	97.8	99.2	97.8	94.5
IRWINDALE 2	6.1	4.2	5.3	5.8	4.4	3.3	3.6	3.9	74.2	38.3	0.0	98.0	95.8	99.0	98.3
VERNON	93.3	90.6	98.9	98.3	96.4	79.4	97.2	98.6	98.1	99.0	98.7	97.3	97.2	97.2	97.5

TABLE 5.6

TRAVEL TIME (MINUTES)

FROM VERNON TO LAKE

STARTING TIME: 7:30 AM

MODE	TRAVEL TIME		
		AVERAGE	% TOD
TOD		**36.41**	**100**
10/24/00	28.65		
10/25/00	36.93		
10/31/00	38.47		
11/01/00	41.10		
11/07/00	35.44		
11/14/00	40.06		
12/05/00	38.25		
12/07/00	35.85		
12/12/00	32.98		
SWARM 1		**35.14**	**97**
04/24/01	35.85		
04/25/01	34.43		
SWARM 2b		**21.85**	**60**
04/10/01	24.55		
04/11/01	19.15		
SWARM 1/2b		**26.15**	**72**
05/01/01	25.91		
05/02/01	26.39		

TABLE 5.7a

ON-RAMP VOLUMES (VEHICLES)

FROM 6:00 AM TO 9:00 AM

STATION	PRE SWARM (TOD)									SWARM 1		SWARM 2b		SWARM 1/2b	
	10/24/00	10/25/00	10/31/00	11/01/00	11/07/00	11/14/00	12/05/00	12/07/00	12/12/00	04/24/01	04/25/01	04/10/01	04/11/01	05/01/01	05/02/01
LAKE	2817	2770	2836	2816	2865	2779	2826	2045	2785	2571	2803	2565	2602	1891	2094
HILL	NA	NA	NA	NA	NA	NA	NA	NA	NA	1032	1109	1251	1282	1171	1258
*ALTADENA**	1797	1809	1883	1883	1838	1864	1903	1839	1837	1791	1842	1791	1759	1507	1466
SAN GABRIEL	2188	NA	NA	NA	NA	NA	NA	NA	NA	1889	1862	1806	1795	1606	1590
SIERRA MAD V*,***	1125	1117	1284	189	1210	1174	1169	1153	1095	1153	1140	1023	1070	580	1184
*ROSEMEAD 1***	NA	NA	375	NA	182	540	NA	340	NA	420	427	426	306	382	456
ROSEMEAD 2	NA	NA	NA	NA	NA	NA	2376	2453	2215	2087	2163	2058	2056	2184	2079
MICHILLINDA*	1761	1796	1865	1782	1756	1865	1810	NA	1680	1875	1898	1570	1494	1734	1708
BALDWIN 1	NA	NA	NA	NA	NA	NA	NA	NA	NA	1328	1354	1448	1474	1378	1348
BALDWIN 2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	828	814	NA	925
SANTA AN 1,***	938	1006	1054	1194	968	1024	1015	1039	964	1065	1079	447	903	1074	1118
SANTA AN 2***	1488	1525	1486	1347	1480	1496	1510	1478	1495	1702	1714	1497	1512	1617	1692
HUNTINGTON	1999	2039	1975	1984	1952	1998	1860	1836	1761	1558	1456	1496	1548	1495	1601
MYRTLE	1567	1574	1577	1596	1634	1630	1593	1643	1553	1494	1540	1593	1659	1556	1570
MOUNTAIN	1023	1089	1105	1175	1143	1136	1152	1186	1119	1183	1194	1008	1052	1146	1166
*BUENA VISTA**	762	773	810	769	791	848	820	768	809	884	830	792	892	NA	NA
*MOUNT OLIVE**	574	646	593	638	600	565	606	669	672	754	676	680	491	649	629
*IRWINDALE 1**	996	981	NA	NA	NA	NA	NA	953	476	NA	NA	NA	NA	NA	NA
IRWINDALE 2	1325	1233	1186	1290	1319	1217	1197	1199	1239	NA	NA	1081	1042	NA	NA
VERNON	1071	1101	1117	1143	1122	1098	1114	1104	1149	1492	1152	1006	1040	1146	1113

Notes: TOD adjusted volumes are marked by an asterisk (*)
SWARM 2b adjusted volumes are marked by **
SWARM 1/2b adjusted volumes are marked by ***
Ramps printed in italics have HOV by-pass.

TABLE 5.7b

AVERAGE ON-RAMP VOLUMES (VEHICLES) FROM 6:00 AM TO 9:00 AM

COMPARISON WITH TOD MODE AVERAGE VOLUME

STATION	TOD	SWARM 1		SWARM 2b		SWARM 1/2b	
			%TOD		%TOD		%TOD
LAKE	2727	2687	**99**	2584	**95**	1993	**73**
HILL	NA	1071	**NA**	1267	**NA**	1215	**NA**
*ALTADENA**	1850	1817	**98**	1775	**96**	1487	**80**
SAN GABRIEL	1094	1876	**171**	1801	**165**	1598	**146**
SIERRA MAD V*,***	1057	1147	**108**	1047	**99**	882	**83**
*ROSEMEAD 1***	359	424	**118**	366	**102**	419	**117**
ROSEMEAD 2	2348	2125	**91**	2057	**88**	2132	**91**
MICHILLINDA*	1789	1887	**105**	1532	**86**	1721	**96**
BALDWIN 1	NA	1341	**NA**	1461	**NA**	1363	**NA**
BALDWIN 2	NA	NA	**NA**	821	**NA**	925	**NA**
SANTA AN 1,***	1022	1072	**105**	675	**66**	1096	**107**
SANTA AN 2***	1478	1708	**116**	1505	**102**	1655	**112**
HUNTINGTON	1934	1507	**78**	1522	**79**	1548	**80**
MYRTLE	1596	1517	**95**	1626	**102**	1563	**98**
MOUNTAIN	1125	1189	**106**	1030	**92**	1156	**103**
*BUENA VISTA**	794	857	**108**	842	**106**	NA	**NA**
*MOUNT OLIVE**	618	715	**116**	586	**95**	639	**103**
*IRWINDALE 1**	852	NA	**NA**	NA	**NA**	NA	**NA**
IRWINDALE 2	1245	NA	**NA**	1062	**85**	NA	**NA**
VERNON	1113	1322	**119**	1023	**92**	1130	**101**

Note: Ramps printed in italics have HOV by-pass.

TABLE 5.8

ON-RAMP QUEUE COUNTS

ON-RAMP	CAPACITY	PRE SWARM (TOD)								SWARM 1				SWARM 2b		
		11/14/00	11/16/00	11/28/00	11/29/00	12/05/00	12/07/00	12/12/00	12/19/00	03/13/01	03/14/01	03/15/01	% TOD	03/20/01	04/10/01	% TOD
S/B Irwindale	16			16						14		36	**188**	36		**225**
Myrtle	10			12						18	18	18	**150**	18	10	**117**
Huntington Dr.	22				29					49	35	49	**153**		40	**138**
N/B Santa Anita	39	15										19	**127**		40	**267**
S/B Santa Anita	18					14							**NA**		11	**79**
N/B Baldwin	12				12						10		**83**	38	23	**254**
S/B Baldwin	26		20							24			**120**			**NA**
Michillinda	16					20				42	42	25	**182**	28	10	**95**
N Rosemead 2	17								18	50	50	35	**250**		20	**111**
San Gabriel	18							14		41	34	29	**183**	48		**343**
Altadena	22							18			23	25	**133**	34		**189**
Hill	24		28					18		35	36		**154**			**NA**
Lake	36						40				16		**40**	58	14	**35**

Notes: 1. Table shows only ramps with available data.

2. Bold figures indicate percentage of Q counts compared to TOD Q counts

3. No Q counts for SWARM 1/2b mode.

Runtime: 05-17-2001, 10:29

RAMP METERING REPORT

Metering History - Mode and Metering Rate

FROM: 04-24-2001 07:40:00 TO: 04-24-2001 07:50:00

Metering Rate: 0 Off
1 Greenball

ND = No Data
All values are suspect until verified by Engineer

RMS ID	FREEWAY	PM	NAME	DATE	TIME	REPORTED METERING MODE	METERING RATE (Vehicles/Minute)
716592	LA-210-W	R28.29	SAN GABRIEL	04-24-2001	07:40:30	SWARM 1	15
					07:41:00	SWARM 1	15
					07:41:30	SWARM 1	15
					07:42:00	SWARM 1	15
					07:42:30	SWARM 1	15
					07:43:00	SWARM 1	15
					07:43:30	SWARM 1	15
					07:44:00	SWARM 1	10
					07:44:30	SWARM 1	10
					07:45:00	SWARM 1	7
					07:45:30	SWARM 1	6
					07:46:00	SWARM 1	5
					07:46:30	SWARM 1	5
					07:47:00	SWARM 1	6
					07:47:30	SWARM 1	5
					07:48:00	SWARM 1	5
					07:48:30	SWARM 1	6
					07:49:00	SWARM 1	6
					07:49:30	SWARM 1	7
					07:50:00	SWARM 1	7

TABLE 6.1a

Runtime: 05-17-2001, 10:40

RAMP METERING REPORT

Metering History - Mode and Metering Rate

FROM: 04-25-2001 08:45:00 TO: 04-25-2001 09:00:00

Metering Rate: 0 Off
1 Greenball

ND = No Data
All values are suspect until verified by Engineer

RMS ID	FREEWAY	PM	NAME	DATE	TIME	REPORTED METERING MODE	METERING RATE (Vehicles/Minute)
716592	LA-210-W	R28.29	SAN GABRIEL	04-25-2001	08:45:30	SWARM 1	15
					08:46:00	SWARM 1	15
					08:46:30	SWARM 1	15
					08:47:00	SWARM 1	15
					08:47:30	SWARM 1	15
					08:48:00	SWARM 1	15
					08:48:30	SWARM 1	15
					08:49:00	SWARM 1	10
					08:49:30	SWARM 1	8
					08:50:00	SWARM 1	7
					08:50:30	SWARM 1	6
					08:51:00	SWARM 1	5
					08:51:30	SWARM 1	5
					08:52:00	SWARM 1	5
					08:52:30	SWARM 1	5
					08:53:00	SWARM 1	5
					08:53:30	SWARM 1	5
					08:54:00	SWARM 1	5
					08:54:30	SWARM 1	5
					08:55:00	SWARM 1	5
					08:55:30	SWARM 1	5
					08:56:00	SWARM 1	7
					08:56:30	SWARM 1	6
					08:57:00	SWARM 1	6
					08:57:30	SWARM 1	5
					08:58:00	SWARM 1	7
					08:58:30	SWARM 1	7
					08:59:00	SWARM 1	12
					08:59:30	SWARM 1	12
					09:00:00	SWARM 1	9

TABLE 6.1b

TABLE 6.1c

Adjacent VDS Data: Speed / 30-Second Volume

Tue 10-Apr-01 06:21

Freeway: I-210-W Data at: Apr 10 06:20:30

Freeze Data | Data Display

Lane	VERNON R38.87 Speed	VERNON R38.87 Vol	IRWINDALE 2 R37.92 Speed	IRWINDALE 2 R37.92 Vol	IRWINDALE 1 R37.78 Speed	IRWINDALE 1 R37.78 Vol	MOUNT OLIVE R36.30 Speed	MOUNT OLIVE R36.30 Vol	BUENA VISTA R35.12 Speed	BUENA VISTA R35.12 Vol
HOV1	56	16	58	12	70	0	36	1	54	14
1	54	16	60	21	70	0	70	14	62	20
2	46	21	6	10	70	0	56	10	64	17
3	47	15	64	14	40	16	70	21	61	19
4	50	17	70	14	45	20	70	13	51	11
Average:	49.0	17.2	63.8	16.3	42.8	18.0	67.6	14.5	60.7	16.8
Status:	All Loops Good		Some Loops Bad		Some Loops Bad		All Loops Good		All Loops Good	

Speed = MPH Vol = Veh / 30 Sec

Dismiss

TABLE 6.1d

RMS Control

Tue 10-Apr-01 06:20

RMS ID:	718211	Data at:	Apr 10 06:20:30
County:	LA		
Location:	210 W	Metering Status:	Currently Metering
Postmile:	35.12	Metering Mode:	SWARM (2b)
Cross Street:	BUENA VISTA	Metering Rate:	15 veh/min
		Controller Override:	None
LDS ID/Rev:	715522	% Violations:	0

RMS Control

Tue 10-Apr-01 06:20

RMS ID:	716881	Data at:	Apr 10 06:20:30
County:	LA		
Location:	210 W	Metering Status:	Currently Metering
Postmile:	36.30	Metering Mode:	SWARM (2b)
Cross Street:	MOUNT OLIVE	Metering Rate:	15 veh/min
		Controller Override:	None
LDS ID/Rev:	715521	% Violations:	0

RMS Control

Tue 10-Apr-01 06:20

RMS ID:	716607	Data at:	Apr 10 06:20:30
County:	LA		
Location:	210 W	Metering Status:	Currently Metering
Postmile:	37.78	Metering Mode:	SWARM (2b)
Cross Street:	IRWINDALE SB	Metering Rate:	15 veh/min
		Controller Override:	None
LDS ID/Rev:	715520	% Violations:	0

RMS Control

Tue 10-Apr-01 06:20

RMS ID:	716608	Data at:	Apr 10 06:20:30
County:	LA		
Location:	210 W	Metering Status:	Currently Metering
Postmile:	37.92	Metering Mode:	SWARM (2b)
Cross Street:	IRWINDALE NB	Metering Rate:	11 veh/min
		Controller Override:	None
LDS ID/Rev:	715519	% Violations:	0

RMS Control

Tue 10-Apr-01 06:20

RMS ID:	716609	Data at:	Apr 10 06:20:30
County:	LA		
Location:	210 W	Metering Status:	Currently Metering
Postmile:	38.87	Metering Mode:	SWARM (2b)
Cross Street:	VERNON	Metering Rate:	15 veh/min
		Controller Override:	None
LDS ID/Rev:	715518	% Violations:	0
Status:	Good		
		Metered Lanes:	1
		Ramp Lanes:	2

TABLE 6.1e

Adjacent VDS Data: Speed / 30-Second Volume

Wed 11-Apr-01 09:16

Freeway: I-210-W Data at: Apr 11 09:15:30

Freeze Data Data Display

Lane	MOUNTAIN R34.61 Speed	MOUNTAIN R34.61 Vol	HYRTLE R33.76 Speed	HYRTLE R33.76 Vol	HUNTINGTON 1 R32.76 Speed	HUNTINGTON 1 R32.76 Vol	SANTA ANITA 2 R31.91 Speed	SANTA ANITA 2 R31.91 Vol	SANTA ANITA 1 R31.73 Speed	SANTA ANITA 1 R31.73 Vol
HOV1	65	11	63	8	70	3	57	6	66	11
1	70	16	70	20	70	15	70	18	70	19
2	66	16	70	0	70	18	66	12	69	15
3	55	11	47	10	24	13	46	14	52	16
4	62	14	51	10	56	10	50	14	41	10
Average:	64.0	14.2	59.5	13.3	56.9	14.0	58.6	14.5	60.3	15.0
Status:	All Loops Good		Some Loops Bad		All Loops Good		All Loops Good		All Loops Good	

Speed = MPH Vol = Veh / 30 Sec

Dismiss

TABLE 6.1f

RMS Control
Wed 11-Apr-01
09:15
Data at: Apr 11 09:15:00
RMS ID: 716604
County: LA
Location: 210 W
Postmile: 31.73
Cross Street: SANTA ANITA SB
LDS ID/Rev: 715527
Metering Status: Currently Metering
Metering Mode: SWARM (2b)
Metering Rate: 15 veh/min
Controller Override: None
% Violations: 0
RMS Control
Wed 11-Apr-01
09:15
Data at: Apr 11 09:15:00
RMS ID: 717107
County: LA
Location: 210 W
Postmile: 31.91
Cross Street: SANTA ANITA NB
LDS ID/Rev: 715526
Metering Status: Currently Metering
Metering Mode: SWARM (2b)
Metering Rate: 26 veh/min
Controller Override: None
% Violations: 0
RMS Control
Wed 11-Apr-01
09:15
Data at: Apr 11 09:15:00
RMS ID: 718206
County: LA
Location: 210 W
Postmile: 32.76
Cross Street: HUNTINGTON 1
LDS ID/Rev: 715525
Metering Status: Currently Metering
Metering Mode: SWARM (2b)
Metering Rate: Greenball
Controller Override: None
% Violations: 0
RMS Control
Wed 11-Apr-01
09:15
Data at: Apr 11 09:15:00
RMS ID: 718208
County: LA
Location: 210 W
Postmile: 33.76
Cross Street: MYRTLE
LDS ID/Rev: 715524
Metering Status: Currently Metering
Metering Mode: SWARM (2b)
Metering Rate: Greenball
Controller Override: None
% Violations: 0
RMS Control
Wed 11-Apr-01
09:15
Data at: Apr 11 09:15:00
RMS ID: 761366
County: LA
Location: 210 W
Postmile: 34.61
Cross Street: MOUNTAIN
LDS ID/Rev: 715523
Status: Good
Metering Status: Currently Metering
Metering Mode: SWARM (2b)
Metering Rate: 15 veh/min
Controller Override: None
% Violations: 0

APPENDIXES

1. ABBREVIATIONS

2. TABLES

Table A5.1.1a to Table A5.1.20d	Mainline Data (Volume, Occupancy, Speed)
Table A5.6.1a to Table A5.6.15b	Travel Time

ABBREVIATIONS

AM	Ante Meridiem (period between midnight and noon)
ATMS	Advanced Transportation Management System
EB *or* E/B	Eastbound
GB	Green Ball
LOS	Level Of Service
ML	Mainline
mph	miles per hour
NB *or* N/B	Northbound
NET	National Engineering Technology
Occ	Occupancy
PM	Post Mile
Q	Queue
QO	Queue Override
RMS	Ramps
S	Speed
SATMS	Semi-Automatic Traffic Management System
SB *or* S/B	Southbound
SWARM	System Wide Adaptive Ramp Metering
TMC	Transportation Management Center
TOD	Time Of Day
V	Volume
VDS	Vehicle Dectection Station
vphpl	vehicles per hour per lane
vpmpl	vehicles per minute per lane
WB *or* W/B	Westbound

TABLE A5.1.1a

MAINLINE @ LAKE, W/B LA-210, PM R 26.14

	PRE SWARM (TOD)															
	10/24/ 2000				10/25/ 2000				10/312000				11/01/ 2000			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1951	17.4	41	79991	2260	9.1	57	128820	2170	8.3	60	130200	2217	11.5	57	126369
6:15-6:30	1527	30.6	52	79404	2328	9.5	56	130368	2593	10.0	59	152987	2464	27.2	52	128128
6:30-6:45	2380	20.9	44	104720	2573	11.1	53	136369	2675	10.8	57	152475	2676	11.3	56	149856
6:45-7:00	2218	26.3	40	88720	2603	13.4	45	117135	2755	11.3	56	154280	2574	10.3	55	141570
7:00-7:15	2825	15.6	48	135600	2628	16.6	39	102492	2740	12.1	52	142480	2725	12.4	53	144425
7:15-7:30	2315	27.1	43	99545	2860	16.3	40	114400	2695	13.4	46	123970	2749	13.7	50	137450
7:30-7:45	2743	14.1	44	120692	2833	13.5	48	135984	2287	26.6	40	91480	2574	26.9	49	126126
7:45-8:00	2743	13.5	46	126178	2685	14.0	44	118140	2555	16.8	37	94535	2625	18.3	47	123375
8:00-8:15	2673	13.3	46	122958	2648	13.3	45	119160	2508	14.8	40	100320	2510	18.6	41	102910
8:15-8:30	2480	17.6	35	86800	2603	12.8	47	122341	2488	11.1	51	126888	2559	37.2	43	110037
8:30-8:45	2558	12.9	45	115110	2242	24.4	38	85196	2460	15.0	46	113160	2499	14.2	49	122451
8:45-9:00	2548	12.7	46	117208	1707	35.9	46	78522	2290	12.8	49	112210	2435	25.6	50	121750
Total Volume	***28961***				***29970***				***30216***				***30607***			
Aver Occ		**18.5**				**15.8**				**13.6**				**18.9**		
Aver Speed			***44***				***46***				***49***				***50***	

TABLE A5.1.1b

MAINLINE @ LAKE, W/B LA-210, PM R 26.14

	PRE SWARM (TOD)															
	11/07/ 2000				11/14/ 2000				12/05/ 2000				12/07/ 2000			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	2173	8.4	59	128207	3110	15.7	51	158610	2028	6.9	67	135876	2132	9.6	61	130052
6:15-6:30	2385	9.8	56	133560	2203	25.5	42	92526	2398	8.4	65	155870	2575	12.3	57	146775
6:30-6:45	2403	10.0	55	132165	2273	23.5	45	102285	2553	8.9	65	165945	2630	11.8	59	155170
6:45-7:00	2285	15.6	46	105110	2580	11.1	54	139320	2668	9.5	64	170752	2133	29.3	57	121581
7:00-7:15	2605	11.7	51	132855	2817	18.2	43	121131	2605	9.2	65	169325	2693	9.8	63	169659
7:15-7:30	2753	13.5	47	129391	2790	20.0	39	108810	2753	11.5	54	148662	2710	11.6	53	143630
7:30-7:45	2705	14.3	43	116315	2390	27.2	36	86040	2608	13.5	44	114752	2875	18.3	44	126500
7:45-8:00	2675	13.0	47	125725	2458	23.9	37	90946	2528	15.5	38	96064	2075	30.9	35	72625
8:00-8:15	2575	14.0	42	108150	2618	13.8	43	112574	2460	11.4	49	120540	2295	24.2	42	96390
8:15-8:30	2498	13.4	42	104916	2615	13.7	43	112445	2035	23.5	44	89540	2733	12.1	52	142116
8:30-8:45	2513	13.6	42	105546	2450	17.6	39	95550	2071	22.7	37	76627	2603	11.3	53	137959
8:45-9:00	2433	11.3	49	119217	2090	26.3	36	75240	2453	10.7	52	127556	2640	11.1	54	142560
Total Volume	***30003***				***30394***				***29160***				***30094***			
Aver Occ		**12.4**				**19.7**				**12.6**				**16.0**		
Aver Speed			***48***				***43***				***54***				***53***	

TABLE A5.1.1c

MAINLINE @ LAKE, W/B LA-210, PM R 26.14

	PRE SWARM (TOD)				SWARM 1								SWARM 2b			
	12/12/ 2000				4/24/ 2001				4/25/ 2001				4/10/ 2001			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1881	9.2	54	101574	1859	7.7	65	1E+05	2077	8.8	62	128774	1915	8.2	62	118730
6:15-6:30	1782	20.6	47	83754	2028	7.7	68	1E+05	2337	9.6	64	149568	2374	10.0	62	147188
6:30-6:45	2380	9.7	60	142800	2266	9.0	66	1E+05	2381	10.3	61	145241	2340	9.4	65	152100
6:45-7:00	2430	9.6	61	148230	2409	10.2	62	1E+05	2449	10.8	60	146940	2450	10.6	61	149450
7:00-7:15	2100	21.4	46	96600	2520	11.3	59	1E+05	2460	12.3	53	130380	2410	12.2	52	125320
7:15-7:30	2733	12.3	55	150315	2616	12.6	55	1E+05	2527	14.1	47	118769	2581	11.8	57	147117
7:30-7:45	2790	14.6	47	131130	2506	13.8	48	1E+05	2537	13.3	50	126850	2576	13.0	53	136528
7:45-8:00	2726	17.1	44	119944	2511	14.0	47	1E+05	2497	14.7	45	112365	2505	13.7	48	120240
8:00-8:15	2610	15.3	47	122670	2475	14.2	46	1E+05	2434	13.5	48	116832	2500	13.7	48	120000
8:15-8:30	2484	17.9	45	111780	2290	11.7	52	1E+05	2434	13.3	48	116832	2469	14.2	47	116043
8:30-8:45	2490	12.2	51	126990	2305	10.5	57	1E+05	2348	13.3	47	110356	2385	13.6	47	112095
8:45-9:00	2378	10.4	56	133168	2417	12.6	51	1E+05	2349	12.9	48	112752	2371	13.9	46	109066
Total Volume	***28784***				***28202***				***28830***				***28876***			
Aver Occ		**14.2**				**11.3**				**12.2**				**12.0**		
Aver Speed			***51***				***56***				***53***				***54***	

TABLE A5.1.1d

MAINLINE @ LAKE, W/B LA-210, PM R 26.14

	SWARM 2b				SWARM 1/2b							
	4/11/ 2001				5/01/ 2001				5/02/ 2001			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1934	8.0	63	121842	2029	8.2	65	131885	2018	8.7	62	125116
6:15-6:30	2311	9.5	64	147904	2272	9.6	62	140864	2236	9.4	62	138632
6:30-6:45	2418	10.0	63	152334	2385	9.5	65	155025	2322	9.5	63	146286
6:45-7:00	2494	10.3	63	157122	2341	10.0	62	145142	2313	9.3	64	148032
7:00-7:15	2467	10.8	60	148020	2563	12.5	55	140965	2409	10.3	61	146949
7:15-7:30	2711	14.1	51	138261	2452	13.6	48	117696	2463	11.4	57	140391
7:30-7:45	2804	15.0	50	140200	2521	11.0	60	151260	2619	12.8	54	141426
7:45-8:00	2697	12.4	57	153729	2534	12.2	56	141904	2460	10.0	64	157440
8:00-8:15	2629	12.4	56	147224	2310	10.9	56	129360	2367	11.4	55	130185
8:15-8:30	2496	11.1	59	147264	2242	11.2	54	121068	2258	11.4	54	121932
8:30-8:45	2458	11.9	55	135190	2205	11.1	53	116865	2269	11.3	54	122526
8:45-9:00	2287	10.2	59	134933	2158	10.7	53	114374	2296	13.3	47	107912
Total Volume	***29706***				***28012***				***28030***			
Aver Occ		**11.3**				**10.9**				**10.7**		
Aver Speed			***58***				***57***				***58***	

