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TASK 37:
Post New York State Fair Fair
Performance Assessment

Final Report

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DISCLAIMER

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16. Abstract The NYS Fair project was a \$200,000 effort sponsored by the Federal Highway Administration and the New York State Department of Transportation. The project began in July 2007 and completed in February 2009, this included the times the 2007 and 2008 NYS Fair was in operation. The goal of the project was assess the traffic conditions at and in close proximity to the NYS Fairgrounds located in Syracuse, NY. The reason this was important was due to a major interstate bridge replacement project that was located nearby the fairgrounds that was planned to disrupt traffic for two years. In order to accomplish the goals, six wireless solar powered RFID tag readers (E-ZPass) were deployed to collect and display vehicle travel times in real-time as well as collecting other sources of data such as traffic counts on the surrounding road network. In addition to the data collection efforts a traffic micro simulation model was built to mimic the conditions around the NYS Fair. This model served as a tool for assessing possible improvements in the traffic flow from both an efficiency and safety point of view.					
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Appendix D: 15 minute interval travel time plots as collected by the wireless solar powered E-ZPass tag readers, the parking readers and several toll plazas

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1 Executive Summary

The NYS Fair project was a \$200,000 effort sponsored by the Federal Highway Administration and the New York State Department of Transportation. The project began in July 2007 and completed in February 2009, this included the times the 2007 and 2008 NYS Fair was in operation. The goal of the project was assess the traffic conditions at and in close proximity to the NYS Fairgrounds located in Syracuse, NY. The reason this was important was due to a major interstate bridge replacement project that was located nearby the fairgrounds that was planned to disrupt traffic for two years. In order to accomplish the goals, six wireless solar powered RFID tag readers (E-ZPass) were deployed to collect and display vehicle travel times in real-time as well as collecting other sources of data such as traffic counts on the surrounding road network. In addition to the data collection efforts a traffic micro simulation model was built to mimic the conditions around the NYS Fair. This model served as a tool for assessing possible improvements in the traffic flow from both an efficiency and safety point of view.

2 Introduction

During the 2007 New York State Fair (NYS Fair) data was collected for the development of a detailed traffic micro simulation model of the road network surrounding the NYS Fairgrounds. During the 2008 NYS Fair another comprehensive data collection effort was undertaken.

During the 2007 NYS Fair the attendance through the gate was 936,399 people which was down 8,528 in 2008 to 927,871. Figure 1 shows the attendance by day for both the 2007 and 2008 NYS Fairs. In general the same pattern existed from year to year. The main reason for the variations was typically found to be due to weather conditions from year to year. As can be seen in Figure 1 the attendance in 2008 on Day 3 (Saturday) was much higher than in 2007, but the reverse was true for Day 4 (Sunday). Taking both of these days into account the change in attendance was minimal. These changes can be linked to the weather.

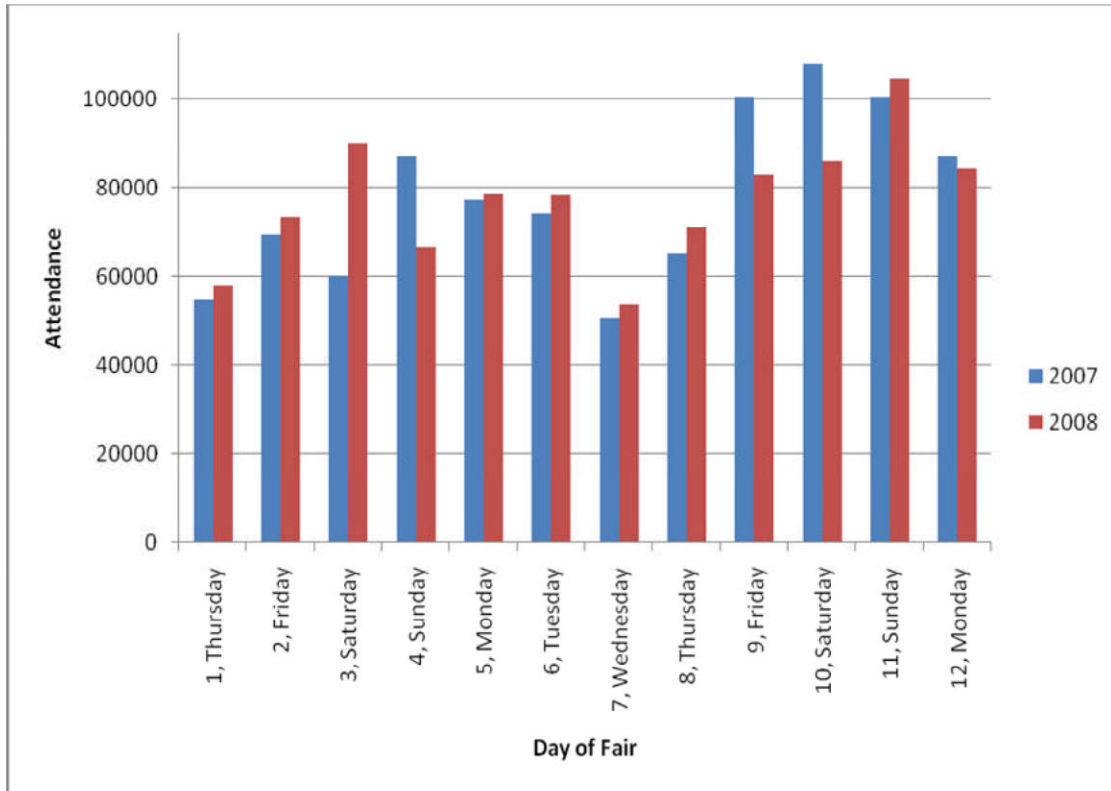


Figure 1 2007 & 2008 NYS Fair attendance by day

This report provides an assessment of the performance of the transportation system during the 2008 NYS Fair. Supporting analysis has been completed and can be found in Section 3; Section 4 provides observations and action items from the 2008 NYS Fair; and Section 5 has concluding remarks. Appendix A contains the agenda, minutes and attendance from the October 2, 2008 post Fair meeting; Appendix B contains 15 minute interval volume plots; Appendix C contains comparison plots for locations where volume data was collected in 2007 and 2008; Appendix D contains travel time plots as collected by the wireless solar powered E-ZPass tag readers, the parking readers and several toll plazas; and Appendix E contains photographs showing suggested changes and improvements.

3 Data Analysis

To provide a comprehensive assessment of the traffic conditions at the 2008 NYS Fair it was necessary to analyze and process all of the data that was collected. In addition to analyzing the data collected in 2008, many of the results were compared to the data collected in 2007 to identify substantial changes within the network. The *Data Collection for the 2008 NYS Fair* report (Task 36) details all of the data collected during the 2008 NYS Fair [1]. Many of the sites identified for data collection in 2008 were found based on the analysis of the 2007 NYS Fair data.

3.1 Volume Data

In the Task 36 report 28 volume count sites were identified for data collection during the 2008 NYS Fair. The data collected in 2008 was only collected when the NYS Fair was in session; in 2007 data both during and after the NYS Fair to determine the percentage increase in traffic during the Fair. The purpose for collecting the volume data during the 2008 NYS Fair was to verify the results from the modeling process and to analysis the performance of the network and parking during the 2008 Fair.

3.1.1 Data Processing

A variety of technologies and data sources were used for the collection of the volume and speed data. These included tubes, loops, acoustic, Nu-Metric and Thruway counters. A master database in containing all of the data sources was compiled in Microsoft Access.

A small percentage of equipment failures should be expected when dealing with traffic data collection devices. In some cases these failures may yield no data records because of faulty equipment (i.e. broken tube). In other cases it might be more difficult to trace, such as if a device was double counting vehicles. It should be noted that the vendor supplying the tube counts for NYS DOT Region 3 frequency checked the equipment to minimize failures. In the case of a failure the vendor quickly fixed the problem and reported it to both RPI and NYS DOT.

3.1.2 Volume Data

The traffic volume on the roads around the NYS Fairgrounds increases each year during the Fair. Figure 2 shows the highway network which serves the NYS Fairgrounds. The RPI team has looked at the volume data in several ways. The first was to plot each 15 minute count throughout the day. Similar to the 2007 data analysis these plots showed the volume characteristics for each instrumented segment of road during the Fair. These plots showed both the weekday and weekend traffic patterns. Appendix B contains each of these plots. There were only a few instances where a counter did not function properly. In many cases when a counter failed it was quickly repaired.

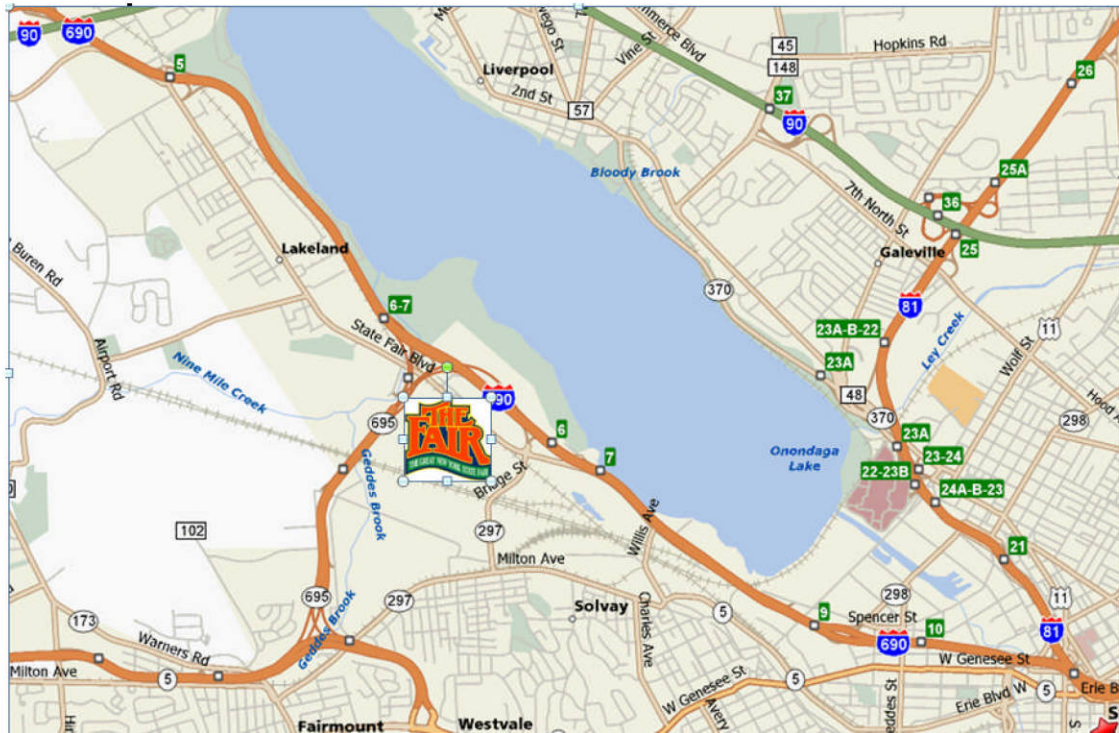


Figure 2 Highway network near NYS Fairgrounds

There were a number of sites that had counters deployed at the same location in both 2007 and 2008. The team produced comparison plots for these locations; they are included in Appendix C. In most cases the weekday and weekend trends are similar from year to year with slight variations. The most notable variations are when certain ramps periodically closed (i.e. I-690 WB exit 7). The plots have two x-axis values that should be noted, the first is the week number and the second is the day of the week. Since the NYS Fair began on Thursday (Day 5, Week 34) in both 2007 and 2008 the team could align the data points this way. Figure 3 shows a comparison between the 2007 and 2008 Fair traffic volumes for the Bear Street on ramp to I-690 WB. The red line in the plot shows the 2008 traffic conditions while the blue line shows the 2007 traffic conditions. Figure 3 shows a spike starting in the early afternoon of the first day of the Fair (week 34, day 5). This spike can be attributed to the accident on I-690 EB with the pedestrian bridge that closed that portion of I-690. The traffic from the NYS Thruway was informed of this via highway advisory radio (HAR) and variable message signs (VMS). As a result traffic used Thruway exit 36 instead of 39 and therefore used the ramp shown in the plots below.

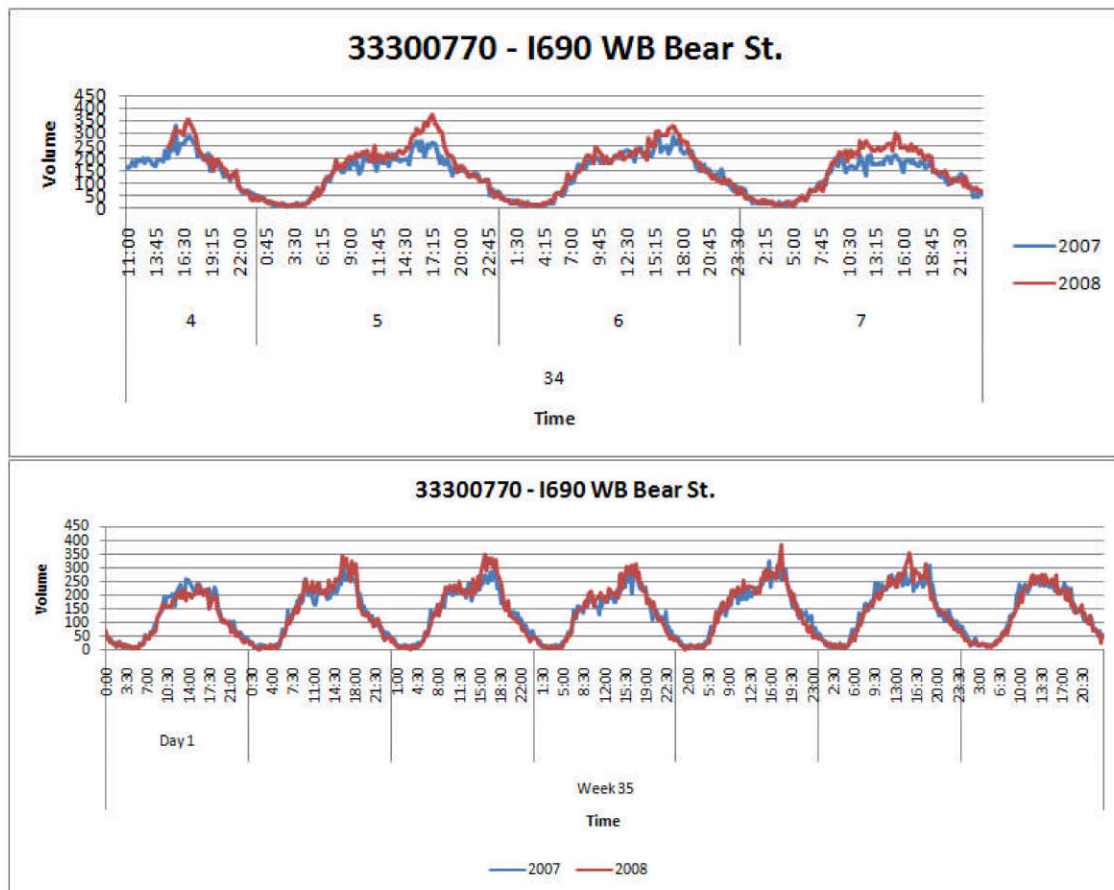


Figure 3 Comparison 2007 and 2008 volume data - Bear Street on ramp to I-690 WB

In addition to analyzing the various volume plots the team computed the average daily traffic (ADT) for each of the count sites. The ADT was computed for the days the NYS Fair was in session. Table 1 shows the comparison between 2007 and 2008 ADTs where the team had reliable count data for both years. On average, 2008 volumes increased 5.4% with respect to the previous year. The last column of the table shows the percentage change in traffic a particular segment of road had during the 2008 Fair. It is also notable that I-690 WB Exit 7 had a substantial increase in traffic during 2008. It should be noted however that when the volume count trends were compared to the trends of the vehicles paying to park in each of the lots the percentage changes in Table 1 are consistent.

Table 1 ADT's of 2007 and 2008 during the NYS Fair

Dir	Station	Location	ADT		Diff	% Change
			2007	2008		
WB	3004	I-690 WB Exit 7 (under overpass, not including Orange Lot)^	7688	11257	3569	31.70%
EB	3005	I690 EB Exit 7	5428	5580	152	2.70%
EB	3006	I-690 exit 7 EB on ramp (from Bridge St / SFB)	6372	6156	-216	-3.50%
WB	3007	Bear St on ramp to I-690 WB	11440	13249	1809	13.70%
EB	3008	I-690 Exit 8 EB off ramp (Hiawatha Blvd)	9163	9219	57	0.60%
SB	3009	Ramp from State Fair Blvd. to I-695	2697	2975	279	9.40%
Entrance	9310	State Fair Blvd. Gate 7 Entrance*	3999	4257	258	6.10%
Exit	9311	State Fair Blvd. Gate 6 Exit*	5667	6045	378	6.30%
Entrance	9311	State Fair Blvd. Gate 6 Entrance*	2009	2547	538	21.10%
Exit	9312	Brown Lot Exit State Fair Blvd. Exit	4654	5086	432	8.50%
NB	9313	Brown Lot Entrance State Fair Blvd.**	1566	1859	293	15.80%
EB	9315	Brown Lot Entrance from I-690 exit 7*	3323	2426	-897	-37.00%
NB	9316	Route 695	15304	15432	128	0.80%
WB	9319	State Fair Blvd. to I-690 WB	6361	7228	866	12.00%
EB	9319	State Fair Blvd. to I-690 and Rte 695 SB (before temp. ramp)	6652	7085	433	6.10%
WB entrance	9321	Orange Lot Entrance from I-690 WB exit 6	2340	2497	157	6.30%
WB entrance	9322	Orange Lot Entrance from I-690 WB exit 7	2387	2948	561	19.00%
NB	9324	State Fair Blvd. @ Gate 12	10428	10948	521	4.80%
EB	9325	Spencer St	3532	3694	162	4.40%
WB	9325	Spencer St	1956	1848	-108	-5.90%

^ 2007 count failed for several days

* Locations are subject to error since speeds were found to be low and traffic may have been sitting on tubes.

** Traffic exiting from the Pink Lot passed by this location during some busy nights when traffic was diverted away

The NYSTA also provided count data for their toll plazas and sections of the Thruway. Figure 4 and Figure 5 show the ADT at each of the toll plazas in the Syracuse area before, during and after the NYS Fair for both entering and exiting movements respectively. The most notable trends are the spikes in traffic at Exits 34A and 39 during the NYS Fair for both entering and exiting traffic. The Exit 39 spike represents a 35% increase in volume at the toll plaza during the NYS Fair. Similar to the results presented for the 2007 NYS Fair it is interesting that Exits 35, 37 and 38 actually decrease during the NYS Fair [2].

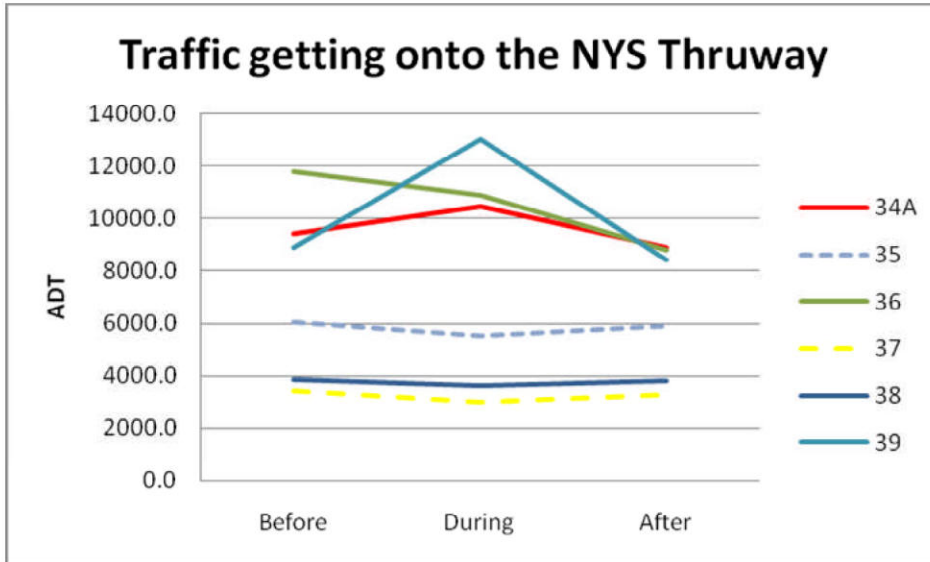


Figure 4 ADT's at NYSTA toll plazas (entering)

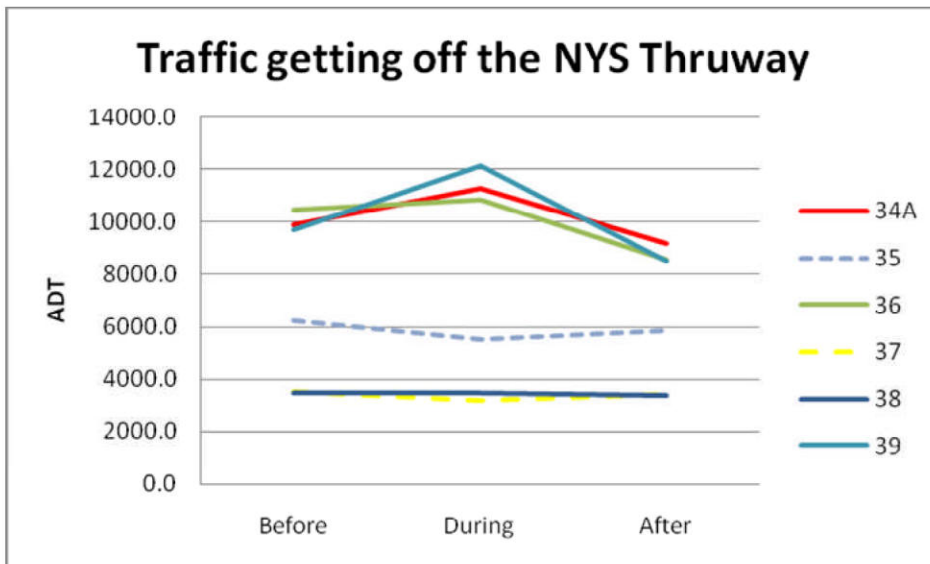


Figure 5 ADT's at NYSTA toll plazas (exiting)

3.2 Travel Time Data

RPI deployed their wireless solar powered E-ZPass tag readers at six locations with the help of NYS DOT Region 3. During the 2007 NYS Fair the team decided to position the readers to monitor the travel time through the temporary detour when exit 7 for I-690 EB was closed. Since that detour was only activated once in 2007 for approximately 1.5 hours the team decided to monitor different travel times during the 2008 NYS Fair. Table 2 shows the various segments for which travel time information was available during the 2008 NYS Fair. The travel time data between the various readers was

published in real-time at a website. The website was made available to the NYS DOT officials so the link performance could be monitored.

Table 2 Tag reader pairs

Travel Time Between		Real - Time
From	To	(Y / N)
I-690 WB @ Bear St (ramp & through)	I-690 Exit 7 WB off ramp	Y
I-690 WB @ Bear St (ramp & through)	Orange Lot entrance from exit 7 WB	N
I-690 WB @ Bear St (ramp & through)	Orange Lot entrance from exit 6 WB	N
I-690 Exit 7 WB off ramp	Gate 6 on SFB	Y
I-690 EB (west of temp. signal)	Gate 6 on SFB	Y
I-690 EB (west of temp. signal)	Brown Parking lot	N
I-690 EB (west of temp. signal)	I-690 EB (in work zone)	Y
I-690 EB (in work zone)	I-690 WB @ Bear St (ramp & through)	Y
I-690 EB (in work zone)	Orange Lot entrance from exit 7 WB	N
I-690 EB (in work zone)	Orange Lot entrance from exit 6 WB	N

In addition to the RPI tag readers, data was obtained from the NYS Thruway Authority. Travel time plots from the toll plazas to the RPI tag readers are included in Appendix D. It should be noted that the clocks on RPI readers were regularly synced with a universal clock so the travel times should be exact. The team is unaware if the clocks at the Thruway toll plazas or the parking readers were synced. Therefore there might be discrepancies with the travel times to and from the RPI readers to/from the other readers. However, the general travel time patterns can be seen from the plots.

A sample of the travel time data can be seen in Figure 6, the travel times shown are between the base of the I-690 westbound Exit 7 ramp and the entrance to Gate 6 which is located on the west side of State Fair Blvd. This travel time pair has a great deal of variation. This is due to the fact that State Fair Blvd has several traffic lights and many pedestrian crosswalks. Then the vehicles wishing to go to Gate 6 sometimes must sit in a rather long queue until they are serviced. It is not uncommon for this queue to extend back onto State Fair Blvd. During most times of the day the travel time is normally between 2 and 4 minutes, but when traffic increases the travel time variation becomes much less uniform and can extend up to ten minutes. This indicates that at some times of the day the traffic between these two points is moving at less than 10 MPH. If the fairgoers were aware of this congestion in real-time it may be possible to have them change their parking lot preference to one further way, like the Orange Lot. This could be done by carefully crafting a message to display on a VMS. Diverting a percentage of the traffic off of State Fair Blvd. would also increase the safety for the pedestrians crossing the road. A more comprehensive set of travel time plots can be found in Appendix D.

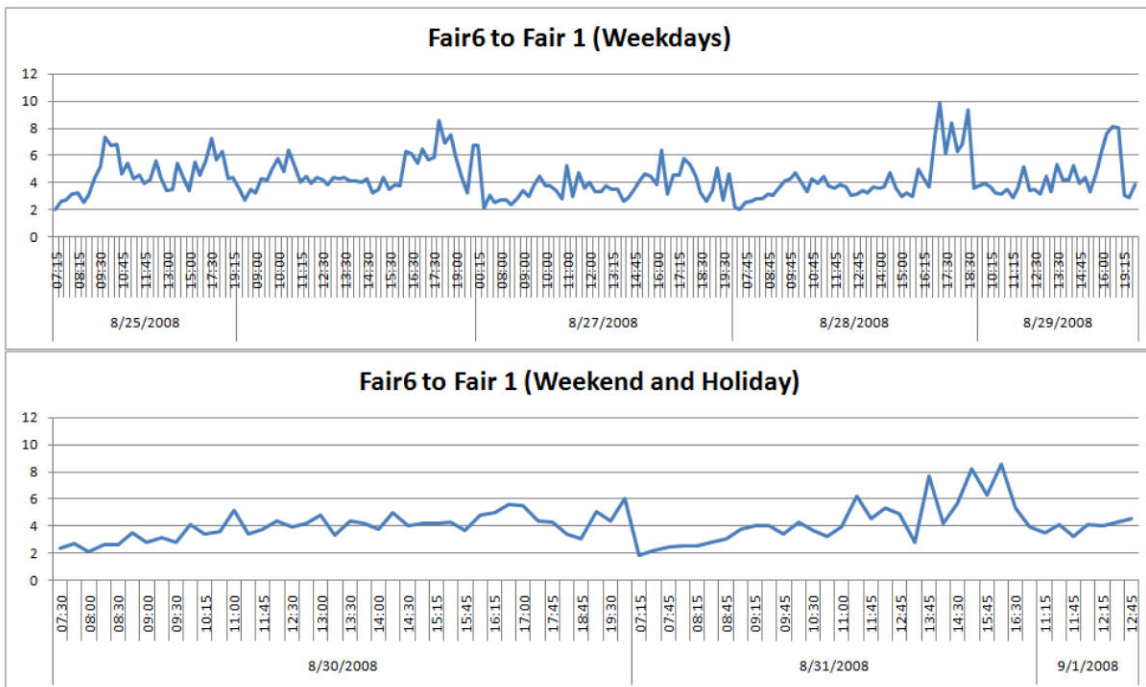


Figure 6 Travel times between the base of the exit 7 WB ramp to Gate 6 on SFB

As the previous example showed having real time travel time data is crucial to help aid in monitoring network conditions, especially in areas that are not well instrumented. Incidents or times of heavy congestion can be monitored and proper actions can be taken. Figure 7 represents traffic originating from I-690 westbound at the Bear Street on ramp (both ramp and through traffic) and terminating at the Exit 7 off ramp. In general the travel times between the pair were found to be fairly uniform; however on Sunday August 31, 2008 there is a substantial spike in the data. According to the Help Truck Vehicle Activity Logs, at 10:50 A.M. a rolling roadblock to clear debris was registered for I-690 WB near exit 7.

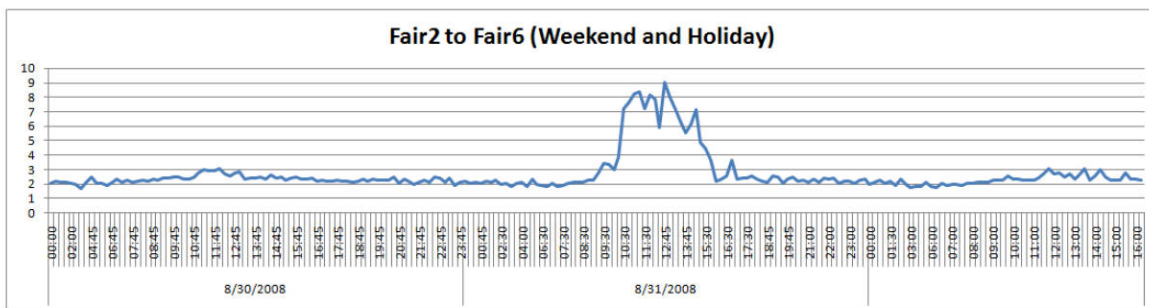


Figure 7 Travel times Fair2-Fair6 Weekend and Holiday

When this spike was originally noted on the travel time website the team accessed the online video images to see if there was in fact a problem. Figure 8 shows a series of images from the traffic cameras indicating the traffic backups through the work zone leading to the fairgrounds. Although the initial incident was cleared relatively quickly the effects lingered until approximately 3:00 P.M.



Figure 8 8/31/08 accident on I-690 WB

3.3 Parking Operations

During the 2008 NYS Fair 177,134 vehicles parked at one of the Fair operated parking lots. In 2007 it was reported that 156,545 vehicles parked at the Fair [3]. Upon further investigation the team believes that this number is incorrect and actual total for 2007 should be 177,479 vehicles. The team believes that the previously reported 2007 total

was strictly cash sales and did not include the vehicles that paid with E-ZPass. If this is the case the total number of vehicles that paid to park at a NYS Fair parking lot during the 2008 Fair decreased by 345 vehicles which is negligible. This also correlates with the attendance data for the two years. In 2008 the paid attendance was down by approximately 8,500 people.

To help minimize delays at the parking lots and subsequently on the highway network mobile E-ZPass trailers were again deployed at three locations to supplement the parking fee collection process. The requirement to use E-ZPass to pay for parking was that the account must be an E-ZPass Plus account. This essentially meant that if an E-ZPass customer pays their bill via a credit card they have an E-ZPass Plus account.

The three entrances that accepted E-ZPass to park were the same as in 2007; the upper and lower Orange Lots and the brown lot from I-690 eastbound. The reason these gates were selected were to help minimize traffic backups onto I-690, especially into the work zone. At each of these locations there was always at least one cash lane open and one E-ZPass lane. In 2007 the three units were not identical; this led to some minor problems. This year four identical units were constructed and deployed (one served as a spare). There were a couple instances noted that the readers were down but the total time is negligible. Of the 91,423 vehicles parked in one of the E-ZPass parking lots 19,579 used E-ZPass Plus to pay, this equates to 21%, this is down from 22% in 2007 (note it was previously reported to be 28% but according to the adjusted parking lot total this number also changed). It also represents 11% of all 177,134 vehicles parked at the NYS Fair using E-ZPass Plus.

It should also be noted that there were 3,159 E-ZPass tag ID's that were used in both 2007 and 2008 to pay for parking. This means that at least 16.1% of the vehicles using E-ZPass to pay for parking in 2008 were repeat customers. The reason it is not possible to give the exact number of repeat customers is that someone may have received a new tag or used a different vehicle with a different tag.

The team collected service time data at the parking lot entrances for the Pink, Brown, Orange and Grey Lots. These service times were collected on various dates and times during the NYS Fair. On average a cash transaction took approximately 11 seconds compared to 4 seconds for an E-ZPass transaction, a savings of 7 seconds which are similar to the 2007 results. These times represent the time it took once the vehicle began paying for the transaction and when it started to move again, it does not include the time spent in queue. It should be noted that since the E-ZPass transaction was faster the queue moved faster, therefore during peak times there could be a significant time savings by paying with E-ZPass.

To maintain safe and efficient roads it is necessary to get fairgoers arriving by automobile into parking lots without confusion. There are several outlets for this information that the average fairgoer can access. This data is available on the NYS Fair website, local news stations, on VMS signs approaching the Fair and on a variety of websites. Figure 9 shows a screenshot from a local news stations website Figure 9. The website offers

information to the fairgoer including an interactive map with the parking lots. The map informs the fairgoer where the various parking lots are (i.e. handicap, E-ZPass, motorcycle, etc). Providing the information in advance of the fairgoers arrival at the Fairgrounds is critical, especially if they are unfamiliar with the area. It should be noted that this information is available in the Syracuse area but there were instances from fairgoers coming from other parts of the state and Canada that could not easily find parking data. It is suggested that prior to large concerts that media relations reach out to neighboring areas to broadcast Fair information such as traffic conditions and parking locations.