TABLE A5.1.2a

MAINLINE @ HILL, W/B LA-210, PM R 26.82

	PRE SWARM (TOD)															
	10/24/ 2000				10/25/ 2000				10/31/ 2000				11/01/ 2000			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1825	17.7	41	74825	1618	22.4	42	67956	1418	31.7	35	49630	1738	24.4	43	74734
6:15-6:30	2200	10.6	52	114400	1900	21.5	40	76000	1530	38.4	48	73440	2043	21.2	41	83763
6:30-6:45	1673	31.5	40	66920	1753	25.5	40	70120	2605	10.5	56	145880	1493	41.4	50	74650
6:45-7:00	1433	41.2	50	71650	1915	26.4	37	70855	2580	10.6	56	144480	1258	44.6	56	70448
7:00-7:15	1863	31.4	38	70794	1403	45.0	51	71553	1838	29.0	41	75358	1508	40.6	46	69368
7:15-7:30	2690	12.5	49	131810	2795	16.2	39	109005	1658	38.9	30	49740	2530	16.4	35	88550
7:30-7:45	2625	17.7	34	89250	2710	13.1	47	127370	2475	11.9	48	118800	1778	35.8	21	37338
7:45-8:00	2520	12.3	47	118440	2475	17.8	32	79200	1578	37.2	36	56808	1595	41.5	21	33495
8:00-8:15	2450	11.6	48	117600	1385	44.1	34	47090	1225	45.6	49	60025	2435	20.1	28	68180
8:15-8:30	2575	12.0	49	126175	2535	13.7	42	106470	2420	11.4	49	118580	2390	17.9	31	74090
8:30-8:45	2440	14.8	38	92720	2545	14.0	41	104345	2170	10.1	49	106330	2425	18.1	31	75175
8:45-9:00	2505	15.6	37	92685	2390	17.0	32	76480	2140	10.0	49	104860	1490	36.9	28	41720
Total Volume	***26799***				***25424***				***23637***				***22683***			
Aver Occ		**19.1**				**23.1**				**23.8**				**29.9**		
Aver Speed			***44***				***40***				***47***				***35***	

TABLE A5.1.2b

MAINLINE @ HILL, W/B LA-210, PM R 26.82

	PRE SWARM (TOD)															
	11/07/ 2000				11/14/ 2000				12/05/ 2000				12/07/ 2000			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1403	32.0	46	64538	1575	31.2	44	69300	1955	8.6	55	107525	1407	26.7	35	49245
6:15-6:30	2405	11.3	54	129870	1688	29.4	41	69208	1643	30.5	46	75578	1608	30.0	37	59496
6:30-6:45	1760	25.3	41	72160	1463	40.5	46	67298	2385	14.7	45	107325	1915	21.7	36	68940
6:45-7:00	1590	37.2	48	76320	1328	44.8	54	71712	2323	20.7	40	92920	1770	34.5	37	65490
7:00-7:15	1948	25.6	38	74024	1423	41.7	49	69727	2535	9.6	60	152100	1683	29.9	47	79101
7:15-7:30	2610	12.3	48	125280	2590	11.9	50	1E+05	2753	25.6	33	90849	1487	37.3	26	38662
7:30-7:45	2465	17.5	32	78880	2590	18.0	33	85470	2608	39.3	21	54768	1793	34.5	26	46618
7:45-8:00	1638	37.1	28	45864	2565	20.4	29	74385	2528	49.4	30	75840	1405	42.7	21	29505
8:00-8:15	1235	47.3	37	45695	2440	15.7	35	85400	2460	33.0	26	63960	1712	37.3	19	32528
8:15-8:30	2390	17.5	31	74090	2390	16.3	33	78870	2035	30.6	25	50875	2428	24.2	25	60700
8:30-8:45	2370	15.7	34	80580	2390	16.3	33	78870	2071	12.4	46	95266	1790	33.1	34	60860
8:45-9:00	2270	10.5	49	111230	2420	14.6	38	91960	2453	21.7	30	73590	2620	14.1	42	110040
Total Volume	***24084***				***24862***				***27749***				***21618***			
Aver Occ		**24.1**				**25.1**				**24.7**				**30.5**		
Aver Speed			***41***				***39***				***38***				***32***	

TABLE A5.1.2c

MAINLINE @ HILL, W/B LA-210, PM R 26.82

	PRE SWARM (TOD)				SWARM 1								SWARM 2b			
	12/12/ 2000				4/24/ 2001				4/25/ 2001				4/10/ 2001			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1327	25.0	33	43791	2110	7.3	73	154030	2363	8.5	71	167773	1762	6.2	73	128626
6:15-6:30	1660	22.8	35	58100	1803	6.3	73	131619	2246	8.0	73	163958	2120	7.5	73	154760
6:30-6:45	1500	32.4	35	52500	2000	7.2	71	142000	2313	8.6	70	161910	2089	7.5	71	148319
6:45-7:00	1945	27.3	44	85580	2172	7.8	71	154212	2320	8.7	69	160080	2206	7.9	71	156626
7:00-7:15	2200	20.2	41	90200	2120	8.0	67	142040	2328	10.6	57	132696	2172	8.2	67	145524
7:15-7:30	1640	35.1	46	75440	2254	8.9	64	144256	2316	13.5	45	104220	2276	9.0	65	147940
7:30-7:45	1898	30.5	39	74022	2338	12.8	47	109886	2328	16.4	38	88464	2333	9.4	63	146979
7:45-8:00	1727	35.0	24	41448	2257	12.8	46	103822	2193	15.2	38	83334	2232	10.4	55	122760
8:00-8:15	1793	32.4	29	51997	2194	12.1	48	105312	2105	12.8	43	90515	2217	12.0	48	106416
8:15-8:30	1950	31.6	32	62400	2034	11.1	48	97632	2075	13.6	41	85075	2143	9.9	56	120008
8:30-8:45	1795	34.4	37	66415	2402	10.2	60	144120	2119	13.2	43	91117	2087	12.4	45	93915
8:45-9:00	1595	35.4	45	71775	2369	9.8	62	146878	2497	11.1	58	144826	2072	10.9	50	103600
Total Volume	***21030***				***26053***				***27203***				***25709***			
Aver Occ		**30.2**				**9.5**				**11.7**				**9.3**		
Aver Speed			***37***				***60***				***54***				***61***	

TABLE A5.1.2d

MAINLINE @ HILL, W/B LA-210, PM R 26.82

	SWARM 2b				SWARM 1/2b							
	4/11/ 2001				5/01/ 2001				5/02/ 2001			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	2308	8.4	71	163868	1857	6.5	72	133704	2029	7.5	69	140001
6:15-6:30	2603	9.4	71	184813	2066	7.3	72	148752	2284	8.8	67	153028
6:30-6:45	2416	8.7	72	173952	2241	8.0	71	159111	2164	8.3	66	142824
6:45-7:00	2491	9.2	70	174370	2175	7.9	70	152250	2179	8.4	66	143814
7:00-7:15	2396	9.1	68	162928	2388	9.3	66	157608	2215	8.9	63	139545
7:15-7:30	2588	11.4	59	152692	2452	8.9	66	161832	2226	9.1	62	138012
7:30-7:45	2655	12.7	55	146025	2521	9.4	64	161344	2454	10.5	59	144786
7:45-8:00	2362	9.6	63	148806	2534	12.2	50	126700	2168	9.5	58	125744
8:00-8:15	2197	9.4	60	131820	2310	14.7	40	92400	2181	13.4	42	91602
8:15-8:30	2166	8.1	68	147288	2242	12.9	43	96406	2107	12.2	44	92708
8:30-8:45	2128	7.8	70	148960	2205	11.6	49	108045	2118	12.2	45	95310
8:45-9:00	2022	7.8	66	133452	2158	10.4	50	107900	2189	12.7	44	96316
Total Volume	***28332***				***27149***				***26314***			
Aver Occ		**9.3**				**9.9**				**10.1**		
Aver Speed			***66***				***59***				***57***	

TABLE A5.1.3a

MAINLINE @ ALTADENA, W/B LA-210, PM R 28.05

	PRE SWARM (TOD)															
	10/24/ 2000				10/25/ 2000				10/31/ 2000				11/01/ 2000			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	2159	10.9	50	107950	2164	10.9	50	108200	2107	11.0	50	105350	2190	11.6	50	109500
6:15-6:30	2258	12.0	48	108384	2277	12.3	47	107019	2389	13.4	48	114672	2373	13.7	47	111531
6:30-6:45	2342	13.6	45	105390	2352	13.0	47	110544	2407	12.8	49	117943	2499	13.5	48	119952
6:45-7:00	2406	13.8	45	108270	2532	14.1	47	119004	2524	14.1	47	118628	2462	13.6	47	115714
7:00-7:15	2510	16.7	40	100400	2591	15.6	44	114004	2532	16.8	40	101280	2501	14.5	45	112545
7:15-7:30	2572	19.3	35	90020	2542	20.7	33	83886	2476	22.3	29	71804	2392	22.2	28	66976
7:30-7:45	2407	23.1	28	67396	2435	22.5	29	70615	2272	25.6	24	54528	2261	25.0	24	54264
7:45-8:00	2249	25.4	24	53976	2361	24.1	26	61386	2376	23.8	27	64152	2166	26.2	22	47652
8:00-8:15	2367	21.9	29	68643	2385	22.6	28	66780	2333	22.9	28	65324	2220	24.6	24	53280
8:15-8:30	2335	22.7	28	65380	2353	22.5	28	65884	2243	23.9	26	58318	2162	25.3	23	49726
8:30-8:45	2364	21.5	30	70920	2372	22.0	29	68788	2186	24.5	24	52464	2296	22.9	27	61992
8:45-9:00	2399	20.1	32	76768	2328	22.3	29	67512	2066	25.7	22	45452	2223	23.3	26	57798
Total Volume	***28368***				***28692***				***27911***				***27745***			
Aver Occ		**18.4**				**18.6**				**19.7**				**19.7**		
Aver Speed			***36***				***36***				***35***				***35***	

TABLE A5.1.3b

MAINLINE @ ALTADENA, W/B LA-210, PM R 28.05

	PRE SWARM (TOD)															
	11/07/ 2000				11/14/ 2000				12/05/ 2000				12/07/ 2000			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	2135	10.8	50	106750	2221	11.4	49	108829	2015	9.5	56	112840	2064	9.8	55	113520
6:15-6:30	2322	12.2	49	113778	2305	11.8	50	115250	2241	10.7	55	123255	2287	10.9	54	123498
6:30-6:45	2373	13.0	47	111531	2224	11.7	49	108976	2401	11.8	54	129654	2386	11.5	54	128844
6:45-7:00	2557	13.5	49	125293	2494	13.1	49	122206	2523	13.2	51	128673	2656	12.7	55	146080
7:00-7:15	2427	16.0	40	97080	2542	14.0	47	119474	2490	12.3	53	131970	2510	13.0	51	128010
7:15-7:30	2456	21.9	30	73680	2569	18.0	37	95053	2509	17.2	39	97851	2532	19.9	34	86088
7:30-7:45	2283	24.3	25	57075	2485	23.5	29	72065	2238	22.7	27	60426	2337	22.7	28	65436
7:45-8:00	2299	23.7	26	59774	2216	25.2	24	53184	2261	22.3	28	63308	2323	24.2	26	60398
8:00-8:15	2377	22.2	29	68933	2257	23.8	26	58682	2149	23.5	25	53725	2406	21.3	32	76992
8:15-8:30	2212	24.1	24	53088	2245	24.0	25	56125	2215	22.1	28	62020	2301	21.7	29	66729
8:30-8:45	2239	24.9	24	53736	2180	24.7	24	52320	2262	20.2	31	70122	2421	20.6	33	79893
8:45-9:00	2249	21.2	29	65221	2289	22.3	28	64092	2288	20.0	32	73216	2354	22.0	30	70620
Total Volume	*27929*				*28027*				*27592*				*28577*			
Aver Occ		**19.0**				**18.6**				**17.1**				**17.5**		
Aver Speed			*35*				*37*				*40*				*40*	

TABLE A5.1.3c

MAINLINE @ ALTADENA, W/B LA-210, PM R 28.05

	PRE SWARM (TOD)				SWARM 1								SWARM 2b			
	12/12/ 2000				4/24/ 2001				4/25/ 2001				4/10/ 2001			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1847	9.6	51	94197	1888	8.3	59	111392	2160	9.8	57	123120	2016	9.1	57	114912
6:15-6:30	2056	10.7	51	104856	1958	8.3	61	119438	2312	10.6	57	131784	2320	10.9	56	129920
6:30-6:45	2258	12.0	50	112900	2306	11.3	55	126830	2340	12.3	50	117000	2388	10.8	58	138504
6:45-7:00	2406	12.4	52	125112	2355	11.7	53	124815	2411	12.3	52	125372	2444	12.4	52	127088
7:00-7:15	2494	13.7	48	119712	2418	15.5	41	99138	2400	13.0	50	120000	2360	13.4	47	110920
7:15-7:30	2564	17.4	40	102560	2473	16.6	40	98920	2368	16.9	37	87616	2493	14.9	44	109692
7:30-7:45	2479	20.9	33	81807	2257	21.6	28	63196	2379	19.7	33	78507	2461	18.5	36	88596
7:45-8:00	2472	21.2	33	81576	2286	22.2	27	61722	2338	21.2	30	70140	2368	20.0	32	75776
8:00-8:15	2298	22.8	28	64344	2287	21.0	29	66323	2240	21.3	29	64960	2405	19.6	34	81770
8:15-8:30	2444	19.6	34	83096	2065	23.0	24	49560	2190	20.2	29	63510	2435	19.8	33	80355
8:30-8:45	2376	20.2	33	78408	2192	21.0	28	61376	2216	19.5	31	68696	2468	19.4	34	83912
8:45-9:00	2344	20.6	31	72664	2393	19.9	33	78969	2057	22.8	25	51425	2272	21.3	29	65888
Total Volume	***28038***				***26878***				***27411***				***28430***			
Aver Occ		**16.8**				**16.7**				**16.6**				**15.8**		
Aver Speed			***40***				***39***				***40***				***42***	

TABLE A5.21.3d

MAINLINE @ ALTADENA, W/B LA-210, PM R 28.05

	SWARM 2b				SWARM 1/2b							
	4/11/ 2001				5/01/ 2001				5/02/ 2001			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1985	9.0	57	113145	2118	9.5	58	122844	2057	9.5	57	117249
6:15-6:30	2322	10.7	56	130032	2234	10.3	56	125104	2269	10.5	57	129333
6:30-6:45	2412	11.0	57	137484	2329	10.7	57	132753	2289	10.6	56	128184
6:45-7:00	2527	12.1	55	138985	2495	12.1	53	132235	2404	11.4	55	132220
7:00-7:15	2503	12.8	51	127653	2595	12.9	52	134940	2461	12.0	53	130433
7:15-7:30	2673	17.1	41	109593	2504	12.9	50	125200	2522	15.2	44	110968
7:30-7:45	2635	15.4	46	121210	2570	18.1	38	97660	2642	18.2	39	103038
7:45-8:00	2602	19.7	37	96274	2604	19.6	36	93744	2510	12.4	54	135540
8:00-8:15	2413	14.8	43	103759	2437	19.3	35	85295	2474	14.2	46	113804
8:15-8:30	2484	14.5	46	114264	2204	22.1	27	59508	2314	18.0	34	78676
8:30-8:45	2400	11.5	55	132000	2161	22.7	25	54025	2346	20.8	32	75072
8:45-9:00	2398	12.4	52	124696	2151	21.8	27	58077	2181	21.1	29	63249
Total Volume	***29354***				***28402***				***28469***			
Aver Occ		**13.4**				**16.0**				**14.5**		
Aver Speed			***49***				***43***				***46***	

TABLE A5.1.4a

MAINLINE @ SAN GABRIEL, W/B LA-210, PM R28.29

	PRE SWARM (TOD)															
	10/24/ 2000				10/25/ 2000				10/31/ 2000				11/01/ 2000			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	2206	10.5	57	125742	2199	11.2	55	120945	2032	9.3	59	119888	2112	8.7	62	130944
6:15-6:30	2302	12.1	53	122006	2311	11.1	55	127105	2337	10.7	59	137883	2298	9.6	62	142476
6:30-6:45	2386	11.9	54	128844	2314	10.2	59	136526	2316	11.4	57	132012	2388	10.1	61	145668
6:45-7:00	2430	12.3	53	128790	2499	12.2	55	137445	2504	12.4	53	132712	2353	10.1	61	143533
7:00-7:15	2497	12.9	52	129844	2609	12.6	55	143495	2443	14.3	43	105049	2384	11.4	57	135888
7:15-7:30	2555	15.5	44	112420	2533	21.0	32	81056	2360	20.2	30	70800	2267	22.1	27	61209
7:30-7:45	2491	19.4	34	84694	2399	21.3	30	71970	2230	23.8	24	53520	2169	23.6	24	52056
7:45-8:00	2225	26.0	23	51175	2288	23.1	26	59488	2305	23.1	26	59930	2055	24.9	22	45210
8:00-8:15	2347	22.8	27	63369	2321	22.7	27	62667	2289	22.0	27	61803	2158	24.3	23	49634
8:15-8:30	2325	21.0	29	67425	2363	21.2	30	70890	2318	23.1	27	62586	2192	24.8	23	50416
8:30-8:45	2391	22.4	28	66948	2398	22.4	29	69542	2242	24.4	24	53808	2275	22.4	27	61425
8:45-9:00	2436	21.1	33	80388	2382	21.9	29	69078	2135	23.1	25	53375	2218	23.0	26	57668
Total Volume	***28591***				***28616***				***27511***				***26869***			
Aver Occ		**17.3**				**17.6**				**18.2**				**17.9**		
Aver Speed			***41***				***40***				***38***				***40***	

TABLE A5.1.4b

MAINLINE @ SAN GABRIEL, W/B LA-210, PM R28.29

	PRE SWARM (TOD)															
	11/07/ 2000				11/14/ 2000				12/05/ 2000				12/07/ 2000			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	2158	9.5	59	127322	2141	8.8	62	132742	2109	9.8	59	124431	2082	8.7	61	127002
6:15-6:30	2311	10.1	60	138660	2161	8.8	63	136143	2247	11.1	57	128079	2253	9.5	61	137433
6:30-6:45	2303	9.9	60	138180	2071	8.5	63	130473	2344	12.2	56	131264	2348	9.1	66	154968
6:45-7:00	2489	10.7	60	149340	2410	10.5	58	139780	2540	12.3	57	144780	2640	10.3	65	171600
7:00-7:15	2540	15.3	44	111760	2426	11.0	56	135856	2480	11.5	59	146320	2499	10.4	63	157437
7:15-7:30	2441	21.0	31	75671	2370	15.4	40	94800	2698	16.6	43	116014	2499	17.2	37	92463
7:30-7:45	2237	24.8	24	53688	2344	20.0	31	72664	2299	22.5	27	62073	2277	22.5	27	61479
7:45-8:00	2303	24.4	25	57575	2041	23.3	22	44902	2252	23.9	25	56300	2320	23.3	26	60320
8:00-8:15	2331	21.9	28	65268	2110	22.5	24	50640	2138	22.2	26	55588	2412	21.8	29	69948
8:15-8:30	2207	23.1	25	55175	2112	22.2	25	52800	2281	23.2	26	59306	2322	23.8	26	60372
8:30-8:45	2264	23.8	25	56600	2061	23.1	23	47403	2290	22.0	27	61830	2376	22.3	28	66528
8:45-9:00	2273	22.5	27	61371	2152	20.9	27	58104	2295	19.9	30	68850	2437	18.4	35	85295
Total Volume	***27857***				***26399***				***27973***				***28465***			
Aver Occ		**18.1**				**16.3**				**17.3**				**16.4**		
Aver Speed			***39***				***42***				***41***				***44***	

TABLE A5.1.4c

MAINLINE @ SAN GABRIEL, W/B LA-210, PM R28.29

	PRE SWARM (TOD)				SWARM 1								SWARM 2b			
	12/12/ 2000				4/24/ 2001				4/25/ 2001				4/10/ 2001			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1835	8.0	58	106430	1994	7.5	64	127616	2294	8.9	61	139934	1940	7.4	67	129980
6:15-6:30	2013	8.7	59	118767	1845	6.4	73	134685	2423	9.4	61	147803	2179	8.4	66	143814
6:30-6:45	2181	10.2	54	117774	2212	8.2	68	150416	2411	10.6	54	130194	2269	8.5	68	154292
6:45-7:00	2374	10.5	57	135318	2228	8.9	64	142592	2441	9.7	60	146460	2313	9.3	64	148032
7:00-7:15	2460	11.5	55	135300	2284	13.7	45	102780	2455	10.1	58	142390	2223	10.4	56	124488
7:15-7:30	2443	14.7	42	102606	2271	15.2	40	90840	2324	14.4	39	90636	2392	10.5	58	138736
7:30-7:45	2396	20.7	30	71880	2060	21.5	25	51500	2191	20.4	28	61348	2262	15.4	40	90480
7:45-8:00	2411	21.1	30	72330	2179	20.8	27	58833	2087	20.9	26	54262	2205	18.0	32	70560
8:00-8:15	2332	23.6	26	60632	2078	20.3	27	56106	2047	21.3	25	51175	2236	18.9	31	69316
8:15-8:30	2388	22.0	28	66864	1885	22.9	21	39585	2020	20.1	26	52520	2259	19.2	31	70029
8:30-8:45	2350	20.7	30	70500	2045	20.9	25	51125	2046	20.7	26	53196	2274	18.2	33	75042
8:45-9:00	2322	20.2	30	69660	2149	19.8	28	60172	1970	21.2	24	47280	2138	18.5	30	64140
Total Volume	***27505***				***25230***				***26709***				***26690***			
Aver Occ		**16.0**				**15.5**				**15.6**				**13.6**		
Aver Speed			***41***				***42***				***42***				***48***	

TABLE A5.1.4d

MAINLINE @ SAN GABRIEL, W/B LA-210, PM R28.29

	SWARM 2b				SWARM 1/2b							
	4/11/ 2001				5/01/ 2001				5/02/ 2001			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1890	7.3	65	122850	2214	8.6	62	137268	2200	8.5	62	136400
6:15-6:30	2204	8.3	67	147668	2353	9.4	60	141180	2386	9.3	61	145546
6:30-6:45	2268	8.6	66	149688	2434	9.4	62	150908	2375	9.3	61	144875
6:45-7:00	2406	9.2	66	158796	2574	10.4	59	151866	2473	10	59	145907
7:00-7:15	2407	10.0	61	146827	2675	11.2	57	152475	2534	10.6	57	144438
7:15-7:30	2491	14.8	45	112095	2550	12.2	50	127500	2451	15.1	42	102942
7:30-7:45	2461	10.3	61	150121	2368	18.0	33	78144	2399	14.5	43	103157
7:45-8:00	2395	18.3	35	83825	2323	17.1	36	83628	2278	9.2	64	145792
8:00-8:15	2208	13.5	43	94944	2280	18.6	32	72960	2353	11.3	54	127062
8:15-8:30	2297	10.3	58	133226	2095	21.0	26	54470	2251	13.1	45	101295
8:30-8:45	2259	8.8	66	149094	1998	22.2	23	45954	2137	18.3	30	64110
8:45-9:00	2247	8.9	65	146055	2004	20.5	25	50100	2018	20.4	25	50450
Total Volume	***27533***				***27868***				***27855***			
Aver Occ		**10.7**				**14.9**				**12.5**		
Aver Speed			***58***				***45***				***51***	

TABLE A5.1.5a

MAINLINE @ SIERRA MADRE VILLA, W/B LA-210, PM R 29.19

	PRE SWARM (TOD)															
	10/24/ 2000				10/25/ 2000				10/31/ 2000				11/01/ 2000			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	2045	9.7	52	106340	2051	9.9	51	104601	2048	9.7	52	106496	ND	ND	ND	#VALUE!
6:15-6:30	2093	10.5	49	102557	2136	10.5	51	108936	2322	11.3	51	118422	ND	ND	ND	#VALUE!
6:30-6:45	2163	11.1	49	105987	2076	10.3	50	103800	2170	10.3	53	115010	ND	ND	ND	#VALUE!
6:45-7:00	2261	11.3	50	113050	2224	11.1	50	111200	2364	11.5	51	120564	ND	ND	ND	#VALUE!
7:00-7:15	2253	11.4	49	110397	2326	12.0	49	113974	2733	18.4	43	117519	ND	ND	ND	#VALUE!
7:15-7:30	2347	12.2	48	112656	2331	13.8	42	97902	2294	14.6	41	94054	ND	ND	ND	#VALUE!
7:30-7:45	2319	12.9	45	104355	2211	17.8	32	70752	2062	24.6	22	45364	ND	ND	ND	#VALUE!
7:45-8:00	2015	22.3	24	48360	2140	20.3	28	59920	2125	22.4	24	51000	ND	ND	ND	#VALUE!
8:00-8:15	2031	20.5	26	52806	1983	21.6	25	49575	2062	21.2	25	51550	ND	ND	ND	#VALUE!
8:15-8:30	2118	15.2	36	76248	2194	18.3	31	68014	2140	15.9	34	72760	1983	24.1	21	41643
8:30-8:45	2194	11.6	48	105312	2169	13.5	41	88929	ND	ND	ND	######	2060	21.1	25	51500
8:45-9:00	ND	ND	ND	######	ND	ND	ND	######	ND	ND	ND	######	ND	ND	ND	#VALUE!
Total Volume	***26006***				***26008***				***26784***				***24258***			
Aver Occ		**13.5**				**14.5**				**16.0**				**22.6**		
Aver Speed			***44***				***41***				***40***				***23***	

TABLE A5.1.5b

MAINLINE @ SIERRA MADRE VILLA, W/B LA-210, PM R 29.19

	PRE SWARM (TOD)															
	11/07/ 2000				11/14/2000				12/05/ 2000				12/07/ 2000			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1981	10.4	49	97069	2087	10.1	51	106437	1934	8.3	58	112172	2145	8.8	58	124410
6:15-6:30	2161	10.6	51	110211	2053	9.4	54	110862	1973	11.8	54	106542	2303	9.5	58	133574
6:30-6:45	2167	12.1	46	99682	2025	9.6	53	107325	2173	12.3	52	112996	2373	9.7	58	137634
6:45-7:00	2756	17.5	46	126776	2201	10.6	52	114452	2191	14.9	52	113932	2590	10.6	58	150220
7:00-7:15	2276	11.9	48	109248	2204	10.7	51	112404	1930	22.8	58	111940	2415	10.4	55	132825
7:15-7:30	2267	14.8	38	86146	2446	12.7	48	117408	2337	11.4	51	119187	2460	12.0	49	120540
7:30-7:45	2105	20.6	26	54730	2257	14.8	39	88023	2172	13.4	41	89052	2160	16.5	31	66960
7:45-8:00	2029	23.6	23	46667	2075	20.5	26	53950	2048	21.8	25	51200	2204	17.9	30	66120
8:00-8:15	2119	17.6	31	65689	2041	23.2	23	46943	1833	23.2	21	38493	2055	17.5	28	57540
8:15-8:30	2004	18.4	28	56112	2096	23.1	23	48208	2065	17.6	31	64015	2041	17.7	28	57148
8:30-8:45	2009	19.1	27	54243	2052	21.9	24	49248	1771	25.4	20	35420	2186	15.1	35	76510
8:45-9:00	2028	17.8	29	58812	1976	20.7	25	49400	2117	13.3	40	84680	2274	12.3	44	100056
Total Volume	***25902***				***25513***				***24544***				***27206***			
Aver Occ		**16.2**				**15.6**				**16.4**				**13.2**		
Aver Speed			***37***				***39***				***42***				***45***	

TABLE A5.1.5c

MAINLINE @ SIERRA MADRE VILLA, W/B LA-210, PM R 29.19

	PRE SWARM (TOD)				SWARM 1								SWARM 2b			
	12/12/ 2000				4/24/ 2001				4/25/ 2001				4/10/ 2001			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1926	8.6	53	102078	1636	13.0	57	93252	2022	8.5	59	119298	1877	7.9	59	110743
6:15-6:30	2089	9.2	54	112806	1853	7.6	62	114886	2169	9.4	58	125802	2131	9.1	58	123598
6:30-6:45	2184	9.5	55	120120	1996	15.9	56	111776	2170	9.6	56	121520	2193	9.2	59	129387
6:45-7:00	2340	10.0	56	131040	2246	9.5	59	132514	2150	9.4	57	122550	2250	9.7	58	130500
7:00-7:15	2373	10.2	55	130515	2216	9.6	58	128528	2214	9.7	57	126198	2197	9.6	57	125229
7:15-7:30	2466	11.1	53	130698	2303	10.5	55	126665	2215	10.4	54	119610	2270	10.5	55	124850
7:30-7:45	2360	13.9	41	96760	2179	14.3	39	84981	2253	15.2	38	85614	2239	10.1	56	125384
7:45-8:00	2279	13.9	39	88881	2085	19.0	29	60465	2050	17.2	31	63550	2265	10.2	56	126840
8:00-8:15	2100	17.1	30	63000	2005	19.1	28	56140	2034	20.6	26	52884	2246	11.2	50	112300
8:15-8:30	2144	14.1	36	77184	1840	21.1	23	42320	2000	20.2	26	52000	2235	13.5	42	93870
8:30-8:45	2170	13.9	37	80290	1966	19.4	26	51116	1984	18.7	27	53568	2208	11.8	47	103776
8:45-9:00	2318	11.4	48	111264	2090	14.7	37	77330	2066	13.9	38	78508	2121	11.3	47	99687
Total Volume	***26749***				***24415***				***25327***				***26232***			
Aver Occ		**11.9**				**14.5**				**13.6**				**10.3**		
Aver Speed			***47***				***44***				***44***				***54***	

TABLE A5.1.5d

MAINLINE @ SIERRA MADRE VILLA, W/B LA-210, PM R 29.19

	SWARM 2b				SWARM 1/2b							
	4/11/ 2001				5/01/ 2001				5/02/ 2001			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1892	7.9	60	113520	2477	10.6	61	151097	1995	12.0	54	107730
6:15-6:30	2148	9.0	59	126732	2965	13.3	60	177900	2781	12.3	60	166860
6:30-6:45	2252	9.7	58	130616	2343	9.6	58	135894	2460	10.9	58	142680
6:45-7:00	2329	9.9	59	137411	2469	10.2	57	140733	2344	9.8	57	133608
7:00-7:15	2351	10.4	57	134007	2533	10.9	55	139315	2405	10.4	55	132275
7:15-7:30	2400	10.6	56	134400	2429	10.7	54	131166	2435	12.1	48	116880
7:30-7:45	2475	10.9	57	141075	2514	12.9	50	125700	2268	10.9	53	120204
7:45-8:00	2377	10.5	57	135489	2316	14.1	42	97272	2182	11.4	50	109100
8:00-8:15	2087	10.1	52	108524	ND	ND	ND	#VALUE!	2375	14.4	46	109250
8:15-8:30	2242	10.2	56	125552	ND	ND	ND	#VALUE!	ND	ND	ND	#VALUE!
8:30-8:45	2083	11.0	53	110399	ND	ND	ND	#VALUE!	2831	16.5	46	130226
8:45-9:00	2417	15.7	48	116016	ND	ND	ND	#VALUE!	2139	12.4	44	94116
Total Volume	***27053***				***30069***				***28598***			
Aver Occ		**10.5**				**11.5**				**12.1**		
Aver Speed			***56***				***55***				***52***	

TABLE A5.1.6a

MAINLINE @ ROSEMEAD1 W/B LA-210, PM R 29.59

	PRE SWARM (TOD)															
	10/24/ 2000				10/25/ 2000				10/31/ 2000				11/01/ 2000			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	2276	10.8	53	120628	2254	10.8	52	117208	2211	10.4	53	117183	2265	10.5	53	120045
6:15-6:30	2273	10.9	52	118196	2269	11.8	48	108912	2360	13.6	44	103840	2436	12.1	51	124236
6:30-6:45	2269	11.8	48	108912	2270	11.8	48	108960	2334	11.5	51	119034	2431	12.0	51	123981
6:45-7:00	2385	12.6	48	114480	2490	12.9	49	122010	2383	12.0	50	119150	2345	12.1	49	114905
7:00-7:15	2378	12.9	47	111766	2455	13.8	45	110475	2435	12.7	49	119315	2363	13.1	46	108698
7:15-7:30	2431	13.4	46	111826	2441	14.8	42	102522	2444	13.8	45	109980	2353	15.7	38	89414
7:30-7:45	2451	13.4	47	115197	2303	15.9	37	85211	2180	18.8	31	67580	2120	18.7	30	63600
7:45-8:00	2120	19.7	29	61480	2301	15.3	39	89739	2125	18.7	30	63750	2014	19.9	28	56392
8:00-8:15	2091	17.2	32	66912	2086	17.5	32	66752	2218	16.6	35	77630	2044	20.3	28	57232
8:15-8:30	2150	16.2	34	73100	2159	16.1	35	75565	2178	16.8	34	74052	1966	19.3	27	53082
8:30-8:45	2268	13.5	43	97524	2178	15.8	36	78408	2041	17.0	31	63271	2105	15.9	34	71570
8:45-9:00	2133	14.6	38	81054	2168	15.4	36	78048	2035	18.0	30	61050	2013	16.0	33	66429
Total Volume	***27225***				***27374***				***26944***				***26455***			
Aver Occ		**13.9**				**14.3**				**15.0**				**15.5**		
Aver Speed			***43***				***42***				***41***				***40***	

TABLE A5.1.6b

MAINLINE @ ROSEMEAD1, W/B LA-210, PM R 29.59

	PRE SWARM (TOD)															
	11/07/ 2000				11/14/ 2000				12/05/ 2000				12/07/ 2000			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	2244	10.9	51	114444	2309	11.3	51	117759	2160	9.0	60	129600	2156	9.1	60	129360
6:15-6:30	2315	12.1	48	111120	2179	10.3	53	115487	2209	9.8	57	125913	2224	9.3	60	133440
6:30-6:45	2329	12.0	49	114121	2151	10.5	52	111852	2308	10.4	56	129248	2374	10.5	57	135318
6:45-7:00	2463	12.3	51	125613	2375	11.6	52	123500	2443	11.3	55	134365	2480	11.7	54	133920
7:00-7:15	2396	12.8	48	115008	2316	11.6	51	118116	2355	10.5	57	134235	2345	11.4	52	121940
7:15-7:30	2406	14.1	44	105864	2506	15.0	43	107758	2374	14.7	42	99708	2438	13.4	47	114586
7:30-7:45	2146	18.6	30	64380	2333	17.9	34	79322	2248	14.1	41	92168	2224	15.9	37	82288
7:45-8:00	2093	20.0	28	58604	2300	19.2	31	71300	2080	18.3	31	64480	2278	15.5	38	86564
8:00-8:15	2165	16.6	34	73610	1980	19.7	27	53460	1958	17.0	31	60698	2096	16.9	33	69168
8:15-8:30	2065	18.4	30	61950	2150	16.0	35	75250	2056	15.9	34	69904	2200	14.5	39	85800
8:30-8:45	2044	16.5	33	67452	2099	16.0	34	71366	2056	15.2	34	69904	2268	12.9	45	102060
8:45-9:00	2089	15.2	36	75204	2034	16.0	33	67122	2096	14.7	37	77552	2260	13.2	44	99440
Total Volume	***26755***				***26732***				***26343***				***27343***			
Aver Occ		**15.0**				**14.6**				**13.4**				**12.9**		
Aver Speed			***41***				***42***				***45***				***47***	

TABLE A5.1.6c

MAINLINE @ ROSEMEAD1, W/B LA-210, PM R 29.59

	PRE SWARM (TOD)				SWARM 1								SWARM 2b			
	12/12/ 2000				4/24/ 2001				4/25/ 2001				4/10/ 2001			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1924	9.6	50	96200	1723	7.2	59	101657	2019	8.9	56	113064	1940	8.6	56	108640
6:15-6:30	2036	10.2	50	101800	1903	7.8	61	116083	2235	10.3	54	120690	2168	10.0	54	117072
6:30-6:45	2165	10.8	51	110415	2197	9.6	57	125229	2218	11.1	50	110900	2249	10.1	56	125944
6:45-7:00	2345	11.3	53	124285	2258	10.6	54	121932	2189	11.8	46	100694	2293	10.9	53	121529
7:00-7:15	2320	11.5	51	118320	2271	11.0	51	115821	2245	11.4	49	110005	2222	10.7	52	115544
7:15-7:30	2473	13.3	47	116231	2326	12.3	47	109322	2234	13.3	42	93828	2298	11.6	50	114900
7:30-7:45	2378	14.2	43	102254	2240	14.8	38	85120	2313	13.4	44	101772	2254	11.2	50	112700
7:45-8:00	2371	13.3	46	109066	2096	15.3	36	75456	2236	15.3	37	82732	2264	11.2	51	115464
8:00-8:15	2265	15.3	39	88335	2062	14.9	36	74232	1929	18.3	29	55941	2269	11.4	50	113450
8:15-8:30	2186	13.9	41	89626	1938	19.0	28	54264	2048	15.3	34	69632	2261	11.9	48	108528
8:30-8:45	2191	12.6	44	96404	1862	16.4	29	53998	1943	15.2	33	64119	2256	11.7	48	108288
8:45-9:00	2281	11.3	52	118612	2089	14.3	37	77293	1976	15.3	34	67184	2113	10.4	51	107763
Total Volume	***26935***				***24965***				***25585***				***26587***			
Aver Occ		**12.3**				**12.8**				**13.3**				**10.8**		
Aver Speed			***47***				***44***				***43***				***52***	

TABLE A5.1.6d

MAINLINE @ ROSEMEAD1, W/B LA-210, PM R 29.59

	SWARM 2b				SWARM 1/2b							
	4/11/ 2001				5/01/ 2001				5/02/ 2001			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1911	8.4	56	107016	2017	9.0	55	110935	1947	8.4	57	110979
6:15-6:30	2211	9.8	56	123816	2103	9.5	55	115665	2137	9.6	55	117535
6:30-6:45	2340	10.6	55	128700	2254	10.4	54	121716	2173	10.2	53	115169
6:45-7:00	2372	11.4	52	123344	2389	11.6	51	121839	2293	10.8	53	121529
7:00-7:15	2419	11.6	52	125788	2432	12.0	50	121600	2318	11.6	51	118218
7:15-7:30	2417	11.7	52	125684	2357	11.6	51	120207	2379	12.1	51	121329
7:30-7:45	2466	11.8	52	128232	2446	12.5	49	119854	2277	13.0	46	104742
7:45-8:00	2454	11.6	53	130062	2327	11.9	49	114023	2236	12.0	45	100620
8:00-8:15	2098	9.9	53	111194	2251	11.6	49	110299	2255	12.9	44	99220
8:15-8:30	2259	11.3	50	112950	2179	12.4	44	95876	2187	11.6	49	107163
8:30-8:45	2158	10.3	52	112216	2065	13.6	39	80535	2107	12.9	41	86387
8:45-9:00	2172	10.8	51	110772	2087	12.3	42	87654	2179	12.6	42	91518
Total Volume	***27277***				***26907***				***26488***			
Aver Occ		**10.8**				**11.5**				**11.5**		
Aver Speed			***53***				***49***				***49***	

TABLE A5.1.7a

MAINLINE @ ROSEMEAD2 W/B LA-210, PM R 29.71

	PRE SWARM (TOD)															
	10/24/ 2000				10/25/ 2000				10/31 2000				11/01/ 2000			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	ND	ND	ND	######	ND	ND	ND	#####	ND	ND	ND	######	ND	ND	ND	######
6:15-6:30	ND	ND	ND	######	ND	ND	ND	#####	ND	ND	ND	######	ND	ND	ND	######
6:30-6:45	ND	ND	ND	######	ND	ND	ND	#####	ND	ND	ND	######	ND	ND	ND	######
6:45-7:00	ND	ND	ND	######	ND	ND	ND	#####	ND	ND	ND	######	ND	ND	ND	######
7:00-7:15	ND	ND	ND	######	ND	ND	ND	#####	ND	ND	ND	######	ND	ND	ND	######
7:15-7:30	ND	ND	ND	######	ND	ND	ND	#####	ND	ND	ND	######	ND	ND	ND	######
7:30-7:45	ND	ND	ND	######	ND	ND	ND	#####	ND	ND	ND	######	ND	ND	ND	######
7:45-8:00	ND	ND	ND	######	ND	ND	ND	#####	ND	ND	ND	######	ND	ND	ND	######
8:00-8:15	ND	ND	ND	######	ND	ND	ND	#####	ND	ND	ND	######	ND	ND	ND	######
8:15-8:30	ND	ND	ND	######	ND	ND	ND	#####	ND	ND	ND	######	ND	ND	ND	######
8:30-8:45	ND	ND	ND	######	ND	ND	ND	#####	ND	ND	ND	######	ND	ND	ND	######
8:45-9:00	ND	ND	ND	######	ND	ND	ND	#####	ND	ND	ND	######	ND	ND	ND	######
Total Volume	***NA***				***NA***				***NA***				***NA***			
Aver Occ		***NA***				***NA***				***NA***				***NA***		
Aver Speed			***NA***				***NA***				***NA***				***NA***	

TABLE A5.1.7b

MAINLINE @ ROSEMEAD2, W/B LA-210, PM R 29.71

	PRE SWARM (TOD)															
	11/07/ 2000				11/14/ 2000				12/05/ 2000				12/07/ 2000			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	ND	ND	ND	######	ND	ND	ND	######	ND	ND	ND	#####	ND	ND	ND	#####
6:15-6:30	ND	ND	ND	######	ND	ND	ND	######	ND	ND	ND	#####	ND	ND	ND	#####
6:30-6:45	ND	ND	ND	######	ND	ND	ND	######	ND	ND	ND	#####	ND	ND	ND	#####
6:45-7:00	ND	ND	ND	######	ND	ND	ND	######	ND	ND	ND	#####	ND	ND	ND	#####
7:00-7:15	ND	ND	ND	######	ND	ND	ND	######	ND	ND	ND	#####	ND	ND	ND	#####
7:15-7:30	ND	ND	ND	######	ND	ND	ND	######	ND	ND	ND	#####	ND	ND	ND	#####
7:30-7:45	ND	ND	ND	######	ND	ND	ND	######	ND	ND	ND	#####	ND	ND	ND	#####
7:45-8:00	ND	ND	ND	######	ND	ND	ND	######	ND	ND	ND	#####	ND	ND	ND	#####
8:00-8:15	ND	ND	ND	######	ND	ND	ND	######	ND	ND	ND	#####	ND	ND	ND	#####
8:15-8:30	ND	ND	ND	######	ND	ND	ND	######	ND	ND	ND	#####	ND	ND	ND	#####
8:30-8:45	ND	ND	ND	######	ND	ND	ND	######	ND	ND	ND	#####	ND	ND	ND	#####
8:45-9:00	ND	ND	ND	######	ND	ND	ND	######	ND	ND	ND	#####	ND	ND	ND	#####
Total Volume	***NA***				***NA***				***NA***				***NA***			
Aver Occ		***NA***				***NA***				***NA***				***NA***		
Aver Speed			***NA***				***NA***				***NA***				***NA***	

TABLE A5.1.7c

MAINLINE @ ROSEMEAD2, W/B LA-210, PM R 29.71

	PRE SWARM (TOD)				SWARM 1								SWARM 2b			
	12/12/ 2000				4/24/ 2001				4/25/ 2001				4/10/ 2001			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1624	4.1	ND	#####	1308	7.7	63	82404	741	4.5	60	44460	1436	8.8	60	86160
6:15-6:30	1716	4.3	ND	#####	723	4.1	65	46995	1760	11.5	56	98560	1698	10.7	59	100182
6:30-6:45	1692	4.3	ND	#####	1810	10.4	64	115840	1890	13.1	53	100170	1872	11.4	61	114192
6:45-7:00	1896	4.9	ND	#####	1876	12.3	57	106932	1848	13.1	52	96096	1944	13.1	55	106920
7:00-7:15	1976	5.0	ND	#####	1952	13.1	55	107360	1908	13.1	54	103032	1874	12.3	57	106818
7:15-7:30	ND	ND	ND	#####	2016	14.4	52	104832	1892	15.9	44	83248	1948	13.8	52	101296
7:30-7:45	ND	ND	ND	#####	1952	19.5	37	72224	2092	17.9	43	89956	1922	13.6	52	99944
7:45-8:00	ND	ND	ND	#####	1966	17.9	41	80606	1976	20.0	37	73112	1956	13.5	53	103668
8:00-8:15	ND	ND	ND	#####	1848	18.6	37	68376	1870	19.2	36	67320	1928	13.9	52	100256
8:15-8:30	ND	ND	ND	#####	1856	19.1	36	66816	1846	18.6	37	68302	1904	13.7	52	99008
8:30-8:45	ND	ND	ND	#####	1722	21.2	30	51660	1726	20.9	31	53506	1924	13.8	52	100048
8:45-9:00	ND	ND	ND	#####	1836	19.2	36	66096	1746	15.7	41	71586	1754	12.4	52	91208
Total Volume	***21370***				***20865***				***21295***				***22160***			
Aver Occ		**4.5**				**14.8**				**15.3**				**12.6**		
Aver Speed			***NA***				***46***				***45***				***55***	

TABLE A5.1.7d

MAINLINE @ ROSEMEAD2, W/B LA-210, PM R 29.71

	SWARM 2b				SWARM 1/2b							
	4/11/ 2001				5/01/ 2001				5/02/ 2001			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1360	8.8	57	77520	1584	10.0	58	91872	1422	9.0	58	82476
6:15-6:30	1698	10.5	59	100182	1624	10.3	58	94192	1666	10.1	61	101626
6:30-6:45	1918	12.3	58	111244	1888	11.9	59	111392	1788	11.7	56	100128
6:45-7:00	1956	12.8	56	109536	1986	13.7	54	107244	1940	12.6	57	110580
7:00-7:15	2072	14.1	55	113960	2068	14.2	54	111672	1996	14.4	51	101796
7:15-7:30	1986	13.8	53	105258	2042	13.8	55	112310	2010	14.7	51	102510
7:30-7:45	2104	13.8	56	117824	2132	16.1	49	104468	1954	15.8	46	89884
7:45-8:00	2112	13.8	57	120384	2008	15.2	49	98392	1974	16.3	45	88830
8:00-8:15	1752	11.6	56	98112	1968	14.3	51	100368	1968	16.7	44	86592
8:15-8:30	1826	13.3	51	93126	1910	15.5	46	87860	1936	14.7	49	94864
8:30-8:45	1764	12.2	54	95256	1862	15.5	45	83790	900	8.2	41	36900
8:45-9:00	1788	12.9	51	91188	1808	14.0	48	86784	1856	16.4	42	77952
Total Volume	***22336***				***22880***				***21410***			
Aver Occ		**12.5**				**13.7**				**13.4**		
Aver Speed			***55***				***52***				***50***	

TABLE A5.1.8a

MAINLINE @ MICHILLINDA W/B LA-210, PM R 29.85

	PRE SWARM (TOD)															
	10/24/ 2000				10/25/ 2000				10/31/2000				11/01/ ###			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1701	9.0	79	134379	1705	9.1	78	132990	1724	9.2	78	134472	1787	9.2	80	142960
6:15-6:30	1831	9.9	77	140987	1809	10.4	76	137484	1949	10.7	76	148124	1976	10.6	76	150176
6:30-6:45	1807	11.1	73	131911	1811	11.0	73	132203	1832	10.3	75	137400	1913	10.3	77	147301
6:45-7:00	1859	11.4	74	137566	1820	10.9	74	134680	1730	14.1	45	77850	1843	10.8	73	134539
7:00-7:15	1797	11.3	72	129384	1872	11.5	73	136656	1809	11.0	72	130248	1779	11.8	69	122751
7:15-7:30	1664	15.3	40	66560	1672	15.3	40	66880	1696	15.2	41	69536	1610	16.6	36	57960
7:30-7:45	1608	14.4	41	65928	1578	18.3	32	50496	1530	20.6	27	41310	1506	20.5	27	40662
7:45-8:00	1490	21.6	25	37250	1616	18.5	32	51712	1542	25.4	23	35466	1334	25.5	19	25346
8:00-8:15	1512	23.2	24	36288	1422	19.5	27	38394	1552	20.9	27	41904	1434	24.4	22	31548
8:15-8:30	1456	22.1	24	34944	1510	20.0	28	42280	1524	21.6	26	39624	1410	27.0	19	26790
8:30-8:45	1578	16.6	35	55230	1506	17.7	31	46686	1460	17.2	32	46720	1502	18.9	30	45060
8:45-9:00	1430	16.2	33	47190	1532	15.6	36	55152	1470	18.9	29	42630	1426	17.8	30	42780
Total Volume	***19733***				***19853***				***19818***				***19520***			
Aver Occ		**15.2**				**14.8**				**16.3**				**17.0**		
Aver Speed			***52***				***52***				***48***				***50***	