Figure 9 Sample of parking guidance available on the internet

The use of E-ZPass for parking aided the operations during the 2008 NYS Fair. Also the coordination between Murbro Parking, the NYS Police, NYSDOT and the Fair officials was superb in handling the various changes in the traffic flow to the parking lots.

3.4 Accident Analysis

Accident records were obtained from the New York State Police and NYS DOT. These records were for the roadways in close proximity to the fairgrounds and represented accidents collected during 2005 – 2008 for days when the Fair was in operation. The records were entered into a database, geocoded based on location, then plotted for trend analysis.

Table 3 shows the frequency of accidents by year. Similar to 2007, the most common type of accident was a rear-end collision. Most of these rear-end collisions were a result of a motorist not paying attention to the traffic and striking the vehicle due to slowing traffic conditions. It should be noted that there were no reported accidents at the temporary traffic signal on I-690 where the Orange parking lot empties out.

The locations with higher occurrences of accidents during the last four years include the following:

- I-690 / Orange Lot traffic signal (2005, 2006, 2007)
- I-690 EB between fairgrounds & work zone (2007 & 2008)
- I-690 WB prior to exit 7 (2006, no work zone)
- State Fair Blvd at Bridge St. (each year)
- State Fair Blvd crosswalks (2008)

Table 3 Reported accidents 05 - 08

ACCIDENT TYPE	2005	2006	2007	2008
REAR-END	7	9	16	16
SIDESWIPE	2	3	0	4
FIXED OBJ	1	1	2	2
ROLLOVER	0	1	1	0
RIGHT TURN	1	1	1	0
RIGHT ANGLE	0	1	0	0
LEFT TURN	0	1	0	0
FAIRGROUNDS	17	14	13	n/a
TOTAL	28	31	33	n/a
TOTAL (on roadway)	11	17	20	22

*obtained from NYS Police MV-104A forms

The increase in rear-end collisions during the 2007 and 2008 NYS Fair appears to be related to the work zone on I-690. However it should be noted that in the westbound direction the number of rear-end accidents that occurred just before exit 7 decreased. This is likely due to the filtering effect that the work zone created.

The only reported accident in 2008 with injuries occurred on opening day of the NYS Fair. It occurred on I-690 EB to the west of the fairgrounds. In this accident a truck's body was accidentally raised and struck a pedestrian bridge. As a result the debris hit a passing car; as a result eight people were severely injured. The accident closed this section of I-690 for over 12 hours and the remaining sections of the pedestrian bridge had to be removed before the road could be reopened. If this accident occurred under normal circumstances the road would likely be shut down for several days. The traffic was quickly rerouted, some of which was routed down State Fair Blvd towards the fairgrounds and traffic on the Thruway was advised of this accident and advised to use alternate exits to access the Fairgrounds. The coordination amongst the various agencies was excellent.

3.5 Bus Ridership

Centro is the transit agency providing buses for the NYS Fair. There are two main services offered. The first is the shuttle bus service that loops between the orange parking lot and the main gate at the Fair. This is a popular service that carried approximately 271,500 passengers during the 2008 Fair; this is down 9% from 2007. The second service is a ‘park and ride’ service that services seven different satellite parking areas and brings people to and from the Fair. This service is growing in popularity; nearly 25% of all fairgoers used this service to get to the Fair, and there were approximately 226,000 total passengers in 2008. Figure 10 shows the ridership for the satellite lots for 2005 through 2008. Although the ridership decreased on many of the routes in 2008 it is higher than in 2006 in most instances, the only line with a substantial decrease was the Camillus route. If you assume the occupancy of the vehicles arriving at the Fair is three people per vehicle then the Centro bus service removed approximately 75,000 vehicles from parking lots immediately adjacent to the fairgrounds. This reduction is substantial. The bus ridership is expected to remain the same or even increase during the 2009 Fair.

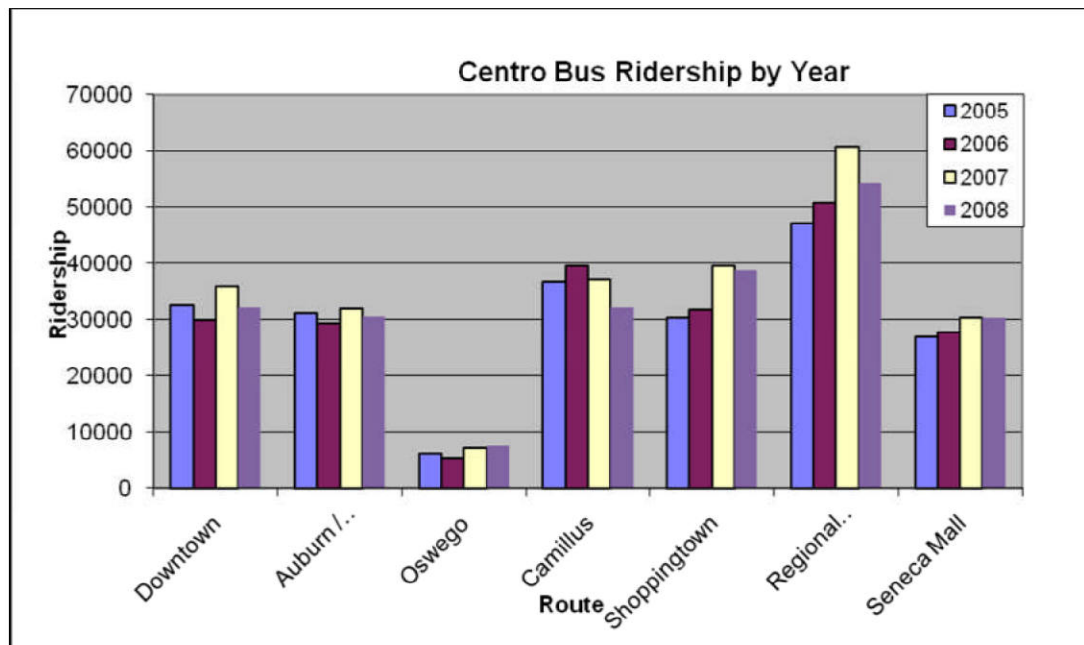


Figure 10 Centro bus ridership by year

On the fairgrounds there are two separate drop off areas for the Centro buses, one for each of the two services. One is the horseshoe area in front of the main gate; this area serves the Orange Lot shuttle service. The second is just to the east of the first location and is used for the ‘park and ride’ buses. With the frequency of buses continuing to rise these areas are becoming more and more congested. In addition to the bus movements

there are a substantial number of pedestrians cutting through the parking lots which conflict with the bus movements. The existing configuration has become too crowded to be operated safely and efficiently, therefore it is highly recommended that either one or both of these areas be reconfigured or relocated to improve efficiency and safety.

Obtaining ridership information was relatively easy. It was available on the NYS Fair and Centro websites, radio, TV and a several other websites. The ABC news station had detailed interactive maps on their website as can be seen in Figure 11 [4]. This website allows the user to choose a bus line and see its route. The bus icons represent stops for the bus and if clicked it displays information such as fares and schedule information.

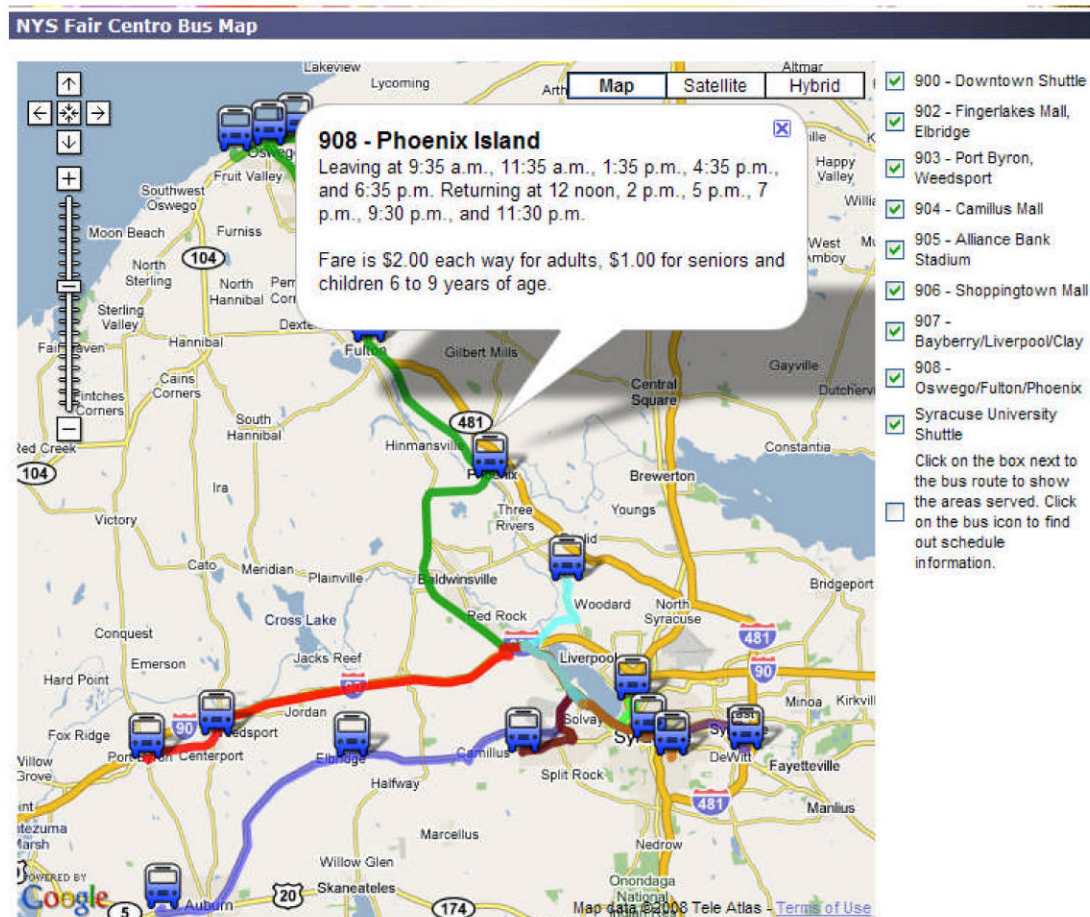


Figure 11 NYS Fair Centro bus routes

3.5.1 'Parlor' Bus study

On August 28th, 2008 a 'parlor bus' was temporarily added to the shuttle service between the main gate at the NYS Fair and the various bus stops along the Orange parking lot perimeter road. This bus was in service for approximately two hours and the results are documented in this report. It should be noted that the two hour study included three full round trips for the bus which is not statistically significant. With that said the team

believes that the snap shot provided by the data accurately represents what would occur if a single parlor bus were put into operation with the existing Centro 'transit' buses. The parlor bus was a traditional tour bus with a single door in the front with a series of steps leading to the raised seating area. The Centro transit buses that normally operate at the fair are low platform buses with a front and rear door and wide center isles. The capacity of the parlor bus is 49 passengers with no standees, while the capacity of the transit bus is 66 (44 seated and 22 standing).

When the parlor bus was placed in operation the reliability of the parking lot shuttle service was negatively affected. Figure 12 shows the total time each of the buses were in the horseshoe; this was measured as the time when the bus arrived in the horseshoe from the Orange Lot until it departed for the Orange Lot. This time included the wait time it experienced in the horseshoe, the passenger discharge time and the boarding time. The red dots in the plot show when the parlor bus began full operation; the blue dots represent the Centro buses. The plot shows that prior to the parlor bus in operation the length of time a bus is in the horseshoe loading and unloading passengers is 3 minutes on average. Once the parlor bus began operation the time all of the buses spent in the horseshoe became much less uniform, with an average time of 6 minutes. The reason for this is that even though the buses behind the parlor bus are more efficient they must wait for the parlor bus to unload and load before they can proceed. It is expected that if the entire fleet of buses were parlor buses the variability would become more uniform (like before the parlor bus entered service) but the average service time would double in time.

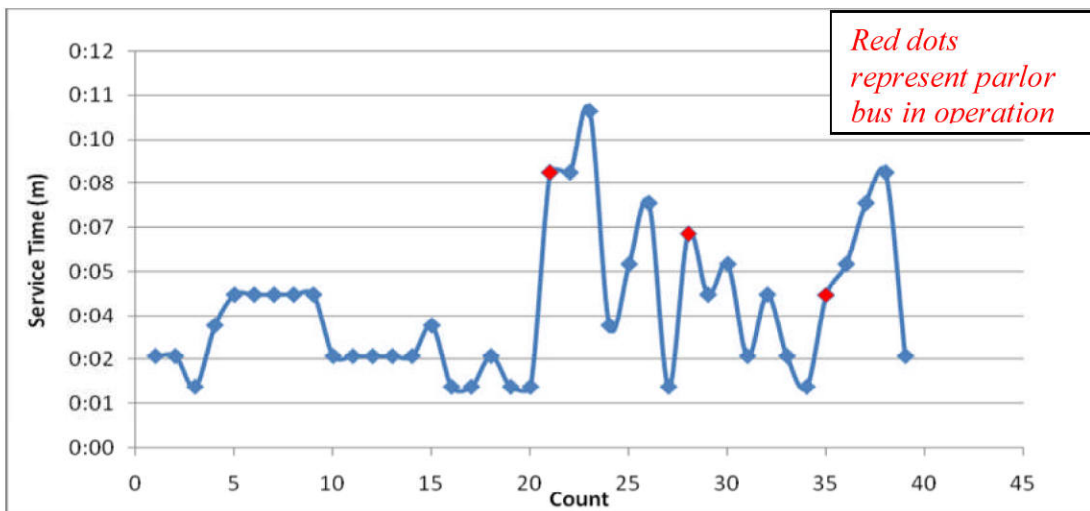


Figure 12 Service time for buses in horseshoe area

In addition the horseshoe area there are a number of bus stops along the Orange Lot perimeter road. At these stops the buses both drop off and pick up passengers. At an event like the fair it is likely that the people will be boarding the bus with additional items. These items might include strollers, stuffed animals, coolers or other oversized items. With the existing Centro buses with wide aisles and multiple doors this is done with ease. It was noted that when the parlor bus was in operation it was necessary for the bus driver to exit the bus at each stop and open the undercarriage storage area, this

substantially decreased the service rate for this type of bus. There were also times when passengers in the aisles had to exit the bus while passengers seated in the rear of the bus wanted to disembark the bus.

Figure 13 shows the average service rates per person for both types of buses. The boarding and alighting times for the existing Centro buses are 4.3 and 3.2 seconds respectively. The average boarding and alighting times for the parlor bus was 5.6 and 7.0 seconds respectively. A 2004 study sponsored by the Federal Transit Administration (FTA) states:

Vehicle configurations with low floors facilitate boarding and alighting, especially of mobility impaired groups – the disabled, elderly, children, and persons with packages. For low floor vehicles passenger service times could be reduced 20% for boarding times, 15% for front alighting times and 15% for rear alighting times [5]

The 20% reduction in boarding times the FTA study suggests was observed during the study. The alighting time of the low floor buses was found to have a savings of over 50% per person. These savings represent over 5.5 minutes of savings per bus based on 66 passengers.

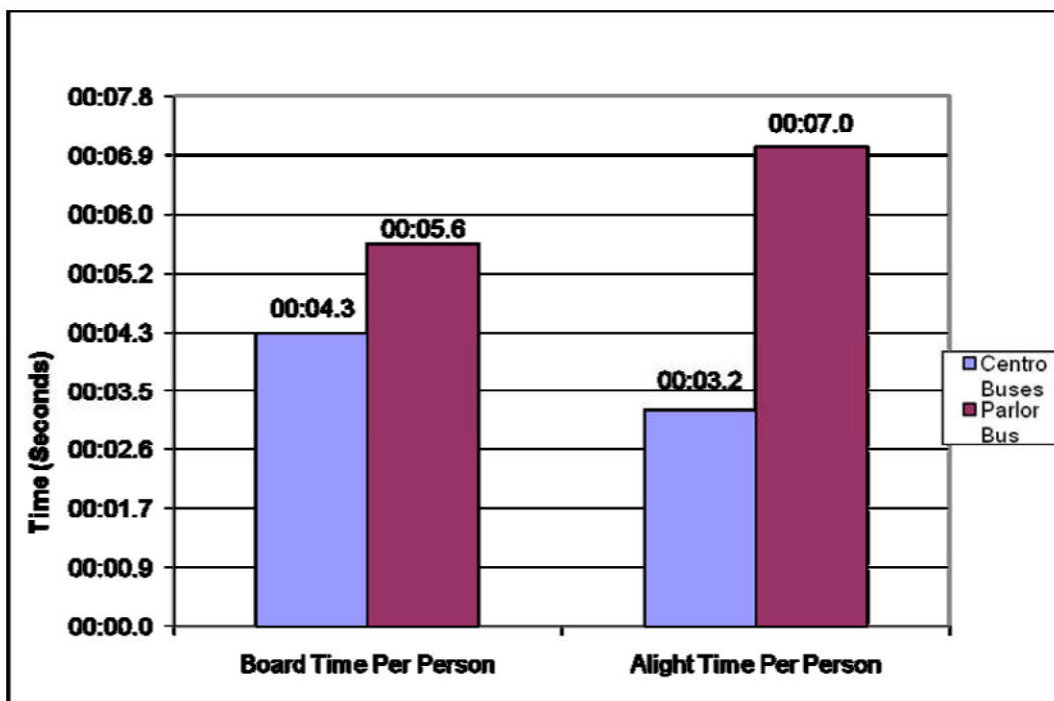


Figure 13 Boarding & Alighting times for shuttle buses

It is anticipated that if the entire fleet of parking lot shuttle buses was comprised of parlor buses it would be necessary to have twice as many in operation to maintain the same level of service that is currently offered. This is due to the fact that the service time for this type of bus is much longer than the existing Centro transit buses and the capacity is

reduced. This would therefore increase the congestion at the already busy horseshoe drop off area and State Fair Blvd. Other negative impacts of using a less efficient bus include the fact that if more buses were used the temporary traffic signal at I-690 would have to be switched to the parking lot more often to service the buses coming from the parking lot. Based on this short field study it is recommended that low platform buses with multiple doors continue to be used at the NYS Fair.

4 Action Items

This section outlines some potential changes or improvements that could be undertaken for future NYS Fairs based on the data collected during the 2007 and 2008 Fairs. Appendix E contains annotated photographs of many of the problems spots identified in this section. Overall the operations during the Fair are run smoothly, especially for an event of this size. There is a great deal of communication among agencies that needs to take place; this was found to be done superbly.

On the first day of the 2008 NYS Fair there was a devastating accident on I-690 EB a few miles west of the fairgrounds. This section of the highway is a major link for Fairgoers, especially for people arriving from the west on the NYS Thruway. The accident involved a truck striking a pedestrian bridge and debris hitting a passing automobile. The accident closed this section of road for over 12 hours and the remaining sections of the pedestrian bridge had to be removed before the road could be reopened. If this accident occurred under normal circumstances the road would likely be shut down for several days. The traffic was quickly rerouted, some of which was routed down State Fair Blvd towards the fairgrounds and traffic on the Thruway was advised of this accident and advised to use alternate exits to access the Fair. Without the communication between agencies during this event it could have resulted in much worse conditions. It is also beneficial that the NYS Fair hosts an annual tabletop meeting that deals with some type of large scale event.

The signage for the NYS Fair should be carefully examined prior to the 2009 Fair. Due to the sheer number of signs for the Fair there is a great deal of confusion. There are also inconsistencies in sign formats. Several key locations that need improved signage and or road markings include:

- Orange parking lot via the I-690 exit 6 ramp. The overhead sign should be clearer and there should be a break in the solid striping so vehicles are aware they can use the shoulder.
- Consider adding temporary striping to the exit 7 WB ramp so drivers see that there are in fact two lanes.
- The VMS signs are sometimes placed too far in advance, giving the motorist too much information too soon. For instance there was a VMS on I-690 telling people to form two lanes for exit 7 WB. If this VMS were placed near the exit 7 gore it would be more beneficial.
- VMS signs were sometimes difficult to read due to haze and dirt on the screens.

Currently at the base of the exit 7 ramp from I-690 WB at least one NYS Police officer directs traffic. This is because the Centro buses that service the Orange Lot cannot stop

at the base of the hill so the officer stops traffic when a bus is present. During certain times of the day it is difficult to see the officer. The team feels it would be safer if a temporary traffic signal be deployed at this location. When the motorist sees a traffic light they are less likely to be confused therefore increasing the safety at this location. The signal would likely be controlled by the police officer when a Centro bus was present.

It was found that the HELP trucks assisted on average 10 vehicles per day during the Fair. This service should be continued in future years as one minor incident could result in a larger incident if not cleared in a short period of time.

Some of the other issues that were discovered during the 2008 NYS Fair include:

- Pedestrians coming from the west end of the Brown and Pink lots frequently cross State Fair Blvd where there are not crosswalks (often at Gate 5).
- The visibility of the I-690 signal, particularly in the eastbound direction is poor. This is mainly because of the slight curve and grade leading to the intersection as well as the overhead exit 6 bridge structure. This is especially problematic in the morning when the sun glare is directly in front of the driver. Although there are many VMS informing the motorists of the signal there should be some improved notification within about a ¼ mile of the signal.
- Vehicles traveling eastbound on I-690 have been observed to pass trucks on the left just past the temporary traffic signal. This typically occurs when the truck is starting from a stop at the light and the vehicle sees a lane to their right. The motorist is often unaware that the lane is just an onramp.
- Both the 'park and ride' and 'parking lot' bus areas at the NYS Fair are at capacity. Improving and/or relocating one or both of these should be greatly considered. It would improve safety of both pedestrians and motorist in and around the State Fair / Bridge St area.
- Local media outlets do an excellent job in keeping the fairgoers informed. However during large venues such as the Jonas Brothers Concert in 2008 media outlets outside of Syracuse should be notified (i.e. Albany, Rochester, Buffalo, Binghamton, etc).
- It was found, especially during PM peak periods, that the traffic on Bridge St approaching State Fair Blvd often backed up severely. The cause for this is unknown but it is believed to be a mix of fair traffic and commuter work traffic. This should be investigated further and if it is in fact commuter traffic it might be possible to suggest changes to eliminate this backup.

- When the work zone is completed the team feels that either the existing detour route or a 'reversed existing' detour route should be used; not the pre-work zone detour.
- To help eliminate traffic from State Fair Blvd a new temporary ramp could be constructed from Route 695 NB to the Grey parking lot. This ramp would eliminate the need for motorists to merge onto I-690 then take exit 7 to either the Brown Lot or State Fair Blvd. It would therefore ease congestion on State Fair Blvd and improve the safety. This ramp idea could also be considered for the Route 695 SB from the Black parking lot. The Black parking lot is connected to the Grey lot.
- The area between the Grey and Black parking lots (under the Route 695 bridges) should be consolidated so more vehicles can park in this location. Increasing the number of vehicles parked in the Grey and Black lots reduces the number of people crossing State Fair Blvd.

5 Conclusions

The data collection effort at the 2008 NYS Fair was a successful partnership among many different organizations. With the data collected during the last two years the team was able to closely examine the traffic operations during the Fair. Based on the knowledge learned from studying this data recommendations have been presented which will aid in planning and operation of future Fairs.

Based on the data collected and the work to create a micro simulation model using the TransModeler software the team has the expertise to code future recommendations dealing with the network surrounding the NYS Fairgrounds. Coding and running these scenarios in the future will certainly be cost effective. The reason for this is that if a recommendation is made several alternatives can be modeled to find the most beneficial design in terms of traffic movement. If a design has no value or negative impacts on another area of the network substantial construction costs will be saved. This is a tremendous asset for the DOT and the NYS Fair.

In addition to some of the specific items outlined in Section 4 here are some of the key notes and findings outlined in this report:

HIGHWAY NETWORK:

- The wireless solar powered E-ZPass tag readers detected that there are changes in travel times throughout the day. It would be advantageous for someone to monitor this information in real time and make the necessary changes to the network.
- There appear to be issues with the signage and road markings in close proximity to the fairgrounds.
- Similar to 2007, there was a spike in rear-end collisions compared to fairs prior to the work zone being in use.

- Similar to 2007 there was a reduction in rear-end accidents on I-690 westbound just before exit 7. This is likely due to the filtering effect that the work zone created.

PARKING:

- E-ZPass Plus transactions were found to be approximately 7 seconds faster than that of cash transactions.
- E-ZPass Plus transactions for parking reduced the time vehicles were in queue.
- Enhanced safety since vehicles moving more efficiently.

BUS RIDERSHIP:

- 25% of all fairgoers used Centro's 'park and ride' service to get to the 2008 Fair.
- This 'park and ride' service is expected to continue to grow or at least stay the same in the future. It is suggested that the bus parking areas be either relocated or reconfigured to increase safety and efficiency.
- The 'parlor' bus that was put into operation for the Orange Lot shuttle service was inefficient and the use of transit buses should continue.
- In addition to the bus movements there are a substantial number of pedestrians cutting through the parking lots which conflict with the bus movements.

6 References

- [1] Bertoli, B., Murrugarra, R., Renna, N., Wallace, W. and Wojtowicz, J. *Task 36: Data Collection for the 2008 New York State Fair*. Technical Report 08-02. Center for Infrastructure and Transportation Studies, Department of Civil and Environmental Engineering, Rensselaer Polytechnic Institute, July 2008.
- [2] Bertoli, B., Murrugarra, R., Wallace, W. and Wojtowicz, J. *Task 34: Perform Data Analysis for the 2008 New York State Fair*. Technical Report 08-01. Center for Infrastructure and Transportation Studies, Department of Civil and Environmental Engineering, Rensselaer Polytechnic Institute, April 2008.
- [3] Ilacqua, Anthony. ailacqua@dot.state.ny.us. NYS Fair E-ZPass Plus Parking Statistics. 9/5/2007.
- [4] WSYR News, *New York State Fair Parking Map*. <http://www.9syr.com/content/news/fair/parking.aspx>. Accessed September 5, 2008
- [5] Federal Transit Administration. *Characteristics of Bus Rapid Transit for Decision Making*. Project No: FTA-VA-26-7222-2004.1. US Department of Transportation, Washington, DC. August 2004.

Appendix A

2008 State Fair

Transportation/Parking Operations and Management

Post Event Review Meeting

- **Agenda**
- **Attendance Sheet**
- **Minutes**

2008 State Fair

Transportation/Parking Operations and Management

Post Event Review Meeting

10:00 A.M on October 2, 2008

State Fair Grounds – Arts and Home Building

- Introductions
- Purpose and Format of Meeting – **John Bassett, NYSDOT Main Office**
 - what went right/wrong, 30 min or less, etc

- Communications – **lead Josh Ribakove, NYSDOT R-3**
 - 2 phase public outreach plan: Successful? Impact?
 - CCTV & Traffic Website: Improvements? # of hits?

- Contracting/Fiscal – **lead Matt Morgan (State Fair) & Mike Kolb (TTI)**
 - Contract with TTI: What went wrong this year? Next year? Any changes or similar agreement expected?
 - Billing Arrangement: Satisfactory?
 - Reports: E-ZPass statistics? Logs? Available to who?

- E-ZPass Parking Operations & Management – **lead Ola Fawumi & Larry Ruzycky, NYSDOT Main Office**
 - MEUs: Testing & Calibration? Deployment? Performance Problems?
 - Tech Support: Needed to what extent next year?
 - Related Parking operations: signing, cones & drums, etc

- Traffic/Event Management & Plan– **lead Eric Hansen & Diana Miller, NYSDOT R-3**
 - Equipment (VMS, HELP, SMARTZONE, HAR): Enough? Performance? New/additional resource/s needed?
 - Overall Plan: How successful? Issues? Improvements?
 - ❖ DOT, SP and State Fair/Parking
 - Mobile Command Vehicle: Effectiveness? Problems?
 - Conditioning Reporting (STICC, etc): Summarize issues?

- Traffic Management Evaluation – **lead Jeff Wojtowicz, RPI**
 - Data Collection: Issues? Improvements? Next year?
 - Operations and Traffic Management observations: Summarize? Report/Presentation?
 - Other: Implement any suggested scenario/s? What's next?

- **Conclusion – John Bassett, NYSDOT Main Office**
 - **Open forum for any other topic**
 - **Next steps and review any action items**
 - **Au Revoir!!!!!!!!!!**

Attendance Sheet

Name	Organization	Phone	Email
John Bassett	NYS DOT M/D	(516) 457-2384	JBASSETT@DOT.STATE.NY.US
OLA FAWUMI	NYS DOT M-8	518-457-6450	OFAWUMI@DOT.STATE.NY.US
Larry Pozysky	NYS DOT M-8	518 457 7951	lpuzysky@DOT.STATE.NY.US
Jeff Wojtowicz	RPI	518 276 2759	wjtojr@rpi.edu
Nick Rennan	RPI	518 276-2759	rennan@rpi.edu
Diana Miller	NYS DOT R-3	315-426-2131	dmiller@dot.state.ny.us
Julie Bednar	NYS DOT R-3	315-428-4408	jbednar@dot.state.ny.us
John Reichert	NYS DOT R-7	(315) 428-4405	jreichert@dot.state.ny.us
ERIK HANSEN	NYS DOT R-3	(315) 247-0025	ehansen@dot.state.ny.us
Jim LAWLER	NYS DOT R-3	(315) 428-4312	JLAWLER@DOT.STATE.NY.US
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Diana Graser	NYS DOT R-3	315 428 4380	dgraser@dot.state.ny.us
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David Smith	DOT R-3	315 448 7312	dsmith@dot.state.ny.us
Josh Ribakove	NYS DOT R-3	315-428-4351	JRibakove@dot.state.ny.us

2008 NYS State Fair – Post Event Review Meeting Minutes

October 2, 2008, 10:00 AM – 11:45 AM

State Fair Grounds – Arts and Homes Building

Introductions

John Bassett (NYSDOT)

- Welcome and thanks to the participants.
- Claims that the Fair ran relatively smooth this year.
- Felt that the parking operations were better than in 2007 based on lessons learned from past experiences.
- Stated that construction had less of an impact this year, but same steps from the past were used to reduce its negative effects.

Matt Morgan (NYSF)

- Sends kudos to DOT, especially for the first day bridge accident on I-690 – proof of great communication and operations, great planning.
- Would like to see the E-ZPass demographics from the NYS Thruway Authority.
- Stated that he received a preliminary report on bus study for the parking operations and is waiting on for RPI to finalize it.

Jeff Wojtowicz (RPI)

- Stated that after some quick analysis of the bus data, normal bus pickup and drop-off times are about 3-5 minutes; with coach buses, it is about 8-11 minutes.

John Bassett (NYSDOT)

- As the meeting moves on to the other topics he encourages people present to speak freely and express their opinions.

Diana Miller (NYSDOT R-3)

- Asked if anyone had CENTRO bus ridership trends yet.

Matt Morgan (NYSF)

- Stated that the Fair was working basically at maximum bus usage. The 'Park-and-Ride' service was used more (5 last year to 7-8 buses this year, roughly). Looked to increasing more with southbound buses (such as with LaFayette school).

Communications

Josh Ribakove (NYSDOT R-3)

- Claims that this was the first year with true comprehensive media communication for the Fair
- Prior to the Fair most media outlets in the region and a few statewide were contacted.
- Drew Fuller (Engineer in charge of the I-690 construction) opened up the work zone the day before the Fair; Says drivers were not confused by it.
- Mentioned the accident that occurred on I-690 on the first day of the Fair

- No communication trouble between DOT and other agencies
- Communication with media also went well that day – all information was updated by the minute.
- Stated that the joint press conference at the crash site was covered by virtually all available media outlets.
- Praised Dave and Molly in the Mobile Command Vehicle.
- Mentioned that “News 10” did a segment on traffic management operations (interviewed Dave and Molly).
- Mentioned the presence of the Governor and excellent performance by everyone involved.

Matt Morgan (NYSF)

- Agreed with Josh’s points.

Josh Ribakove (NYSDOT R-3)

- NYS Fair Traffic website for the Fair had 2,471 unique visits this year compared to 12,228 last year.

Matt Morgan (NYSF)

- Questioned the reason behind the decline in unique visits to the website – were people more impressed with the Fair last year? Attendance only down 1%.

Josh Ribakove (NYSDOT R-3)

- Claimed the decrease in site views was mostly due to it being a novelty the previous year and people were more curious to check it out.
- Also claims that the website is not the best source of information for people traveling more than a half hour or more to the Fair. This is because the information is likely to be outdated when the motorist gets to the Fair.
- He encouragement for advertisement for future Fairs.
- There were not a lot of website referrals from print materials - most links came from Fair’s own site and one local news site. Improvement: Included url on each press release
- The main changes to site this year included some logos, fair events and a mobile version was added.
- On his end, there were no major complaints about the distinction between E-ZPass and E-ZPass Plus - most people already have E-ZPass Plus and those that do not know that they do not.