TABLE A5.1.8b

MAINLINE @ MICHILLINDA, W/B LA-210, PM R 29.85

	PRE SWARM (TOD)															
	11/07/ 2000				11/14/ 2000				12/05/ 2000				12/07/ 2000			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1761	9.9	78	137358	1781	9.8	78	138918	1665	8.1	84	139860	ND	ND	ND	#####
6:15-6:30	1900	11.4	74	140600	1755	9.6	77	135135	1785	10.0	77	137445	ND	ND	ND	#####
6:30-6:45	1853	11.0	73	135269	1747	10.0	74	129278	1829	10.0	79	144491	ND	ND	ND	#####
6:45-7:00	1927	10.8	75	144525	1660	13.7	45	74700	1915	10.8	78	149370	ND	ND	ND	#####
7:00-7:15	1797	10.8	74	132978	1650	13.7	44	72600	1660	11.9	51	84660	ND	ND	ND	#####
7:15-7:30	1580	14.9	39	61620	1756	14.8	44	77264	1668	17.7	35	58380	ND	ND	ND	#####
7:30-7:45	1550	18.5	31	48050	1602	17.7	33	52866	1542	17.1	34	52428	ND	ND	ND	#####
7:45-8:00	1436	26.3	20	28720	1622	19.9	30	48660	1478	20.5	27	39906	ND	ND	ND	#####
8:00-8:15	1504	19.4	29	43616	1346	22.5	22	29612	1404	24.4	21	29484	ND	ND	ND	#####
8:15-8:30	1464	20.8	26	38064	1474	22.1	25	36850	1390	20.4	25	34750	ND	ND	ND	#####
8:30-8:45	1520	17.7	32	48640	1464	18.7	29	42456	1412	22.8	23	32476	ND	ND	ND	#####
8:45-9:00	1382	19.0	27	37314	1424	17.0	31	44144	1462	19.1	28	40936	ND	ND	ND	#####
Total Volume	***19674***				***19281***				***19210***				***NA***			
Aver Occ		**15.9**				**15.8**				**16.1**				**NA**		
Aver Speed			***51***				***46***				***49***				***NA***	

TABLE A5.1.8c

MAINLINE @ MICHILLINDA, W/B LA-210, PM R 29.85

	PRE SWARM (TOD)				SWARM 1								SWARM 2b			
	12/12 2000				4/24/ 2001				4/25/ 2001				4/10/ 2001			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1800	8.3	94	169200	1052	21.9	60	63120	1671	9.7	57	95247	1576	9.3	57	89832
6:15-6:30	1560	7.7	92	143520	1144	22.2	61	69784	1851	11.5	54	99954	1844	11.2	55	101420
6:30-6:45	ND	ND	ND	######	1835	10.5	59	1E+05	1879	12.9	49	92071	1923	11.5	56	107688
6:45-7:00	ND	ND	ND	######	1861	12.1	52	96772	1788	12.6	48	85824	1903	12.7	51	97053
7:00-7:15	2120	10.1	89	188680	1807	12.1	51	92157	1777	12.7	47	83519	1800	11.3	54	97200
7:15-7:30	ND	ND	ND	######	1808	12.7	48	86784	1723	13.5	43	74089	1831	13.1	47	86057
7:30-7:45	ND	ND	ND	######	1723	16.6	35	60305	1759	14.1	42	73878	1713	13.0	44	75372
7:45-8:00	ND	ND	ND	######	1608	18.3	30	48240	1685	16.1	36	60660	1732	12.0	48	83136
8:00-8:15	1900	11.0	84	159600	1588	15.4	35	55580	1571	16.2	33	51843	1784	12.9	47	85632
8:15-8:30	ND	ND	ND	######	1601	14.8	36	57636	1549	18.8	28	43372	1787	12.7	48	85776
8:30-8:45	1300	23.8	56	72800	1420	21.9	22	31240	1505	21.1	25	37625	1804	12.8	48	88396
8:45-9:00	2080	10.3	82	170560	1649	15.3	36	59364	1199	25.9	41	49159	1695	11.7	49	83055
Total Volume	***21520***				***19096***				***19957***				***21392***			
Aver Occ		**11.9**				**16.2**				**15.4**				**12.0**		
Aver Speed			***84***				***43***				***42***				***51***	

TABLE A5.1.8d

MAINLINE @ MICHILLINDA, W/B LA-210, PM R 29.85

	SWARM 2b				SWARM 1/2b							
	4/11/ 2001				5/01/ 2001				5/02/ 2001			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1539	9.0	57	87723	1725	11.2	51	87975	1629	9.4	58	94482
6:15-6:30	1385	24.2	57	78945	1728	10.6	55	95040	1789	10.5	57	101973
6:30-6:45	1497	25.4	54	80838	1921	12.3	52	99892	1828	12.6	49	89572
6:45-7:00	1467	25.0	55	80685	1967	13.2	50	98350	1875	12.6	50	93750
7:00-7:15	1988	13.5	50	99400	1939	13.1	50	96950	1881	13.7	46	86526
7:15-7:30	1941	12.9	50	97050	1832	13.1	47	86104	1856	14.1	44	81664
7:30-7:45	1905	12.6	51	97155	1909	14.0	46	87814	1739	13.5	43	74777
7:45-8:00	1953	12.6	52	101556	1792	12.8	48	86016	1783	15.6	39	69537
8:00-8:15	1604	10.4	52	83408	1803	12.7	48	86544	1763	14.3	42	74046
8:15-8:30	1717	11.8	49	84133	1691	14.6	39	65949	1724	13.6	43	74132
8:30-8:45	1696	11.8	49	83104	1688	14.2	40	67520	1236	26.2	41	50676
8:45-9:00	1741	13.6	43	74863	1645	13.9	40	65800	1724	13.6	13.6	23446
Total Volume	***20433***				***21640***				***20827***			
Aver Occ		**15.2**				**13.0**				**14.1**		
Aver Speed			***51***				***47***				***44***	

TABLE A5.1.9a

MAINLINE @ BALDWIN1, W/B LA-210, PM R 30.49

	PRE SWARM (TOD)															
	10/24/ 2000				10/25/ 2000				10/31 2000				11/01/ 2000			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	2303	13.4	52	119756	2141	12.5	52	111332	2336	14.5	52	121472	2291	14.3	52	119132
6:15-6:30	2191	13.8	48	105168	2072	16.5	38	78736	2523	15.8	52	131196	2425	15.0	52	126100
6:30-6:45	2045	15.4	40	81800	2023	17.9	34	68782	2259	21.7	34	76806	2353	17.2	45	105885
6:45-7:00	1885	19.1	30	56550	2153	20.2	33	71049	2288	24.0	32	73216	2166	22.8	32	69312
7:00-7:15	1905	26.3	29	55245	1980	18.0	33	65340	2356	21.7	36	65968	2162	25.8	28	60536
7:15-7:30	1917	21.3	28	53676	1871	17.1	34	63614	2121	26.3	28	50904	2149	24.7	29	62321
7:30-7:45	1888	23.5	25	47200	2071	22.8	28	57988	1957	27.0	24	41097	1815	29.5	21	38115
7:45-8:00	1368	35.8	21	28728	1703	22.2	24	40872	1858	29.1	21	39018	1571	30.9	17	26707
8:00-8:15	1641	22.9	22	36102	1521	25.2	19	28899	1942	26.4	25	48550	1732	30.4	19	32908
8:15-8:30	1637	23.3	22	36014	1688	23.3	22	37136	1815	27.6	22	39930	1723	28.9	20	34460
8:30-8:45	1787	20.8	26	46462	1771	19.4	28	49588	1881	25.4	25	47025	1825	26.2	24	43800
8:45-9:00	1594	29.7	25	39850	1897	16.0	37	70189	1955	24.4	27	52785	1883	26.1	24	45192
Total Volume	***22161***				***22891***				***25291***				***24095***			
Aver Occ		**22.1**				**19.3**				**23.7**				**24.3**		
Aver Speed			***32***				***32***				***31***				***32***	

TABLE A5.1.9b

MAINLINE @ BALDWIN1, W/B LA-210, PM R 30.49

	PRE SWARM (TOD)															
	11/07/ 2000				11/14/2000				12/05/ 2000				12/07/ 2000			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	2169	14.6	48	104112	2243	15.3	47	105421	2035	11.1	58	118030	2039	11.3	57	116223
6:15-6:30	2340	18.0	42	98280	2072	17.2	39	80808	2088	14.6	45	93960	2129	22.3	45	95805
6:30-6:45	2140	18.3	38	81320	1944	22.0	29	56376	1991	17.3	38	75658	2060	13.6	49	100940
6:45-7:00	2235	15.3	48	107280	2081	22.0	31	64511	2001	16.5	39	78039	2169	15.2	46	99774
7:00-7:15	2150	17.1	41	88150	1956	21.7	30	58680	1895	11.4	53	100435	1847	18.7	32	59104
7:15-7:30	1974	23.8	28	55272	2007	21.7	31	62217	1859	20.0	31	57629	1928	21.1	31	59768
7:30-7:45	1881	26.6	24	45144	2010	21.0	32	64320	1751	21.6	28	49028	1829	22.2	28	51212
7:45-8:00	1617	27.5	20	32340	1882	22.6	28	52696	1553	24.3	21	32613	2078	26.2	27	56106
8:00-8:15	1699	28.4	20	33980	1676	25.8	22	36872	1524	24.3	21	32004	1894	28.8	22	41668
8:15-8:30	1722	26.4	22	37884	1740	25.0	24	41760	1616	22.0	24	38784	2337	24.2	33	77121
8:30-8:45	1786	23.5	25	44650	1902	23.3	28	53256	1593	23.5	22	35046	2335	22.7	35	81725
8:45-9:00	1696	23.8	24	40704	1654	26.6	21	34734	1683	21.1	27	45441	1873	20.6	29	54317
Total Volume	***23409***				***23167***				***21589***				***24518***			
Aver Occ		**21.9**				**22.0**				**19.0**				**20.6**		
Aver Speed			***33***				***31***				***35***				***36***	

TABLE A5.1.9c

MAINLINE @ BALDWIN1, W/B LA-210, PM R 30.49

	PRE SWARM (TOD)				SWARM 1								SWARM 2b			
	12/12/2000				4/24/ 2001				4/25/ 2001				4/10/ 2001			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1142	26.7	32	36544	1559	8.1	62	96658	1932	110.7	58	112056	1819	9.9	59	107321
6:15-6:30	1140	33.3	28	31920	1736	8.9	63	109368	2070	12.1	55	113850	2059	12.2	55	113245
6:30-6:45	1816	22	33	59928	1936	11.9	53	102608	1933	14.7	43	83119	2040	12.5	53	108120
6:45-7:00	1916	23.6	32	61312	1852	16.0	38	70376	1879	14.5	42	78918	1984	17.6	37	73408
7:00-7:15	1864	25.4	29	54056	1911	17.9	35	66885	1854	17.8	35	64890	1895	12.5	50	94750
7:15-7:30	1864	25.6	29	54056	1816	19.2	32	58112	1757	19.9	30	52710	1860	18.2	34	63240
7:30-7:45	1262	38.0	18	22716	1627	23.6	24	39048	1744	22.0	27	47088	1775	21.4	29	51475
7:45-8:00	1440	33.1	19	27360	1526	25.8	20	30520	1759	21.8	27	47493	1758	20.9	30	52740
8:00-8:15	1406	33.8	17	23902	1593	22.4	24	38232	1608	23.0	24	38592	1854	19.8	32	64890
8:15-8:30	1152	40.5	16	18432	1619	22.5	25	40475	1544	22.9	23	35512	1867	18.2	35	67212
8:30-8:45	1696	25.0	26	44096	1497	25.8	20	29940	1561	22.1	24	37464	1888	17.5	36	67968
8:45-9:00	1412	27.7	22	31064	1759	19.8	30	52770	1605	20.6	26	41730	1848	17.1	36	66528
Total Volume	***18110***				***20431***				***21246***				***22647***			
Aver Occ		**29.6**				**18.5**				**26.8**				**16.5**		
Aver Speed			***26***				***36***				***35***				***41***	

TABLE A5.1.9d

MAINLINE @ BALDWIN1, W/B LA-210, PM R 30.49

	SWARM 2b				SWARM 1/2b							
	4/11/ 2001				5/01/ 2001				5/02/ 2001			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1797	9.7	60	107820	1915	11.5	53	101495	2048	10.5	59	120832
6:15-6:30	2063	11.8	57	117591	1967	12.1	53	104251	2135	11.3	57	121695
6:30-6:45	2158	12.9	55	118690	2049	15.5	43	88107	2016	13.5	45	90720
6:45-7:00	2109	13.4	51	107559	2054	14.0	48	98592	1976	16.1	38	75088
7:00-7:15	2032	15.2	44	89408	2031	14.3	47	95457	1944	16.3	37	71928
7:15-7:30	2012	15.9	41	82492	1823	21.4	29	52867	1875	17.3	33	61875
7:30-7:45	1950	20.1	33	64350	1910	19.2	33	63030	1800	22.3	28	50400
7:45-8:00	1986	18.1	37	73482	1816	20.5	31	56296	1834	19.8	32	58688
8:00-8:15	1677	20.9	26	43602	1839	19.2	32	58848	1777	16.8	36	63972
8:15-8:30	1814	21.1	30	54420	1760	20.1	30	52800	1849	14.0	43	79507
8:30-8:45	1833	19.3	32	58656	1780	20.2	30	53400	1744	18.9	31	54064
8:45-9:00	1822	19.1	32	58304	1684	20.0	29	48836	1843	14.9	41	75563
Total Volume	***23253***				***22628***				***22841***			
Aver Occ		**16.5**				**17.3**				**16.0**		
Aver Speed			***42***				***39***				***40***	

TABLE A5.1.10a

MAINLINE @ BALDWIN2, W/B LA-210, PM R 30.71

	PRE SWARM (TOD)															
	10/24/ 2000				10/25/ 2000				10/312000				11/01/ 2000			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1881	10.0	60	112860	1934	10.0	62	119908	1927	11.3	55	105985	1921	10.7	57	109497
6:15-6:30	1933	11.6	53	102449	1910	12.5	49	93590	1992	12.0	54	107568	1972	10.7	59	116348
6:30-6:45	1877	12.3	49	91973	1822	14.3	41	74702	1839	13.4	44	80916	1900	11.7	52	98800
6:45-7:00	1803	15.0	39	70317	1756	14.8	38	66728	1745	15.6	37	64565	1759	15.1	38	66842
7:00-7:15	1713	16.5	34	58242	1781	13.8	41	73021	1759	14.8	38	66842	1676	16.8	32	53632
7:15-7:30	1641	18.7	28	45948	1660	13.6	39	64740	1589	19.0	27	42903	1589	16.6	31	49259
7:30-7:45	1550	18.0	28	43400	1530	17.5	28	42840	1535	14.7	34	52190	1375	21.4	21	28875
7:45-8:00	1372	20.8	21	28812	1477	19.9	24	35448	1294	24.5	17	21998	1216	27.1	15	18240
8:00-8:15	1387	22.3	20	27740	1317	23.5	18	23706	1445	19.2	24	34680	1309	24.9	18	23562
8:15-8:30	1444	21.0	22	31768	1469	17.8	26	38194	1401	22.2	21	29421	1362	21.6	20	27240
8:30-8:45	1513	17.0	29	43877	1549	17.2	29	44921	1426	19.9	23	32798	1333	23.0	19	25327
8:45-9:00	1549	17.6	28	43372	1553	14.9	34	52802	1483	16.6	29	43007	1441	20.2	23	33143
Total Volume	***19663***				***19758***				***19435***				***18853***			
Aver Occ		**16.7**				**15.8**				**16.9**				**18.3**		
Aver Speed			***36***				***37***				***35***				***35***	

TABLE A5.1.10b

MAINLINE @ BALDWIN2, W/B LA-210, PM R 30.71

	PRE SWARM (TOD)															
	11/07/ 2000				11/14/2000				12/05/ 2000				12/07/ 2000			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1958	11.4	55	107690	1960	11.9	52	101920	1895	9.6	63	119385	1878	9.6	63	118314
6:15-6:30	1933	12.7	49	94717	1847	12.9	46	84962	1905	11.2	55	104775	1937	10.8	57	110409
6:30-6:45	1810	12.6	46	83260	1662	17.6	31	51522	1794	13.9	42	75348	1857	11.8	51	94707
6:45-7:00	1893	11.7	52	98436	1649	17.8	30	49470	1772	12.1	47	83284	1964	12.2	52	102128
7:00-7:15	1778	11.7	49	87122	1624	18.3	29	47096	1721	9.7	57	98097	1656	14.1	38	62928
7:15-7:30	1603	17.2	30	48090	1633	17.0	31	50623	1629	14.2	37	60273	1634	15.3	35	57190
7:30-7:45	1483	19.0	25	37075	1589	15.7	33	52437	1513	16.4	30	45390	1634	14.0	38	62092
7:45-8:00	1307	25.0	18	23526	1525	16.4	30	45750	1324	19.8	22	29128	1410	19.5	24	33840
8:00-8:15	1336	22.6	19	25384	1355	21.6	20	27100	1289	21.8	20	25780	1321	22.4	20	26420
8:15-8:30	1455	19.9	24	34920	1336	21.4	20	26720	1331	19.5	22	29282	1474	18.6	26	38324
8:30-8:45	1387	20.0	22	30514	1464	21.2	22	32208	1370	20.5	22	30140	1510	16.1	30	45300
8:45-9:00	1378	19.4	23	31694	1350	23.0	20	27000	1411	19.3	24	33864	1585	17.0	30	47550
Total Volume	***19321***				***18994***				***18954***				***19860***			
Aver Occ		**16.9**				**17.9**				**15.7**				**15.1**		
Aver Speed			***36***				***31***				***39***				***40***	

TABLE A5.1.10c

MAINLINE @ BALDWIN2, W/B LA-210, PM R 30.71

	PRE SWARM (TOD)				SWARM 1								SWARM 2b			
	12/12/2000				4/24/ 2001				4/25/ 2001				4/10/ 2001			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1656	9.8	55	91080	ND	ND	ND	######	ND	ND	ND	######	1758	9.1	63	110754
6:15-6:30	1716	13.0	42	72072	ND	ND	ND	######	ND	ND	ND	######	1983	11.0	58	115014
6:30-6:45	1737	12.7	44	76428	ND	ND	ND	######	ND	ND	ND	######	1964	11.1	57	111948
6:45-7:00	1679	15.6	35	58765	ND	ND	ND	######	ND	ND	ND	######	1869	14.0	43	80367
7:00-7:15	1670	15.1	36	60120	ND	ND	ND	######	ND	ND	ND	######	1753	10.5	54	94662
7:15-7:30	1621	14.1	37	59977	ND	ND	ND	######	ND	ND	ND	######	1709	13.8	40	68360
7:30-7:45	1608	15.7	33	53064	ND	ND	ND	######	ND	ND	ND	######	1604	17.3	30	48120
7:45-8:00	1535	15.6	32	49120	ND	ND	ND	######	ND	ND	ND	######	1535	19.7	25	38375
8:00-8:15	1568	15.8	32	50176	ND	ND	ND	######	ND	ND	ND	######	1672	14.2	38	63536
8:15-8:30	1522	18.9	26	39572	ND	ND	ND	######	ND	ND	ND	######	1680	14.3	38	63840
8:30-8:45	1600	15.8	33	52800	ND	ND	ND	######	ND	ND	ND	######	1764	13.2	43	75852
8:45-9:00	1572	16.1	32	50304	ND	ND	ND	######	ND	ND	ND	######	1728	12.7	44	76032
Total Volume	***19484***				***NA***				***NA***				***21019***			
Aver Occ		**14.9**				**NA**				**NA**				**13.4**		
Aver Speed			***37***				***NA***				***NA***				***45***	

TABLE A5.1.10d

MAINLINE @ BALDWIN2, W/B LA-210, PM R 30.71

	SWARM 2b				SWARM 1/2b							
	4/11/ 2001				5/01/ 2001				5/02/ 2001			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1746	8.7	65	113490	ND	ND	ND	######	1844	9.0	66	121704
6:15-6:30	2021	10.7	61	123281	ND	ND	ND	######	1956	10.0	63	123228
6:30-6:45	2042	11.0	59	120478	ND	ND	ND	######	1863	11.8	51	95013
6:45-7:00	2000	10.7	60	120000	ND	ND	ND	######	1840	12.6	47	86480
7:00-7:15	1906	12.8	48	91488	ND	ND	ND	######	1791	14.7	39	69849
7:15-7:30	1844	12.4	48	88512	ND	ND	ND	######	1685	14.4	38	64030
7:30-7:45	1768	15.6	37	65416	ND	ND	ND	######	1553	18.0	30	46590
7:45-8:00	1812	12.7	46	83352	ND	ND	ND	######	1533	17.1	30	45990
8:00-8:15	1507	20.3	24	36168	ND	ND	ND	######	1484	13.8	36	53424
8:15-8:30	1693	14.6	37	62641	ND	ND	ND	######	1697	13.7	40	67880
8:30-8:45	1683	13.7	40	67320	ND	ND	ND	######	1606	15.8	33	52998
8:45-9:00	1666	13.9	39	64974	ND	ND	ND	######	1663	13.0	41	68183
Total Volume	***21688***				***NA***				***20515***			
Aver Occ		**13.1**				***NA***				**13.7**		
Aver Speed			***48***				***NA***				***44***	

TABLE A5.1.11a

MAINLINE @ SANTA ANITA1, W/B LA-210, PM R 31.73

	PRE SWARM (TOD)															
	10/24/ 2000				10/25/ 2000				10/31/2000				11/01/ 2000			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1880	11.3	54	101520	1869	15.4	48	89712	1954	12.9	49	95746	1949	14.8	42	81858
6:15-6:30	1952	13.1	48	93696	1972	16.7	38	74936	1890	20.0	34	64260	1935	14.9	42	81270
6:30-6:45	1746	25.1	26	45396	1740	27.1	23	40020	1859	23.4	26	48334	1820	21.4	32	58240
6:45-7:00	1643	27.6	25	41075	1640	26.9	22	36080	1651	26.3	22	36322	1651	23.7	27	44577
7:00-7:15	1720	24.8	23	39560	1772	23.4	25	44300	1630	27.4	22	35860	1632	26.0	22	35904
7:15-7:30	1678	24.4	22	36916	1710	22.8	25	42750	1456	23.1	24	34944	1558	27.7	19	29602
7:30-7:45	1591	27.8	20	31820	1616	27.3	21	33936	1572	23.0	23	36156	1438	29.8	17	24446
7:45-8:00	1402	29.7	17	23834	1335	32.3	18	24030	1297	34.1	14	18158	1289	31.7	14	18046
8:00-8:15	1270	33.3	14	17780	1109	38.5	12	13308	1473	26.7	18	26514	1291	32.1	13	16783
8:15-8:30	1500	27.3	18	27000	1378	30.2	17	23426	1433	28.2	17	24361	1344	31.2	15	20160
8:30-8:45	1544	26.7	19	29336	1424	32.2	19	27056	1433	29.1	19	27227	1324	30.3	14	18536
8:45-9:00	1458	26.4	19	27702	1507	24.4	21	31647	1446	25.9	18	26028	1373	28.8	16	21968
Total Volume	***19384***				***19072***				***19094***				***18604***			
Aver Occ		**24.8**				**26.4**				**25.0**				**26.0**		
Aver Speed			***27***				***25***				***25***				***24***	

TABLE A5.1.11b

MAINLINE @ SANTA ANITA1, W/B LA-210, PM R 31.73

PRE SWARM (TOD)

	11/07/ 2000				11/14/ 2000				12/05/ 2000				12/07/ 2000			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1941	14.9	42	81522	1958	11.9	53	103774	1900	10.1	61	115900	1883	10.1	60	112980
6:15-6:30	1852	19.2	34	62968	1807	16.9	38	68666	1968	11.6	56	110208	1942	13.2	48	93216
6:30-6:45	1694	24.0	25	42350	1470	31.8	21	30870	1726	22.7	26	44876	1843	18.9	32	58976
6:45-7:00	1875	22.5	28	52500	1631	27.0	20	32620	1691	24.5	24	40584	1776	23.7	29	51504
7:00-7:15	1755	22.6	27	47385	1612	23.8	22	35464	1663	20.3	27	44901	1657	22.3	25	41425
7:15-7:30	1397	34.8	23	32131	1581	28.0	21	33201	1747	19.8	29	50663	1655	23.9	24	39720
7:30-7:45	1526	28.2	18	27468	1588	26.7	20	31760	1359	30.9	18	24462	1681	24.2	23	38663
7:45-8:00	1374	30.5	15	20610	1454	29.4	17	24718	1395	27.3	17	23715	1451	25.5	19	27569
8:00-8:15	1289	32.5	14	18046	1396	28.9	16	22336	1415	24.4	19	26885	1481	26.1	19	28139
8:15-8:30	1500	26.4	19	28500	1428	29.4	17	24276	1126	31.1	13	14638	1448	26.0	19	27512
8:30-8:45	1296	30.5	15	19440	1336	31.5	15	20040	1499	22.4	22	32978	1425	26.4	18	25650
8:45-9:00	1338	29.8	16	21408	1341	30.4	17	22797	1304	27.2	17	22168	1768	19.3	31	54808
Total Volume	**18837**				**18602**				**18793**				**20010**			
Aver Occ		**26.3**				**26.3**				**22.7**				**21.6**		
Aver Speed			***24***				***24***				***29***				***30***	

TABLE A5.1.11c

MAINLINE @ SANTA ANITA1, W/B LA-210, PM R 31.73

	PRE SWARM (TOD)				SWARM 1								SWARM 2b			
	12/12/ 2000				4/24/ 2001				4/25/ 2001				4/10/ 2001			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1630	10.2	52	84760	1510	7.6	64	96640	1966	10.2	62	1E+05	1824	11.4	54	98496
6:15-6:30	1757	12.6	46	80822	1682	8.3	65	109330	1854	17.7	40	74160	1911	15.8	49	93639
6:30-6:45	1619	24.3	26	42094	1922	13.7	46	88412	1746	20.0	31	54126	1948	17.9	36	70128
6:45-7:00	1703	23.8	25	42575	1715	23.2	27	46305	1779	21.8	28	49812	1900	19.7	32	60800
7:00-7:15	1605	23.3	24	38520	1777	21.3	28	49756	1651	23.1	24	39624	1535	27.6	25	38375
7:15-7:30	1670	23.2	24	40080	1621	22.8	23	37283	1522	25.9	23	35006	1743	21.7	27	47061
7:30-7:45	1591	25.4	23	36593	1695	22.4	25	42375	1646	23.7	23	37858	1622	24.8	24	38928
7:45-8:00	1432	28.9	21	30072	1357	29.3	18	24426	1450	26.2	19	27550	1440	29.3	21	30240
8:00-8:15	1611	22.7	23	37053	1417	26.1	20	28340	1446	25.2	19	27474	1574	25.8	23	36202
8:15-8:30	1538	25.1	22	33836	1447	25.1	19	27493	1402	27.7	17	23834	1672	22.6	25	41800
8:30-8:45	1610	21.9	24	38640	1327	27.4	16	21232	1152	23.4	16	18432	1790	20.1	30	53700
8:45-9:00	1522	24.0	22	33484	1484	23.5	21	31164	1403	26.2	18	25254	1811	20.7	30	54330
Total Volume	**19288**				**18954**				**19017**				**20770**			
Aver Occ		**22.1**				**20.9**				**22.6**				**21.5**		
Aver Speed			***28***				***32***				***28***				***32***	

TABLE A5.1.11d

MAINLINE @ SANTA ANITA1, W/B LA-210, PM R 31.73

	SWARM 2b				SWARM 1/2b							
	4/11/ 2001				5/01/ 2001				5/02/ 2001			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1783	9.6	61	108763	1928	11.3	55	106040	1821	9.7	61	111081
6:15-6:30	2013	12.5	52	104676	1877	18.3	34	63818	1900	10.7	58	110200
6:30-6:45	2028	12.5	54	109512	1926	19.1	34	65484	1913	14.1	45	86085
6:45-7:00	2005	12.0	55	110275	1818	20.8	29	52722	1810	21.7	28	50680
7:00-7:15	1894	18.7	33	62502	1783	23.5	27	48141	1672	24.4	26	43472
7:15-7:30	1863	21.1	29	54027	1592	26.9	20	31840	1719	22.6	25	42975
7:30-7:45	1732	22.2	28	48496	1686	23.8	26	43836	1681	22.2	26	43706
7:45-8:00	1872	21.2	29	54288	1686	22.7	26	43836	1492	23.9	22	32824
8:00-8:15	1586	23.0	23	36478	1589	23.4	23	36547	1523	23.8	22	33506
8:15-8:30	1753	19.1	32	56096	1527	25.3	22	33594	1658	21.7	26	43108
8:30-8:45	1590	23.8	29	46110	1603	23.3	23	36869	1580	24.5	26	41080
8:45-9:00	1706	16.8	34	58004	1463	24.4	22	32186	1515	23.6	24	36360
Total Volume	**21825**				**20478**				**20284**			
Aver Occ		**17.7**				**21.9**				**20.2**		
Aver Speed			***39***				***29***				***33***	

TABLE A5.1.12a

MAINLINE @ SANTA ANITA2, W/B LA-210, PM R 31.91

	PRE SWARM (TOD)															
	10/24/ 2000				10/25/ 2000				10/31/ 2000				11/01/ 2000			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1748	9.3	60	104880	1885	10.5	57	107445	1846	10.9	54	99684	1883	11.7	51	96033
6:15-6:30	1825	10.9	54	98550	1855	13.4	45	83475	1869	14.4	42	78498	1830	12.3	48	87840
6:30-6:45	1715	17.0	33	56595	1729	19.4	30	51870	1755	19.1	31	54405	1869	12.6	48	89712
6:45-7:00	1680	18.6	30	50400	1571	20.5	25	39275	1580	19.5	26	41080	1664	15.0	36	59904
7:00-7:15	1606	21.8	25	40150	1674	20.2	28	46872	1626	20.5	26	42276	1615	19.3	27	43605
7:15-7:30	1529	22.1	23	35167	1621	19.7	27	43767	1434	23.3	20	28680	1472	24.2	21	30912
7:30-7:45	1540	22.8	23	35420	1491	23.6	22	32802	1589	21.0	25	39725	1400	23.8	20	28000
7:45-8:00	1360	23.0	20	27200	1446	22.1	22	31812	1312	27.1	16	20992	1265	25.5	17	21505
8:00-8:15	1232	27.4	15	18480	1207	27.2	15	18105	1328	25.8	17	22576	1213	29.3	14	16982
8:15-8:30	1400	24.6	19	26600	1332	23.4	19	25308	1342	26.1	17	22814	1318	25.6	17	22406
8:30-8:45	1387	24.0	19	26353	1478	22.2	23	33994	1435	21.8	22	31570	1208	28.6	14	16912
8:45-9:00	1405	21.3	22	30910	1395	22.1	22	30690	1362	22.7	20	27240	1293	25.8	17	21981
Total Volume	***18427***				***18684***				***18478***				***18030***			
Aver Occ		**20.2**				**20.4**				**21.0**				**21.1**		
Aver Speed			***30***				***29***				***28***				***30***	

TABLE A5.1.12b

MAINLINE @ SANTA ANITA2, W/B LA-210, PM R 31.91

	PRE SWARM (TOD)															
	11/07/ 2000				11/14/ 2000				12/05/ 2000				12/07/ 2000			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1843	12.1	48	88464	1857	10.7	55	102135	1825	9.1	64	1E+05	1792	8.9	65	116480
6:15-6:30	1867	13.8	43	80281	1740	13.5	41	71340	1874	9.8	61	1E+05	1841	11.4	52	95732
6:30-6:45	1698	17.2	32	54336	1623	21.4	25	40575	1656	18.4	30	49680	1774	16.3	36	63864
6:45-7:00	1705	16.2	35	59675	1483	24.6	20	29660	1666	17.3	32	53312	1709	17.9	32	54688
7:00-7:15	1670	15.8	35	58450	1485	23.4	21	31185	1488	18.2	27	40176	1550	20.3	26	40300
7:15-7:30	1561	22.3	24	37464	1571	21.6	24	37704	1600	18.0	30	48000	1571	20.4	26	40846
7:30-7:45	1424	24.6	19	27056	1471	25.9	19	27949	1427	22.9	22	31394	1520	22.4	23	34960
7:45-8:00	1292	27.1	16	20672	1465	25.8	19	27835	1390	24.7	20	27800	1337	23.9	19	25403
8:00-8:15	1304	28.3	15	19560	1296	28.5	15	19440	1240	25.4	16	19840	1383	22.6	20	27660
8:15-8:30	1333	26.8	17	22661	1387	24.3	19	26353	1112	28.6	14	15568	1392	23.2	20	27840
8:30-8:45	1223	26.4	16	19568	1332	26.5	17	22644	1369	20.3	22	30118	1341	24.2	19	25479
8:45-9:00	1334	23.7	19	25346	1277	25.4	17	21709	1292	24.0	18	23256	1682	15.9	36	60552
Total Volume	**18254**				**17987**				**17939**				**18892**			
Aver Occ		**21.2**				**22.6**				**19.7**				**19.0**		
Aver Speed			***28***				***25***				***32***				***32***	

TABLE A5.1.12c

MAINLINE @ SANTA ANITA2, W/B LA-210, PM R 31.91

	PRE SWARM (TOD)				SWARM 1								SWARM 2b			
	12/12/ 2000				4/24/ 2001				4/25/ 2001				4/10/ 2001			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1560	9.6	53	82680	1428	6.8	68	97104	1880	9.3	65	122200	1762	9.3	61	107482
6:15-6:30	1648	10.3	52	85696	1546	7.2	69	106674	1844	12.5	47	86668	1890	10.5	58	109620
6:30-6:45	1629	18.2	31	50499	1784	13.0	44	78496	1749	14.8	38	66462	1866	15.0	40	74640
6:45-7:00	1622	22.8	25	40550	1735	18.4	32	55520	1674	18.7	30	50220	1822	16.7	37	67414
7:00-7:15	1560	21.6	25	39000	1618	20.2	27	43686	1517	21.1	24	36408	1582	20.6	26	41132
7:15-7:30	1551	20.9	25	38775	1436	22.9	22	31592	1447	22.0	23	33281	1594	18.5	29	46226
7:30-7:45	1474	23.3	23	33902	1500	22.6	23	34500	1450	23.2	21	30450	1588	19.4	27	42876
7:45-8:00	1459	21.4	23	33557	1357	24.5	19	25783	1356	24.4	20	27120	1494	21.9	24	35856
8:00-8:15	1524	20.4	25	38100	1348	24.4	19	25612	1288	25.5	17	21896	1543	20.7	26	40118
8:15-8:30	1419	23.2	21	29799	1301	25.4	18	23418	1327	23.5	20	26540	1554	19.4	28	43512
8:30-8:45	1505	20.5	26	39130	1193	26.4	16	19088	1176	26.4	16	18816	1624	17.8	31	50344
8:45-9:00	1457	20.2	25	36425	1360	22.8	21	28560	1286	24.6	19	24434	1715	17.3	33	56595
Total Volume	**18408**				**17606**				**17994**				**20034**			
Aver Occ		**19.4**				**19.6**				**20.5**				**17.3**		
Aver Speed			***30***				***32***				***30***				***36***	

TABLE A5.1.12d

MAINLINE @ SANTA ANITA2, W/B LA-210, PM R 31.91

	SWARM 2b				SWARM 1/2b							
	4/11/ 2001				5/01/ 2001				5/02/ 2001			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1697	8.7	63	106911	1849	9.9	59	109091	1725	8.8	64	110400
6:15-6:30	1930	11.0	56	108080	1764	15.4	37	65268	1758	9.3	61	107238
6:30-6:45	1901	11.3	55	104555	1859	15.4	40	74360	1825	12.5	48	87600
6:45-7:00	1857	10.6	57	105849	1680	21.1	27	45360	1690	20.3	28	47320
7:00-7:15	1786	15.1	39	69654	1728	19.9	30	51840	1633	18.5	30	48990
7:15-7:30	1709	18.7	30	51270	1522	23.8	22	33484	1570	21.2	25	39250
7:30-7:45	1699	15.6	36	61164	1582	19.5	27	42714	1516	19.5	27	40932
7:45-8:00	1681	19.8	28	47068	1556	19.9	27	42012	1413	17.3	27	38151
8:00-8:15	1526	20.1	25	38150	1462	20.9	24	35088	1478	20.6	25	36950
8:15-8:30	1638	15.5	35	57330	1489	22.5	23	34247	1512	20.5	27	40824
8:30-8:45	1609	16.1	34	54706	1482	20.8	25	37050	1566	18.8	28	43848
8:45-9:00	1586	13.4	39	61854	1408	21.4	22	30976	1415	19.3	25	35375
Total Volume	**20619**				**19381**				**19101**			
Aver Occ		**14.7**				**19.2**				**17.2**		
Aver Speed			***42***				***31***				***35***	

TABLE A5.1.13a

MAINLINE @ HUNTINGTON, W/B LA-210, PM R. 32.76

	PRE SWARM (TOD)															
	10/24/ 2000				10/25/ 2000				10/31/2000				11/01/ 2000			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1697	13.1	48	81456	1802	12.9	53	95506	1843	15.1	45	82935	1832	12.7	55	100760
6:15-6:30	1798	16.2	40	71920	1841	17.1	39	71799	1838	18.9	34	62492	1752	19.2	32	56064
6:30-6:45	1672	20.3	29	48488	1689	20.3	29	48981	1680	23.7	24	40320	1718	17.1	36	61848
6:45-7:00	1631	21.4	27	44037	1527	25.1	21	32067	1480	27.8	18	26640	1606	17.3	34	54604
7:00-7:15	1546	18.7	30	46380	1565	25.1	22	34430	1463	27.0	19	27797	1501	25.2	21	31521
7:15-7:30	1434	27.0	19	27246	1420	26.4	19	26980	1388	27.8	18	24984	1398	28.8	17	23766
7:30-7:45	1342	28.6	16	21472	1497	27.5	19	28443	1393	28.1	17	23681	1300	29.6	16	20800
7:45-8:00	1451	23.8	22	31922	1320	29.2	16	21120	1309	29.4	16	20944	1274	29.6	15	19110
8:00-8:15	1251	29.4	16	20016	1370	27.4	18	24660	1298	30.5	15	19470	1200	31.5	14	16800
8:15-8:30	1186	29.8	15	17790	1213	30.5	14	16982	1294	29.3	16	20704	1257	28.9	16	20112
8:30-8:45	1370	26.6	18	24660	1338	27.0	17	22746	1338	27.8	17	22746	1137	31.3	13	14781
8:45-9:00	1375	26.4	19	26125	1375	27.5	18	24750	1269	28.3	16	20304	1335	28.4	16	21360
Total Volume	***17753***				***17957***				***17593***				***17310***			
Aver Occ		**23.4**				**24.7**				**26.1**				**25.0**		
Aver Speed			***26***				***25***				***22***				***26***	

TABLE A5.1.13b

MAINLINE @ HUNTINGTON, W/B LA-210, PM R. 32.76

	PRE SWARM (TOD)															
	11/07/ 2000				11/14/ 2000				12/05/ 2000				12/07/ 2000			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1786	14.7	43	76798	1769	12.4	54	95526	1737	11.7	56	97272	1726	11.4	57	98382
6:15-6:30	1813	16.8	38	68894	1784	15.6	41	73144	1811	14.8	44	79684	1775	14.9	42	74550
6:30-6:45	1630	19.9	29	47270	1588	25.5	21	33348	1708	19.2	31	52948	1763	18.6	33	58179
6:45-7:00	1597	27.1	20	31940	1355	29.4	16	21680	1590	25.2	22	34980	1637	22.2	25	40925
7:00-7:15	1568	24.3	23	36064	1387	29.4	17	23579	1244	29.2	15	18660	1508	25.0	22	33176
7:15-7:30	1496	27.2	19	28424	1382	27.2	18	24876	1528	24.8	22	33616	1395	26.3	19	26505
7:30-7:45	1426	28.6	17	24242	1340	29.1	16	21440	1308	29.1	16	20928	1435	26.1	19	27265
7:45-8:00	1256	30.5	15	18840	1420	28.1	18	25560	1304	28.0	17	22168	1298	26.7	17	22066
8:00-8:15	1259	30.3	15	18885	1284	27.5	16	20544	1272	27.3	18	22896	1432	25.8	20	28640
8:15-8:30	1255	30.4	15	18825	1231	30.7	14	17234	1165	29.7	14	16310	1304	27.0	17	22168
8:30-8:45	1162	31.4	13	15106	1237	30.6	15	18555	1266	28.5	16	20256	1407	23.9	22	30954
8:45-9:00	1291	28.4	17	21947	1298	26.7	18	23364	1248	27.7	17	21216	1586	21.9	26	41236
Total Volume	**17539**				**17075**				**17181**				**18266**			
Aver Occ		**25.8**				**26.0**				**24.6**				**22.5**		
Aver Speed			***23***				***23***				***26***				***28***	

TABLE A5.1.13c

MAINLINE @ HUNTINGTON, W/B LA-210, PM R. 32.76

	PRE SWARM (TOD)				SWARM 1								SWARM 2b			
	12/12/ 2000				4/24/ 2001				4/25/ 2001				4/10/ 2001			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1577	16.1	34	53618	1325	8.4	61	80825	1798	12.1	57	1E+05	1709	11.5	57	97413
6:15-6:30	1622	20.6	27	43794	1465	9.2	61	89365	1819	18.5	34	61846	1448	15.6	42	60816
6:30-6:45	1639	23.3	24	39336	1790	16.5	38	68020	1748	18.0	34	59432	1822	14.0	49	89278
6:45-7:00	1614	25.3	22	35508	1576	20.7	26	40976	1634	20.1	29	47386	1762	19.9	31	54622
7:00-7:15	1455	26.6	19	27645	1613	21.3	26	41938	1528	21.7	24	36672	1563	22.4	24	37512
7:15-7:30	1376	27.3	18	24768	1413	24.3	21	29673	1396	26.7	18	25128	1595	23.4	24	38280
7:30-7:45	1404	27.4	18	25272	1449	22.5	24	34776	1394	26.2	19	26486	1558	23.8	23	35834
7:45-8:00	1383	28.1	18	24894	1383	21.7	23	31809	1394	25.0	20	27880	1518	24.9	21	31878
8:00-8:15	1556	23.3	23	35788	1289	25.3	18	23202	1343	25.2	20	26860	1484	24.8	21	31164
8:15-8:30	1419	24.3	21	29799	1316	26.6	19	25004	1213	27.4	17	20621	1584	20.3	28	44352
8:30-8:45	1464	23.1	22	32208	1307	26.6	19	24833	1231	27.5	17	20927	1605	18.0	32	51360
8:45-9:00	1456	20.8	25	36400	1230	27.9	16	19680	1271	27.3	17	21607	1680	18.6	32	53760
Total Volume	**17965**				**17156**				**17769**				**19328**			
Aver Occ		**23.9**				**20.9**				**23.0**				**19.8**		
Aver Speed			***23***				***30***				***27***				***32***	

TABLE A5.1.13d

MAINLINE @ HUNTINGTON, W/B LA-210, PM R 32.76

	SWARM 2b				SWARM 1/2b							
	4/11/ 2001				5/01/ 2001				5/02/ 2001			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1688	13.1	47	79336	1799	11.8	58	104342	1712	13.1	48	82176
6:15-6:30	1930	13.9	53	102290	1753	19.8	31	54343	1711	18.8	33	56463
6:30-6:45	1799	20.2	31	55769	1735	20.8	29	50315	1810	20.0	34	61540
6:45-7:00	1833	20.5	32	58656	1692	21.4	28	47376	1618	21.2	26	42068
7:00-7:15	1730	20.5	29	50170	1684	21.5	27	45468	1637	21.2	27	44199
7:15-7:30	1757	21.1	29	50953	1632	20.6	27	44064	1585	23.1	24	38040
7:30-7:45	1616	22.3	25	40400	1381	27.1	18	24858	1346	18.5	26	34996
7:45-8:00	1600	20.6	27	43200	1614	19.2	30	48420	1450	18.3	30	43500
8:00-8:15	1719	18.5	33	56727	1511	23.0	23	34753	1457	24.3	21	30597
8:15-8:30	1440	22.4	23	33120	1516	22.7	24	36384	1532	22.3	24	36768
8:30-8:45	1652	19.6	30	49560	1466	22.5	24	35184	1573	18.3	31	48763
8:45-9:00	1565	14.9	38	59470	1360	24.4	19	25840	1367	23.9	20	27340
Total Volume	**20329**				**19143**				**18798**			
Aver Occ		**19.0**				**21.2**				**20.3**		
Aver Speed			***33***				***29***				***29***	

TABLE A5.1.14a

MAINLINE @ MYRTLE, W/B LA-210, PM R. 33.76

	PRE SWARM (TOD)															
	10/24/ 2000				10/25/ 2000				10/31 2000				11/01/ 2000			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1643	9.9	55	90365	1701	10.8	52	88452	1811	11.8	50	90550	1777	10.8	54	95958
6:15-6:30	1776	14.7	40	71040	1791	12.4	48	85968	1819	17.1	36	65484	1771	18.2	33	58443
6:30-6:45	1695	19.5	29	49155	1635	19.8	28	45780	1617	26.7	21	33957	1617	24.4	23	37191
6:45-7:00	1499	24.0	21	31479	1527	25.4	21	32067	1459	27.0	18	26262	1515	25.1	21	31815
7:00-7:15	1464	25.9	19	27816	1459	26.7	19	27721	1351	29.2	16	21616	1443	23.6	21	30303
7:15-7:30	1352	27.5	17	22984	1269	28.1	16	20304	1304	29.9	15	19560	1343	28.9	16	21488
7:30-7:45	1272	32.4	14	17808	1423	26.2	19	27037	1067	35.1	10	10670	1180	31.5	14	16520
7:45-8:00	1199	29.4	14	16786	1195	32.2	13	15535	1324	28.6	16	21184	1144	34.7	11	12584
8:00-8:15	1232	31.3	14	17248	1316	27.9	16	21056	1181	33.1	13	15353	1019	36.3	10	10190
8:15-8:30	1143	32.8	12	13716	1032	36.5	10	10320	1245	29.2	15	18675	1188	31.6	13	15444
8:30-8:45	1196	32.2	13	15548	1264	30.5	14	17696	1145	31.1	13	14885	1073	34.5	11	11803
8:45-9:00	1303	27.4	16	20848	1289	28.1	16	20624	1195	30.1	14	16730	1169	30.6	14	16366
Total Volume	***16774***				***16901***				***16518***				***16239***			
Aver Occ		**25.6**				**25.4**				**27.4**				**27.5**		
Aver Speed			***24***				***24***				***21***				***22***	

TABLE A5.1.14b

MAINLINE @ MYRTLE, W/B LA-210, PM R. 33.76

	PRE SWARM (TOD)															
	11/07/ 2000				11/14/ 2000				12/05/ 2000				12/07/ 2000			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1712	10.6	53	90736	1680	10.3	54	90720	1837	8.2	80	1E+05	1758	8.0	79	138882
6:15-6:30	1843	17.3	36	66348	1779	14.8	40	71160	1854	11.7	64	1E+05	1815	11.9	63	114345
6:30-6:45	1577	27.1	21	33117	1615	22.2	24	38760	1699	14.7	55	93445	1751	15.9	54	94554
6:45-7:00	1451	26.5	19	27569	1299	32.5	14	18186	1488	25.5	20	29760	1670	17.7	52	86840
7:00-7:15	1481	25.4	20	29620	1284	32.0	14	17976	1171	29.5	14	16394	1440	19.6	25	36000
7:15-7:30	1348	28.5	16	21568	1156	34.3	12	13872	1337	23.9	19	25403	1281	28.2	16	20496
7:30-7:45	1333	29.9	16	21328	1241	30.6	14	17374	1316	26.5	19	25004	1325	26.9	18	23850
7:45-8:00	1196	33.4	12	14352	1185	30.5	14	16590	1083	30.6	13	14079	1205	29.0	15	18075
8:00-8:15	1112	33.9	11	12232	1159	34.8	12	13908	1244	27.5	16	19904	1308	27.9	16	20928
8:15-8:30	1172	32.2	13	15236	1117	36.4	11	12287	1055	31.7	12	12660	1111	32.6	12	13332
8:30-8:45	1104	35.4	11	12144	1123	33.5	12	13476	1167	29.0	15	17505	1313	24.9	19	24947
8:45-9:00	1227	27.6	16	19632	1188	31.4	13	15444	1116	27.5	15	16740	1449	20.2	25	36225
Tot Volume	***16556***				**15826**				**16367**				**17426**			
Aver Occ		**27.3**				**28.6**				**23.9**				**21.9**		
Aver Speed			***22***				***21***				***33***				***36***	

TABLE A5.1.14c

MAINLINE @ MYRTLE, W/B LA-210, PM R 33.76

	PRE SWARM (TOD)				SWARM 1								SWARM 2b			
	12/12/ 2000				4/24/ 2001				4/25/ 2001				4/10/ 2001			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1601	10.2	64	102464	1243	6.3	66	82038	1349	7.4	60	80940	1672	9.1	61	1E+05
6:15-6:30	1610	14.5	54	86940	1074	5.4	66	70884	1801	11.6	51	91851	1780	10.5	57	1E+05
6:30-6:45	1656	14.3	56	92736	1306	10.1	43	56158	1740	16.3	36	62640	1768	17.4	35	61880
6:45-7:00	1543	23.9	23	35489	1587	21.3	26	41262	1485	21.5	24	35640	1773	16.0	37	65601
7:00-7:15	1371	27.2	18	24678	1465	24.1	21	30765	1459	22.6	23	33557	1445	20.8	23	33235
7:15-7:30	1273	29.8	15	19095	1299	25.0	18	23382	1327	26.2	18	23886	1491	20.0	25	37275
7:30-7:45	1267	27.9	16	20272	1348	27.3	17	22916	1273	28.1	16	20368	1459	21.8	23	33557
7:45-8:00	1244	29.8	15	18660	1297	28.7	15	19455	1271	27.7	16	20336	1432	17.8	27	38664
8:00-8:15	1471	25.5	21	30891	1211	29.2	15	18165	1311	24.5	18	23598	1419	16.8	28	39732
8:15-8:30	1428	24.6	20	28560	1264	28.3	15	18960	1187	28.3	14	16618	1493	17.9	29	43297
8:30-8:45	1273	24.8	17	21641	1201	28.9	14	16814	1123	28.4	14	15722	1523	20.2	26	39598
8:45-9:00	1503	11.3	45	67635	1144	30.1	14	16016	1240	27.1	16	19840	1579	11.5	46	72634
Tot Volume	***17240***				***15439***				***16566***				***18834***			
Aver Occ		**22.0**				**22.1**				**22.5**				**16.7**		
Aver Speed			***32***				***27***				***27***				***36***	