Contracting / Fiscal

John Bassett (NYSDOT)

- Asked Matt Morgan for any suggestions regarding future changes for E-ZPass for parking at the Fair.

Matt Morgan (NYSF)

- E-ZPass cost approximately \$32,000 for use – more expensive than last year (\$6k extra).
- He stated that it might not be worth it in the future and that they will have to analyze the statistics. Said they got the stats 2 days ago from Albany Airport (*Margret is no

more with them and they got it from someone new) Parking: went down a little ~8% while bus usage went up.

Josh Ribakove (NYSDOT R-3)

- Stated that most people do not realize the true cost of using E-ZPass (the cost for the agencies to provide the service). If not used in the future, public outreach will be needed to explain removal of E-ZPass.

John Bassett (NYSDOT)

- Asked if there were any ways to reduce the cost for TTI.

Matt Morgan (NYSF)

- TTI gave 3 alternatives – they chose middle-of-road option (not cheapest, not most expensive).

Matt Morgan (NYSF)

- Said there were issues with outfitting the new trailers with the E-ZPass equipment – width of poles, length of arms, etc. With each of the changes came additional costs from TTI.

Ola Fawumi (NYSDOT)

- Says not expect them in the future since this was the first time the trailers were deployed.

E-ZPass Parking Operations & Management

Ola Fawumi (NYSDOT)

- Stated that the MEU's tie in to issues with the new trailers. Said that NYSDOT was worried about on-time delivery and worried about letting TTI work at-risk before the proposal was finalized (3 weeks before fair) for calibration and setup.

John Bassett (NYSDOT)

- The vendor of the trailers promised them to NYSDOT months before the Fair but they were delayed in getting them.

(Matt Morgan had to leave the meeting)

Ola Fawumi (NYSDOT)

- After the trailer issues worked out, DOT fitted them with things like keys, indicator lights etc. One unit's CPU failed for a few hours but was fixed relatively quickly by TTI with DOT R3's help.
- Stated that it would be good to have TTI tech support on-site, but might not need this in the future (extra cost).

Dave Isbell (NYSDOT R-3)

- Disagreed and thinks that it is important to have on-site support (not sure about costs though) due to uniqueness of the technology. Reiterates that the trailers were the DOT's responsibility, even for minor problems.

John Bassett (NYSDOT)

- Mentioned that these trailers will also be used for other special events and data collection efforts throughout NYS as they are property of NYSDOT.

Ola Fawumi (NYSDOT)

- Stated that he heard complaints from people who had the indication light turn green when vehicles left (improper signal reads). Says this may be a problem with people parking close to readers – should have more drums/cones to block traffic.

Luke Delia (NYSF)

- Asked if anyone knew what the transmission cone looked like for an E-ZPass tag or the antenna.

Ola Fawumi (NYSDOT)

- Reported to Luke that he was not sure what the cone looked like.
- Stated that this year there was an issue of vandalism on with one of the MEU's on the last day of the Fair.

Jay Elhage (NYSDOT R-3)

- Responded to the vandalism issue. He stated that the locks were ripped from the control box for the generator and another lock ripped for the computer system at the reader in the brown lot. The vandals did not take anything and did not seem to “fiddle with” anything. The lock was resecured the next day after vandalism was discovered. Stated that the box is only a plastic cabinet and if people really want to get in there, they probably will find a way.

Ola Fawumi (NYSDOT)

- Did not think incident is likely to reoccur.
- Someone complained on IntraDOT that E-ZPass readers were not working and they had to pay cash.
- Spoke to Dave Isbell constantly and the trailers were always reported to be working fine. For the most part these trailers worked really well.

John Bassett (NYSDOT)

- Asked for comments on the parking operations.

Luke Delia (NYSF)

- Not many issues this year. Integrating E-ZPass worked well and lessons were learned from last year.

Jay Elhage (NYSDOT R-3)

- Stated that readers did not need to be reset nearly as much as in 2007.

Traffic / Event / Management & Plan

John Bassett (NYSDOT)

- Asked for impressions of the overall traffic management plan.

Eric Hansen (NYSDOT R-3)

- Stated that there were not too many changes from 2007 –some portable signs were removed, some permanent ones installed. Overall, traffic was much smoother than last year.
- Murbro learned from past situations and how to handle them and thus improved their performance.
- Park-and-ride usage increased.
- Eliminating E-ZPass would mean a lot of changes in terms of signage and they will have to modify the plan a bit if this happens.

Diana Miller (NYSDOT R-3)

- Stated that once the spare arms were installed for the E-ZPass readers the service greatly improved.
- From personal observations, traffic seemed to run better than last year.
- Mentioned the heavy traffic before the Rascal Flatts concert. Said that IP-based modems were installed in VMS (but not all, though it is preferred) which improved communications speed. Exit 7 WB sign could benefit from better speed.

Eric Hansen (NYSDOT R-3)

- As time goes on and people get used to equipment and operations, things naturally improve. Thinks another sign on Exit 6 WB is needed to split the traffic and have them use the shoulder.

Jay Elhage (NYSDOT R-3)

- Said that NYS Troopers (Bernie) wants to split the Exit 7 WB ramp into two lanes with cones or by other physical means during the entire Fair, not just when it is busy.

Eric Hansen (NYSDOT R-3)

- Eric feels that the bridge construction creates a filter affect and keeps the traffic getting off at Exit 7 WB metered. He is concerned with the effects of opening the work zone next year and what it will have for safety.

Diana Miller (NYSDOT R-3)

- Praised media encouraging Exit 6 - could even be promoted more.

Josh Ribakove (NYSDOT R-3)

- Agreed with Diana and said more promotion will continue.

Eric Hansen (NYSDOT R-3)

- Talked about the queue on the shoulder of the Exit 6 WB ramp which is now used for vehicles going into the parking lot. Says this is a big issue and the reason why an extra sign might be good – does not want too many people stopping in right lane and no one using the shoulder, which has been occurring.

Dave Isbell (NYSDOT R-3)

- Talked about signage issues. Some issues include:
 - o Overkill on Exit 7 WB E-ZPass & Cash signs – need to think about what is really needed,

- All signs on I-690, Bridge Street, and State Fair Boulevard should be reviewed in tandem with DOT, State Police, and State Fair people – many conflicting signs.
- The signs should be reviewed far in advance of next years Fair (months) if E-ZPass will be implemented..
- Responded to John Bassett’s comment about the Mobile TMC – it worked well and proved its worth on the first day alone. Would be good to have it next year.
- Responded to John Bassett’s comment about H.E.L.P. use – it was about the same amount as last year. Coordination with 911 was better; State Police really want it for next year. Says this needs a lot of lead time for planning.

Traffic Management & Parking Evaluation

Jeff Wojtowicz (RPI)

- Thanks to everyone for data that was collected during the 2008 Fair. Most data is now in hand but RPI is still waiting for some data from the NYSTA.
- Discussed the RPI wireless solar powered E-ZPass trailer deployments.
 - Thanked and commended Larry Hazzard’s (R-3 NYSDOT residency) crew was great in coordinating with RPI for its E-ZPass trailer deployment.
 - These were not deployed throughout the construction detour like last year, but still strategically placed to find travel times through I-690 and State Fair Blvd.
 - Could be used in the future in conjunction with VMS to provide travel times to the various parking lots and possibly shift people off of State Fair Blvd.
- Other notes:
 - I-690 first-day accident coordination was very good.
 - Said that visibility of the I-690 traffic light heading eastbound is a problem (bridge overhead blocks view). However, he believes that there were no accidents during the 2008 Fair.
 - I-690 Exit 6 WB – people do not want to use the shoulder – “monkey-see-monkey-do” mentality sometimes encourages people to use normal right lane alone and ignore signs that allow shoulder use.
 - Pedestrians from pink lot cutting across State Fair Boulevard near Gate 5 without a crosswalk, this is unsafe and needs attention (fencing?).
 - Stated that the bus parking areas at the main entrance are basically at-capacity. An alternative location should be looked at so that the buses are not competing with other traffic at this intersection.
 - It was noticed several times that Bridge Street (approaching SFB) had very bad performance (queues sometimes backed up for 1.5-2 miles) – this should be addressed for next year’s fair.
- RPI will soon start diving into the traffic data, doing year-to-year comparisons and submitting a report in December.
- Responded to John Bassett about any other thoughts on bus operations – Jeff thinks that the buses, Centro, and the State Police are basically doing the best they can with what they have.

Ola Fawumi (NYSDOT)

- Asked if RPI needs E-ZPass statistics for parking.

Jeff Wojtowicz (RPI)

- Yes, and hopefully RPI will be getting them soon from the NYSTA.

Diana Miller (NYSDOT R-3)

- Asked if RPI has videotape of the signage on I-690.

Jeff Wojtowicz (RPI)

- Yes, recorded video with help of the NYS State Police, states that he can provide a DVD copy.

John Bassett (NYSDOT)

- Agreed that review of signage is necessary. Also agrees that cost review for E-ZPass would be good. Said that whatever can be done to bring back help without relying on the local DOT regional office would be good.

Jeff Wojtowicz (RPI)

- Also mentioned a problem he heard with long-distance travelers asking about parking and fair information for the Jonas Bros concert (people from places such as Albany, Vermont, Canada, etc).

Various

- Claimed that good information is on the fair website, and will look into how well it is advertised.

Luke Delia (NYSF)

- Said he will look into it, and also look into what parking information is including with with ticket prints (ex. Map, address, website etc). Says that the State Police asked if there were any operations tweaks made with GPS companies and units in mind?

John Bassett (NYSDOT)

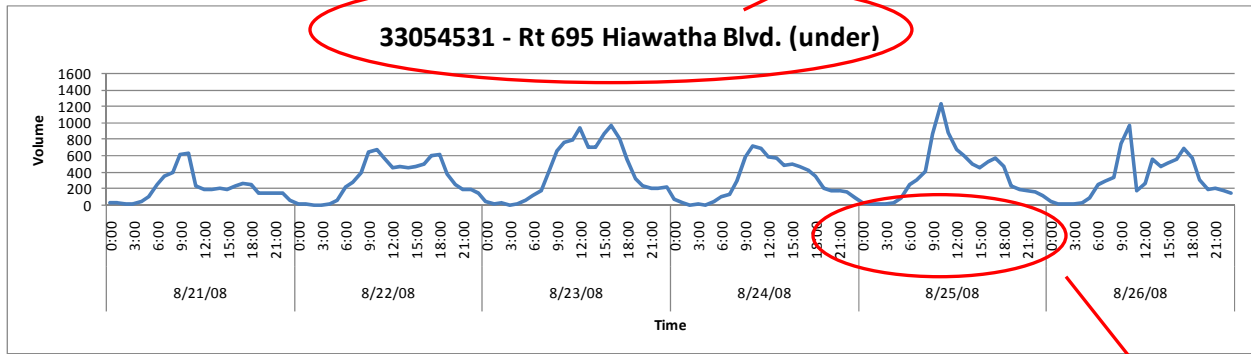
- Efforts were made (for a different project) to integrate traveler information with services such as MapQuest, with not a lot of luck and little results.

APPENDIX B

2008 Volume Plots NYS Fair Count Sites

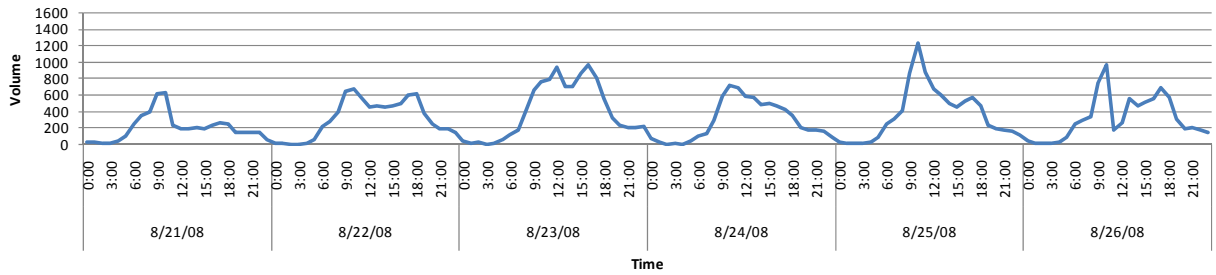
Sample on how to read the attached charts:

Location (station #, description). The 1st 2 digits represent the region code, the 3rd through 6th digits represent the actual station and the last 2 present the direction

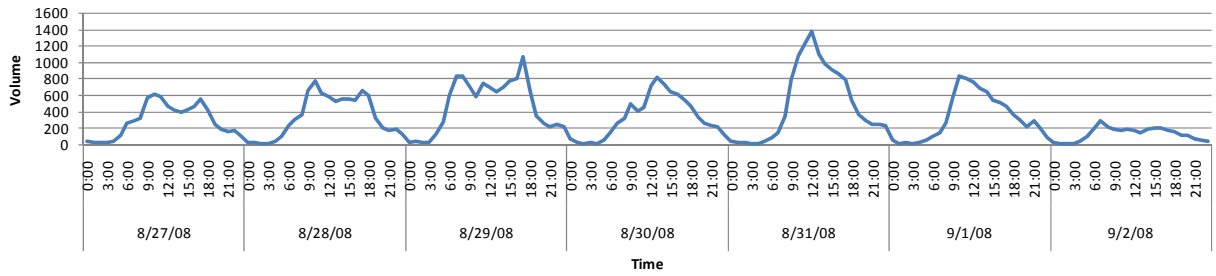


Time of Day

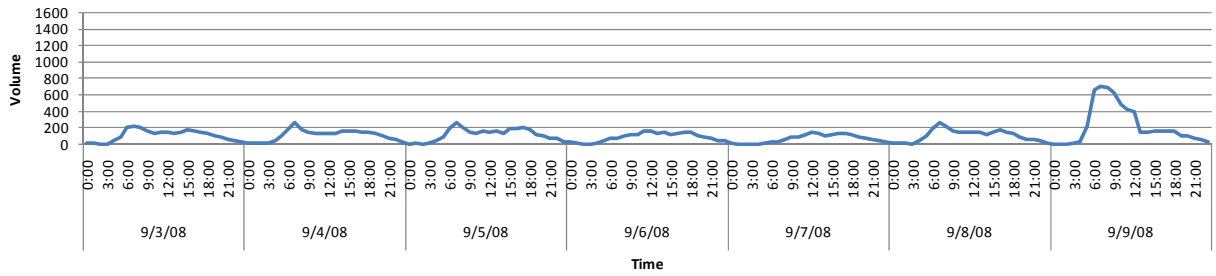
33054531 - Rt 695 Hiawatha Blvd. (under)



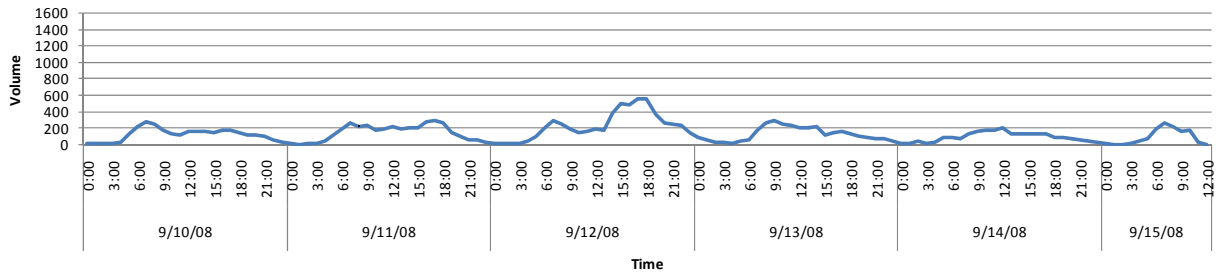
33054531 - Rt 695 Hiawatha Blvd. (under)



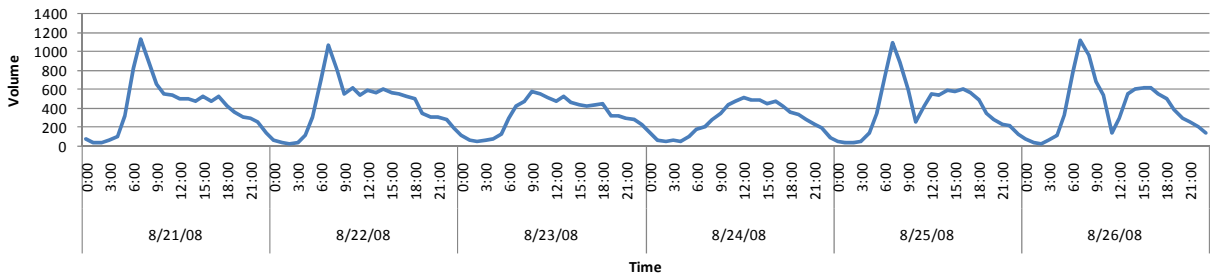
33054531 - Rt 695 Hiawatha Blvd. (under)



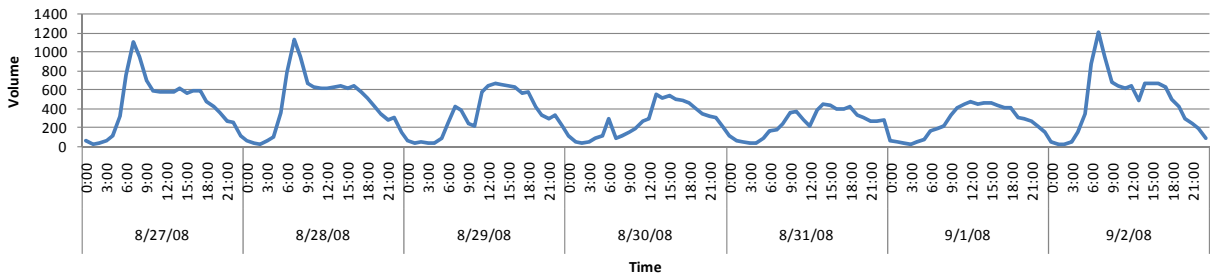
33054531 - Rt 695 Hiawatha Blvd. (under)



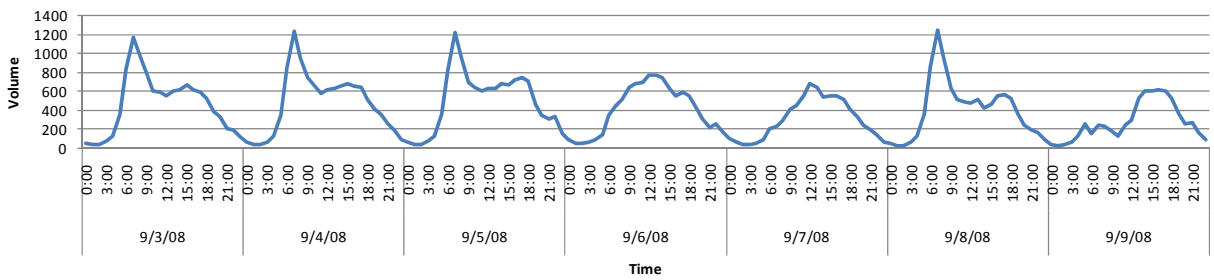
33054532 - Rt 695 Hiawatha Blvd (under)



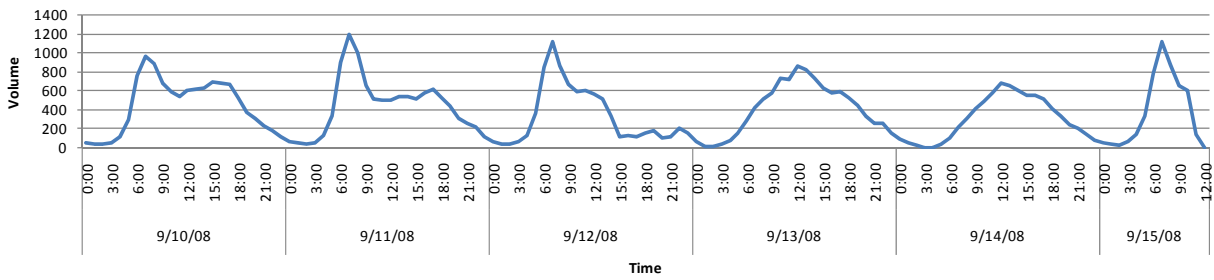
33054532 - Rt 695 Hiawatha Blvd (under)



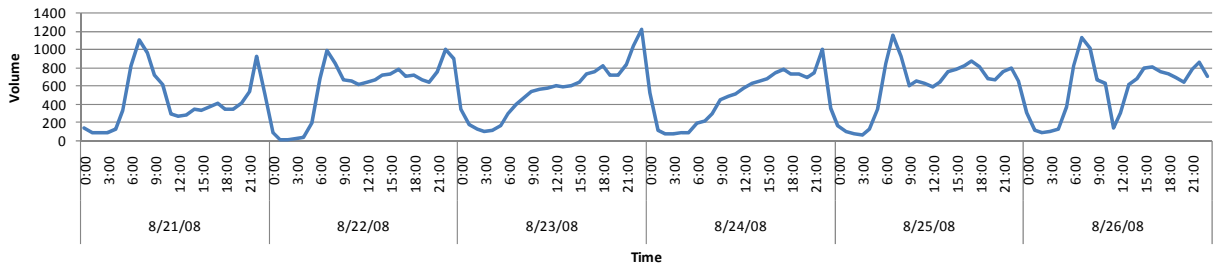
33054532 - Rt 695 Hiawatha Blvd (under)



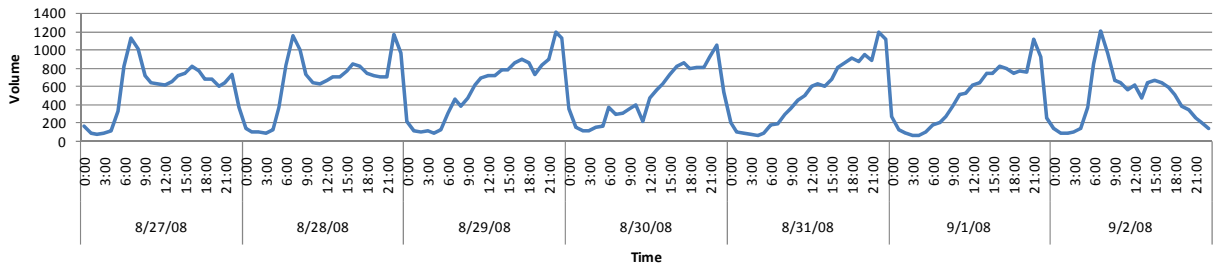
33054532 - Rt 695 Hiawatha Blvd (under)



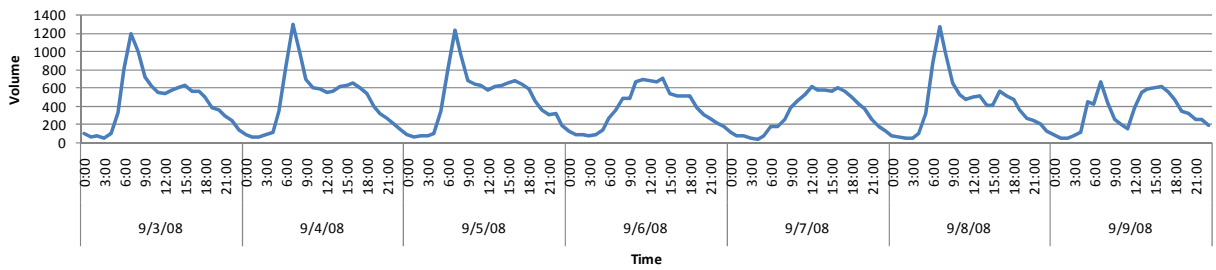
33054533 - Rt 694 Hiawatha Blvd. (under)



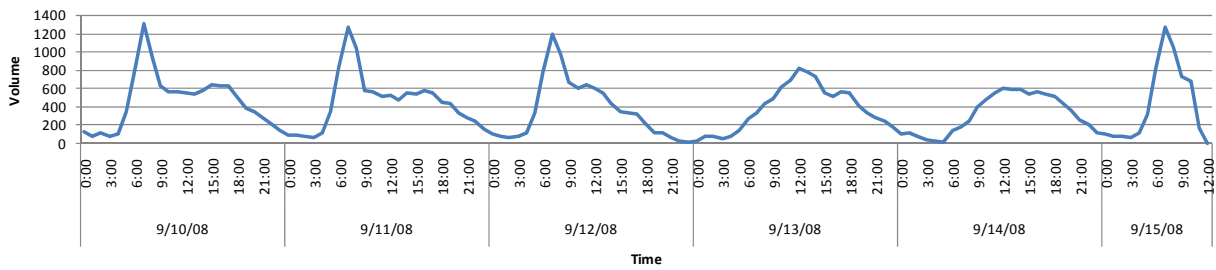
33054533 - Rt 694 Hiawatha Blvd. (under)



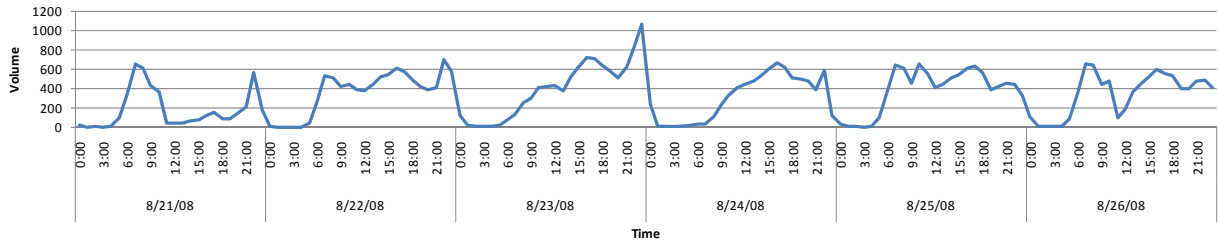
33054533 - Rt 694 Hiawatha Blvd. (under)



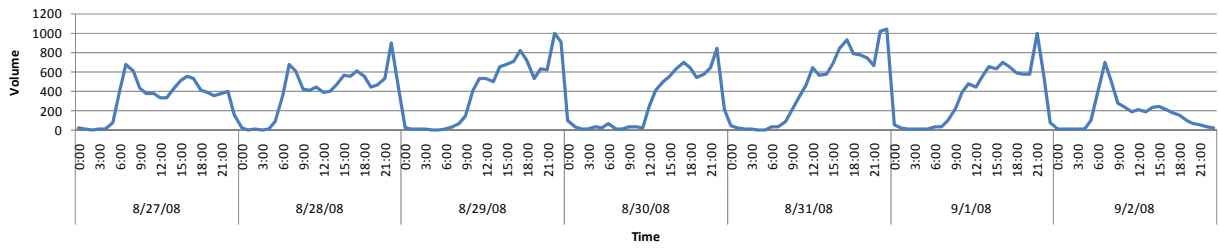
33054533 - Rt 694 Hiawatha Blvd. (under)



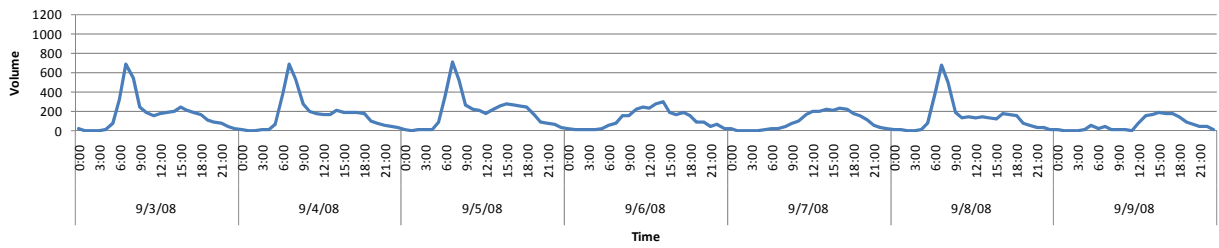
33054534 - Rt 695 Hiawatha Blvd. (under)



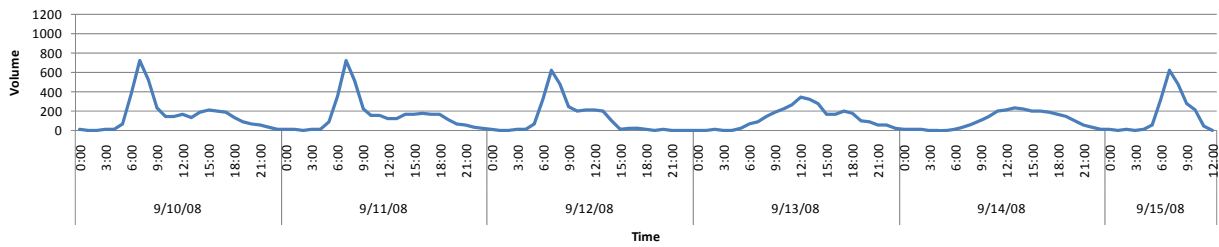
33054534 - Rt 695 Hiawatha Blvd. (under)



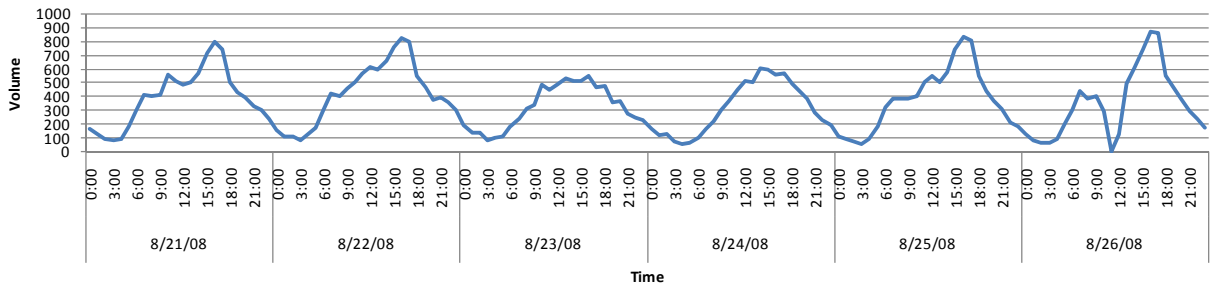
33054534 - Rt 695 Hiawatha Blvd. (under)



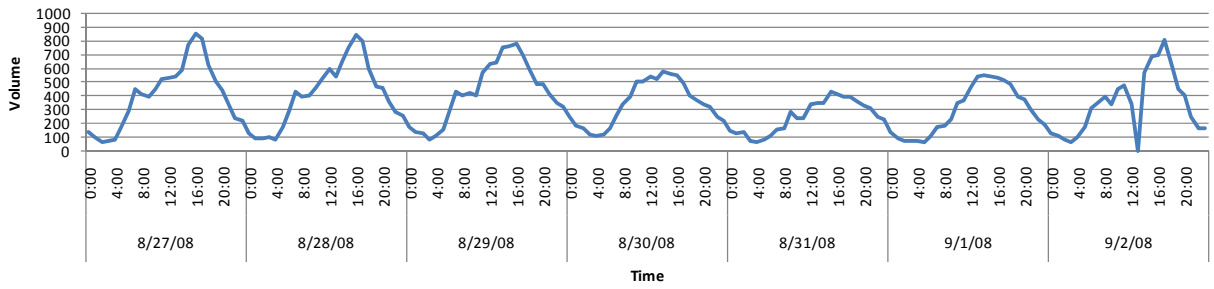
33054534 - Rt 695 Hiawatha Blvd. (under)



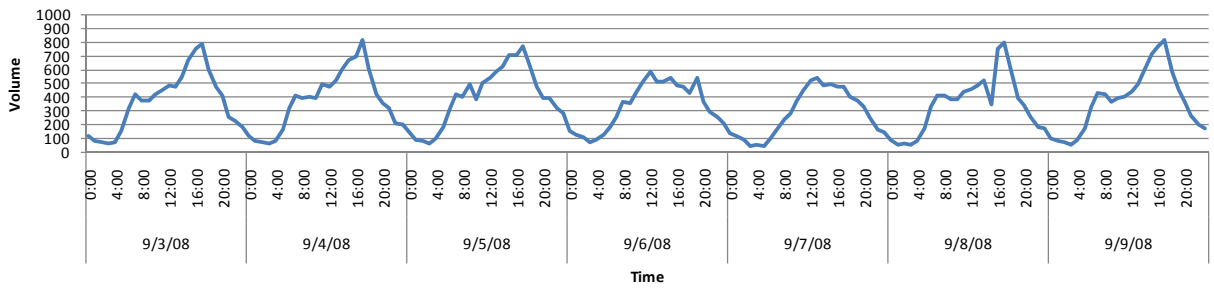
33054571 - Rt 695 Hiawatha Blvd (under)