TABLE A5.1.14d

MAINLINE @ MYRTLE, W/B LA-210, PM R 33.76

	SWARM 2b				SWARM 1/2b							
	4/11/ 2001				5/01/ 2001				5/02/ 2001			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1683	10.7	52	87516	1785	9.9	60	107100	1707	10.3	55	93885
6:15-6:30	1827	12.2	50	91350	1800	17.0	36	64800	1735	16.3	36	62460
6:30-6:45	1723	16.0	36	62028	1636	20.1	28	45808	1647	23.3	25	41175
6:45-7:00	1772	18.3	33	58476	1637	18.4	30	49110	1548	22.0	24	37152
7:00-7:15	1759	16.5	37	65083	1608	20.9	27	43416	1559	24.6	22	34298
7:15-7:30	1604	21.6	25	40100	1555	21.5	25	38875	1435	23.9	21	30135
7:30-7:45	1488	24.0	21	31248	1220	29.7	14	17080	1309	26.1	17	22253
7:45-8:00	1581	19.4	28	44268	1433	24.8	21	30093	1232	27.1	16	19712
8:00-8:15	1560	12.0	44	68640	1472	21.5	24	35328	1377	22.8	21	28917
8:15-8:30	1435	17.9	27	38745	1483	21.5	24	35592	1437	20.8	24	34488
8:30-8:45	1616	14.6	38	61408	1368	25.6	18	24624	1110	16.8	23	25530
8:45-9:00	1476	7.7	65	95940	1441	19.8	25	36025	1396	21.1	23	32108
Tot Volume	***19524***				***18438***				***17492***			
Aver Occ		**15.9**				**20.9**				**21.3**		
Aver Speed			***38***				***29***				***26***	

TABLE A5.1.15a

MAINLINE @ MOUNTAIN, W/B LA-210, PM R. 34.61

	PRE SWARM (TOD)															
	10/24/ 2000				10/25/ 2000				10/31/ 2000				11/01/ 2000			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1785	11.2	52	92820	1782	11.3	51	90882	1861	12.2	49	91189	1870	12.4	48	89760
6:15-6:30	1897	14.0	44	83468	1895	13.5	46	87170	1843	17.5	34	62662	1801	19.2	31	55831
6:30-6:45	1793	17.2	34	60962	1766	18.4	31	54746	1630	21.6	25	40750	1679	18.9	29	48691
6:45-7:00	1647	19.2	28	46116	1634	21.3	25	40850	1507	24.3	20	30140	1547	23.1	22	34034
7:00-7:15	1520	24.0	21	31920	1592	21.6	24	38208	1389	26.6	17	23613	1508	21.2	23	34684
7:15-7:30	1448	25.5	19	27512	1345	26.8	17	22865	1324	27.4	17	22508	1419	23.9	20	28380
7:30-7:45	1416	23.6	20	28320	1433	25.4	19	27227	1203	30.0	14	16842	1292	27.0	17	21964
7:45-8:00	1311	27.3	17	22287	1444	23.1	21	30324	1503	22.5	22	33066	1324	27.2	17	22508
8:00-8:15	1330	26.5	17	22610	1374	25.3	19	26106	1270	28.0	16	20320	1230	29.6	14	17220
8:15-8:30	1275	28.6	15	19125	1201	30.6	14	16814	1297	27.3	16	20752	1242	28.9	15	18630
8:30-8:45	1408	25.6	18	25344	1367	24.9	19	25973	1216	27.0	15	18240	1214	29.3	14	16996
8:45-9:00	1336	26.4	17	22712	1546	22.2	24	37104	1403	24.2	19	26657	1217	30.4	14	17038
Total Volume	***18166***				***18379***				***17446***				***17343***			
Aver Occ		**22.4**				**22.0**				**24.1**				**24.3**		
Aver Speed			***27***				***27***				***23***				***23***	

TABLE A5.1.15b

MAINLINE @ MOUNTAIN, W/B LA-210, PM R. 34.61

	PRE SWARM (TOD)															
	11/07/ 2000				11/14/ 2000				12/05/ 2000				12/07/ 2000			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1841	11.8	50	92050	1728	11.9	47	81216	1798	9.9	59	106082	1799	9.8	60	107940
6:15-6:30	1890	16.1	38	71820	1742	16.1	35	60970	1799	13.2	44	79156	1889	13.7	45	85005
6:30-6:45	1633	20.5	26	42458	1638	21.7	25	40950	1791	16.8	35	62685	1812	15.7	38	68856
6:45-7:00	1517	23.0	22	33374	1235	29.6	14	17290	1618	19.7	27	43686	1583	21.0	25	39575
7:00-7:15	1547	20.9	24	37128	1276	26.7	16	20416	1296	23.4	18	23328	1605	17.9	29	46545
7:15-7:30	1455	24.3	20	29100	1262	28.0	15	18930	1324	23.2	19	25156	1453	22.2	22	31966
7:30-7:45	1427	25.2	19	27113	1233	26.7	15	18495	1331	23.5	19	25289	1327	24.5	19	25213
7:45-8:00	1274	26.9	16	20384	1316	25.4	18	23688	1327	24.0	19	25213	1515	21.1	24	36360
8:00-8:15	1350	28.1	17	22950	1377	24.1	19	26163	1330	22.9	20	26600	1380	24.2	20	27600
8:15-8:30	1257	29.2	15	18855	1198	30.1	13	15574	1259	25.7	17	21403	1234	26.0	17	20978
8:30-8:45	1363	25.3	18	24534	1246	29.3	14	17444	1169	27.0	15	17535	1456	19.5	25	36400
8:45-9:00	1311	26.8	17	22287	1234	29.4	14	17276	1398	22.7	21	29358	1538	19.1	27	41526
Total Volume	**17865**				**16485**				**17440**				**18591**			
Aver Occ		**23.2**				**24.9**				**21.0**				**19.6**		
Aver Speed			***25***				***22***				***28***				***31***	

TABLE A5.1.15c

MAINLINE @ MOUNTAIN, W/B LA-210, PM R. 34.61

	PRE SWARM (TOD)				SWARM 1								SWARM 2b			
	12/12/ 2000				4/24/ 2001				4/25/ 2001				4/10/ 2001			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1647	10.7	50	82350	1318	6.5	67	88306	1960	10.6	60	117600	1803	9.6	61	109983
6:15-6:30	1665	14.1	38	63270	1589	7.8	67	106463	1972	12.5	51	100572	1986	11.0	59	117174
6:30-6:45	1689	14.9	38	64182	1859	16.1	38	70642	1826	16.0	37	67562	1866	16.8	36	67176
6:45-7:00	1551	19.9	25	38775	1740	18.2	31	53940	1612	20.8	25	40300	1916	16.2	39	74724
7:00-7:15	1442	22.0	21	30282	1575	21.3	25	39375	1567	19.7	26	40742	1584	20.0	26	41184
7:15-7:30	1247	26.6	16	19952	1482	21.8	23	34086	1436	22.3	21	30156	1650	18.0	30	49500
7:30-7:45	1394	20.7	22	30668	1408	22.5	21	29568	1382	23.7	19	26258	1535	21.8	23	35305
7:45-8:00	1408	22.5	21	29568	1431	22.3	22	31482	1432	21.0	23	32936	1501	24.4	20	30020
8:00-8:15	1540	19.5	26	40040	1339	23.9	19	25441	1427	21.5	23	32821	1647	21.8	26	42822
8:15-8:30	1490	20.5	24	35760	1440	21.8	22	31680	1343	23.1	19	25517	1651	16.5	33	54483
8:30-8:45	1582	15.7	33	52206	1376	22.1	21	28896	1343	23.9	19	25517	1693	18.2	31	52483
8:45-9:00	1529	9.9	51	77979	1267	25.2	17	21539	1281	23.5	18	23058	1684	9.8	57	95988
Total Volume	**18184**				**17824**				**18581**				**20516**			
Aver Occ		**18.1**				**19.1**				**19.9**				**17.0**		
Aver Speed			***31***				***31***				***30***				***38***	

TABLE A5.1.15d

MAINLINE @ MOUNTAIN, W/B LA-210, PM R 34.61

	SWARM 2b				SWARM 1/2b							
	4/11/ 2001				5/01/ 2001				5/02/ 2001			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1819	11.0	53	96407	1971	10.5	61	120231	1880	10.3	59	110920
6:15-6:30	2003	12.6	52	104156	1894	16.3	38	71972	1872	14.4	42	78624
6:30-6:45	1875	16.8	37	69375	1797	17.7	33	59301	1767	18.4	31	54777
6:45-7:00	1908	17.1	37	70596	1816	18.0	33	59928	1749	17.2	33	57717
7:00-7:15	1828	16.7	36	65808	1673	18.4	30	50190	1702	17.5	32	54464
7:15-7:30	1687	20.6	27	45549	1575	18.6	28	44100	1529	20.6	25	38225
7:30-7:45	1690	19.0	29	49010	1416	23.1	21	29736	1448	21.7	22	31856
7:45-8:00	1734	17.4	33	57222	1617	18.8	28	45276	1195	26.8	15	17925
8:00-8:15	1688	11.4	49	82712	1631	18.9	28	45668	1564	20.0	26	40664
8:15-8:30	1667	12.3	44	73348	1564	17.8	29	45356	1574	18.2	28	44072
8:30-8:45	1732	11.6	49	84868	1661	18.7	29	48169	1658	18.4	30	49740
8:45-9:00	1652	8.4	65	107380	1503	17.7	28	42084	1572	15.6	34	53448
Total Volume	**21283**				**20118**				**19510**			
Aver Occ		**14.6**				**17.9**				**18.3**		
Aver Speed			***43***				***33***				***32***	

TABLE A5.1.16a

MAINLINE @ BUENA VISTA, W/B LA-210, PM R. 35.12

	PRE SWARM (TOD)															
	10/24/ 2000				10/25/ 2000				10/31/ 2000				11/01/ 2000			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1804	10.0	57	102828	1821	11.3	51	92871	1932	10.6	58	112056	1902	10.7	57	108414
6:15-6:30	1905	11.9	51	97155	1815	13.5	43	78045	1878	14.6	41	76998	1855	15.7	38	70490
6:30-6:45	1642	16.1	33	54186	1702	17.4	32	54464	1585	21.2	25	39625	1572	21.1	24	37728
6:45-7:00	1467	20.9	23	33741	1445	22.5	21	30345	1393	23.3	20	27860	1394	22.2	21	29274
7:00-7:15	1379	22.3	20	27580	1369	24.6	18	24642	1252	27.1	16	20032	1336	22.7	20	26720
7:15-7:30	1299	24.5	17	22083	1191	28.6	14	16674	1202	27.2	15	18030	1226	25.5	16	19616
7:30-7:45	1176	28.8	14	16464	1213	27.3	15	18195	1055	31.6	11	11605	1133	29.0	13	14729
7:45-8:00	1169	28.1	14	16366	1243	23.7	17	21131	1217	24.8	16	19472	1098	30.7	12	13176
8:00-8:15	1239	25.4	16	19824	1249	24.5	17	21233	1159	27.9	14	16226	1100	30.8	12	13200
8:15-8:30	1093	28.3	13	14209	1043	30.6	11	11473	1144	28.2	14	16016	1062	30.7	12	12744
8:30-8:45	1276	23.6	18	22968	1166	26.4	14	16324	1067	29.9	12	12804	1111	28.5	13	14443
8:45-9:00	1165	24.8	16	18640	1309	21.6	21	27489	1354	20.7	23	31142	1048	30.6	12	12576
Total Volume	***16614***				***16566***				***16238***				***15837***			
Aver Occ		**22.1**				**22.7**				**23.9**				**24.9**		
Aver Speed			***27***				***25***				***25***				***24***	

TABLE A5.1.16b

MAINLINE @ BUENA VISTA, W/B LA-210, PM R. 35.12

	PRE SWARM (TOD)															
	11/07/ 2000				11/14/ 2000				12/05/ 2000				12/07/ 2000			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1878	10.9	55	103290	1820	11.4	51	92820	1806	9.6	60	108360	1804	9.6	61	110044
6:15-6:30	1950	13.7	46	89700	1831	13.6	43	78733	1851	12.5	48	88848	1914	11.4	54	103356
6:30-6:45	1536	20.8	24	36864	1558	22.6	22	34276	1689	14.4	38	64182	1654	16.1	34	56236
6:45-7:00	1394	22.2	21	29274	1276	27.4	15	19140	1380	21.9	21	28980	1480	21.6	23	34040
7:00-7:15	1290	24.2	18	23220	1162	28.9	14	16268	1236	25.6	17	21012	1358	24.3	18	24444
7:15-7:30	1336	23.7	19	25384	1143	29.5	13	14859	1056	29.4	13	13728	1245	25.9	16	19920
7:30-7:45	1251	25.7	16	20016	1116	29.3	13	14508	1224	24.7	17	20808	1169	26.0	15	17535
7:45-8:00	1121	29.2	13	14573	1122	30.5	13	14586	1167	23.7	16	18672	1224	24.2	17	20808
8:00-8:15	1178	26.5	15	17670	1174	26.9	15	17610	1151	24.9	16	18416	1243	25.0	17	21131
8:15-8:30	1102	28.0	13	14326	1038	30.9	11	11418	1043	28.8	13	13559	1128	27.0	14	15792
8:30-8:45	1123	29.3	14	15722	1222	26.2	15	18330	1021	27.8	12	12252	1279	22.2	20	25580
8:45-9:00	1128	27.1	13	14664	1104	30.6	12	13248	1329	22.1	21	27909	1366	21.2	22	30052
Total Volume	**16287**				**15566**				**15953**				**16864**			
Aver Occ		**23.4**				**25.7**				**22.1**				**21.2**		
Aver Speed			***25***				***22***				***27***				***28***	

TABLE A5.1.16c

MAINLINE @ BUENA VISTA, W/B LA-210, PM R. 35.12

	PRE SWARM (TOD)				SWARM 1								SWARM 2b			
	12/12/ 2000				4/24/ 2001				4/25/ 2001				4/10/ 2001			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1653	10.9	49	80997	1286	5.9	70	90020	1915	9.8	62	118730	1812	9.3	63	114156
6:15-6:30	1668	11.9	45	75060	1580	7.3	70	110600	1954	10.2	62	121148	1915	10.0	62	118730
6:30-6:45	1535	16.5	30	46050	1897	12.6	49	92953	1623	17.2	31	50313	1820	14.1	42	76440
6:45-7:00	1404	21.4	22	30888	1433	20.0	23	32959	1420	21.3	22	31240	1663	16.4	33	54879
7:00-7:15	1283	24.8	18	23094	1382	22.0	21	29022	1356	22.5	20	27120	1464	18.2	26	38064
7:15-7:30	1117	28.6	13	14521	1348	22.2	21	28308	1227	25.3	16	19632	1384	21.8	21	29064
7:30-7:45	1255	26.2	16	20080	1142	27.7	14	15988	1218	25.7	16	19488	1280	23.9	18	23040
7:45-8:00	1193	26.3	15	17895	1179	27.9	14	16506	1204	25.6	15	18060	1327	21.9	21	27867
8:00-8:15	1291	22.7	19	24529	1082	30.5	12	12984	1215	25.1	17	20655	1454	20.3	26	37804
8:15-8:30	1418	14.3	32	45376	1251	26.3	16	20016	1116	26.2	14	15624	1395	20.0	23	32085
8:30-8:45	1453	10.1	47	68291	1144	26.7	15	17160	1134	26.6	15	17010	1617	9.9	53	85701
8:45-9:00	1472	7.3	66	97152	1110	27.0	14	15540	1157	26.0	15	17355	1591	8.1	64	101824
Total Volume	**16742**				**15834**				**16539**				**18722**			
Aver Occ		**18.4**				**21.3**				**21.8**				**16.2**		
Aver Speed			***32***				***30***				***29***				***40***	

TABLE A5.1.16d

MAINLINE @ BUENA VISTA, W/B LA-210, PM R 35.12

	SWARM 2b				SWARM 1/2b							
	4/11/ 2001				5/01/ 2001				5/02/ 2001			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1834	9.6	61	111874	ND	ND	ND	######	ND	ND	ND	#######
6:15-6:30	1876	11.8	51	95676	ND	ND	ND	######	ND	ND	ND	#######
6:30-6:45	1741	15.5	37	64417	ND	ND	ND	######	ND	ND	ND	#######
6:45-7:00	1669	17.2	32	53408	ND	ND	ND	######	ND	ND	ND	#######
7:00-7:15	1600	17.3	30	48000	ND	ND	ND	######	ND	ND	ND	#######
7:15-7:30	1533	18.9	27	41391	ND	ND	ND	######	ND	ND	ND	#######
7:30-7:45	1417	19.2	24	34008	ND	ND	ND	######	ND	ND	ND	#######
7:45-8:00	1498	15.1	32	47936	ND	ND	ND	######	ND	ND	ND	#######
8:00-8:15	1612	8.2	64	103168	ND	ND	ND	######	ND	ND	ND	#######
8:15-8:30	1614	8.2	64	103296	ND	ND	ND	######	ND	ND	ND	#######
8:30-8:45	1629	9.2	58	94482	ND	ND	ND	######	ND	ND	ND	#######
8:45-9:00	1557	7.6	67	104319	ND	ND	ND	######	ND	ND	ND	#######
Total Volume	**19580**				***NA***				***NA***			
Aver Occ		**13.2**				**NA**				**NA**		
Aver Speed			***46***				***NA***				***NA***	

TABLE A5.1.17a

MAINLINE @ MOUNT OLIVE, W/B LA-210, PM R. 36.3

	PRE SWARM (TOD)															
	10/24/ 2000				10/25/ 2000				10/31/ 2000				11/01/ 2000			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1452	6.5	78	113256	1530	7.1	75	114750	1534	6.9	78	119652	1551	6.8	79	122529
6:15-6:30	1462	6.9	73	106726	1602	7.8	70	112140	1658	7.2	78	129324	1587	7.5	73	115851
6:30-6:45	1427	12.1	40	57080	1455	12.4	39	56745	1465	17.7	28	41020	1336	17.3	26	34736
6:45-7:00	1175	6.8	60	70500	1348	23.7	20	26960	1183	27.0	15	17745	1270	25.1	17	21590
7:00-7:15	1301	6.5	68	88468	1152	27.5	14	16128	1089	28.7	13	14157	1177	27.4	15	17655
7:15-7:30	1328	11.6	38	50464	1114	30.1	12	13368	1069	30.2	12	12828	1094	29.8	13	14222
7:30-7:45	1182	23.9	17	20094	1170	29.7	14	16380	1106	29.7	13	14378	1171	27.9	14	16394
7:45-8:00	1216	19.3	25	30400	1217	26.7	15	18255	1075	30.0	12	12900	1073	31.0	12	12876
8:00-8:15	1266	13.4	32	40512	1146	22.9	17	19482	1200	22.5	19	22800	1054	29.0	12	12648
8:15-8:30	1109	21.6	17	18853	1300	18.1	25	32500	1116	25.6	15	16740	981	33.2	10	9810
8:30-8:45	1072	24.7	15	16080	932	29.8	11	10252	1140	25.4	16	18240	1016	28.5	13	13208
8:45-9:00	1137	17.2	24	27288	1204	18.1	24	28896	1126	21.0	19	21394	995	29.4	12	11940
Total Volume	***15127***				***15170***				***14761***				***14305***			
Aver Occ		**14.2**				**21.2**				**22.7**				**24.4**		
Aver Speed			***42***				***31***				***30***				***28***	

TABLE A5.1.17b

MAINLINE @ MOUNT OLIVE, W/B LA-210, PM R. 36.3

	PRE SWARM (TOD)															
	11/07/ 2000				11/14/ 2000				12/05/ 2000				12/07/ 2000			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1494	6.7	78	1E+05	1468	6.7	77	1E+05	1477	6.8	76	1E+05	1475	6.7	76	1E+05
6:15-6:30	1563	6.9	78	121914	1580	7.0	78	123240	1569	6.9	77	120813	1518	7.0	74	112332
6:30-6:45	1473	9.3	53	78069	1445	15.4	32	46240	1488	13.9	36	53568	1558	12.3	43	66994
6:45-7:00	1197	25.3	17	20349	1117	29.6	13	14521	1313	20.2	23	30199	1375	20.3	22	30250
7:00-7:15	1197	23.1	18	21546	1099	30.0	12	13188	1173	26.3	15	17595	1234	27.6	15	18510
7:15-7:30	1286	20.8	21	27006	1015	31.7	11	11165	947	32.9	10	9470	1185	27.8	14	16590
7:30-7:45	1246	23.8	17	21182	1022	31.1	12	12264	1193	25.5	16	19088	1087	29.6	13	14131
7:45-8:00	1162	27.7	15	17430	1034	30.5	12	12408	1036	30.9	11	11396	1122	28.2	14	15708
8:00-8:15	1077	27.5	13	14001	1136	25.1	16	18176	1098	28.3	14	15372	1151	25.0	16	18416
8:15-8:30	1025	28.9	12	12300	1080	30.5	13	14040	1177	25.5	16	18832	1285	18.7	23	29555
8:30-8:45	1100	27.1	15	16500	1021	29.8	13	13273	1002	27.4	13	13026	1129	16.4	24	27096
8:45-9:00	990	28.2	13	12870	942	32.0	12	11304	1102	27.3	14	15428	1193	5.9	71	84703
Total Volume	***14810***				***13959***				***14575***				***15312***			
Aver Occ		**21.3**				**25.0**				**22.7**				**18.8**		
Aver Speed			***32***				***29***				***30***				***36***	

TABLE A5.1.17c

MAINLINE @ MOUNT OLIVE, W/B LA-210, PM R. 36.3

	Pre-SWARM				SWARM 1								SWARM 2b			
	12/12/ 2000				4/24/ 2001				4/25/ 2001				4/10/ 2001			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1350	7.0	66	89100	853	3.6	82	69946	1521	7.0	75	114075	1439	6.6	76	109364
6:15-6:30	1379	7.5	62	85498	1051	4.5	81	85131	1538	7.1	75	115350	1539	7.0	75	115425
6:30-6:45	1298	14.7	29	37642	1581	7.5	72	113832	1433	11.5	42	60186	1578	7.3	73	115194
6:45-7:00	1373	16.9	28	38444	1363	17.2	27	36801	1370	16.3	28	38360	1521	12.8	40	60840
7:00-7:15	1290	19.3	23	29670	1143	28.8	13	14859	1207	26.8	16	19312	1435	10.4	47	67445
7:15-7:30	1115	28.5	13	14495	1167	29.3	14	16338	1148	28.6	13	14924	1261	22.1	20	25220
7:30-7:45	1158	25.9	15	17370	1024	30.1	12	12288	1092	29.8	12	13104	1333	19.4	23	30659
7:45-8:00	1132	28.4	13	14716	1083	28.7	13	14079	1123	28.1	13	14599	1268	13.3	32	40576
8:00-8:15	1257	25.1	17	21369	1088	28.8	13	14144	1200	27.1	15	18000	1228	6.9	60	73680
8:15-8:30	1098	14.3	27	29646	1057	30.4	12	12684	1061	28.7	12	12732	1477	6.7	78	115206
8:30-8:45	1000	6.6	43	43000	1078	28.8	14	15092	1109	29.3	13	14417	1457	6.5	79	115103
8:45-9:00	1036	5.4	55	56980	1090	26.5	14	15260	959	30.3	11	10549	1254	5.7	76	95304
Total Volume	***14486***				***13578***				***14761***				***16790***			
Aver Occ		**16.6**				**22.0**				**22.6**				**10.4**		
Aver Speed			***33***				***31***				***30***				***57***	

TABLE A5.1.17d

MAINLINE @ MOUNT OLIVE, W/B LA-210, PM R 36.30

	SWARM 2b				SWARM 1/2b							
	4/11/ 2001				5/01/ 2001				5/02/ 2001			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1490	6.8	76	113240	1607	7.5	75	120525	1507	7.0	74	111518
6:15-6:30	1609	8.0	69	111021	1619	7.5	74	119806	1548	6.9	77	119196
6:30-6:45	1562	7.4	72	112464	1399	20.1	23	32177	1433	9.4	52	74516
6:45-7:00	1453	14.5	35	50855	1345	26.2	17	22865	1379	19.3	24	33096
7:00-7:15	1487	10.2	49	72863	1350	22.4	20	27000	1312	21.5	20	26240
7:15-7:30	1440	6.7	72	103680	1185	23.5	17	20145	1206	25.4	16	19296
7:30-7:45	1383	5.9	78	107874	1296	20.9	21	27216	1166	26.4	15	17490
7:45-8:00	1323	5.5	81	107163	1194	25.6	15	17910	1081	26.3	14	15134
8:00-8:15	1428	6.1	82	117096	1264	12.1	35	44240	1158	23.5	17	19686
8:15-8:30	1388	6.1	77	106876	1525	7.3	73	111325	1197	15.3	28	33516
8:30-8:45	1340	5.9	78	104520	1361	6.6	70	95270	1209	11.4	36	43524
8:45-9:00	1218	5.4	77	93786	1393	6.4	77	107261	1320	6.0	78	102960
Total Volume	***17121***				***16538***				***15516***			
Aver Occ		**7.4**				**15.5**				**16.5**		
Aver Speed			***70***				***45***				***40***	