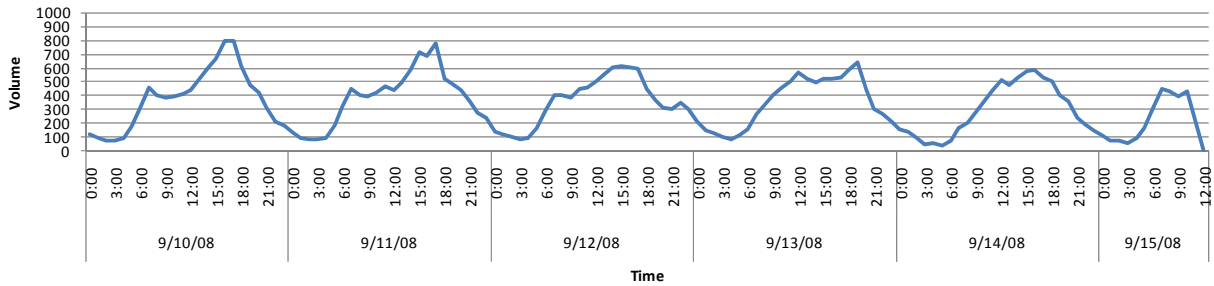
33054571 - Rt 695 Hiawatha Blvd (under)



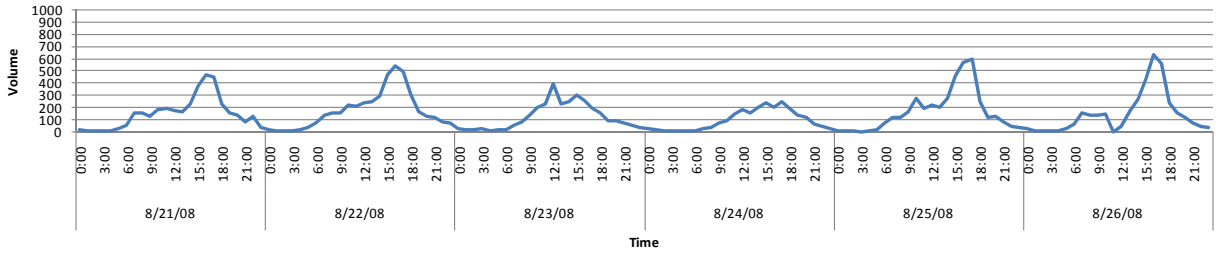
33054571 - Rt 695 Hiawatha Blvd (under)



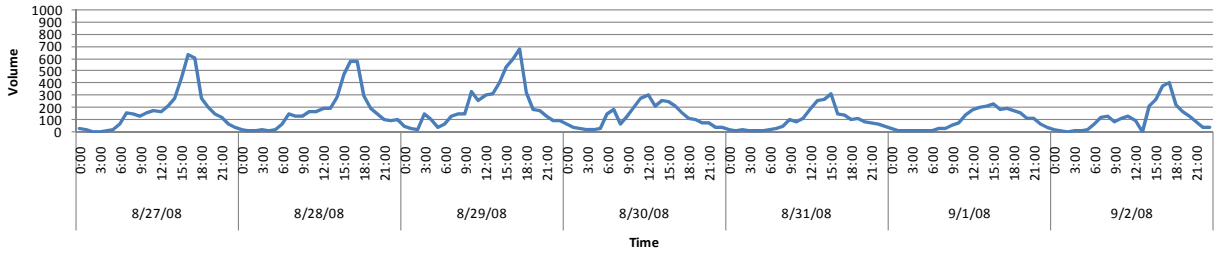
33054571 - Rt 695 Hiawatha Blvd (under)



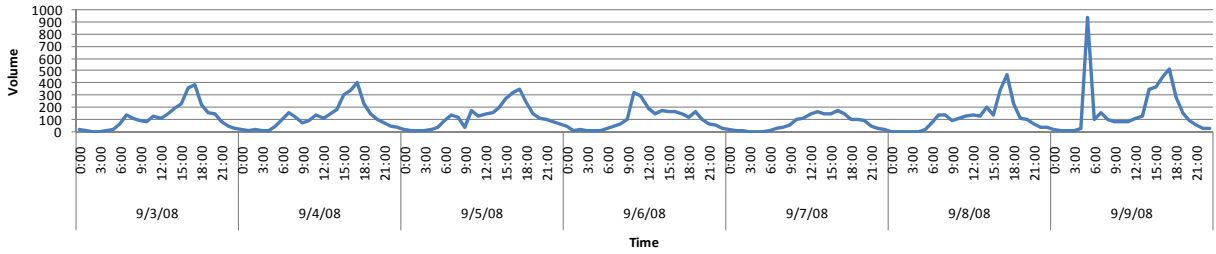
33054572 - Rt 695 Hiawatha Blvd. (under)



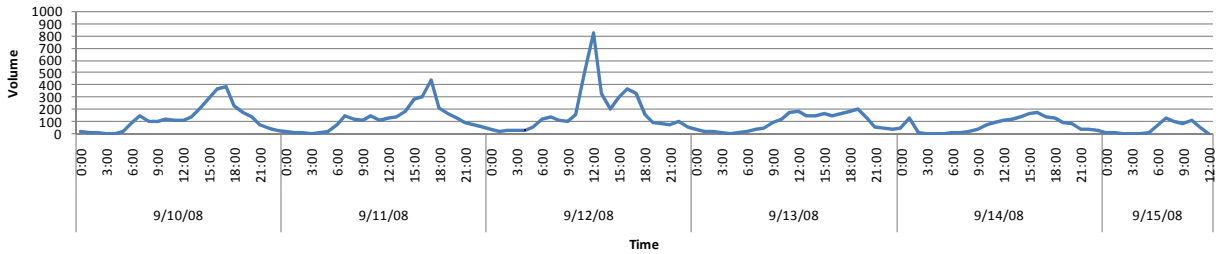
33054572 - Rt 695 Hiawatha Blvd. (under)



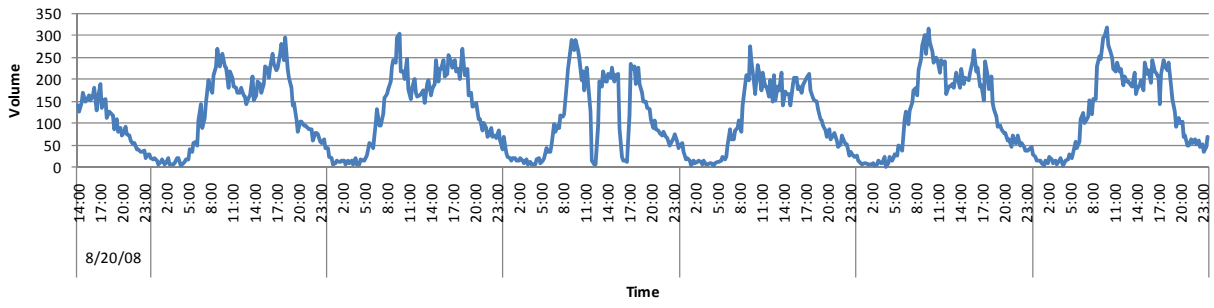
33054572 - Rt 695 Hiawatha Blvd. (under)



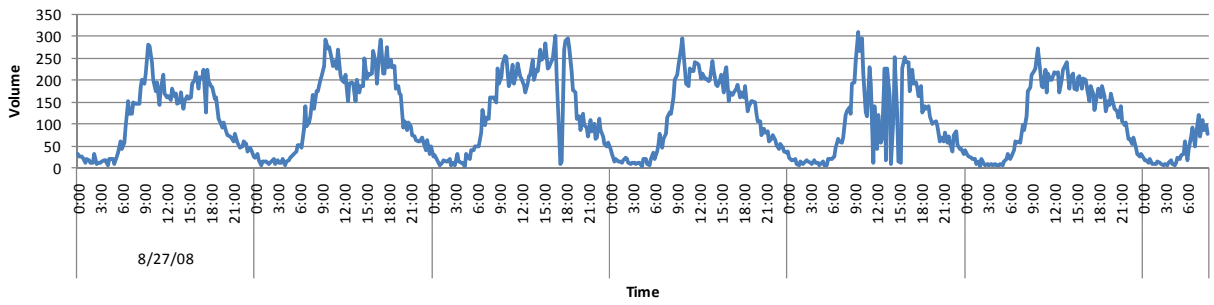
33054572 - Rt 695 Hiawatha Blvd. (under)

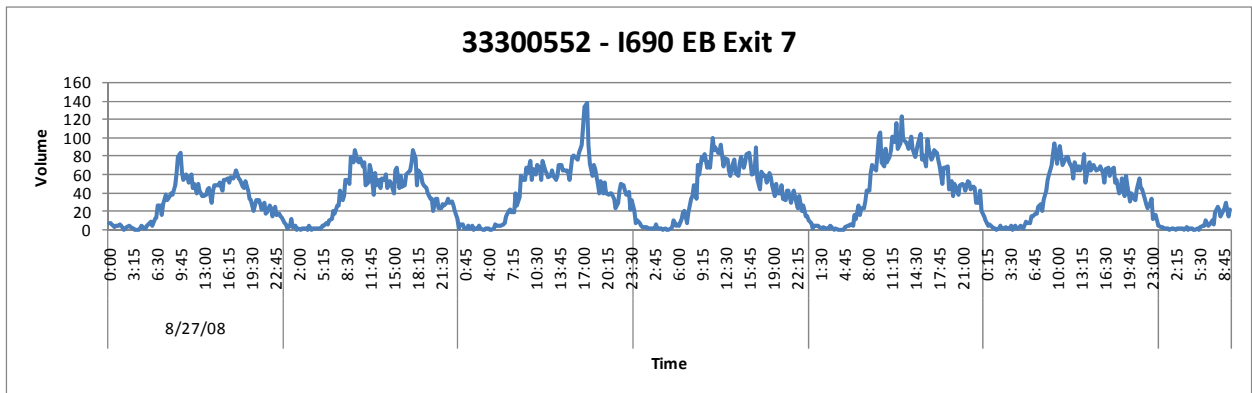
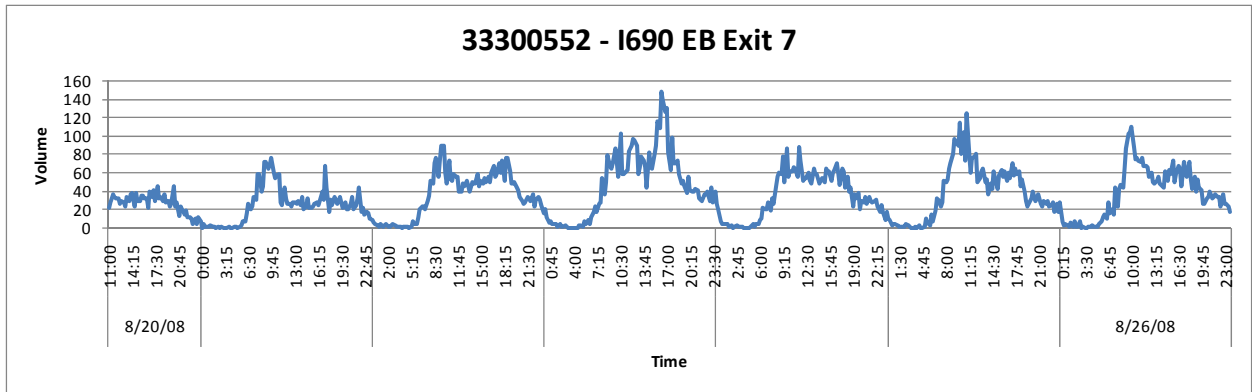
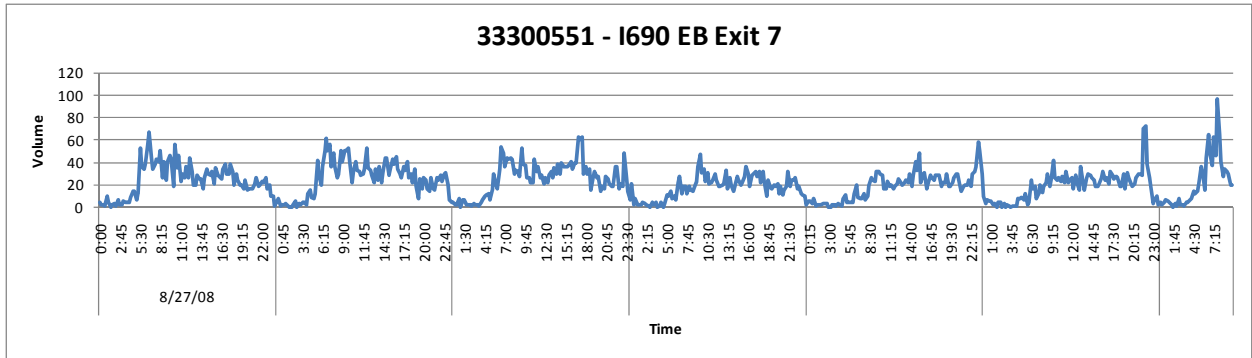
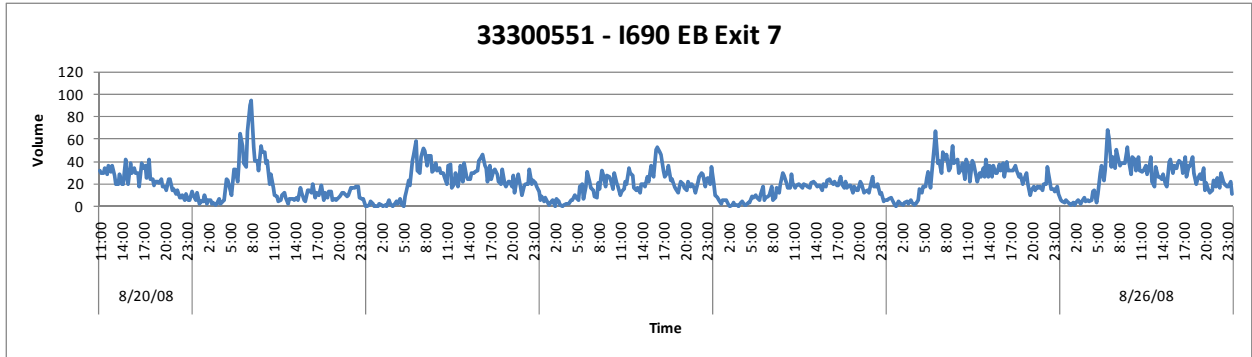


33300450 - I690 WB State Fair Blvd.

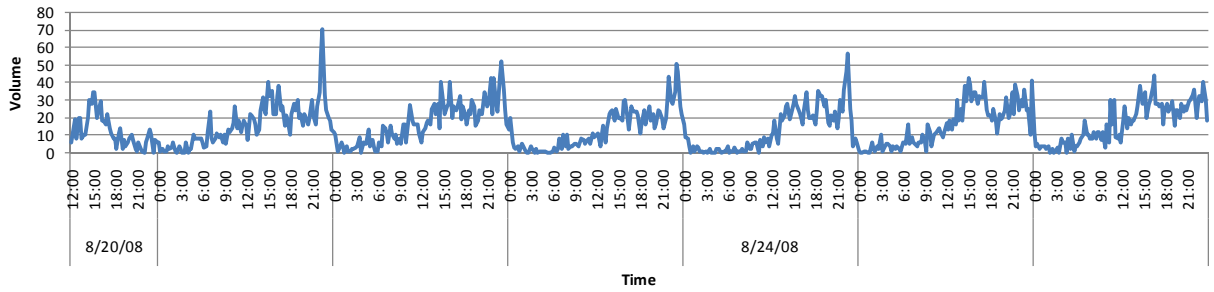


33300450 - I690 WB State Fair Blvd.

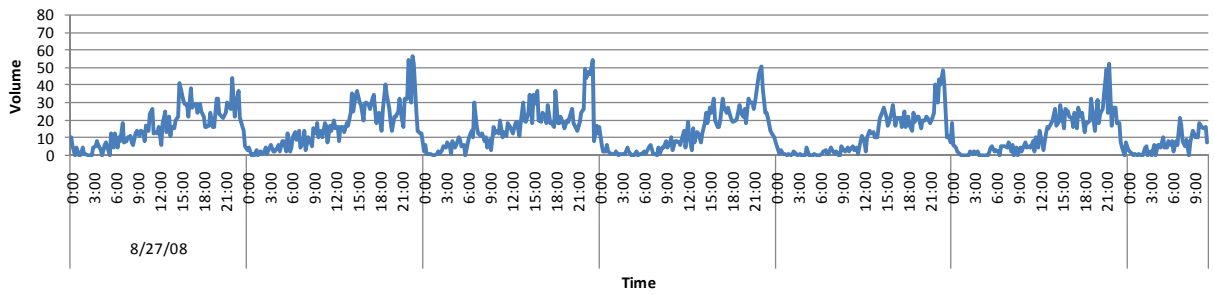




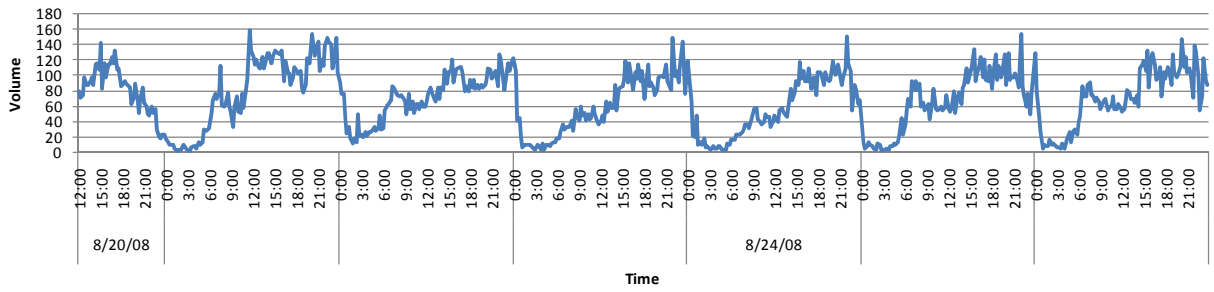
33300631 - Bridge St. I690 EB



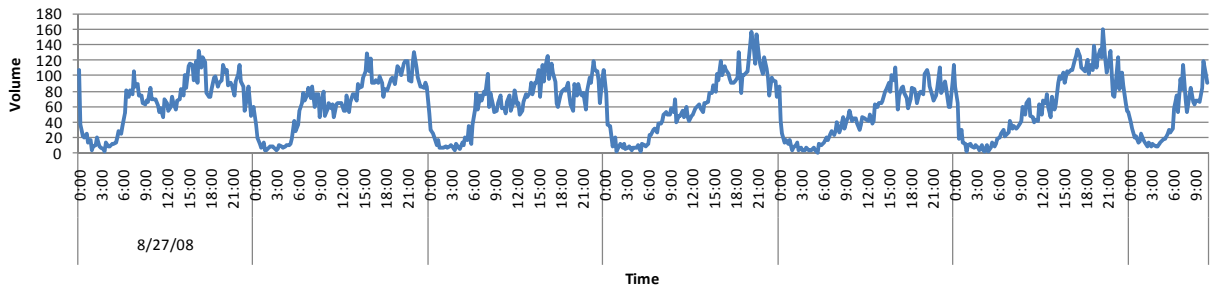
33300631 - Bridge St. I690 EB



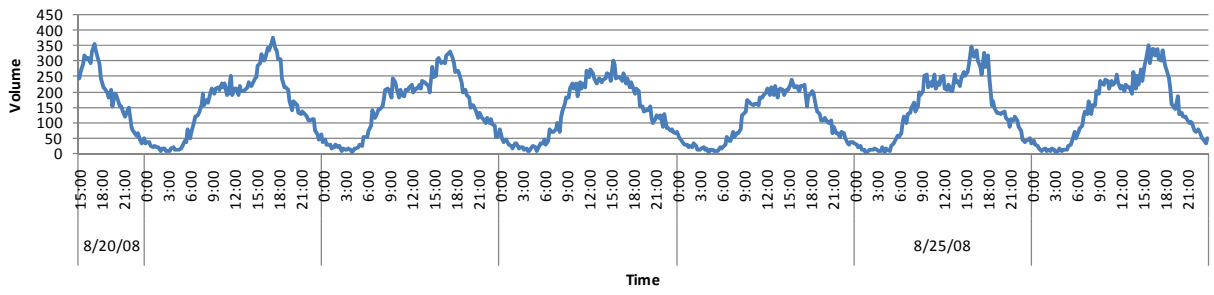
33300632 - Bridge St. I690 EB



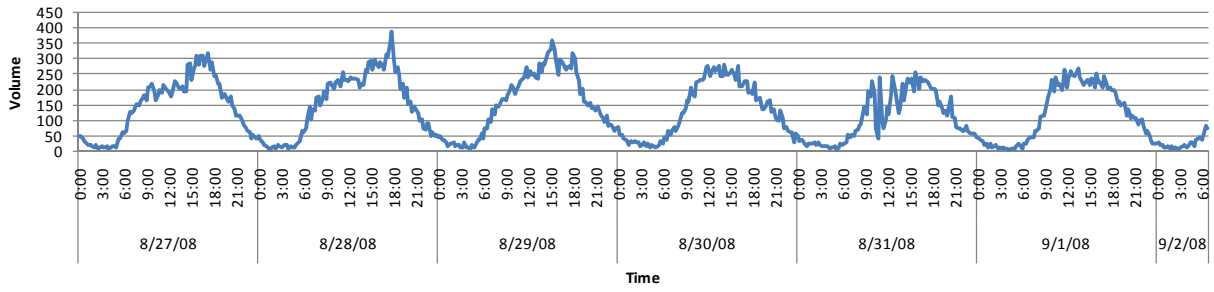
33300632 - Bridge St. I690 EB

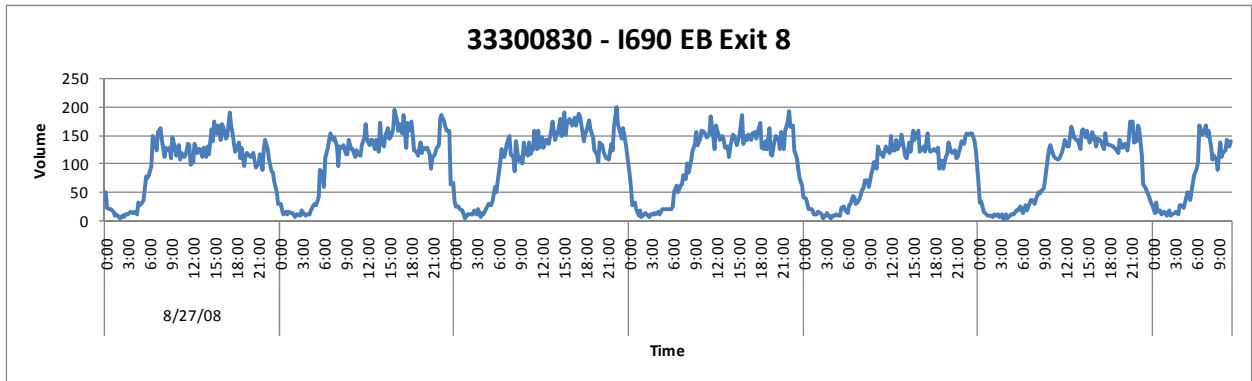
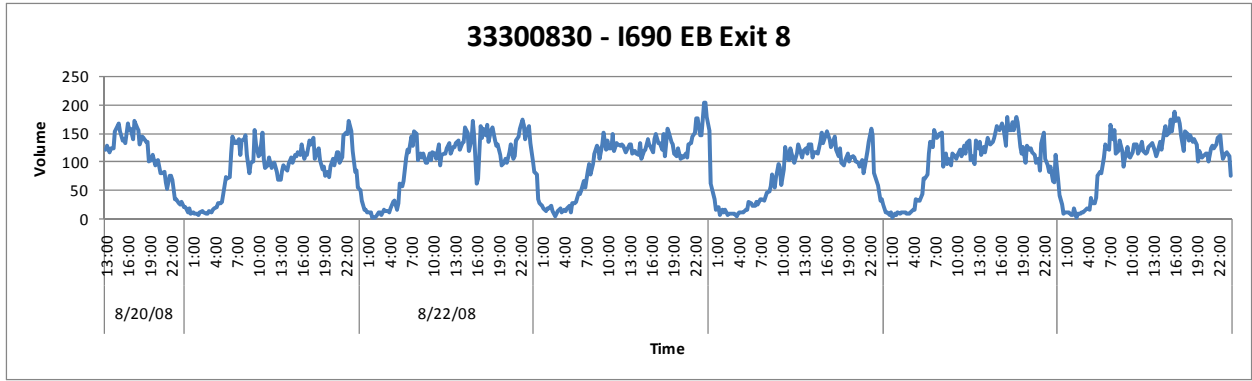


33300770 - NY 298 I690 WB

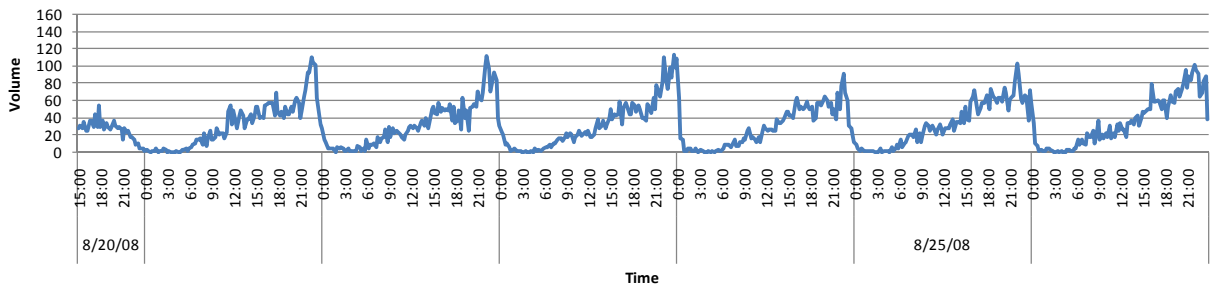


33300770 - NY 298 I690 WB

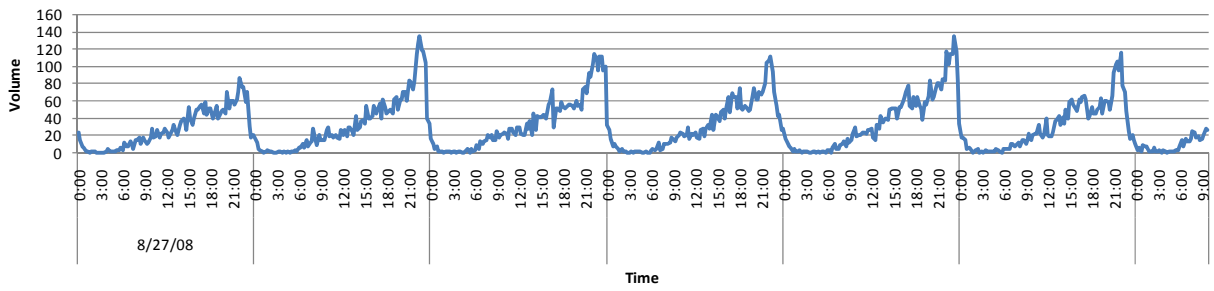


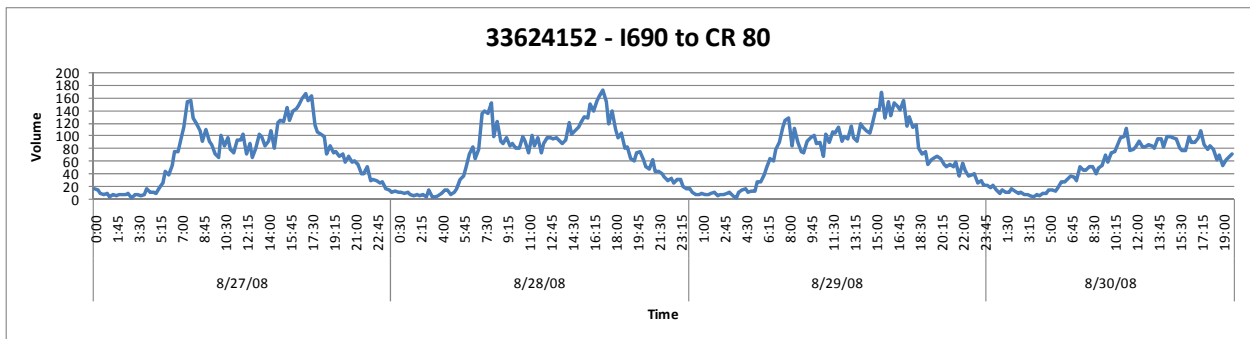
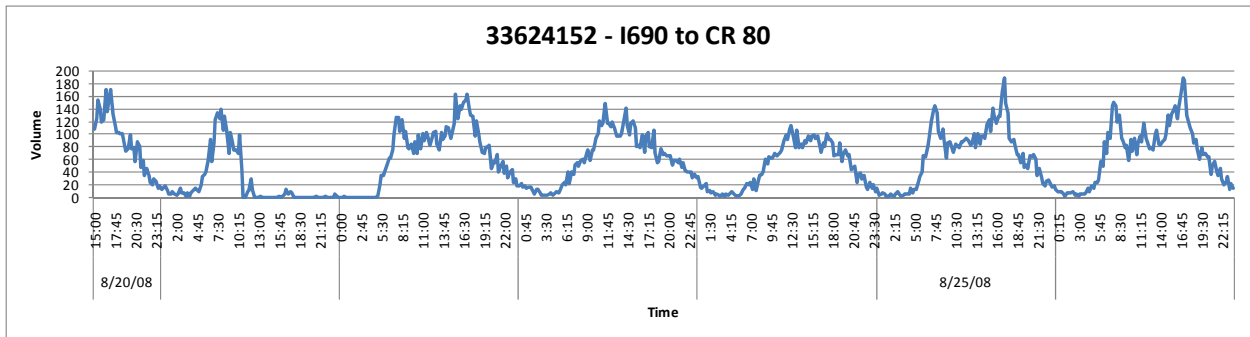
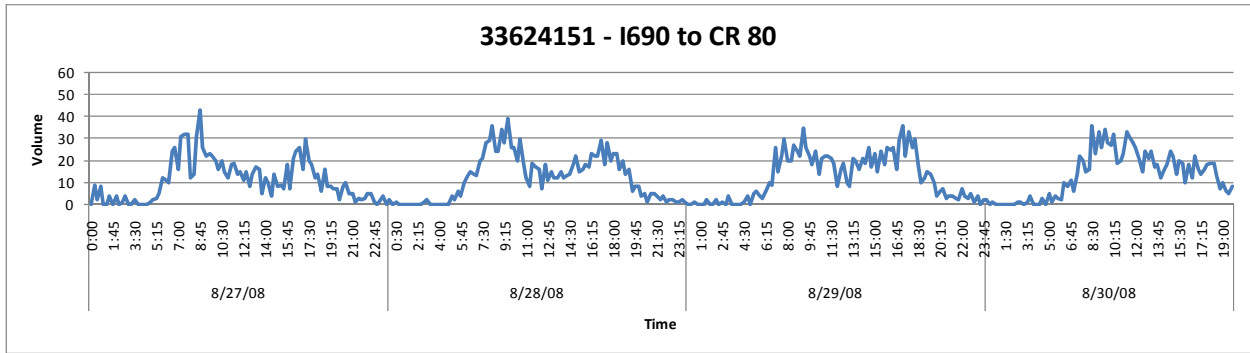
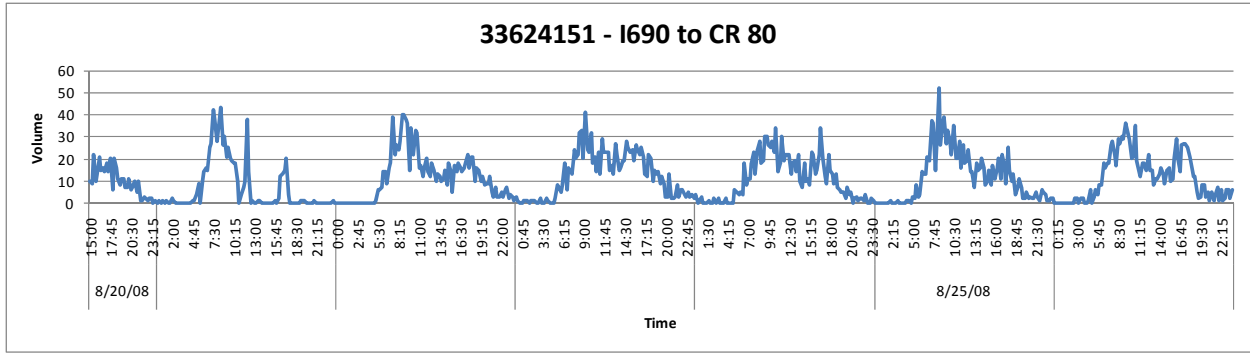