TABLE A5.1.18a

MAINLINE @ IRWINDALE1, W/B LA-210, PM R. 37.78

	PRE SWARM (TOD)															
	10/24/ 2000				10/25/ 2000				10/31/ 2000				11/01/ 2000			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	2024	15.7	48	97152	2204	16.8	49	107996	2098	16.6	47	98606	2136	16.2	59	126024
6:15-6:30	2170	19.1	42	91140	2228	16.5	50	111400	2164	17.5	46	99544	2220	15.7	53	117660
6:30-6:45	2096	18.6	42	88032	2138	18.3	44	94072	2172	20.0	40	86880	2102	18.1	43	90386
6:45-7:00	1876	23.9	29	54404	2018	19.4	39	78702	1958	22.1	33	64614	2050	20.6	37	75850
7:00-7:15	1846	23.4	29	53534	1968	21.2	35	68880	1814	22.5	30	54420	1786	24.6	27	48222
7:15-7:30	2114	20.2	39	82446	1938	23.4	31	60078	1678	27.5	23	38594	1764	25.4	26	45864
7:30-7:45	1964	20.7	35	68740	1690	28.2	22	37180	1796	25.0	27	48492	1782	24.6	27	48114
7:45-8:00	1832	22.7	30	54960	1770	23.6	28	49560	1596	27.4	22	35112	1726	24.7	26	44876
8:00-8:15	1864	19.2	36	67104	1918	13.9	51	97818	1794	21.6	31	55614	1718	22.9	28	48104
8:15-8:30	1834	13.6	50	91700	1674	16.9	37	61938	1768	22.0	30	53040	1550	26.8	22	34100
8:30-8:45	1690	11.1	56	94640	1516	15.4	36	54576	1668	15.9	39	65052	1648	24.5	25	41200
8:45-9:00	1476	9.8	56	82656	1480	11.3	49	72520	1442	9.2	58	83636	1610	21.9	27	43470
Total Volume	***22786***				***22542***				***21948***				***22092***			
Aver Occ		**18.2**				**18.7**				**20.6**				**20.6**		
Aver Speed			***41***				***40***				***36***				***35***	

TABLE A5.1.18b

MAINLINE @ IRWINDALE1, W/B LA-210, PM R. 37.78

	PRE SWARM (TOD)															
	11/07/ 2000				11/14/ 2000				12/05/ 2000				12/07/ 2000			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	2096	16.3	48	100608	2102	17.4	45	94590	2042	16.8	45	91890	2054	17.4	44	90376
6:15-6:30	2150	19.5	41	88150	2148	18.1	44	94512	2100	20.3	39	81900	2060	19.1	40	82400
6:30-6:45	2096	19.7	39	81744	2188	19.0	43	94084	2168	20.7	39	84552	2166	19.2	42	90972
6:45-7:00	2002	17.1	44	88088	1934	20.5	35	67690	2102	19.1	41	86182	2088	19.1	41	85608
7:00-7:15	1860	20.3	34	63240	1604	26.5	22	35288	2022	20.2	37	74814	2028	22.0	34	68952
7:15-7:30	1968	21.0	35	68880	1704	26.6	24	40896	1666	29.4	21	34986	2150	19.6	41	88150
7:30-7:45	2090	19.5	40	83600	1498	30.6	18	26964	1568	28.1	21	32928	1716	24.4	26	44616
7:45-8:00	2054	16.5	46	94484	1630	26.1	23	37490	1812	23.9	29	52548	1758	22.0	30	52740
8:00-8:15	1830	12.1	56	102480	1680	24.7	25	42000	1800	23.4	29	52200	1782	12.6	53	94446
8:15-8:30	1760	12.3	53	93280	1856	23.1	30	55680	1884	18.9	37	69708	1706	10.9	58	98948
8:30-8:45	1550	10.8	53	82150	1568	25.5	23	36064	1622	11.7	51	82722	1664	10.9	56	93184
8:45-9:00	1546	10.0	57	88122	1594	16.3	36	57384	1552	10.7	54	83808	1532	10.3	55	84260
Total Volume	***23002***				***21506***				***22338***				***22704***			
Aver Occ		**16.3**				**22.9**				**20.3**				**20.3**		
Aver Speed			***45***				***32***				***37***				***43***	

TABLE A5.1.18c

MAINLINE @ IRWINDALE1, W/B LA-210, PM R. 37.78

	PRE SWARM (TOD)				SWARM 1								SWARM 2b			
	12/12/ 2000				4/24/ 2001				4/25/ 2001				4/10/ 2001			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1910	17.5	41	78310	1278	7.8	61	77958	1114	46.8	48	53472	2042	17.2	44	89848
6:15-6:30	1888	19.7	36	67968	841	41.4	60	50460	2122	16.2	49	103978	2194	18.7	44	96536
6:30-6:45	1936	19.9	36	69696	1068	47.7	41	43788	2132	20.3	39	83148	2188	18.8	43	94084
6:45-7:00	2020	20.3	37	74740	2126	19.3	41	87166	2070	20.6	38	78660	2262	17.5	48	108576
7:00-7:15	1972	20.1	37	72964	1946	21.7	33	64218	1022	48.5	37	37814	2130	15.9	50	106500
7:15-7:30	2044	23.6	32	65408	1874	23.6	30	56220	1936	22.5	32	61952	2120	13.7	57	120840
7:30-7:45	1780	23.7	28	49840	1724	27.2	24	41376	1768	25.5	26	45968	1946	12.9	56	108976
7:45-8:00	2052	20.2	38	77976	1684	26.1	24	40416	1852	24.3	28	51856	1926	12.8	56	107856
8:00-8:15	1832	12.5	55	100760	1736	25.3	26	45136	1794	24.2	28	50232	1744	11.4	56	97664
8:15-8:30	1764	12.0	55	97020	1644	27.5	22	36168	1836	20.5	33	60588	1844	12.1	57	105108
8:30-8:45	1674	10.5	59	98766	1686	24.8	25	42150	1782	22.8	29	51678	1616	10.8	55	88880
8:45-9:00	1654	10.2	60	99240	1602	26.8	22	35244	1726	22.4	29	50054	1556	11.1	52	80912
Total Volume	***22526***				***19209***				***21154***				***23568***			
Aver Occ		**17.5**				**26.6**				**26.2**				**26.2**		
Aver Speed			***42***				***32***				***34***				***51***	

TABLE A5.1.18d

MAINLINE @ IRWINDLE1, W/B LA-210, PM R 37.78

	SWARM 2b				SWARM 1/2b							
	4/11/ 2001				5/01/ 2001				5/02/ 2001			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1031	45.7	50	51550	2182	16.3	49	106918	2068	15.9	48	99264
6:15-6:30	2176	17.1	48	104448	2272	17.8	48	109056	2194	20.2	40	87760
6:30-6:45	2212	17.5	47	103964	2208	21.2	39	86112	2188	17.5	47	102836
6:45-7:00	2178	17.8	45	98010	2186	21.8	37	80882	1053	10.6	37	38961
7:00-7:15	2132	15.6	51	108732	2028	22.1	34	68952	1015	9.8	39	39585
7:15-7:30	2080	14.9	52	108160	1986	23.8	31	61566	2058	20.4	38	78204
7:30-7:45	2062	14.3	54	111348	2082	19.2	41	85362	1954	20.9	35	68390
7:45-8:00	1864	11.8	59	109976	2004	15.3	49	98196	1842	20.1	34	62628
8:00-8:15	1696	11.5	55	93280	1862	12.8	54	100548	1752	18.9	35	61320
8:15-8:30	1804	12.1	55	99220	1924	13.3	54	103896	1880	18.4	38	71440
8:30-8:45	1750	12.6	51	89250	1764	12.2	54	95256	1708	12.0	53	90524
8:45-9:00	1476	10.3	53	78228	1698	12.2	52	88296	1674	12.2	51	85374
Total Volume	***22461***				***24196***				***21386***			
Aver Occ		**16.8**				**17.3**				**16.4**		
Aver Speed			***51***				***45***				***41***	

TABLE A5.1.19a

MAINLINE @IRWINDALE2 , W/B LA-210, PM R. 37.92

	PRE SWARM (TOD)															
	10/24/ 2000				10/25/ 2000				10/31/ 2000				11/01/ 2000			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1770	15.0	41	72570	1852	16.5	44	81488	1651	10.7	52	85852	1559	12.5	45	70155
6:15-6:30	1879	15.1	41	77039	1913	19.5	40	76520	1443	9.3	52	75036	2256	29.2	22	49632
6:30-6:45	1752	19.5	34	59568	1800	16.3	39	70200	1310	8.5	57	74670	2304	34.8	19	43776
6:45-7:00	1675	18.7	31	51925	1659	21.2	34	56406	1633	23.2	27	44091	2272	33.9	19	43168
7:00-7:15	1566	20.8	29	45414	1690	19.7	31	52390	1353	20.0	28	37884	1071	16.5	24	25704
7:15-7:30	1789	17.9	34	60826	1738	16.3	35	60830	1211	20.7	17	20587	1358	23.6	21	28518
7:30-7:45	1816	16.5	36	65376	1604	19.3	28	44912	1332	26.5	20	26640	1213	15.9	29	35177
7:45-8:00	1610	19.1	30	48300	1423	23.0	30	42690	1233	20.8	20	24660	1259	21.8	24	30216
8:00-8:15	1657	14.2	38	62966	1654	14.7	44	72776	1085	18.8	17	18445	1111	17.3	22	24442
8:15-8:30	1621	9.7	54	87534	1644	16.4	33	54252	1575	24.2	22	34650	1030	20.9	20	20600
8:30-8:45	1549	9.2	55	85195	1348	18.3	26	35048	1286	26.6	22	28292	1172	23.8	18	21096
8:45-9:00	1342	11.2	46	61732	1432	9.3	50	71600	1057	11.9	40	42280	1422	21.7	25	35550
Total Volume	***20026***				***19757***				***16169***				***18027***			
Aver Occ		**15.6**				**17.5**				**18.4**				**22.7**		
Aver Speed			***39***				***36***				***32***				***24***	

TABLE A5.1.19b

MAINLINE @IRWINDALE2 , W/B LA-210, PM R. 37.92

	PRE SWARM (TOD)															
	11/07/ 2000				11/14/ 2000				12/05/ 2000				12/07/ 2000			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1471	12.6	42	61782	1671	11.2	50	83550	1646	19.1	38	62548	1621	9.9	55	89155
6:15-6:30	1425	9.6	50	71250	1293	12.2	38	49134	1588	17.6	41	65108	1560	10.7	49	76440
6:30-6:45	1393	10.0	48	66864	1484	10.0	50	74200	1619	18.3	41	66379	1427	11.4	43	61361
6:45-7:00	1475	9.6	53	78175	1333	10.4	44	58652	1622	18.8	34	55148	1287	10.2	44	56628
7:00-7:15	1309	9.4	48	62832	1211	18.0	27	32697	1546	19.3	41	63386	1603	18.7	30	48090
7:15-7:30	1268	11.8	40	50720	1331	21.8	25	33275	1279	16.8	28	35812	1557	20.3	40	62280
7:30-7:45	1325	12.1	37	49025	998	16.9	22	21956	876	15.0	19	16644	1292	11.3	39	50388
7:45-8:00	1388	11.4	43	59684	1037	18.0	22	22814	1479	20.9	27	39933	1298	19.1	23	29854
8:00-8:15	1361	7.1	64	87104	1262	20.2	24	30288	1107	9.4	40	44280	1207	18.4	29	35003
8:15-8:30	1393	7.8	60	83580	1454	20.5	33	47982	1433	18.2	26	37258	1448	7.1	68	98464
8:30-8:45	1189	6.5	61	72529	1171	18.1	24	28104	1145	11.6	47	53815	1011	15.2	38	38418
8:45-9:00	1157	8.1	49	56693	1417	18.6	38	53846	1079	6.2	58	62582	1119	11.6	45	50355
Total Volume	***16154***				***15662***				***16419***				***16430***			
Aver Occ		**9.7**				**16.3**				**15.9**				**13.7**		
Aver Speed			***50***				***34***				***37***				***42***	

TABLE A5.1.19c

MAINLINE @IRWINDALE2 , W/B LA-210, PM R. 37.92

	PRE SWARM (TOD)				SWARM 1								SWARM 2b			
	12/12/ 2000				4/24/ 2001				4/25/ 2001				4/10/ 2001			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1319	10.0	46	60674	1085	12.6	45	48825	2051	16.2	45	92295	1803	16.5	38	68514
6:15-6:30	1265	11.5	38	48070	1139	19.7	26	29614	1973	15.1	47	92731	1709	19.6	40	68360
6:30-6:45	1179	10.5	40	47160	1453	17.8	32	46496	1978	17.6	37	73186	1684	19.9	35	58940
6:45-7:00	1331	11.0	41	54571	1457	16.6	39	56823	1941	17.7	36	69876	1850	20.2	47	86950
7:00-7:15	1251	8.8	49	61299	1438	18.2	30	43140	1839	20.0	33	60687	1523	11.2	48	73104
7:15-7:30	1141	10.6	36	41076	1770	23.9	21	37170	1693	16.9	35	59255	524	2.9	66	34584
7:30-7:45	1472	22.8	29	42688	1351	22.1	26	35126	1658	22.9	26	43108	1437	6.8	70	100590
7:45-8:00	1644	16.2	37	60828	1291	23.9	24	30984	1813	17.1	35	63455	1559	7.4	71	110689
8:00-8:15	1333	13.5	49	65317	1404	24.2	28	39312	1757	17.5	33	57981	1301	10.7	51	66351
8:15-8:30	1529	7.8	66	1E+05	1294	26.5	22	28468	1780	14.1	42	74760	1411	9.7	52	73372
8:30-8:45	1347	12.3	49	66003	1141	18.1	21	23961	1568	21.3	28	43904	1417	7.5	62	87854
8:45-9:00	1511	7.5	67	1E+05	1257	25.5	20	25140	1628	16.3	32	52096	1195	9.6	48	57360
Total Volume	***16322***				***16080***				***21679***				***17413***			
Aver Occ		**11.9**				**20.8**				**17.7**				**11.8**		
Aver Speed			***46***				***28***				***36***				***51***	

TABLE A5.1.19d

MAINLINE @ IRWINDALE2, W/B LA-210, PM R 37.92

	SWARM 2b				SWARM 1/2b							
	4/11/ 2001				5/01/ 2001				5/02/ 2001			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1553	22.3	43	66779	2099	12.1	57	119643	1949	11.5	57	111093
6:15-6:30	1590	18.9	38	60420	1944	13.8	49	95256	1867	17.0	39	72813
6:30-6:45	1769	22.5	37	65453	2041	15.3	45	91845	1975	12.2	55	108625
6:45-7:00	1431	18.6	28	40068	1879	18.9	35	65765	1659	25.8	39	64701
7:00-7:15	1598	19.3	39	62322	1839	17.2	37	68043	1597	18.8	33	52701
7:15-7:30	1541	10.7	51	78591	1597	22.2	30	47910	1796	17.7	36	64656
7:30-7:45	1684	7.9	72	121248	1528	24.5	38	58064	1505	19.0	30	45150
7:45-8:00	1235	12.4	46	56810	1637	9.3	61	99857	1437	19.9	33	47421
8:00-8:15	1436	7.1	68	97648	1497	13.0	51	76347	1552	13.8	39	60528
8:15-8:30	1245	10.3	42	52290	1444	14.7	49	70756	1584	17.3	33	52272
8:30-8:45	1217	8.8	49	59633	1329	16.6	46	61134	1473	8.3	60	88380
8:45-9:00	1184	8.2	50	59200	1309	13.3	44	57596	1379	12.3	46	63434
Total Volume	***17483***				***20143***				***19773***			
Aver Occ		**13.9**				**15.9**				**16.1**		
Aver Speed			***47***				***45***				***42***	

TABLE A5.1.20a

MAINLINE @VERNON , W/B LA-210, PM R. 38.87

	PRE SWARM (TOD)															
	10/24/ 2000				10/25/ 2000				10/31/ 2000				11/01/ 2000			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	2066	14.5	46	95036	2096	16.8	41	85936	2078	19.7	35	72730	2174	14.8	49	106526
6:15-6:30	1971	19.6	34	67014	2131	16.6	42	89502	1996	18.3	37	73852	2096	20.9	34	71264
6:30-6:45	1861	21.0	30	55830	1859	20.8	29	53911	1928	19.8	33	63624	1888	22.3	29	54752
6:45-7:00	1800	23.8	25	45000	1899	20.8	30	56970	1808	21.6	29	52432	1718	23.8	25	42950
7:00-7:15	1632	25.3	21	34272	1830	19.4	31	56730	1516	28.1	19	28804	1622	23.1	24	38928
7:15-7:30	1835	23.4	26	47710	1719	25.4	23	39537	1494	30.6	19	28386	1602	24.5	22	35244
7:30-7:45	1927	19.1	33	63591	1674	25.4	22	36828	1628	27.7	21	34188	1562	26.1	22	34364
7:45-8:00	1820	18.8	33	60060	1805	20.6	29	52345	1778	20.6	30	53340	1772	23.8	25	44300
8:00-8:15	1827	13.9	43	78561	1528	26.0	25	38200	1690	22.4	26	43940	1622	24.8	22	35684
8:15-8:30	1767	10.9	52	91884	1807	10.7	55	99385	1840	13.1	48	88320	1382	29.7	16	22112
8:30-8:45	1688	9.9	55	92840	1607	9.5	55	88385	1576	11.6	47	74072	1558	26.0	21	32718
8:45-9:00	1507	9.0	55	82885	1556	9.0	56	87136	1494	8.6	58	86652	1574	24.1	24	37776
Total Volume	***21701***				***21511***				***20826***				***20570***			
Aver Occ		**17.4**				**18.4**				**20.2**				**23.7**		
Aver Speed			***38***				***36***				***34***				***27***	

TABLE A5.1.20b

MAINLINE @VERNON , W/B LA-210, PM R. 38.87

	PRE SWARM (TOD)															
	11/07/ 2000				11/14/ 2000				12/05/ 2000				12/07/ 2000			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	2119	15.9	43	91117	2062	19.7	34	70108	2057	15.7	43	88451	2118	13.5	51	108018
6:15-6:30	1967	23.7	27	53109	2072	17.4	39	80808	1942	17.9	36	69912	1902	19.3	33	62766
6:30-6:45	1842	25.0	24	44208	1905	22.7	27	51435	1871	20.0	31	58001	1982	19.9	33	65406
6:45-7:00	1671	23.1	24	40104	1725	25.5	22	37950	1884	19.7	32	60288	1832	22.3	28	51296
7:00-7:15	1656	24.6	22	36432	1598	27.3	19	30362	1849	20.9	29	53621	1948	20.8	31	60388
7:15-7:30	1690	25.7	23	38870	1580	28.8	19	30020	1634	23.5	23	37582	1818	22.6	27	49086
7:30-7:45	1921	15.8	40	76840	1446	29.5	16	23136	1496	24.4	21	31416	1779	19.3	30	53370
7:45-8:00	1986	12.2	53	105258	1583	26.2	21	33243	1827	16.8	37	67599	1833	14.7	42	76986
8:00-8:15	1771	10.2	56	99176	1677	23.2	25	41925	1861	15.1	42	78162	1725	8.7	64	110400
8:15-8:30	1747	10.3	55	96085	1837	19.3	31	56947	1817	11.6	51	92667	1731	8.8	64	110784
8:30-8:45	1621	9.5	55	89155	1582	21.1	26	41132	1641	8.4	64	105024	1723	9.0	63	108549
8:45-9:00	1608	9.6	55	88440	1477	8.6	56	82712	1563	8.9	60	93780	1619	8.4	63	101997
Total Volume	***21599***				***20544***				***21442***				***22010***			
Aver Occ		**17.1**				**22.4**				**16.9**				**15.6**		
Aver Speed			***40***				***28***				***39***				***44***	

TABLE A5.1.20c

MAINLINE @VERNON , W/B LA-210, PM R. 38.87

	PRE SWARM (TOD)				SWARM 1								SWARM 2b			
	12/12/ 2000				4/24/ 2001				4/25/ 2001				4/10/ 2001			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	1961	13.7	47	92167	1157	5.5	68	78676	2157	15.0	46	99222	2167	14.4	49	106183
6:15-6:30	1740	21.7	27	46980	1624	8.0	65	105560	2060	19.2	35	72100	2045	16.0	42	85890
6:30-6:45	1715	20.9	28	48020	1901	18.8	33	62733	1926	17.0	37	71262	1797	22.3	28	50316
6:45-7:00	1779	21.3	28	49812	1816	19.9	30	54480	1832	18.1	33	60456	2091	13.3	51	106641
7:00-7:15	1819	18.0	33	60027	1642	22.6	25	41050	1861	17.6	36	66996	2052	11.4	58	119016
7:15-7:30	1862	20.5	30	55860	1677	22.9	24	40248	1741	20.9	28	48748	2031	10.7	61	123891
7:30-7:45	1743	23.2	26	45318	1510	24.5	21	31710	1752	20.3	29	50808	1911	10.0	62	118482
7:45-8:00	1975	17.1	39	77025	1500	24.9	20	30000	1799	17.4	34	61166	1926	9.8	64	123264
8:00-8:15	1715	8.6	65	111475	1730	21.7	27	46710	1828	16.0	38	69464	1752	8.7	65	113880
8:15-8:30	1765	8.8	65	114725	1511	24.6	21	31731	1748	16.8	34	59432	1870	9.4	65	121550
8:30-8:45	1720	8.8	64	110080	1699	20.3	28	47572	1784	15.6	37	66008	1709	8.6	64	109376
8:45-9:00	1720	8.7	65	111800	1549	20.8	25	38725	1629	14.2	38	61902	1612	8.3	64	103168
Total Volume	***21514***				***19316***				***22117***				***22963***			
Aver Occ		**15.9**				**19.5**				**17.3**				**11.9**		
Aver Speed			***43***				***32***				***36***				***56***	

TABLE A5.1.20d

MAINLINE @ VERNON, W/B LA-210, PM R 38.87

	SWARM 2b				SWARM 1/2b							
	4/11/ 2001				5/01/ 2001				5/02/ 2001			
Time	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS	Volume	Occ	Speed	VxS
6:00-6:15	2174	12.0	59	128266	2323	12.6	59	137057	2048	12.5	53	108544
6:15-6:30	2082	15.5	44	91608	2132	14.7	47	100204	2091	16.2	43	89913
6:30-6:45	2074	13.1	52	107848	2058	17.2	39	80262	1993	19.1	35	69755
6:45-7:00	2082	13.2	51	106182	1979	21.0	32	63328	1943	20.0	32	62176
7:00-7:15	2004	13.0	50	100200	1874	19.1	33	61842	1877	20.7	30	56310
7:15-7:30	2048	10.4	63	129024	1871	20.2	31	58001	1936	15.7	41	79376
7:30-7:45	2007	10.0	65	130455	1927	14.8	43	82861	1825	14.8	40	73000
7:45-8:00	1949	9.7	65	126685	1918	9.7	64	122752	1873	11.9	52	97396
8:00-8:15	1779	8.9	65	115635	1853	9.5	64	118592	1741	10.5	54	94014
8:15-8:30	1913	9.8	63	120519	1953	9.5	66	128898	1777	9.5	61	108397
8:30-8:45	1827	9.4	64	116928	1854	9.6	63	116802	1677	8.8	62	103974
8:45-9:00	1657	8.6	63	104391	1693	9.3	61	103273	1630	8.6	62	101060
Total Volume	***23596***				***23435***				***22411***			
Aver Occ		**11.1**				**13.9**				**14.0**		
Aver Speed			***58***				***50***				***47***	

TABLE A5.6.1a

PRE SWARM (TOD)

TRAVEL TIME (MINUTES)

10/24/00

START AT 7:30 AM

STATION	Vern		Irwin 2		Irwin 1		Mt Olv		B Vis		Mntn		Myrtle		Hunt		S An2		S An 1	
PM	38.87		37.92		37.78		36.30		35.12		34.61		33.76		32.76		31.91		31.73	
Distance		0.95		0.14		1.48		1.18		0.51		0.85		1.00		0.85		0.18		1.02
Speed	26.00		34.00		39.00		38.00		17.00		19.00		17.00	*	16.00		23.00		20.00	
Time (min)		1.90		0.23		2.31		2.57		1.70		2.83		3.64		2.62		0.50		2.55
Cumulative Travel Time (min)		1.90		2.13		4.44		7.01		8.71		11.54		15.18		17.80		18.30		20.85

Note: * indicates that the entered speed is from the next 15 minute interval.

TABLE A5.6.1b

PRE SWARM (TOD)

TRAVEL TIME (MINUTES)

10/24/00

START AT 7:30 AM

STATION	Bald 2		Bald 1		Mich		Rsm 2		Rsm 1		S M V		S Gab		Altad		Hill		Lake	**TRAVEL**
PM	30.71		30.49		29.85		29.71		29.59		29.19		28.29		28.05		26.82		26.14	**TIME**
Distance		0.22		0.64		0.14		0.12		0.40		0.90		0.24		1.23		0.68		
Speed	28.00		25.00		41.00		44.00		47.00		45.00		34.00		28.00		34.00		44.00	
Time (min)		0.50		1.16		0.20		0.16		0.52		1.37		0.46		2.38		1.05		
Cumulative Travel Time (min)		21.35		22.51		22.71		22.87		23.39		24.76		25.22		27.60		28.65		**28.65**

TABLE A5.6.2a

PRE SWARM (TOD)

TRAVEL TIME (MINUTES)

10/25/00

START AT 7:30 AM

STATION	Vern		Irwin 2		Irwin 1		Mt Olv		B Vis		Mntn		Myrtle		Hunt		S An2		S An 1	
PM	38.87		37.92		37.78		36.30		35.12		34.61		33.76		32.76		31.91		31.73	
Distance		0.95		0.14		1.48		1.18		0.51		0.85		1.00		0.85		0.18		1.02
Speed	22.00		28.00		22.00		14.00		15.00		19.00	*	13.00		16.00		22.00		18.00	
Time (min)		2.28		0.34		4.93		4.88		1.80		3.19		4.14		2.68		0.54		2.91
Cumulative Travel Time (min)				2.62		7.55		12.43		14.23		17.42		21.56		24.24		24.78		27.70

Note: * indicates that the entered speed is from the next 15 minute interval.

TABLE A5.6.2b

PRE SWARM (TOD)

TRAVEL TIME (MINUTES)

10/25/00

START AT 7:30 AM

STATION	Bald 2		Bald 1		Mich		Rsm 2		Rsm 1		S M V		S Gab		Altad		Hill		Lake	TRAVEL TIME
PM	30.71		30.49		29.85		29.71		29.59		29.19		28.29		28.05		26.82		26.14	
Distance		0.22		0.64		0.14		0.12		0.40		0.90		0.24		1.23		0.68		
Speed	24.00		24.00		32.00		36.00	*	32.00		25.00		27.00		28.00		34.00		45.00	
Time (min)		0.55		1.37		0.25		0.21		0.84		2.08		0.52		2.38		1.03		
Cumulative Travel Time (min)		28.25		29.62		29.86		30.08		30.92		33.00		33.52		35.90		36.93		**36.93**

Note: * indicates that the entered speed is from the next 15 minute interval.

TABLE A5.6.3a

PRE SWARM (TOD)

TRAVEL TIME (MINUTES)

10/31/00

START AT 7:30 AM

STATION	Vern		Irwin 2		Irwin 1		Mt Olv		B Vis		Mntn		Myrtle		Hunt		S An2		S An 1	
PM	38.87		37.92		37.78		36.30		35.12		34.61		33.76		32.76		31.91		31.73	
Distance		0.95		0.14		1.48		1.18		0.51		0.85		1.00		0.85		0.18		1.02
Speed	21.00		20.00		27.00		13.00		11.00	*	22.00		16.00		16.00		16.00		14.00	
Time (min)		2.78		0.36		4.44		5.90		1.85		2.68		3.75		3.19		0.72		3.95
Cumulative Travel Time (min)		2.78		3.14		7.58		13.48		15.33		18.02		21.77		24.95		25.67		29.62

Note: * indicates that the entered speed is from the next 15 minute interval.

TABLE A5.6.3b

PRE SWARM (TOD)

TRAVEL TIME (MINUTES)

10/31/00

START AT 7:30 AM

STATION	Bald 2		Bald 1		Mich		Rsm 2		Rsm 1		S M V		S Gab		Altad		Hill		Lake	TRAVEL TIME
PM	30.71		30.49		29.85		29.71		29.59		29.19		28.29		28.05		26.82		26.14	
Distance		0.22		0.64		0.14		0.12		0.40		0.90		0.24		1.23		0.68		
Speed	17.00	*	25.00		27.00		31.00		35.00		25.00		27.00		28.00		49.00		40.00	
Time (min)		0.63		1.48		0.29		0.22		0.80		2.08		0.52		1.92		0.92		
Cumulative Travel Time (min)		30.25		31.73		32.02		32.24		33.04		35.11		35.64		37.55		38.47		**38.47**

Note: * indicates that the entered speed is from the next 15 minute interval.

TABLE A5.6.4a

PRE SWARM (TOD)

TRAVEL TIME (MINUTES)

11/01/00

START AT 7:30 AM

STATION	Vern		Irwin 2		Irwin 1		Mt Olv		B Vis		Mntn		Myrtle		Hunt		S An2		S An 1	
PM	38.87		37.92		37.78		36.30		35.12		34.61		33.76		32.76		31.91		31.73	
Distance		0.95		0.14		1.48		1.18		0.51		0.85		1.00		0.85		0.18		1.02
Speed	22.00		29.00		27.00		14.00		13.00		17.00	*	11.00		15.00		17.00		14.00	*
Time (min)		2.24		0.30		4.33		5.24		2.04		3.64		4.62		3.19		0.70		3.83
Cumulative Travel Time (min)		2.24		2.54		6.87		12.11		14.15		17.79		22.41		25.60		26.29		30.12

Note: * indicates that the entered speed is from the next 15 minute interval.

TABLE A5.6.4b

PRE SWARM (TOD)

TRAVEL TIME (MINUTES)

11/01/00

START AT 7:30 AM

STATION	Bald 2		Bald 1		Mich		Rsm 2		Rsm 1		S M V		S Gab		Altad		Hill		Lake	**TRAVEL TIME**
PM	30.71		30.49		29.85		29.71		29.59		29.19		28.29		28.05		26.82		26.14	
Distance		0.22		0.64		0.14		0.12		0.40		0.90		0.24		1.23		0.68		
Speed	18.00		19.00		22.00		25.00		28.00		26.00		23.00		24.00		28.00		39.00	
Time (min)		0.71		1.87		0.36		0.27		0.89		2.20		0.61		2.84		1.22		
Cumulative Travel Time (min)		30.83		32.71		33.06		33.33		34.22		36.43		37.04		39.88		41.10		**41.10**

TABLE A5.6.5a

PRE SWARM (TOD)

TRAVEL TIME (MINUTES)

11/07/00

START AT 7:30 AM

STATION	Vern		Irwin 2		Irwin 1		Mt Olv		B Vis		Mntn		Myrtle		Hunt		S An2		S An 1	
PM	38.87		37.92		37.78		36.30		35.12		34.61		33.76		32.76		31.91		31.73	
Distance		0.95		0.14		1.48		1.18		0.51		0.85		1.00		0.85		0.18		1.02
Speed	40.00		37.00		40.00		17.00		16.00		19.00		16.00	*	15.00		16.00		15.00	
Time (min)		1.48		0.22		3.12		4.29		1.75		2.91		3.87		3.29		0.70		3.71
Cumulative Travel Time (min)		1.48		1.70		4.81		9.11		10.85		13.77		17.64		20.93		21.63		25.34

Note: * indicates that the entered speed is from the next 15 minute interval.

TABLE A5.6.5b

PRE SWARM (TOD)

TRAVEL TIME (MINUTES)

11/07/00

START AT 7:30 AM

STATION	Bald 2		Bald 1		Mich		Rsm 2		Rsm 1		S M V		S Gab		Altad		Hill		Lake	TRAVEL TIME
PM	30.71		30.49		29.85		29.71		29.59		29.19		28.29		28.05		26.82		26.14	
Distance		0.22		0.64		0.14		0.12		0.40		0.90		0.24		1.23		0.68		
Speed	18.00		20.00		20.00		24.00		28.00		23.00	*	28.00		29.00		37.00		42.00	
Time (min)		0.69		1.92		0.38		0.28		0.94		2.12		0.51		2.24		1.03		
Cumulative Travel Time (min)		26.03		27.95		28.33		28.61		29.55		31.67		32.17		34.41		35.44		**35.44**

Note: * indicates that the entered speed is from the next 15 minute interval.

TABLE A5.6.6a

PRE SWARM (TOD)

TRAVEL TIME (MINUTES)

11/14/00

START AT 7:30 AM

STATION	Vern		Irwin 2		Irwin 1		Mt Olv		B Vis		Mntn		Myrtle		Hunt		S An2		S An 1	
PM	38.87		37.92		37.78		36.30		35.12		34.61		33.76		32.76		31.91		31.73	
Distance		0.95		0.14		1.48		1.18		0.51		0.85		1.00		0.85		0.18		1.02
Speed	16.00		22.00		18.00		12.00		13.00	*	18.00		14.00		18.00		19.00		17.00	
Time (min)		3.00		0.42		5.92		5.66		1.97		3.19		3.75		2.76		0.60		2.60
Cumulative Travel Time (min)		3.00		3.42		9.34		15.00		16.98		20.17		23.92		26.67		27.27		29.88

Note: * indicates that the entered speed is from the next 15 minute interval.

TABLE A5.6.6b

PRE SWARM (TOD)

TRAVEL TIME (MINUTES)

11/14/00

START AT 7:30 AM

STATION	Bald 2		Bald 1		Mich		Rsm 2		Rsm 1		S M V		S Gab		Altad		Hill		Lake	**TRAVEL TIME**
PM	30.71		30.49		29.85		29.71		29.59		29.19		28.29		28.05		26.82		26.14	
Distance		0.22		0.64		0.14		0.12		0.40		0.90		0.24		1.23		0.68		
Speed	30.00	*	22.00		22.00		25.00		27.00		23.00		24.00		26.00		35.00		43.00	
Time (min)		0.51		1.75		0.36		0.28		0.96		2.30		0.58		2.42		1.05		
Cumulative Travel Time (min)		30.38		32.13		32.49		32.76		33.72		36.02		36.60		39.02		40.06		**40.06**

Note: * indicates that the entered speed is from the next 15 minute interval.

TABLE A5.6.7a

PRE SWARM (TOD) TRAVEL TIME (MINUTES)

12/05/00 START AT 7:30 AM

STATION	Vern		Irwin 2		Irwin 1		Mt Olv		B Vis		Mntn		Myrtle		Hunt		S An2		S An 1	
PM	38.87		37.92		37.78		36.30		35.12		34.61		33.76		32.76		31.91		31.73	
Distance		0.95		0.14		1.48		1.18		0.51		0.85		1.00		0.85		0.18		1.02
Speed	21.00		19.00		21.00		16.00		17.00		19.00	*	13.00		17.00		20.00		17.00	
Time (min)		2.85		0.42		4.80		4.29		1.70		3.19		4.00		2.76		0.58		3.14
Cumulative Travel Time (min)		2.85		3.27		8.07		12.36		14.06		17.25		21.25		24.01		24.59		27.73

Note: * indicates that the entered speed is from the next 15 minute interval.

TABLE A5.6.7b

PRE SWARM (TOD)

TRAVEL TIME (MINUTES)

12/05/00

START AT 7:30 AM

STATION	Bald 2		Bald 1		Mich		Rsm 2		Rsm 1		S M V		S Gab		Altad		Hill		Lake	TRAVEL TIME
PM	30.71		30.49		29.85		29.71		29.59		29.19		28.29		28.05		26.82		26.14	
Distance		0.22		0.64		0.14		0.12		0.40		0.90		0.24		1.23		0.68		
Speed	22.00		21.00		27.00		29.00		31.00	*	21.00		26.00		25.00		26.00		49.00	
Time (min)		0.61		1.60		0.30		0.24		0.92		2.30		0.56		2.89		1.09		
Cumulative Travel Time (min)		28.34		29.94		30.24		30.48		31.40		33.70		34.27		37.16		38.25		**38.25**

Note: * indicates that the entered speed is from the next 15 minute interval.

TABLE A5.6.8a

PRE SWARM (TOD) TRAVEL TIME (MINUTES)

12/07/00 START AT 7:30 AM

STATION	Vern		Irwin 2		Irwin 1		Mt Olv		B Vis		Mntn		Myrtle		Hunt		S An2		S An 1	
PM	38.87		37.92		37.78		36.30		35.12		34.61		33.76		32.76		31.91		31.73	
Distance		0.95		0.14		1.48		1.18		0.51		0.85		1.00		0.85		0.18		1.02
Speed	30.00		39.00		26.00		13.00		15.00		19.00	*	15.00		17.00		19.00		19.00	
Time (min)		1.65		0.26		4.55		5.06		1.80		3.00		3.75		2.83		0.57		2.85
Cumulative Travel Time (min)		1.65		1.91		6.46		11.52		13.32		16.32		20.07		22.90		23.47		26.32

Note: * indicates that the entered speed is from the next 15 minute interval.

TABLE A5.6.8b

PRE SWARM (TOD) TRAVEL TIME (MINUTES)

12/07/00 START AT 7:30 AM

STATION	Bald 2		Bald 1		Mich		Rsm 2		Rsm 1		S M V		S Gab		Altad		Hill		Lake	TRAVEL TIME
PM	30.71		30.49		29.85		29.71		29.59		29.19		28.29		28.05		26.82		26.14	
Distance		0.22		0.64		0.14		0.12		0.40		0.90		0.24		1.23		0.68		
Speed	24.00		27.00		31.00		35.00		38.00		30.00	*	29.00		32.00		19.00		42.00	
Time (min)		0.52		1.32		0.25		0.20		0.71		1.83		0.47		2.89		1.34		
Cumulative Travel Time (min)		26.84		28.16		28.42		28.61		29.32		31.15		31.62		34.52		35.85		**35.85**

Note: * indicates that the entered speed is from the next 15 minute interval.

TABLE A5.6.9a

PRE SWARM (TOD)

TRAVEL TIME (MINUTES)

12/12/00

START AT 7:30 AM

STATION	Vern		Irwin 2		Irwin 1		Mt Olv		B Vis		Mntn		Myrtle		Hunt		S An2		S An 1	
PM	38.87		37.92		37.78		36.30		35.12		34.61		33.76		32.76		31.91		31.73	
Distance		0.95		0.14		1.48		1.18		0.51		0.85		1.00		0.85		0.18		1.02
Speed	26.00		29.00		28.00		15.00		16.00		22.00	*	15.00		18.00		23.00		21.00	
Time (min)		2.07		0.29		4.13		4.57		1.61		2.76		3.64		2.49		0.49		2.31
Cumulative Travel Time (min)		2.07		2.37		6.50		11.07		12.68		15.43		19.07		21.56		22.05		24.36

Note: * indicates that the entered speed is from the next 15 minute interval.

TABLE A5.6.9b

PRE SWARM (TOD)

TRAVEL TIME (MINUTES)

12/12/00

START AT 7:30 AM

STATION	Bald 2		Bald 1		Mich		Rsm 2		Rsm 1		S M V		S Gab		Altad		Hill		Lake	TRAVEL TIME
PM	30.71		30.49		29.85		29.71		29.59		29.19		28.29		28.05		26.82		26.14	
Distance		0.22		0.64		0.14		0.12		0.40		0.90		0.24		1.23		0.68		
Speed	32.00		19.00		28.00		37.00		46.00		39.00		30.00		33.00	*	29.00		47.00	
Time (min)		0.52		1.63		0.26		0.17		0.56		1.57		0.46		2.38		1.07		
Cumulative Travel Time (min)		24.87		26.51		26.77		26.94		27.51		29.07		29.53		31.91		32.98		**32.98**

Note: * indicates that the entered speed is from the next 15 minute interval.

TABLE A5.6.10a

SWARM 1

TRAVEL TIME (MINUTES)

04/24/01 START AT 7:30 AM

STATION	Vern		Irwin 2		Irwin 1		Mt Olv		B Vis		Mntn		Myrtle		Hunt		S An2		S An 1	
PM	38.87		37.92		37.78		36.30		35.12		34.61		33.76		32.76		31.91		31.73	
Distance		0.95		0.14		1.48		1.18		0.51		0.85		1.00		0.85		0.18		1.02
Speed	21.00		26.00		24.00		12.00		14.00		21.00	*	15.00		23.00		19.00		18.00	
Time (min)		2.43		0.34		4.93		5.45		1.75		2.83		3.16		2.43		0.58		3.31
Cumulative Travel Time (min)		2.43		2.76		7.69		13.14		14.89		17.72		20.88		23.31		23.89		27.20

Note: * indicates that the entered speed is from the next 15 minute interval.

TABLE A5.6.10b

SWARM 1

TRAVEL TIME (MINUTES)

04/24/01

START AT 7:30 AM

STATION	Bald 2		Bald 1		Mich		Rsm 2		Rsm 1		S M V		S Gab		Altad		Hill		Lake	**TRAVEL TIME**
PM	30.71		30.49		29.85		29.71		29.59		29.19		28.29		28.05		26.82		26.14	
Distance		0.22		0.64		0.14		0.12		0.40		0.90		0.24		1.23		0.68		
Speed	19.00		20.00		30.00		41.00		36.00	*	28.00		27.00		29.00		48.00		46.00	
Time (min)		0.68		1.54		0.24		0.19		0.75		1.96		0.51		1.92		0.87		
Cumulative Travel Time (min)		27.88		29.41		29.65		29.84		30.59		32.55		33.07		34.98		35.85		**35.85**

Note: * indicates that the entered speed is from the next 15 minute interval.

TABLE A5.6.11a

SWARM 1

TRAVEL TIME (MINUTES)

04/25/01

START AT 7:30 AM

STATION	Vern		Irwin 2		Irwin 1		Mt Olv		B Vis		Mntn		Myrtle		Hunt		S An2		S An 1	
PM	38.87		37.92		37.78		36.30		35.12		34.61		33.76		32.76		31.91		31.73	
Distance		0.95		0.14		1.48		1.18		0.51		0.85		1.00		0.85		0.18		1.02
Speed	29.00		26.00		26.00		12.00		16.00		19.00	*	16.00		20.00		20.00		19.00	
Time (min)		2.07		0.32		4.67		5.06		1.75		2.91		3.33		2.55		0.55		2.91
Cumulative Travel Time (min)		2.07		2.40		7.07		12.13		13.88		16.79		20.12		22.67		23.23		26.14

Note: * indicates that the entered speed is from the next 15 minute interval.

TABLE A5.6.11b

SWARM 1

TRAVEL TIME (MINUTES)

04/25/01

START AT 7:30 AM

STATION	Bald 2		Bald 1		Mich		Rsm 2		Rsm 1		S M V		S Gab		Altad		Hill		Lake	TRAVEL TIME
PM	30.71		30.49		29.85		29.71		29.59		29.19		28.29		28.05		26.82		26.14	
Distance		0.22		0.64		0.14		0.12		0.40		0.90		0.24		1.23		0.68		
Speed	23.00		27.00		36.00		37.00		37.00		31.00	*	25.00		29.00		43.00		48.00	
Time (min)		0.53		1.22		0.23		0.19		0.71		1.93		0.53		2.05		0.90		
Cumulative Travel Time (min)		26.67		27.89		28.12		28.31		29.02		30.95		31.48		33.53		34.43		**34.43**

Note: * indicates that the entered speed is from the next 15 minute interval.

TABLE A5.6.12a

SWARM 2b

TRAVEL TIME (MINUTES)

04/10/01

START AT 7:30 AM

STATION	Vern		Irwin 2		Irwin 1		Mt Olv		B Vis		Mntn		Myrtle		Hunt		S An2		S An 1	
PM	38.87		37.92		37.78		36.30		35.12		34.61		33.76		32.76		31.91		31.73	
Distance		0.95		0.14		1.48		1.18		0.51		0.85		1.00		0.85		0.18		1.02
Speed	62.00		70.00		56.00		23.00		18.00		23.00		23.00		23.00		27.00	*	21.00	
Time (min)		0.86		0.13		2.25		3.45		1.49		2.22		2.61		2.04		0.45		2.66
Cumulative Travel Time (min)		0.86		1.00		3.25		6.70		8.19		10.41		13.02		15.06		15.51		18.17

Note: * indicates that the entered speed is from the next 15 minute interval.

TABLE A5.6.12b

SWARM 2b

TRAVEL TIME (MINUTES)

04/10/01

START AT 7:30 AM

STATION	Bald 2		Bald 1		Mich		Rsm 2		Rsm 1		S M V		S Gab		Altad		Hill		Lake	TRAVEL TIME
PM	30.71		30.49		29.85		29.71		29.59		29.19		28.29		28.05		26.82		26.14	
Distance		0.22		0.64		0.14		0.12		0.40		0.90		0.24		1.23		0.68		
Speed	25.00		30.00		48.00		53.00		51.00		56.00		32.00		32.00		55.00		48.00	
Time (min)		0.48		0.98		0.17		0.14		0.45		1.23		0.45		1.70		0.79		
Cumulative Travel Time (min)		18.65		19.63		19.80		19.94		20.39		21.61		22.06		23.76		24.55		**24.55**

TABLE A5.6.13a

SWARM 2b

TRAVEL TIME (MINUTES)

04/11/01

START AT 7:30 AM

STATION	Vern		Irwin 2		Irwin 1		Mt Olv		B Vis		Mntn		Myrtle		Hunt		S An2		S An 1	
PM	38.87		37.92		37.78		36.30		35.12		34.61		33.76		32.76		31.91		31.73	
Distance		0.95		0.14		1.48		1.18		0.51		0.85		1.00		0.85		0.18		1.02
Speed	65.00		72.00		54.00		78.00		24.00		29.00		21.00		25.00		36.00		28.00	
Time (min)		0.83		0.13		1.35		1.39		1.15		2.04		2.61		1.67		0.34		1.88
Cumulative Travel Time (min)		0.83		0.97		2.31		3.70		4.85		6.89		9.50		11.17		11.51		13.40

TABLE A5.6.13b

SWARM 2b

TRAVEL TIME (MINUTES)

04/11/01

START AT 7:30 AM

STATION	Bald 2		Bald 1		Mich		Rsm 2		Rsm 1		S M V		S Gab		Altad		Hill		Lake	TRAVEL TIME
PM	30.71		30.49		29.85		29.71		29.59		29.19		28.29		28.05		26.82		26.14	
Distance		0.22		0.64		0.14		0.12		0.40		0.90		0.24		1.23		0.68		
Speed	37.00		33.00		51.00		56.00		52.00	*	57.00		35.00		37.00		63.00		57.00	
Time (min)		0.38		0.91		0.16		0.13		0.44		1.17		0.40		1.48		0.68		
Cumulative Travel Time (min)		13.77		14.69		14.84		14.98		15.42		16.59		16.99		18.47		19.15		**19.15**

Note: * indicates that the entered speed is from the next 15 minute interval.

TABLE A5.6.14a

SWARM 1/2b

TRAVEL TIME (MINUTES)

05/01/01

START AT 7:30 AM

STATION	Vern		Irwin 2		Irwin 1		Mt Olv		B Vis		Mntn		Myrtle		Hunt		S An2		S An 1	
PM	38.87		37.92		37.78		36.30		35.12		34.61		33.76		32.76		31.91		31.73	
Distance		0.95		0.14		1.48		1.18		0.51		0.85		1.00		0.85		0.18		1.02
Speed	43.00		38.00		41.00		21.00		21.00		21.00		14.00	*	30.00		27.00		26.00	
Time (min)		1.41		0.21		2.86		3.37		1.46		2.91		2.73		1.79		0.41		2.23
Cumulative Travel Time (min)		1.41		1.62		4.48		7.86		9.31		12.23		14.95		16.74		17.15		19.38

Note: * indicates that the entered speed is from the next 15 minute interval.

TABLE A5.6.14b

SWARM 1/2b

TRAVEL TIME (MINUTES)

05/01/01

START AT 7:30 AM

STATION	Bald 2		Bald 1		Mich		Rsm 2		Rsm 1		S M V		S Gab		Altad		Hill		Lake	TRAVEL TIME
PM	30.71		30.49		29.85		29.71		29.59		29.19		28.29		28.05		26.82		26.14	
Distance		0.22		0.64		0.14		0.12		0.40		0.90		0.24		1.23		0.68		
Speed	29.00		31.00		48.00		49.00		49.00		42.00		36.00		36.00		50.00		56.00	
Time (min)		0.44		0.97		0.17		0.15		0.53		1.38		0.40		1.72		0.77		
Cumulative Travel Time (min)		19.82		20.79		20.96		21.11		21.64		23.02		23.42		25.14		25.91		**25.91**

TABLE A5.6.15a

SWARM 1/2b

TRAVEL TIME (MINUTES)

05/02/01

START AT 7:30 AM

STATION	Vern		Irwin 2		Irwin 1		Mt Oiv		B Vis		Mntn		Myrtle		Hunt		S An2		S An 1	
PM	38.87		37.92		37.78		36.30		35.12		34.61		33.76		32.76		31.91		31.73	
Distance		0.95		0.14		1.48		1.18		0.51		0.85		1.00		0.85		0.18		1.02
Speed	40.00		30.00		35.00		15.00		19.00		22.00		17.00	*	30.00		27.00		22.00	
Time (min)		1.63		0.26		3.55		4.16		1.49		2.62		2.55		1.79		0.44		2.35
Cumulative Travel Time (min)		1.63		1.89		5.44		9.60		11.10		13.71		16.26		18.05		18.50		20.85

Note: * indicates that the entered speed is from the next 15 minute interval.

TABLE A5.6.15b

SWARM 1/2b

TRAVEL TIME (MINUTES)

05/02/01

START AT 7:30 AM

STATION	Bald 2		Bald 1		Mich		Rsm 2		Rsm 1		S M V		S Gab		Altad		Hill		Lake	TRAVEL TIME
PM	30.71		30.49		29.85		29.71		29.59		29.19		28.29		28.05		26.82		26.14	
Distance		0.22		0.64		0.14		0.12		0.40		0.90		0.24		1.23		0.68		
Speed	30.00		32.00		39.00		45.00		47.00		50.00		64.00		54.00		58.00		64.00	
Time (min)		0.43		1.08		0.20		0.16		0.49		0.95		0.24		1.32		0.67		
Cumulative Travel Time (min)		21.27		22.36		22.56		22.71		23.21		24.16		24.40		25.72		26.39		**26.39**