33300950 - I690 EB Ramp from State Fair Blvd. to I695 SB

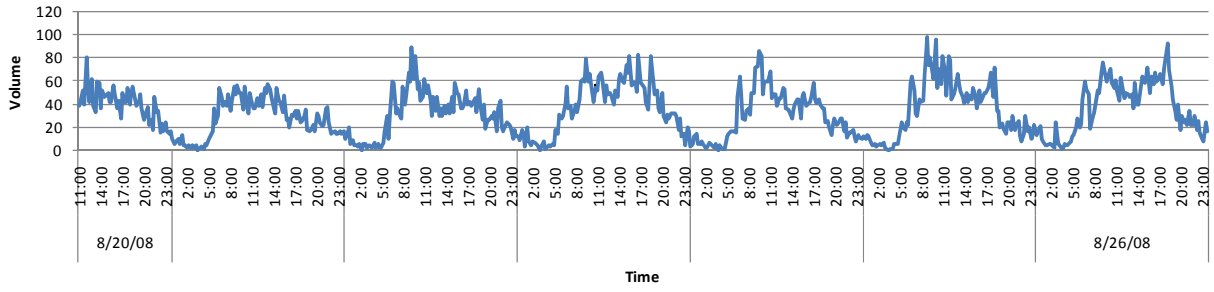


33300950 - I690 EB Ramp from State Fair Blvd. to I695 SB

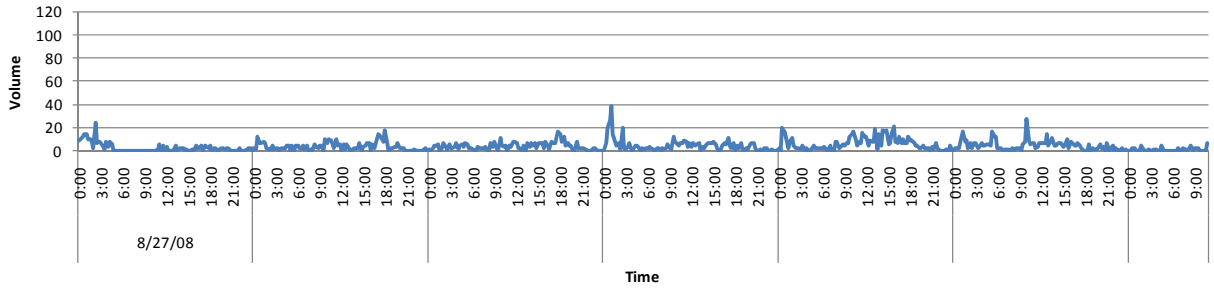




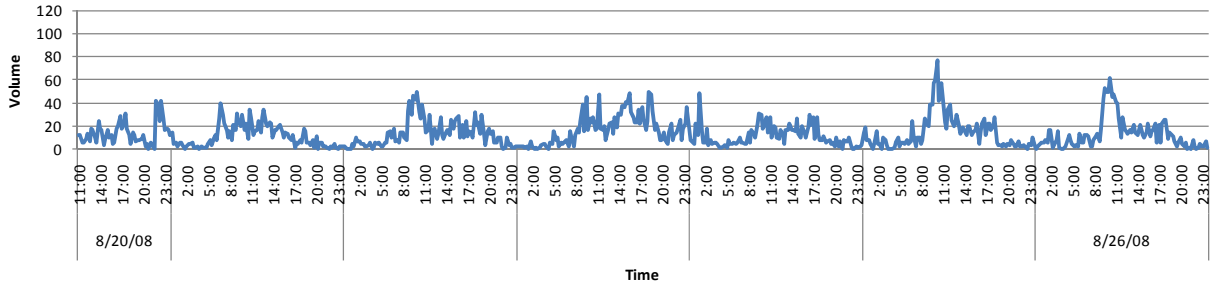
33931011 - State Fair Blvd. Gate 7



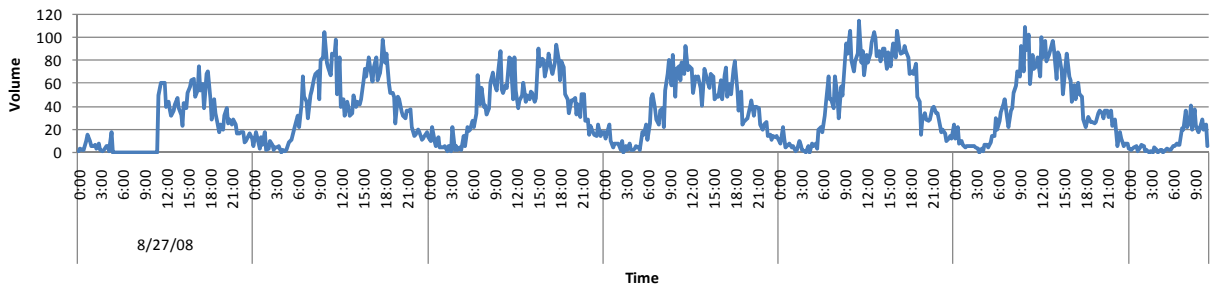
33931011 - State Fair Blvd. Gate 7



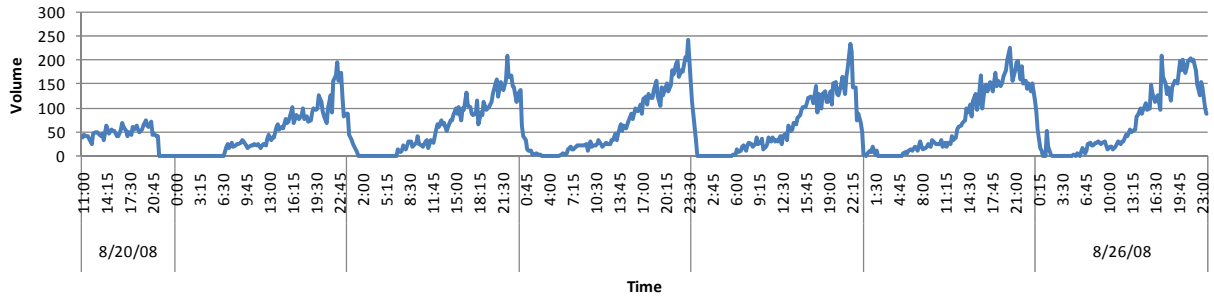
33931051 - State Fair Blvd. Gate 7



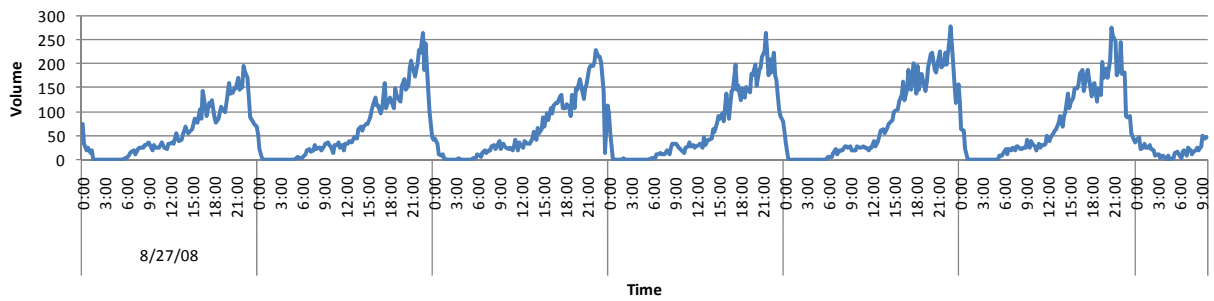
33931051 - State Fair Blvd. Gate 7



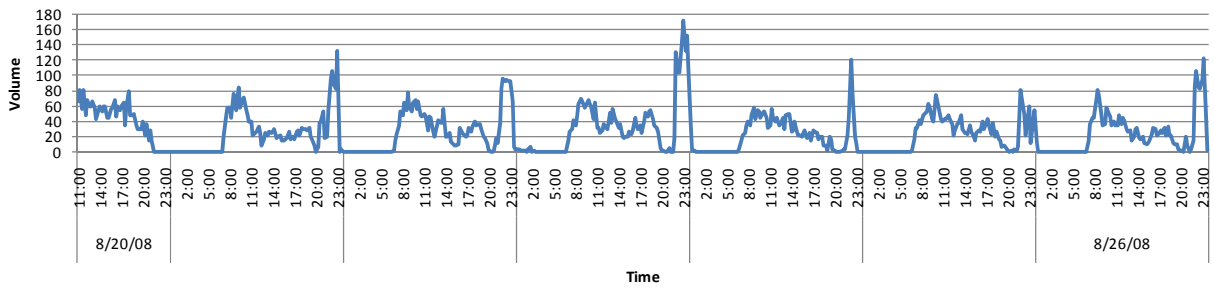
33931111 - State Fair Blvd. Gate 6



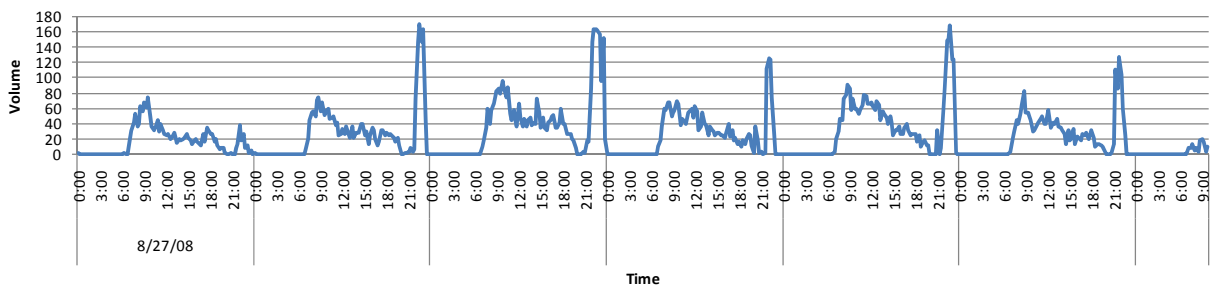
33931111 - State Fair Blvd. Gate 6

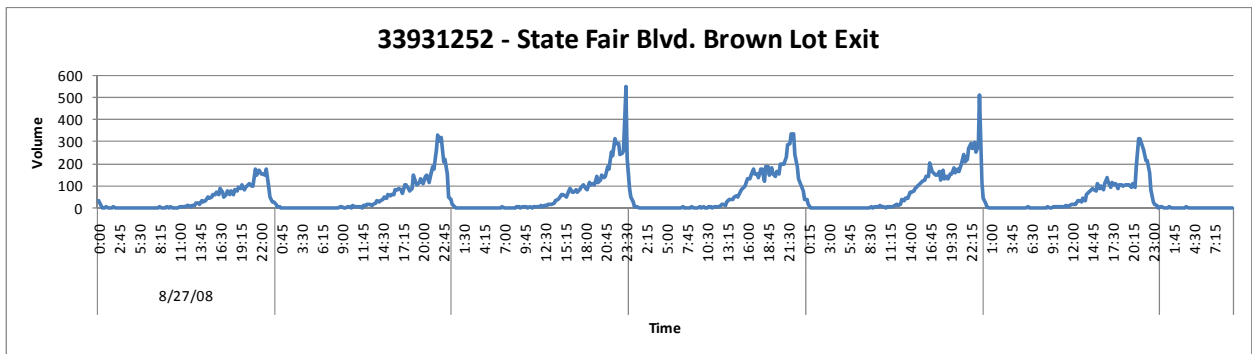
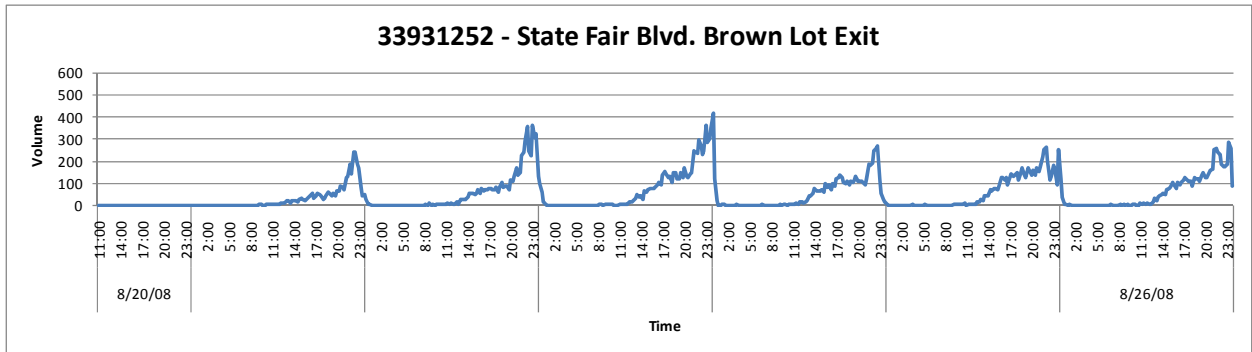
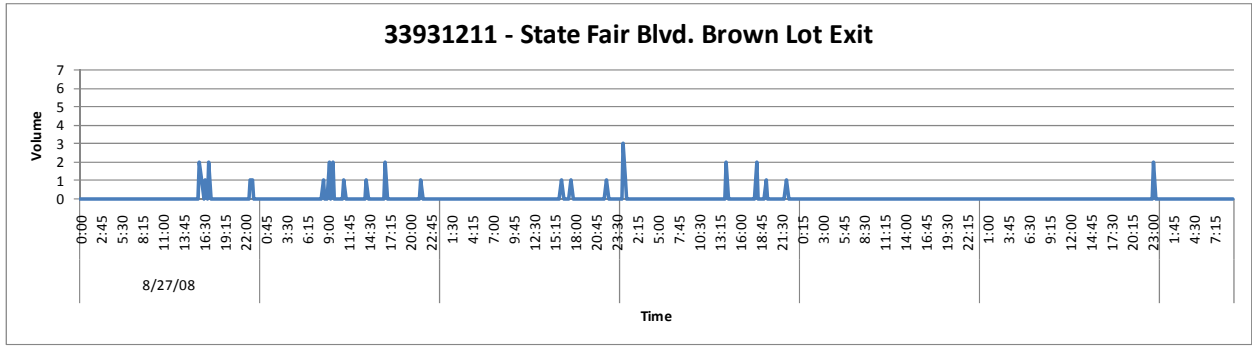
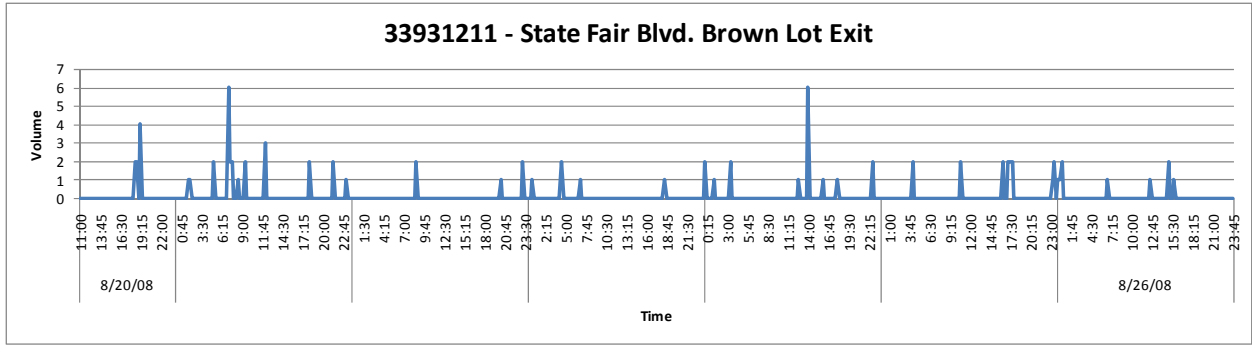


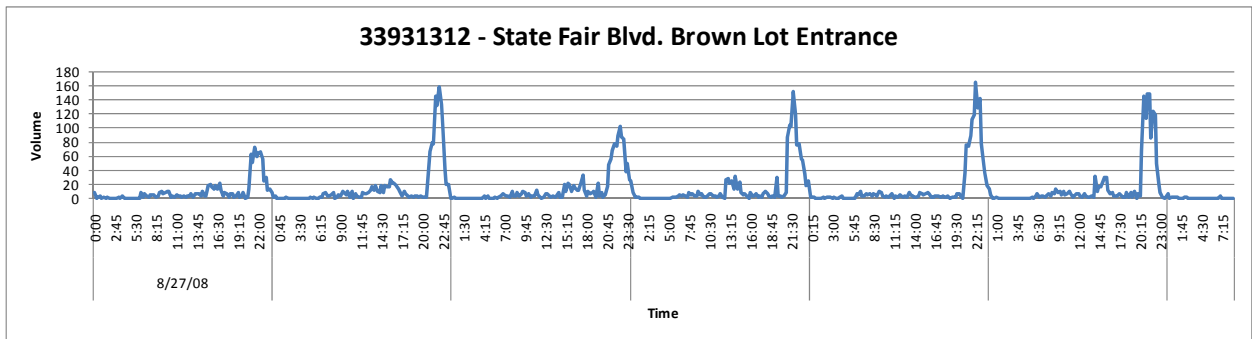
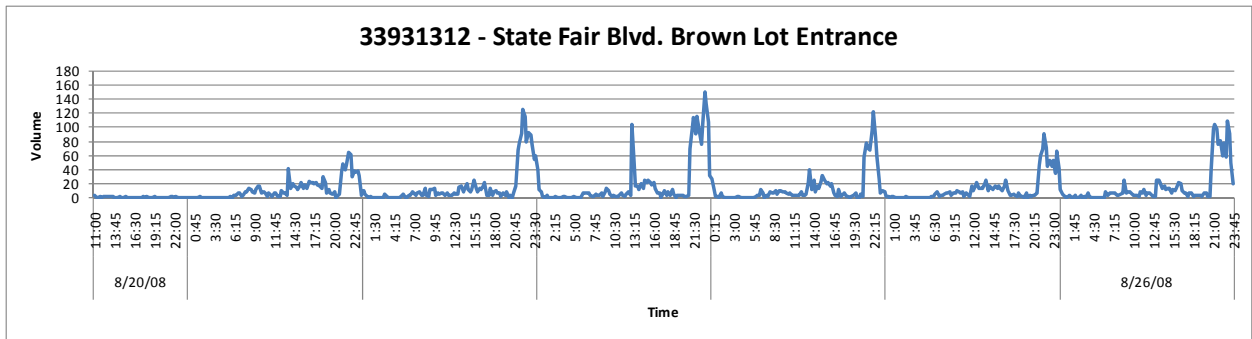
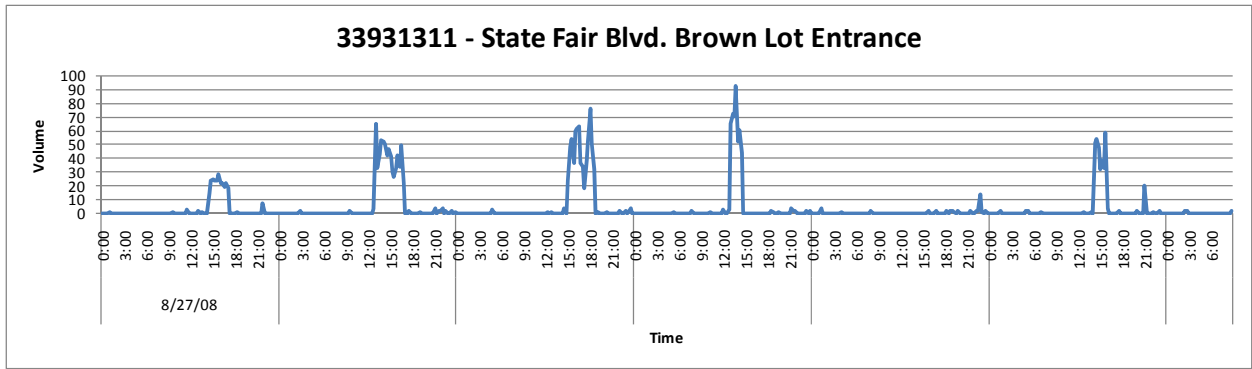
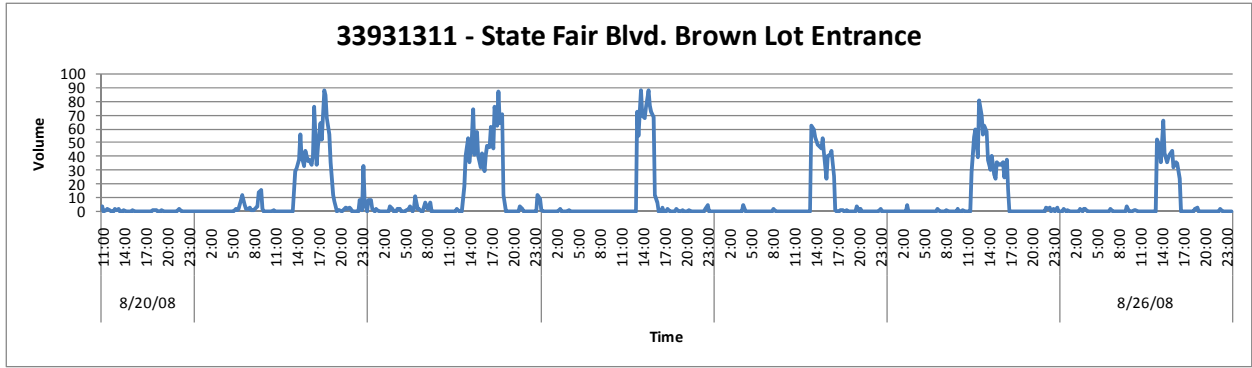
33931152 - State Fair Blvd. Gate 6



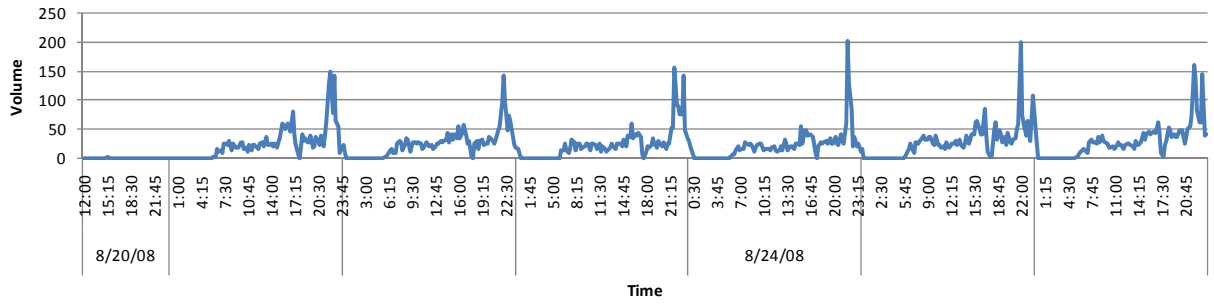
33931152 - State Fair Blvd. Gate 6



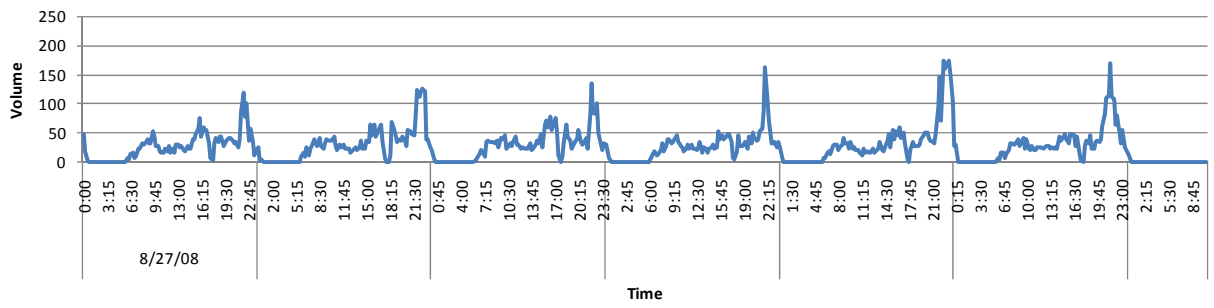




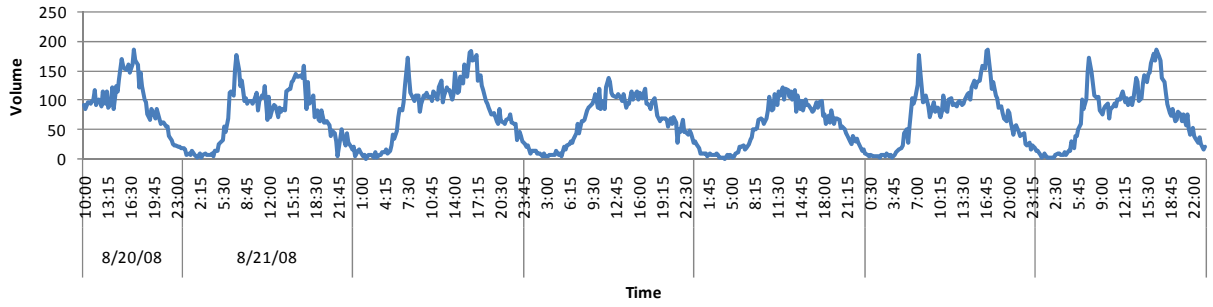
33931550 - I690 Brown Lot Entrance



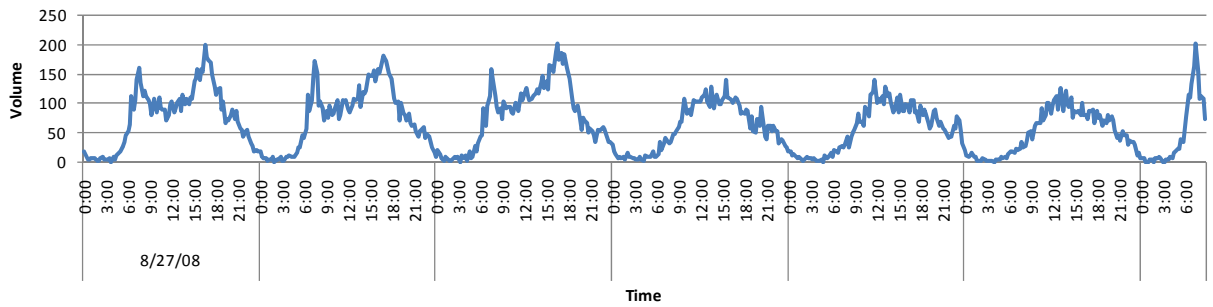
33931550 - I690 Brown Lot Entrance



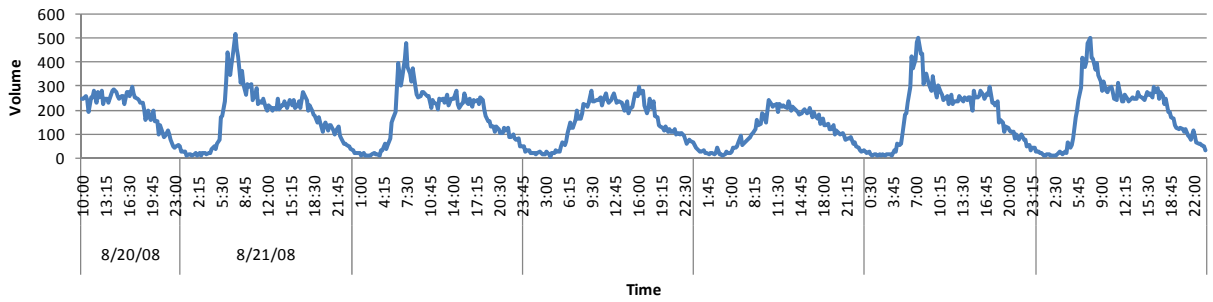
33931611 - Gerelock Rd. Exit 7



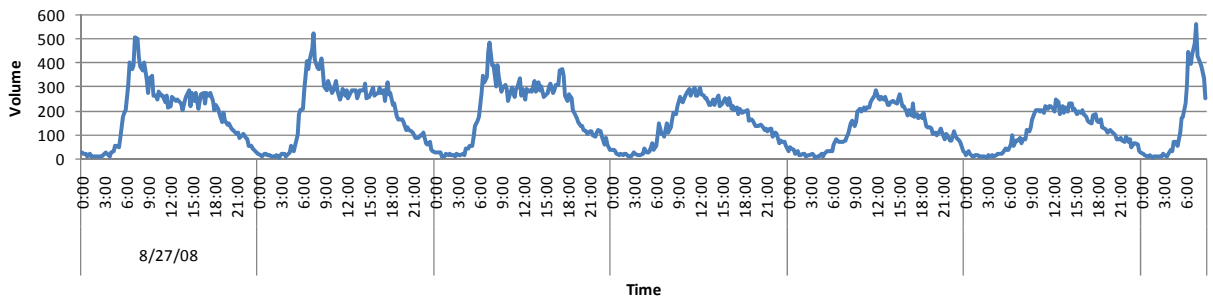
33931611 - Gerelock Rd. Exit 7

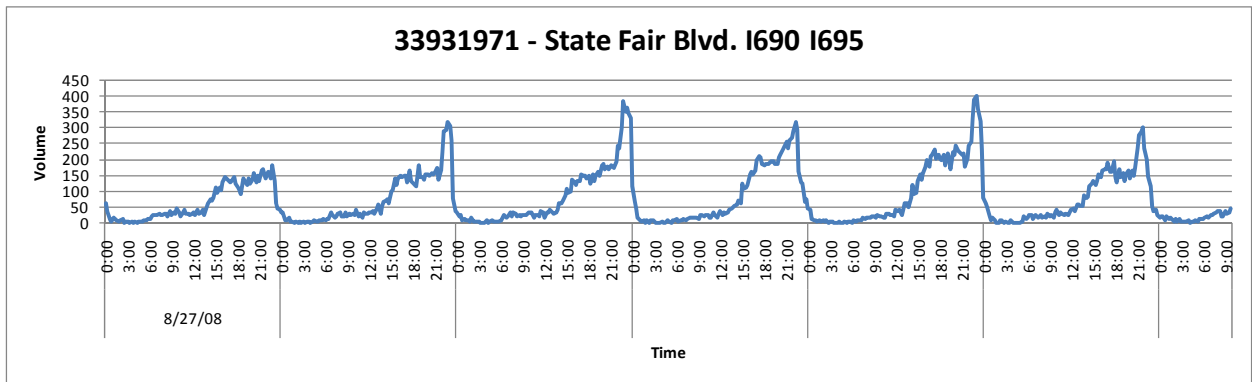
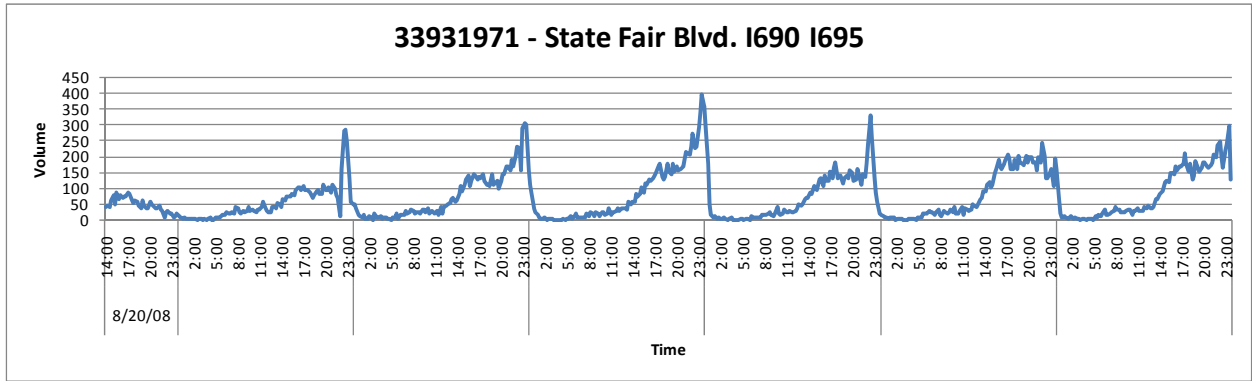
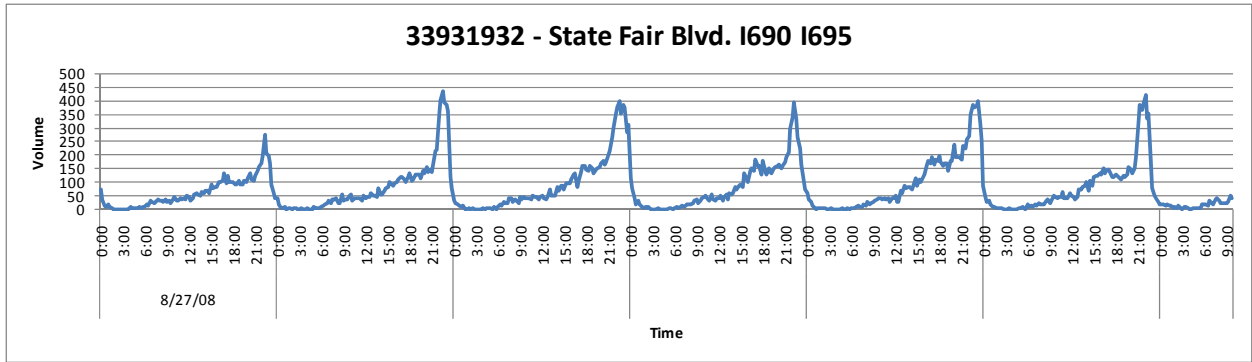
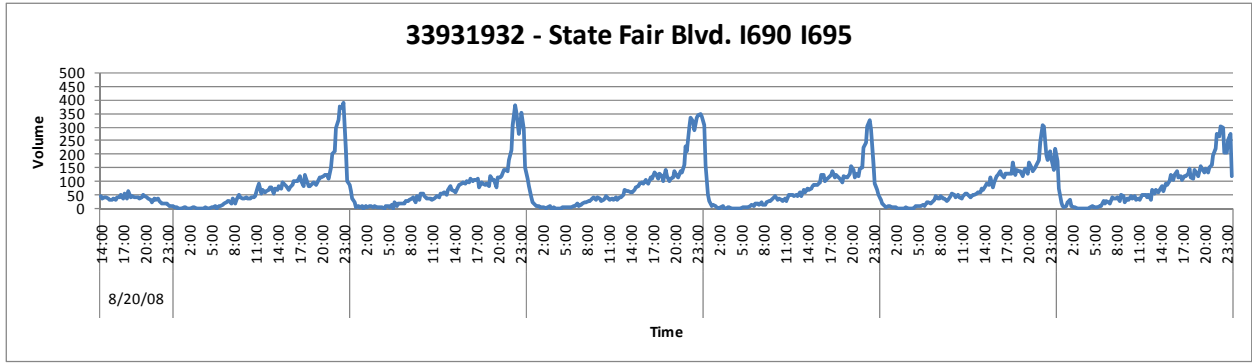


33931612 - Gerelock Rd. Exit 7

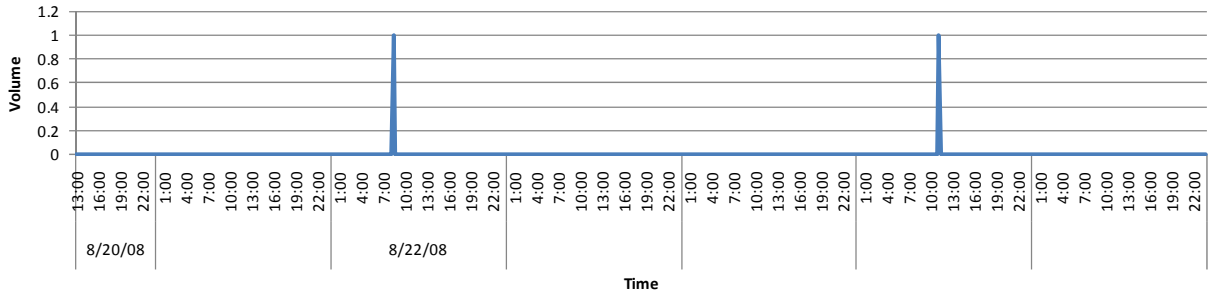


33931612 - Gerelock Rd. Exit 7

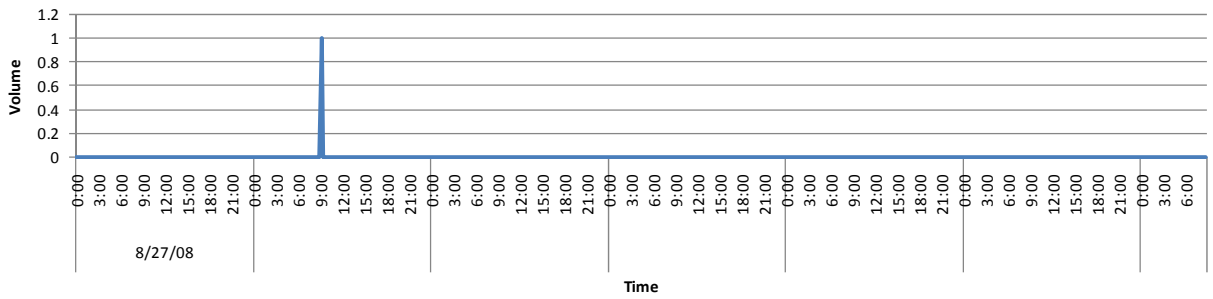




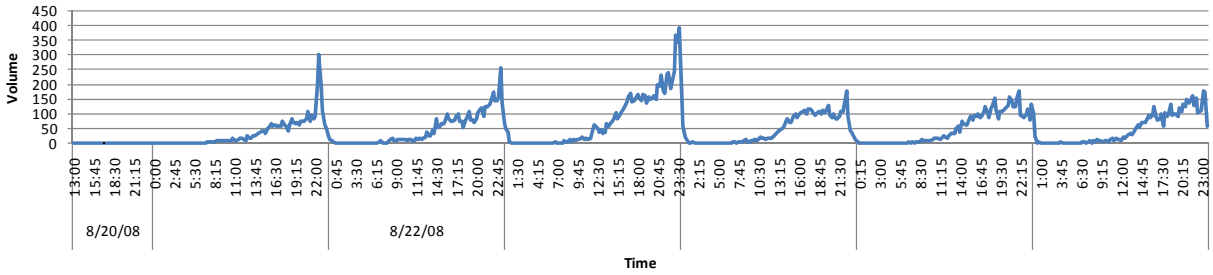
33932030 - Orange Lot Exit I690



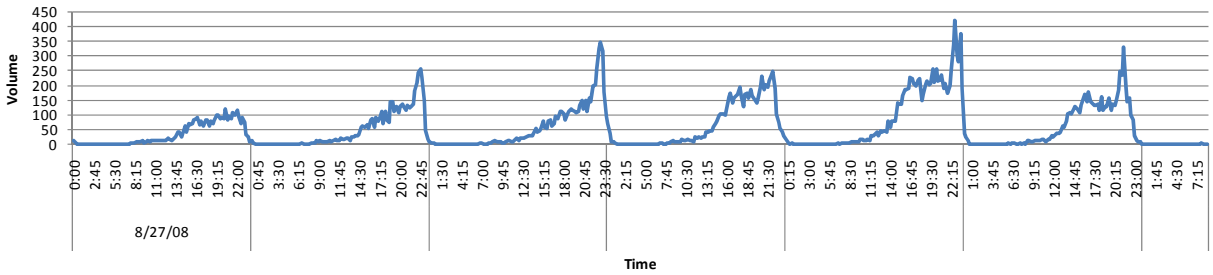
33932030 - Orange Lot Exit I690



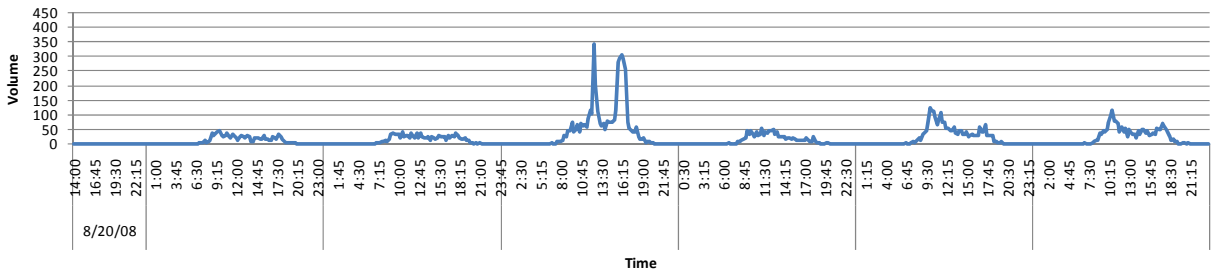
33932070 - Orange Lot Exit I690



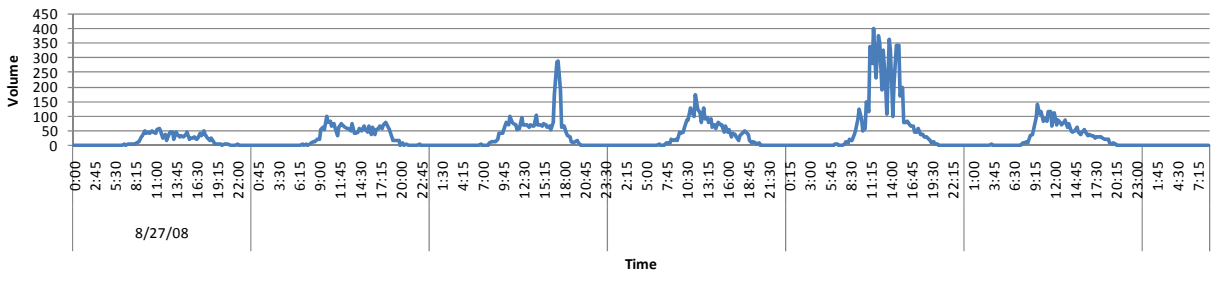
33932070 - Orange Lot Exit I690



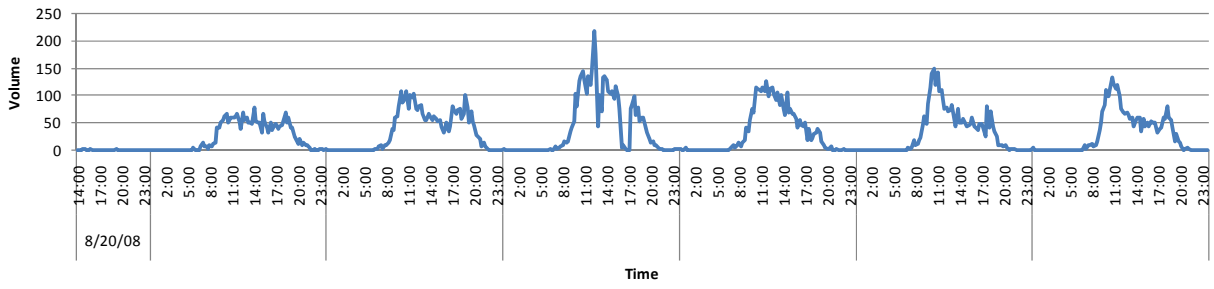
33932110 - Orange Lot Entrance I695



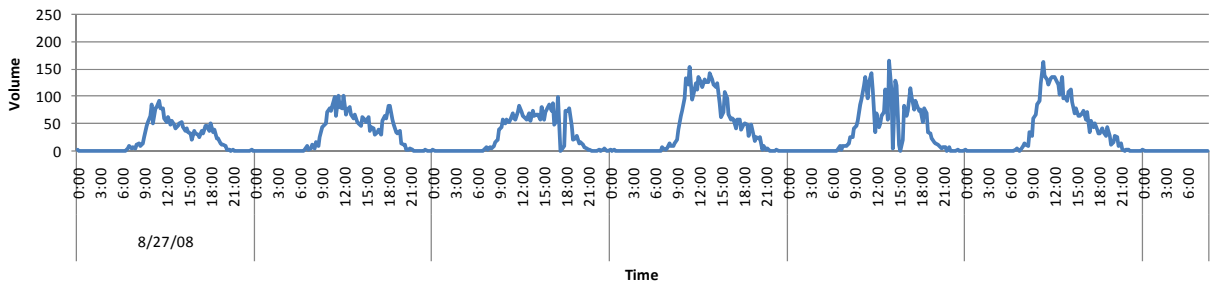
33932110 - Orange Lot Entrance I695



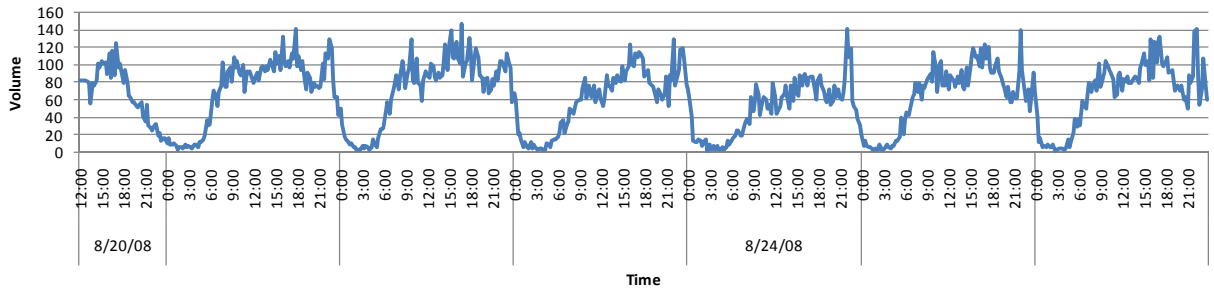
33932270 - Orange Lot Entrance Exit 7 WB



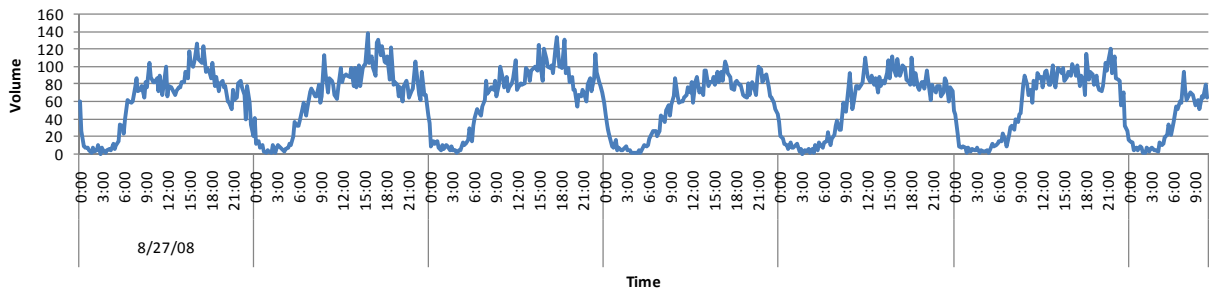
33932270 - Orange Lot Entrance Exit 7 WB



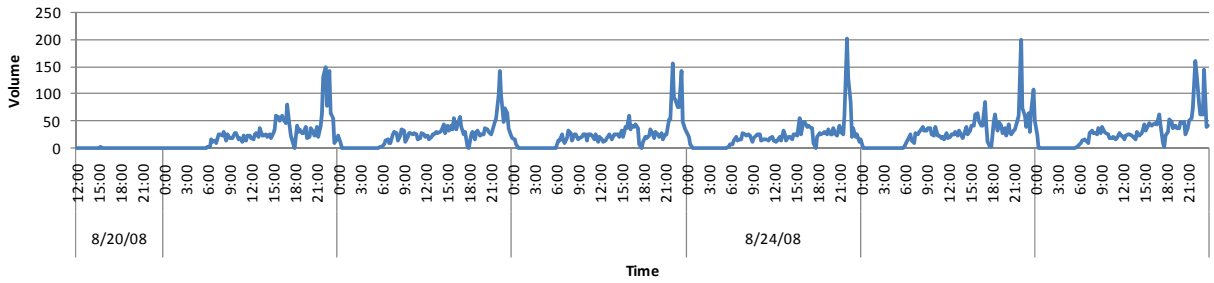
33932411 - State Fair Blvd. Gate 12



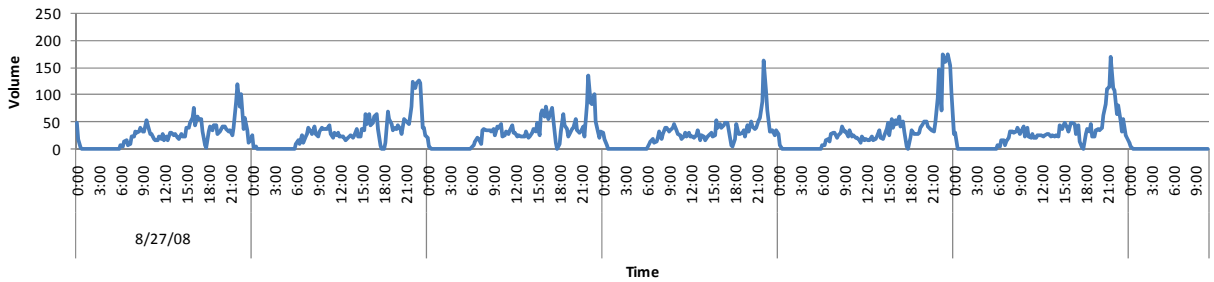
33932411 - State Fair Blvd. Gate 12



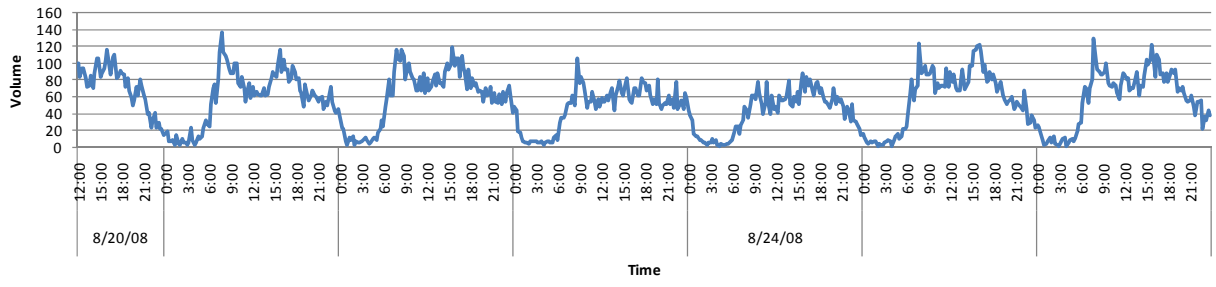
33932430 - State Fair Blvd. Gate 12



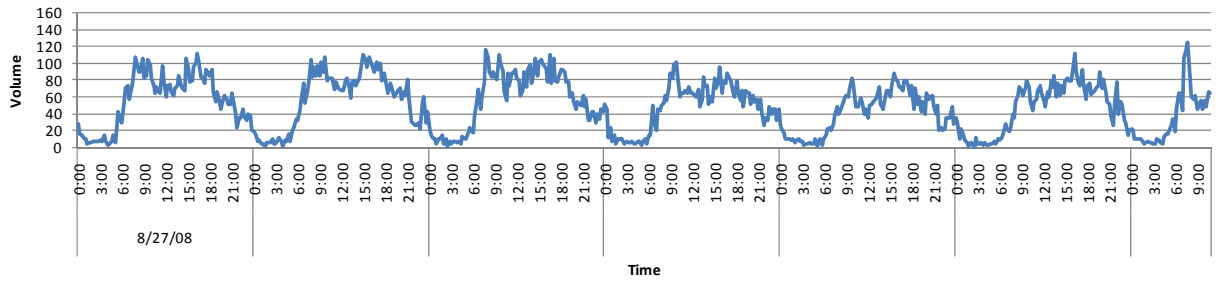
33932430 - State Fair Blvd. Gate 12



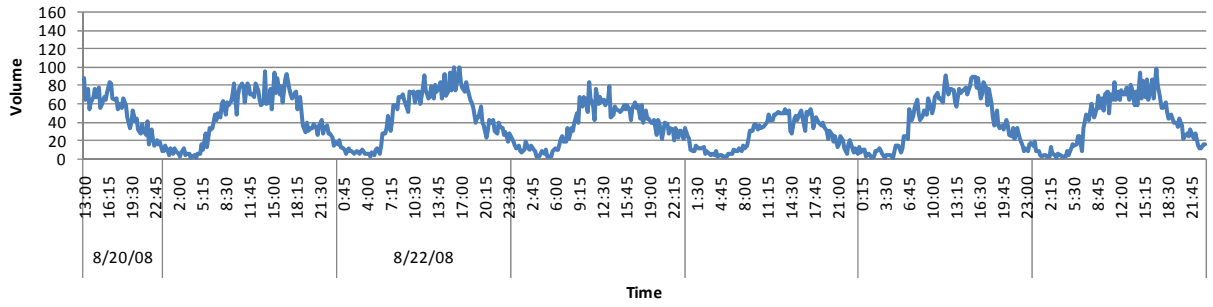
33932451 - State Fair Blvd. Gate 12



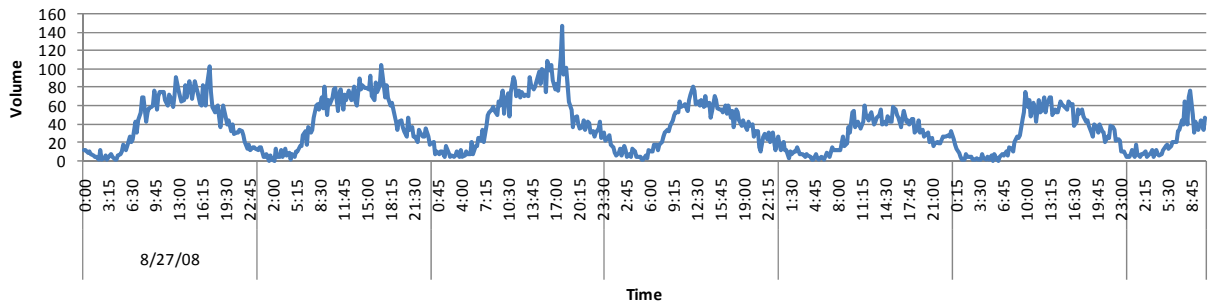
33932451 - State Fair Blvd. Gate 12



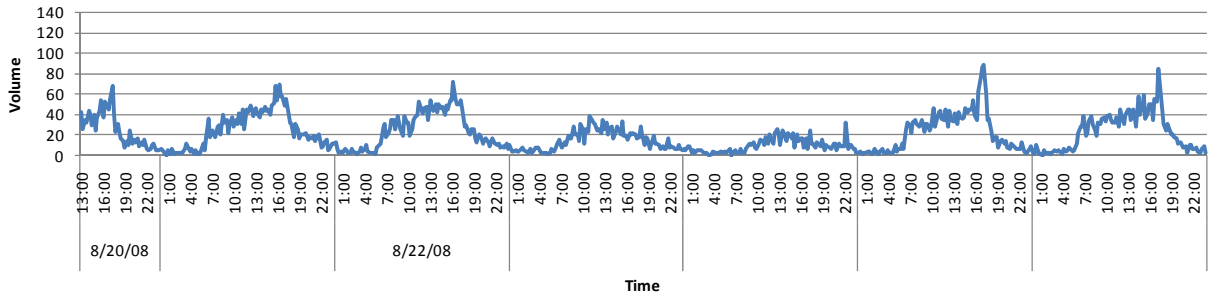
33932531 - Spencer St.



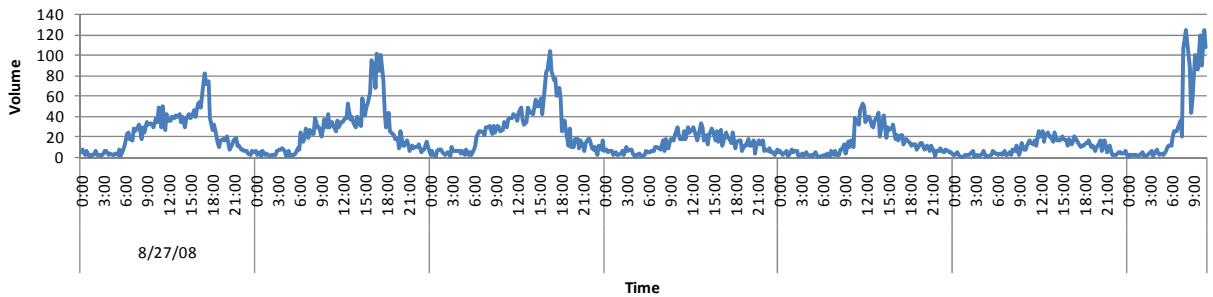
33932531 - Spencer St.



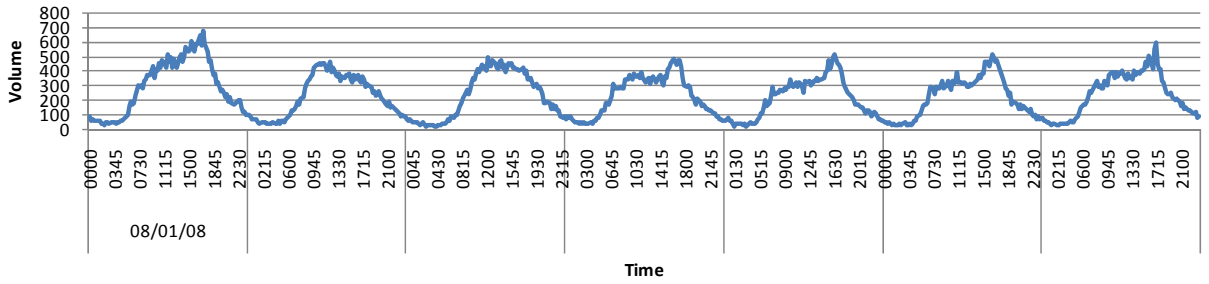
33932571 - Spencer St.



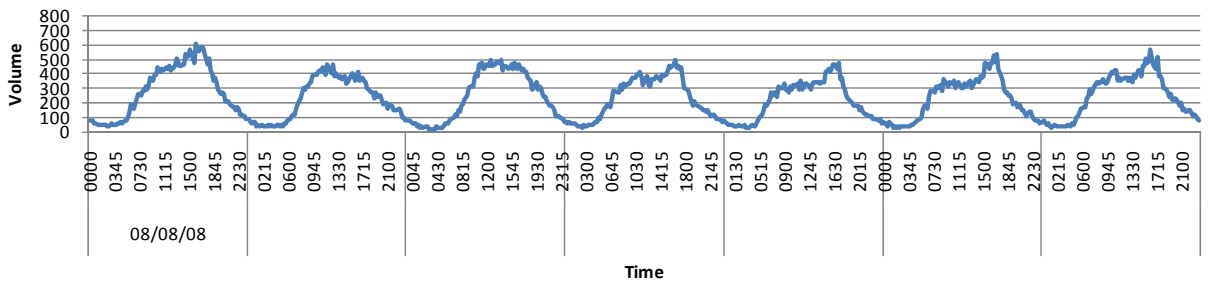
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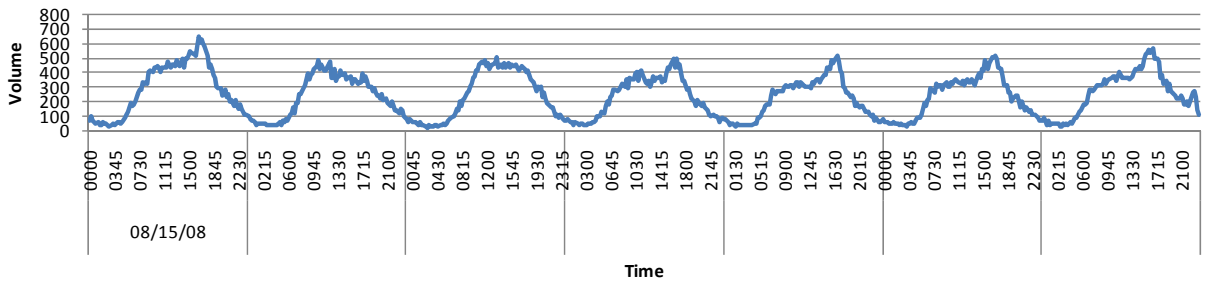
M2733E - 34A to 34 Eastbound



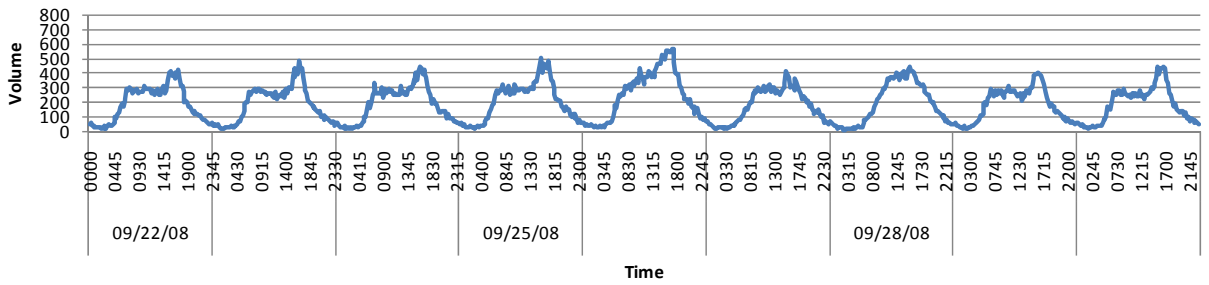
M2733E - 34A to 34 Eastbound



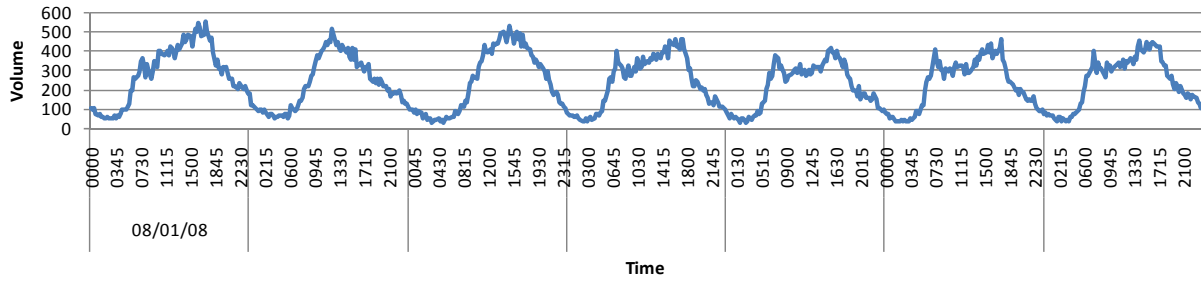
M2733E - 34A to 34 Eastbound



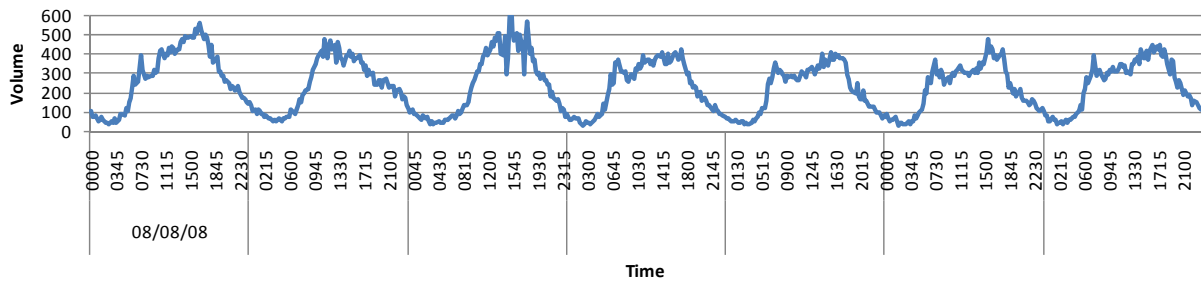
M2733E - 34A to 34 Eastbound



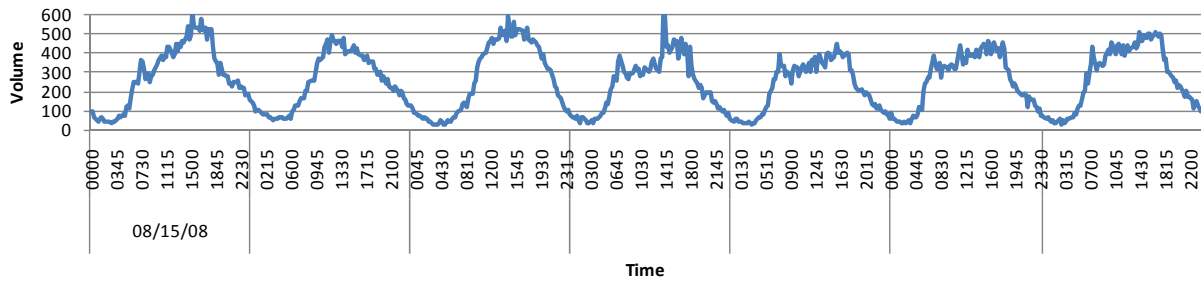
M2733W - 34 to 34A Westbound



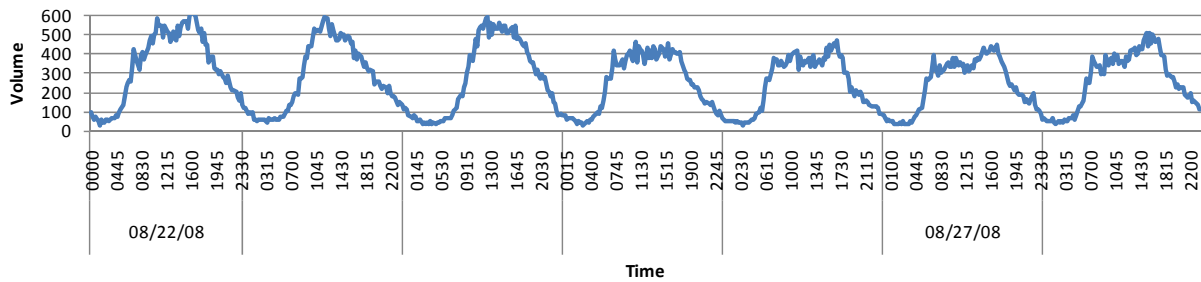
M2733W - 34 to 34A Westbound



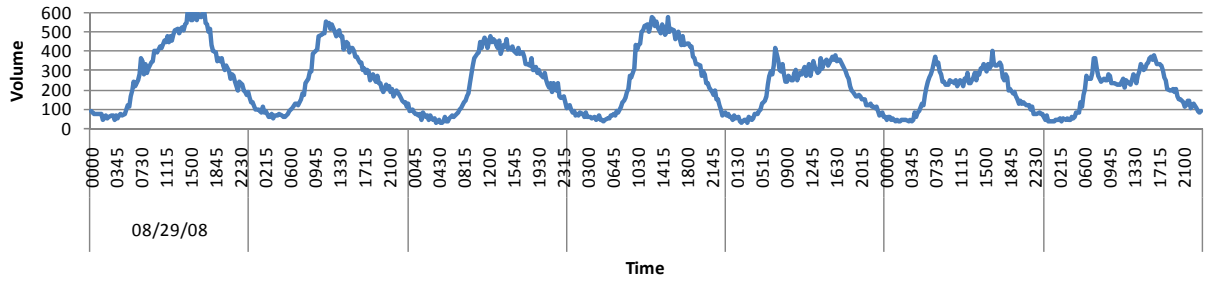
M2733W - 34 to 34A Westbound



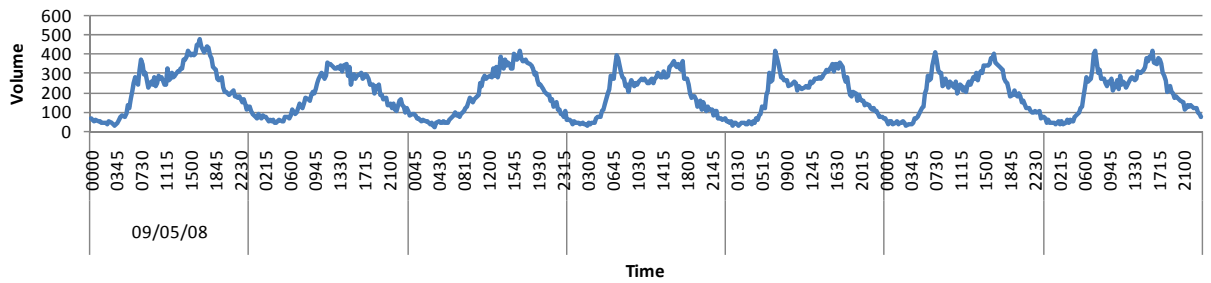
M2733W - 34 to 34A Westbound



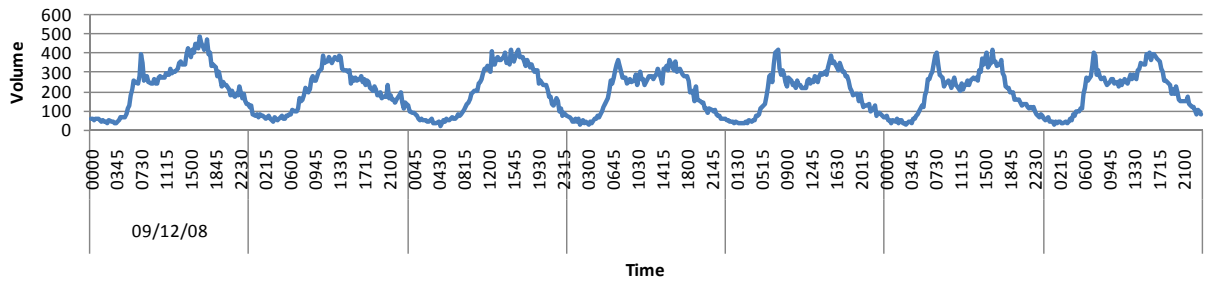
M2733W - 34 to 34A Westbound



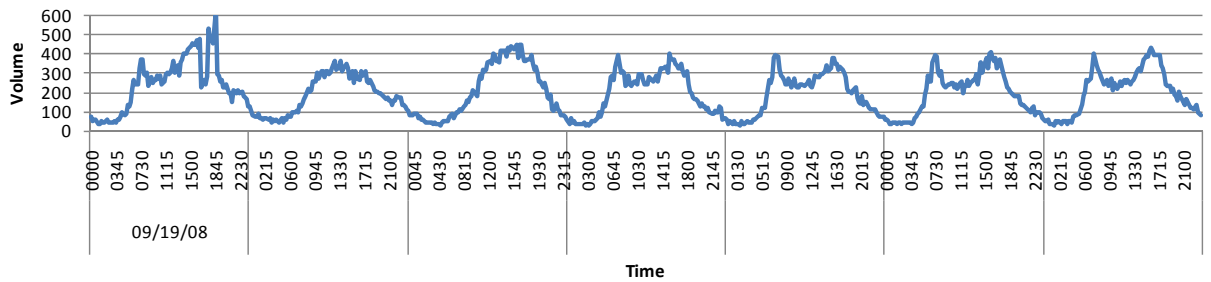
M2733W - 34 to 34A Westbound



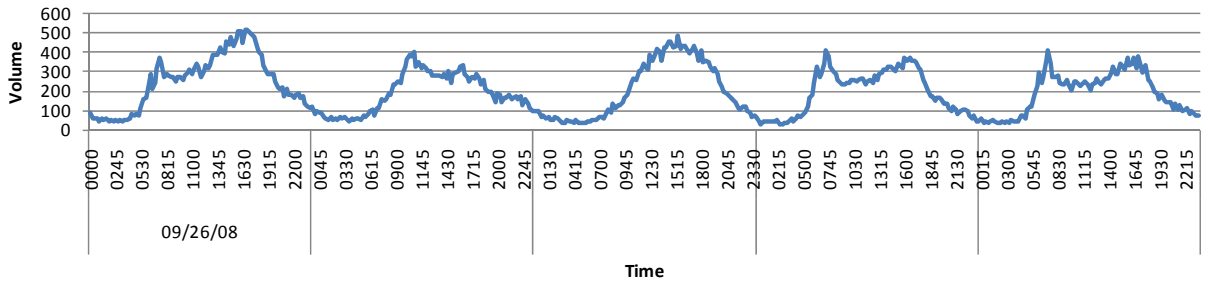
M2733W - 34 to 34A Westbound

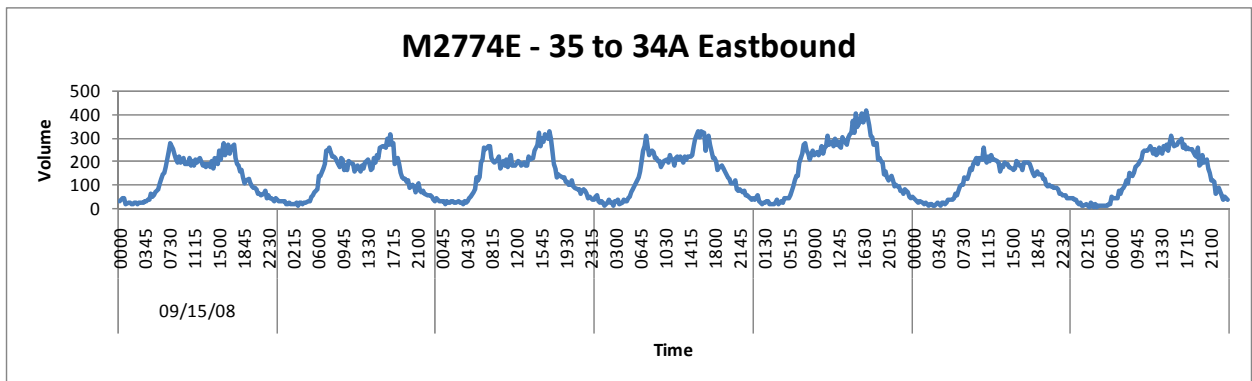
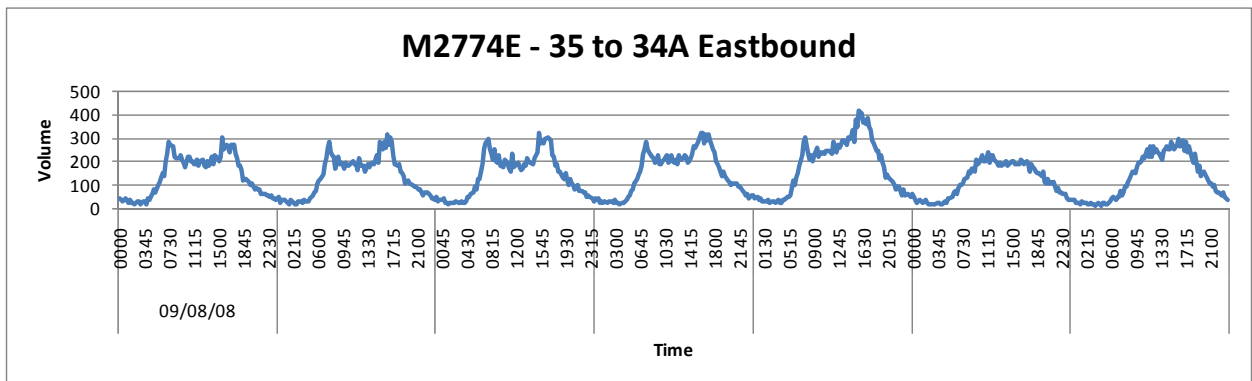
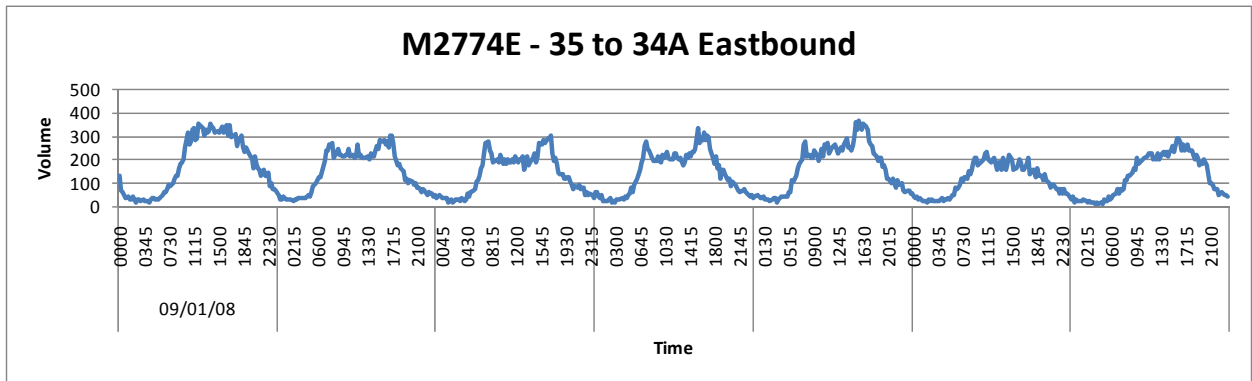
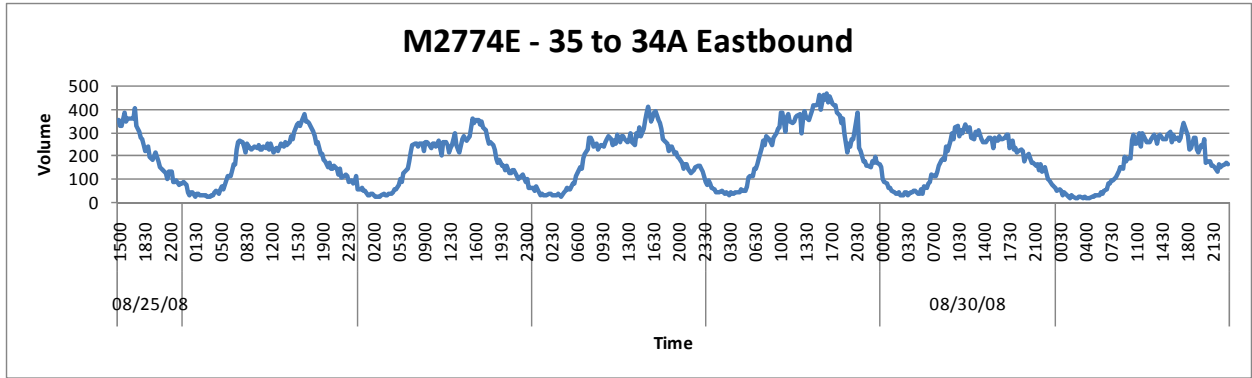


M2733W - 34 to 34A Westbound

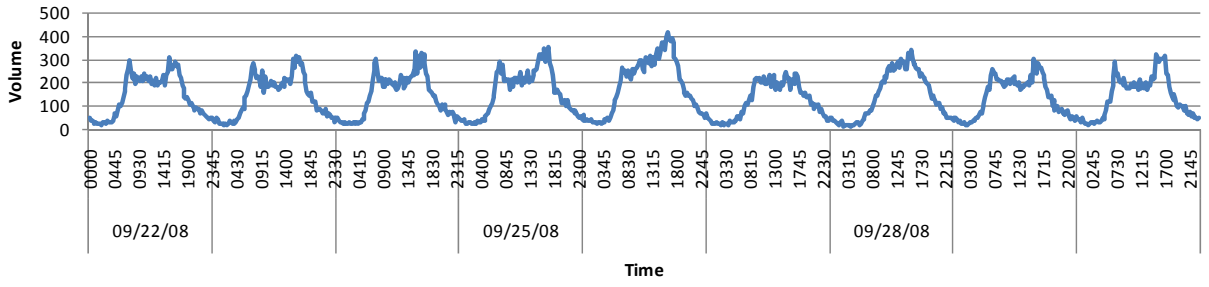


M2733W - 34 to 34A Westbound

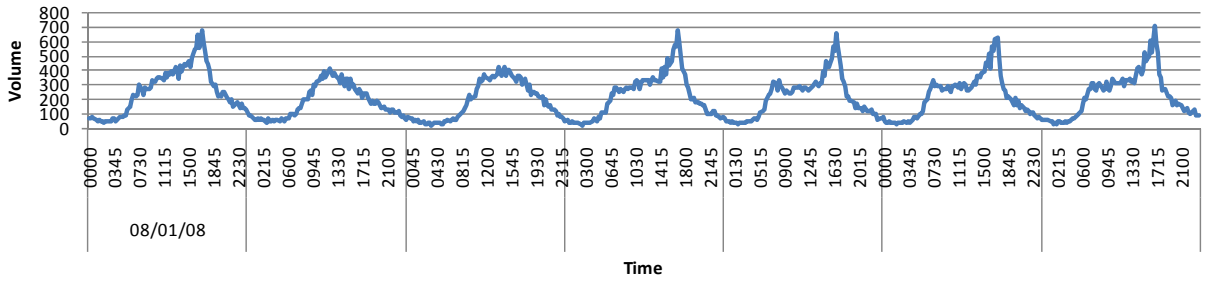




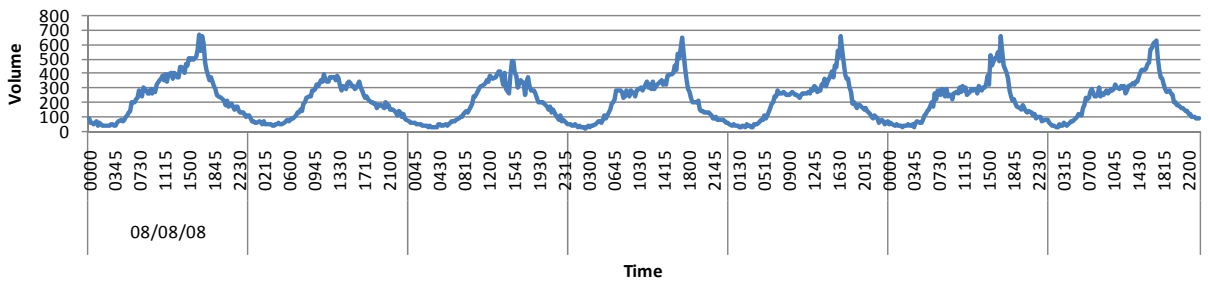
M2774E - 35 to 34A Eastbound



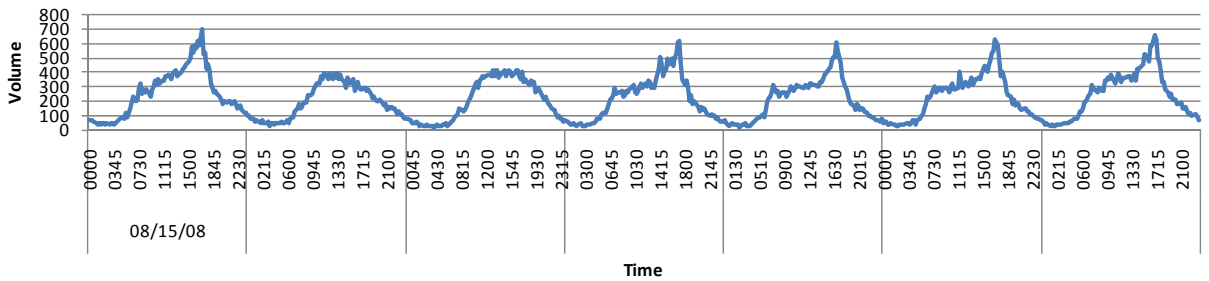
M2803W - 35 to 36 Westbound



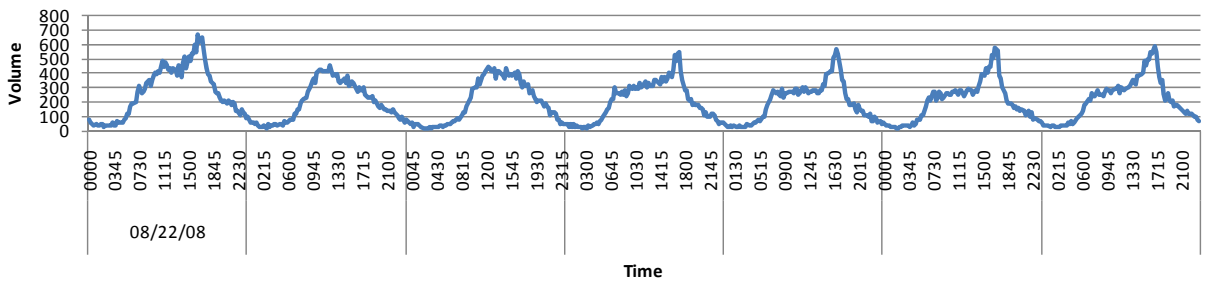
M2803W - 35 to 36 Westbound



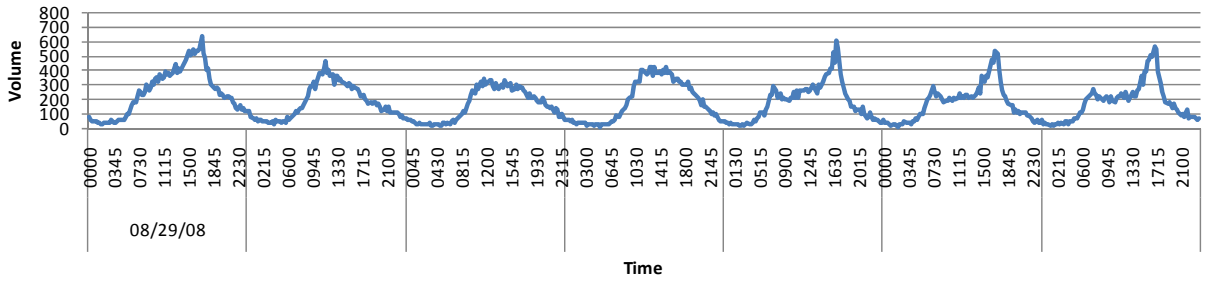
M2803W - 35 to 36 Westbound



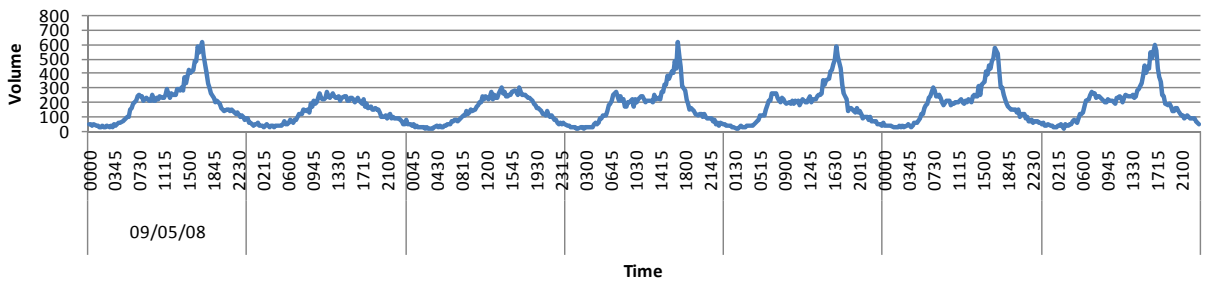
M2803W - 35 to 36 Westbound



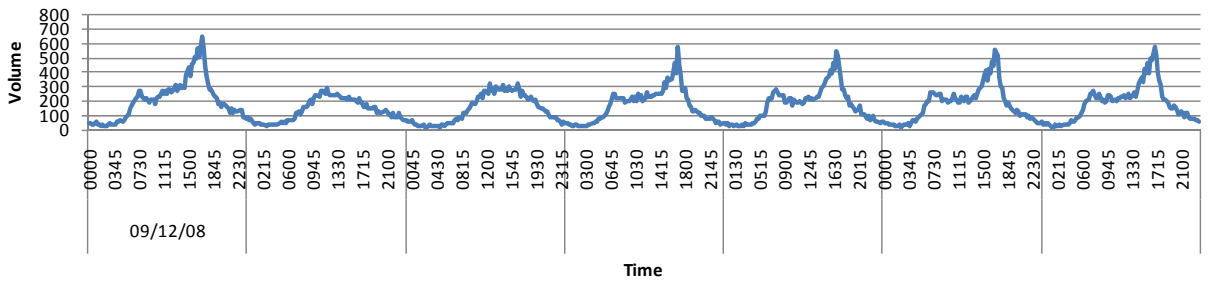
M2803W - 35 to 36 Westbound



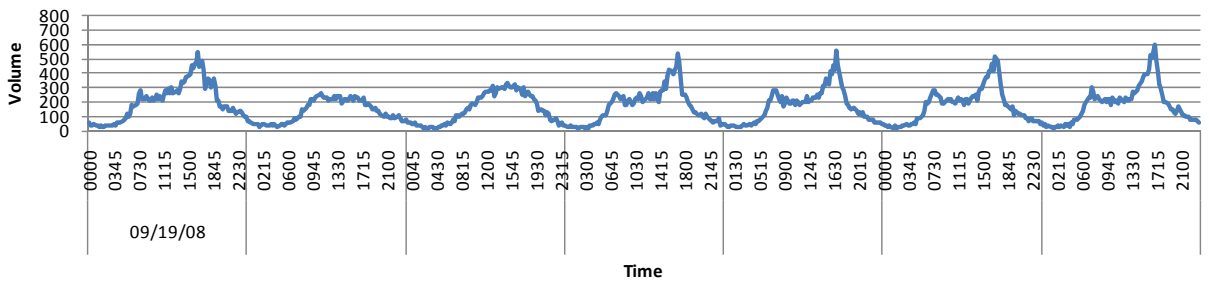
M2803W - 35 to 36 Westbound



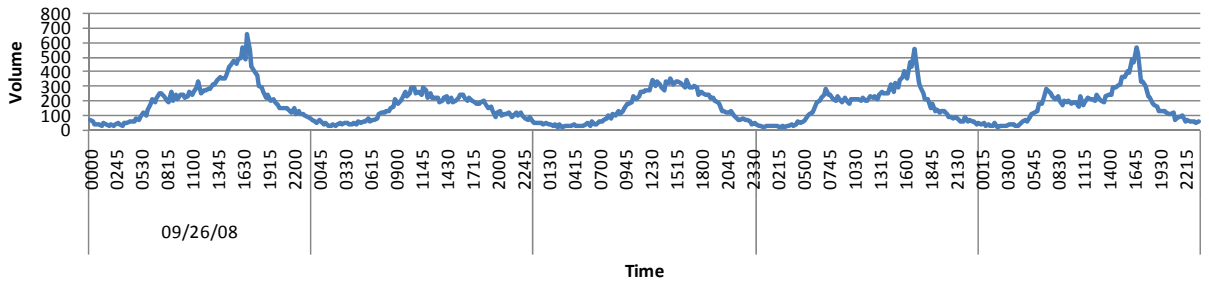
M2803W - 35 to 36 Westbound



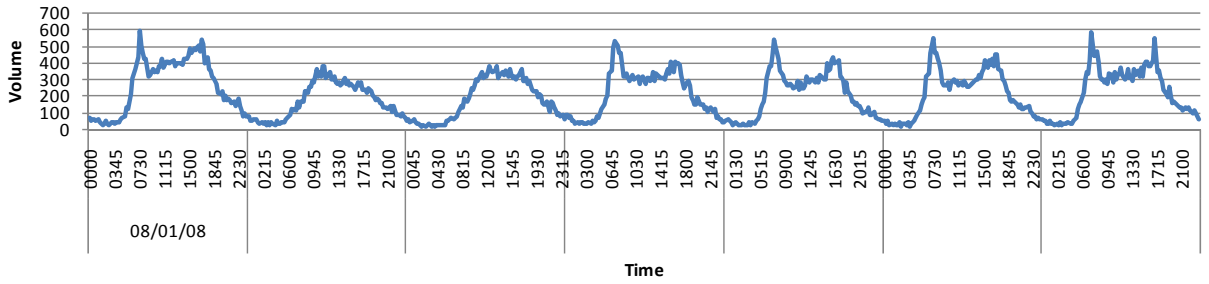
M2803W - 35 to 36 Westbound



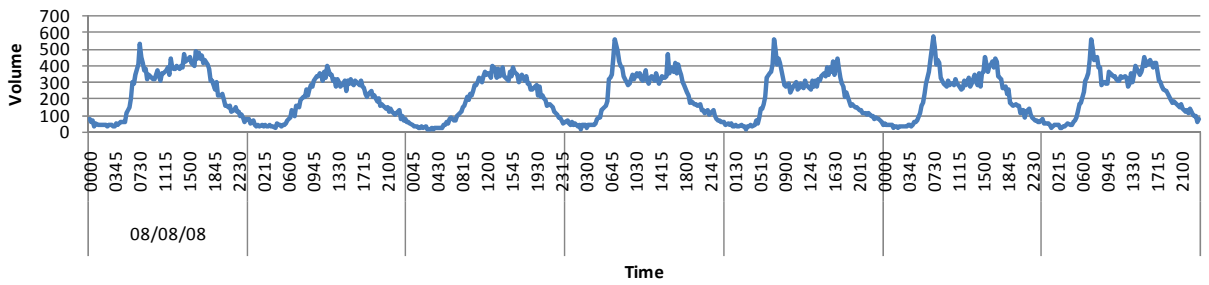
M2803W - 35 to 36 Westbound



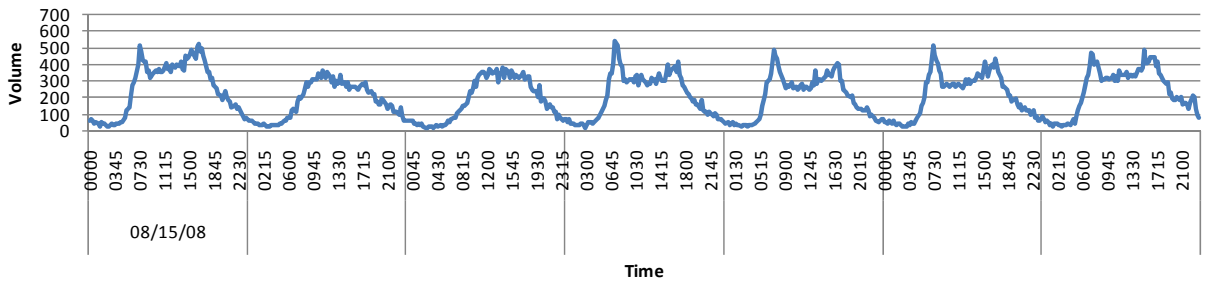
M2818E - 36 to 35 Eastbound



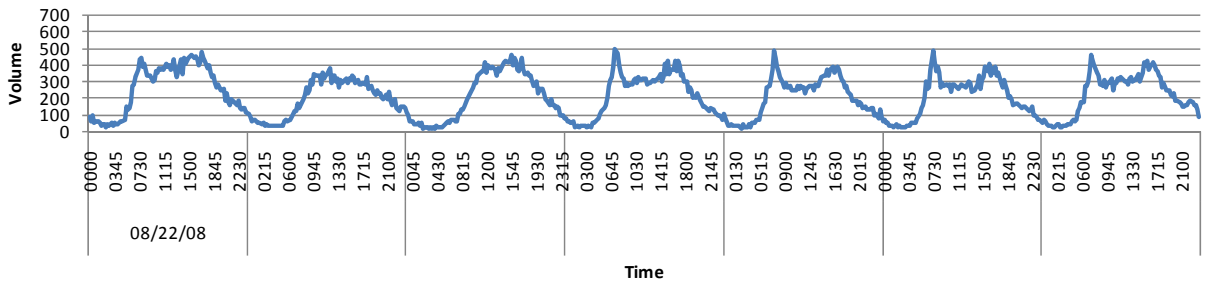
M2818E - 36 to 35 Eastbound



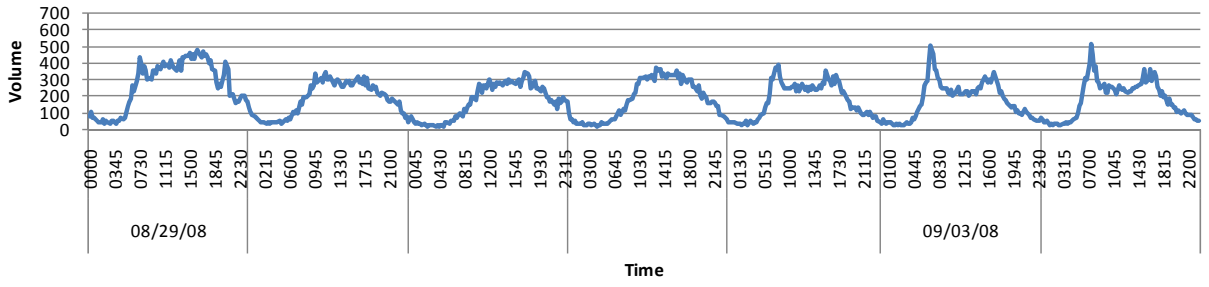
M2818E - 36 to 35 Eastbound



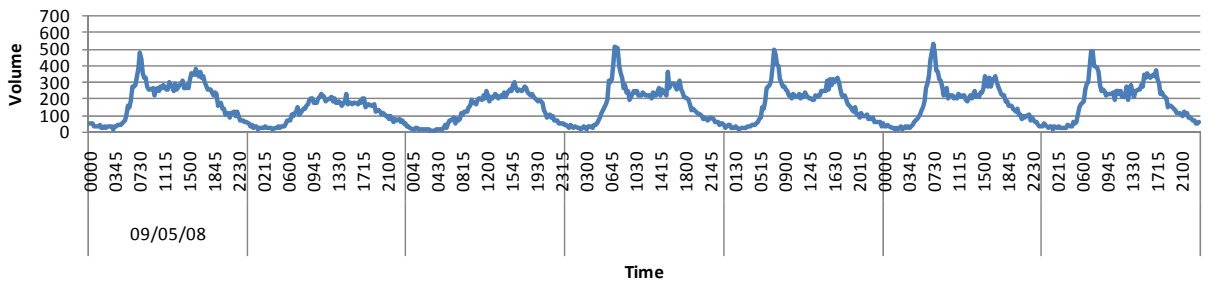
M2818E - 36 to 35 Eastbound



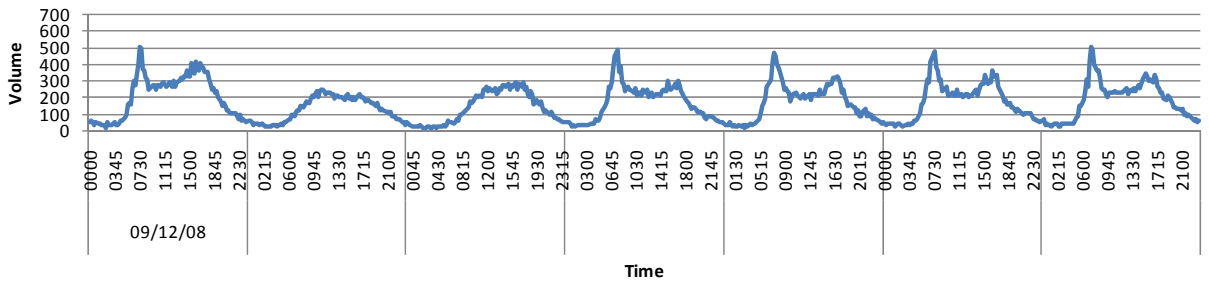
M2818E - 36 to 35 Eastbound



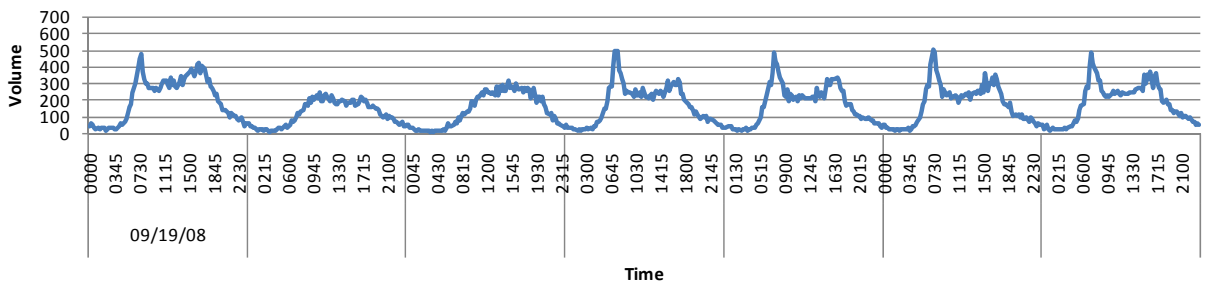
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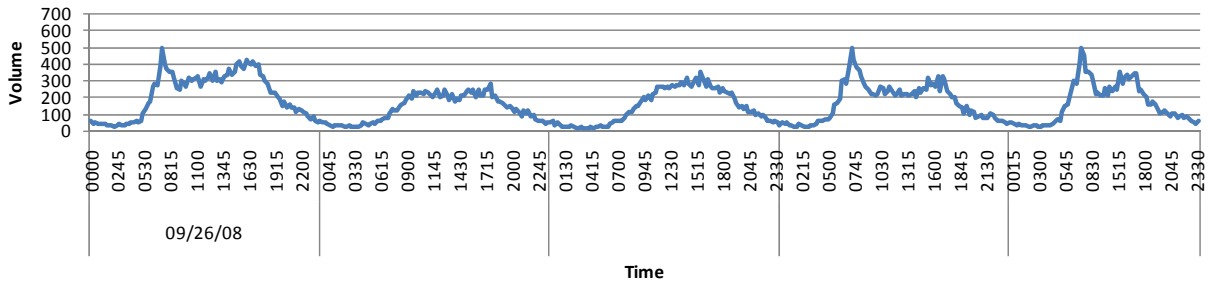
M2818E - 36 to 35 Eastbound



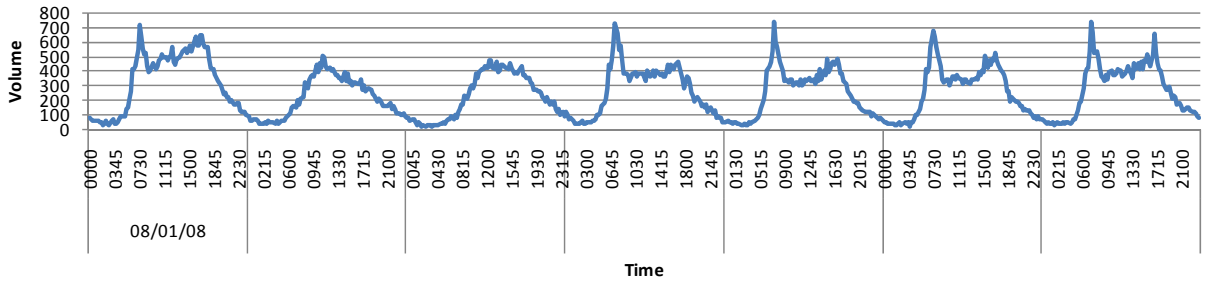
M2818E - 36 to 35 Eastbound



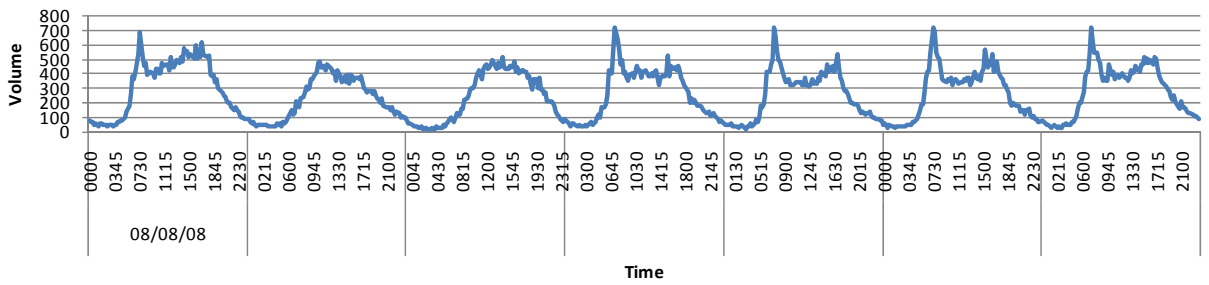
M2818E - 36 to 35 Eastbound



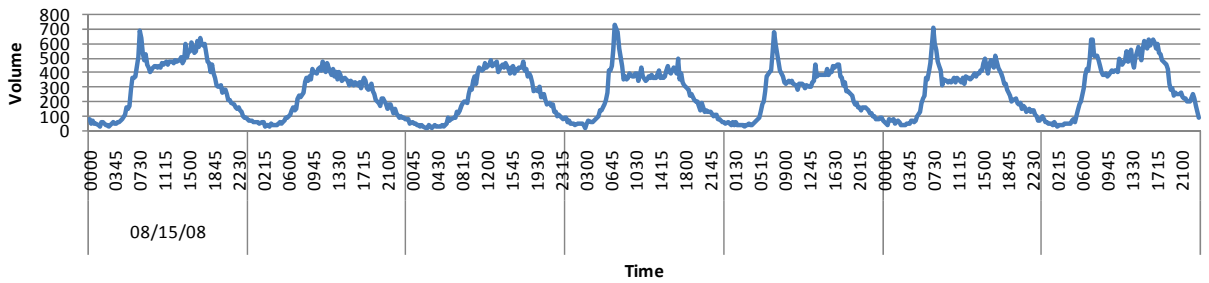
M2833E - 37 to 36 Eastbound



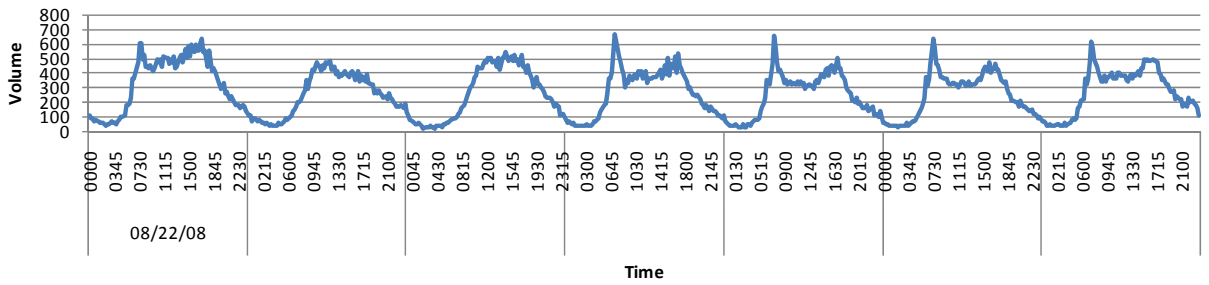
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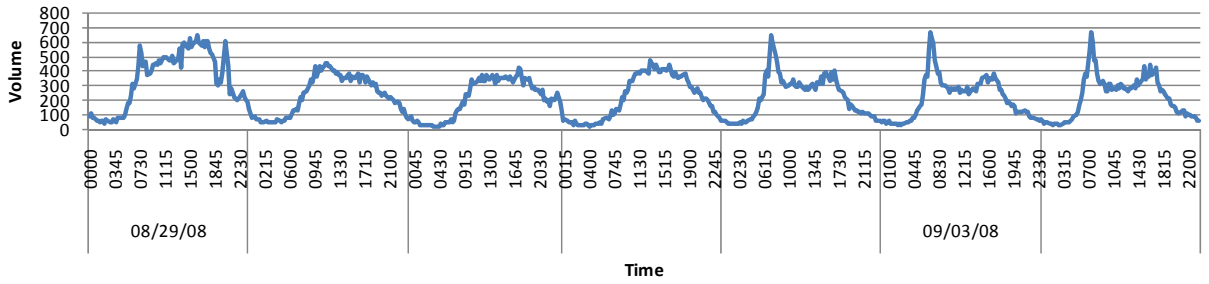
M2833E - 37 to 36 Eastbound



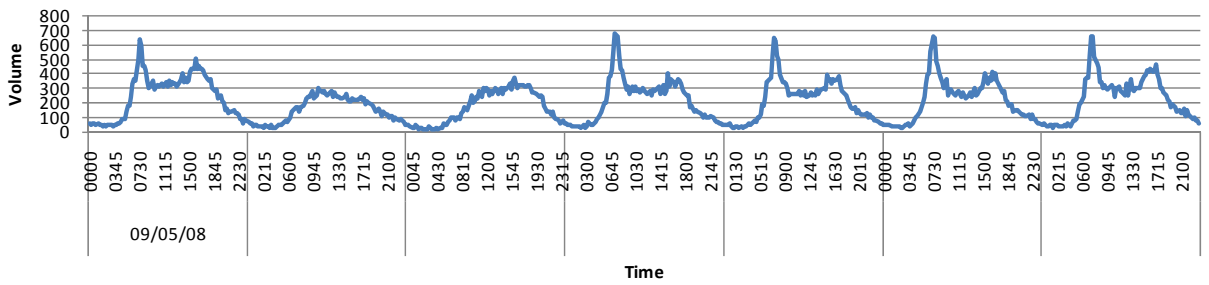
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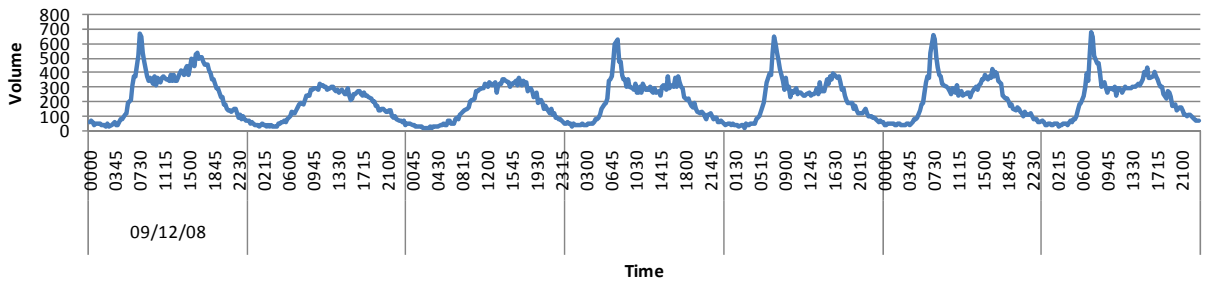
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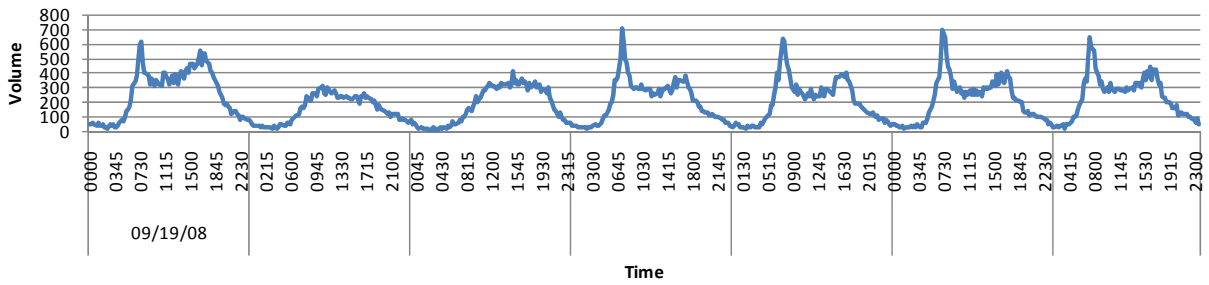
M2833E - 37 to 36 Eastbound



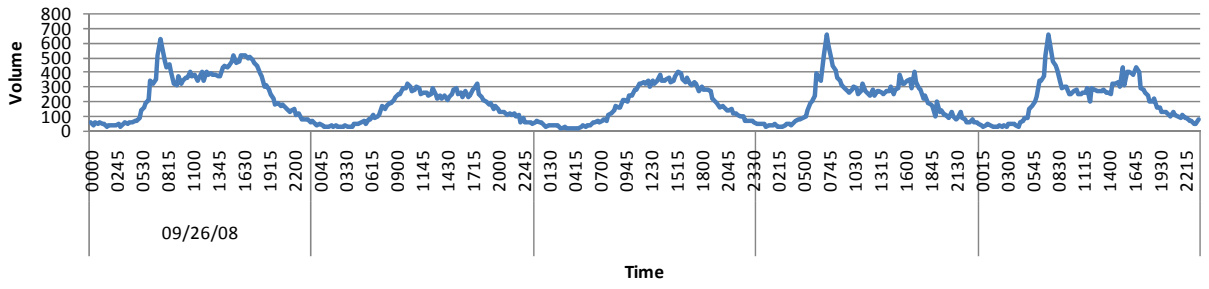
M2833E - 37 to 36 Eastbound



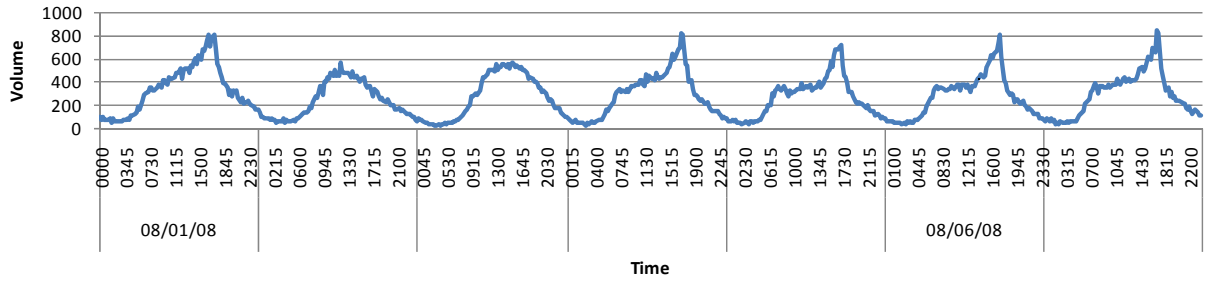
M2833E - 37 to 36 Eastbound



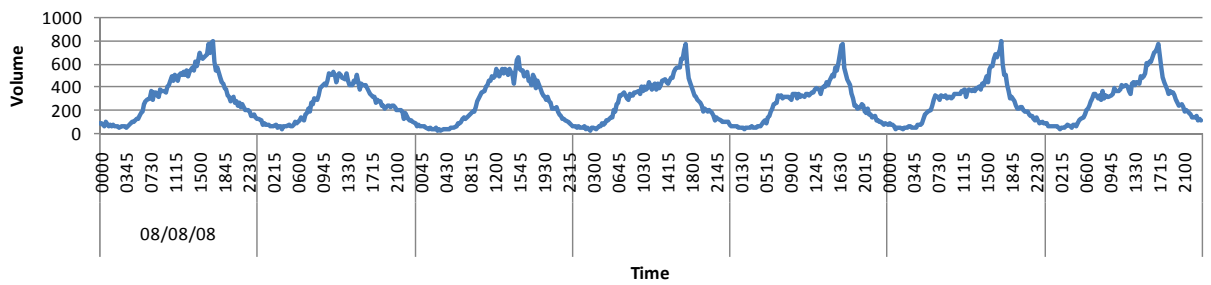
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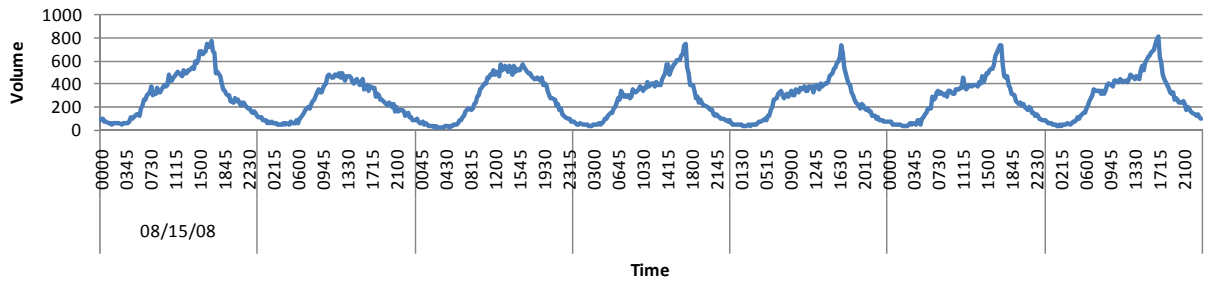
M2833W - 36 to 37 Westbound



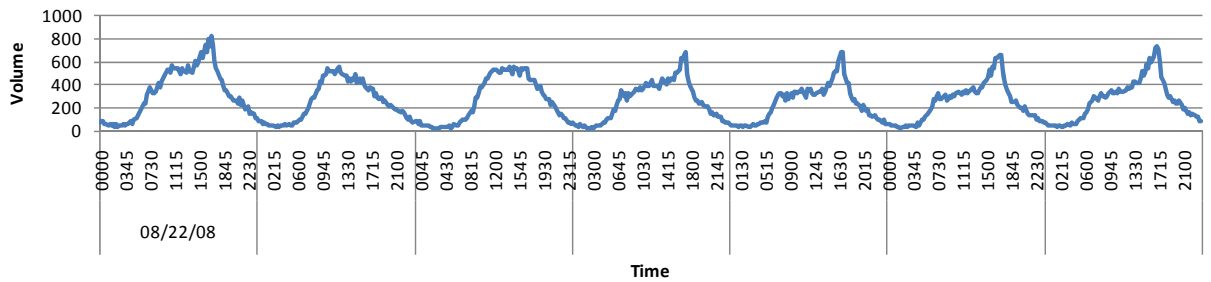
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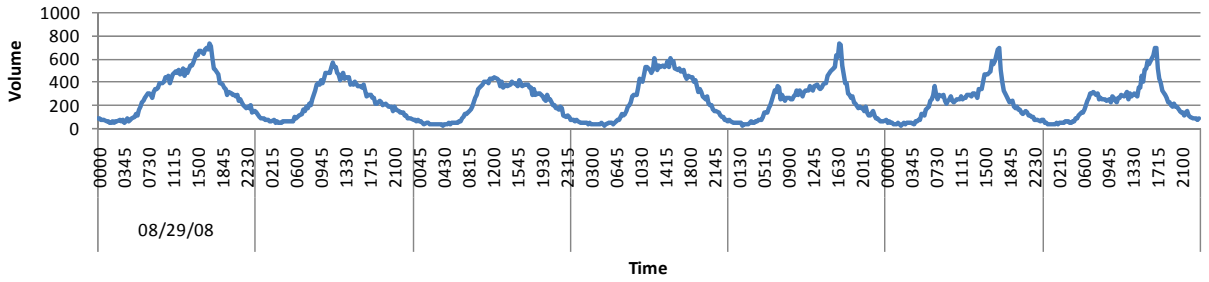
M2833W - 36 to 37 Westbound



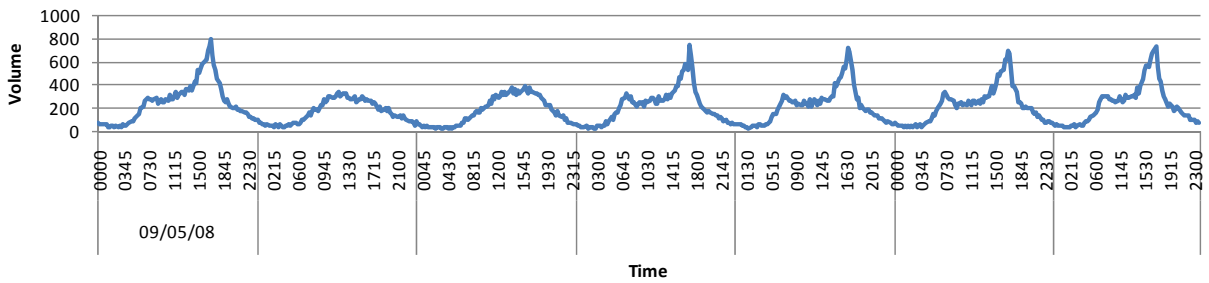
M2833W - 36 to 37 Westbound



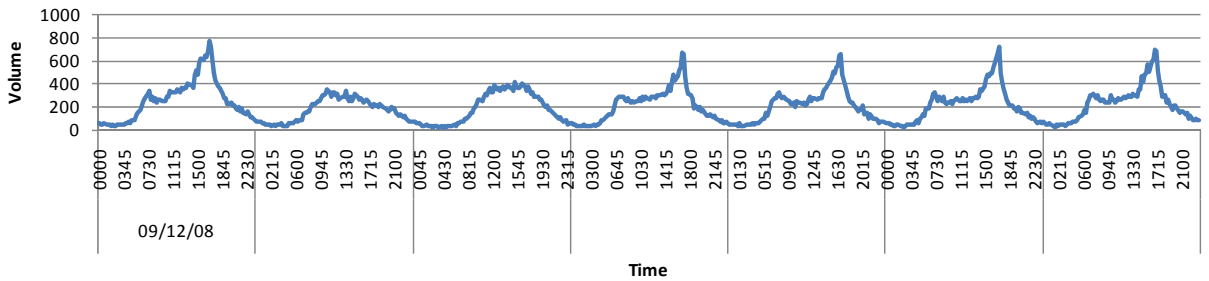
M2833W - 36 to 37 Westbound



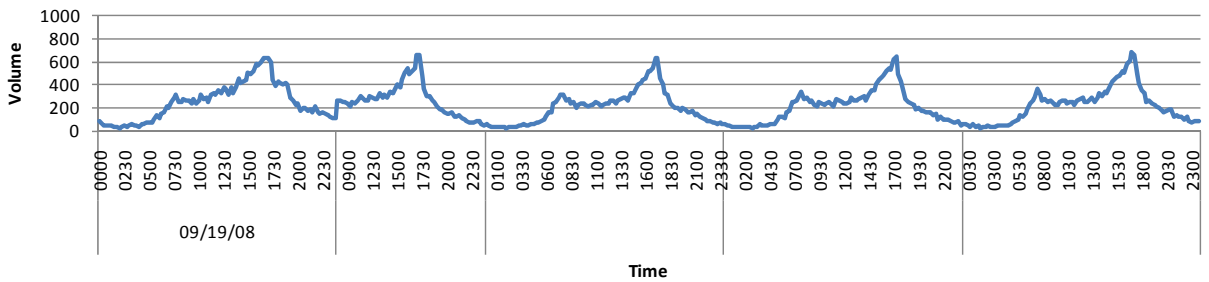
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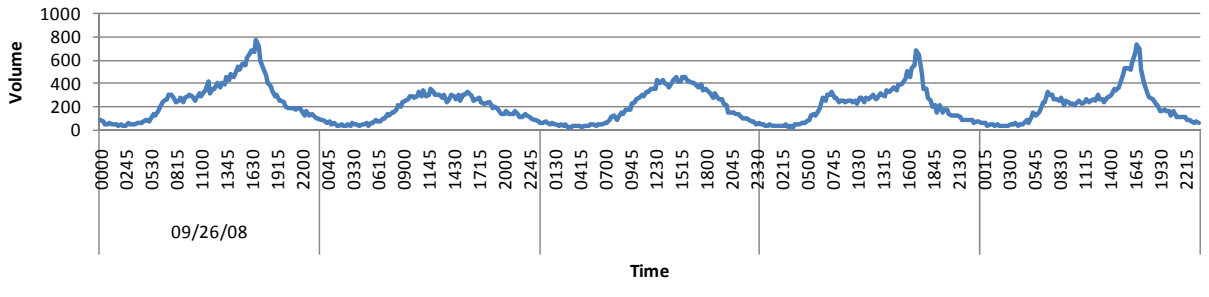
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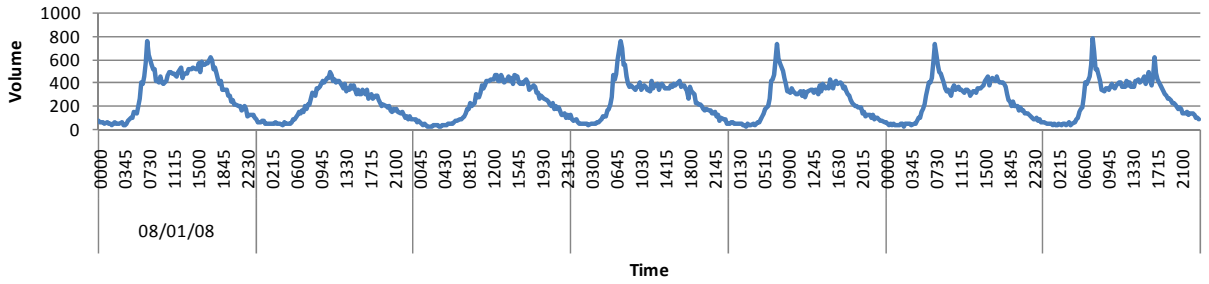
M2833W - 36 to 37 Westbound



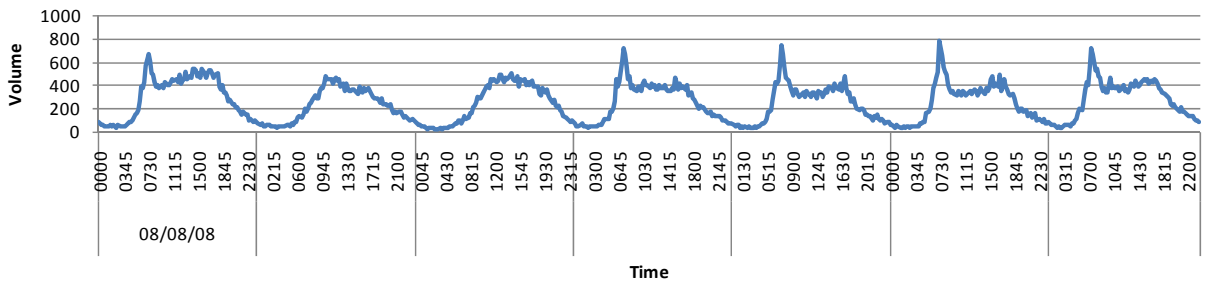
M2833W - 36 to 37 Westbound



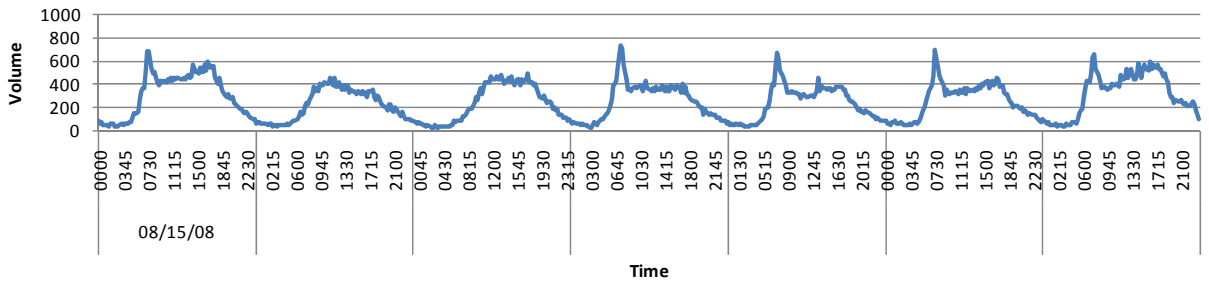
M2852E - 38 to 37 Eastbound



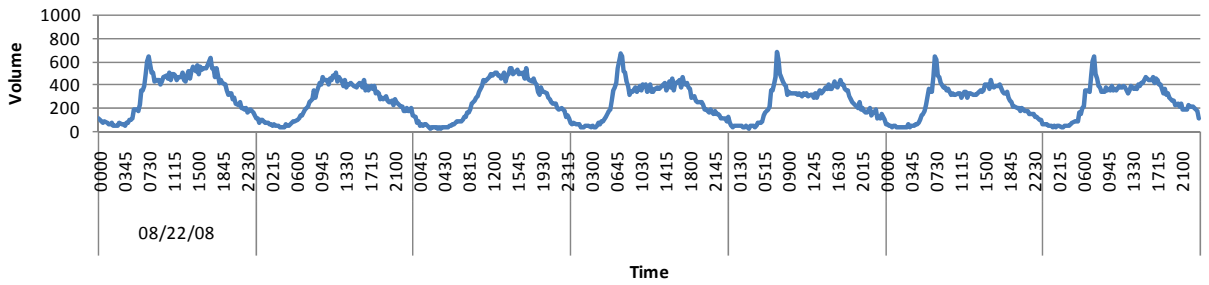
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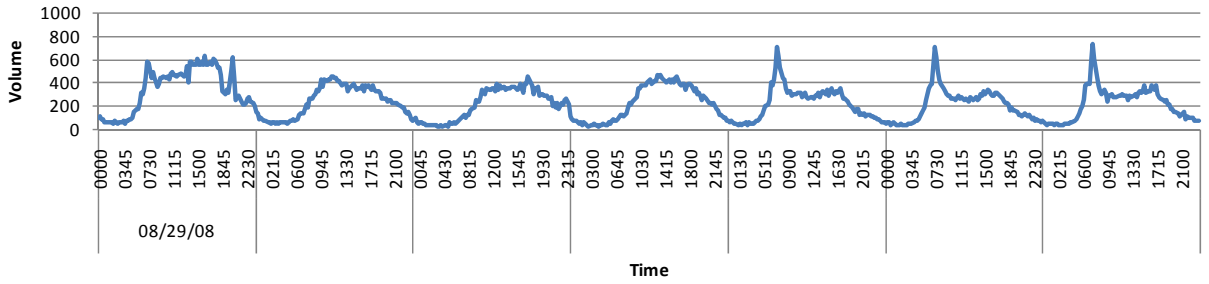
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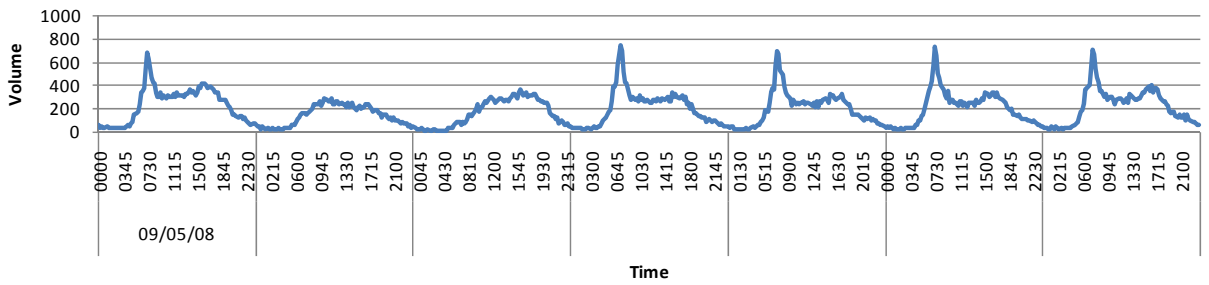
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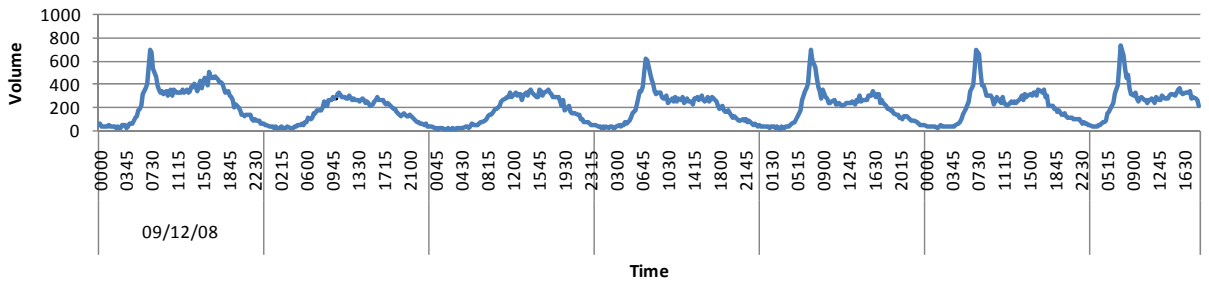
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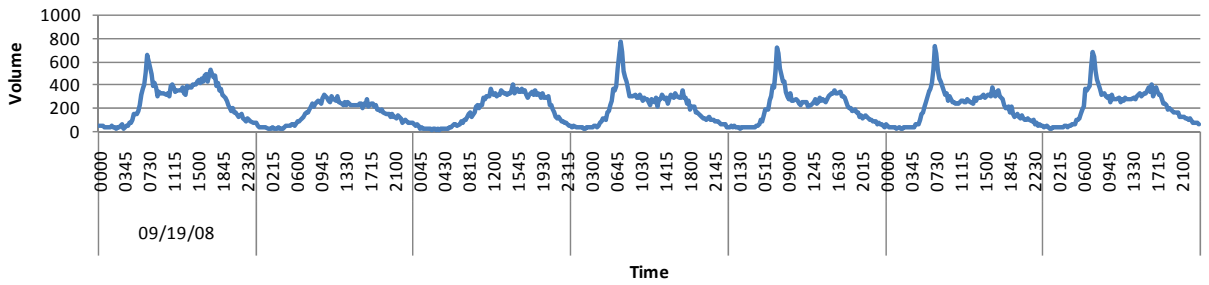
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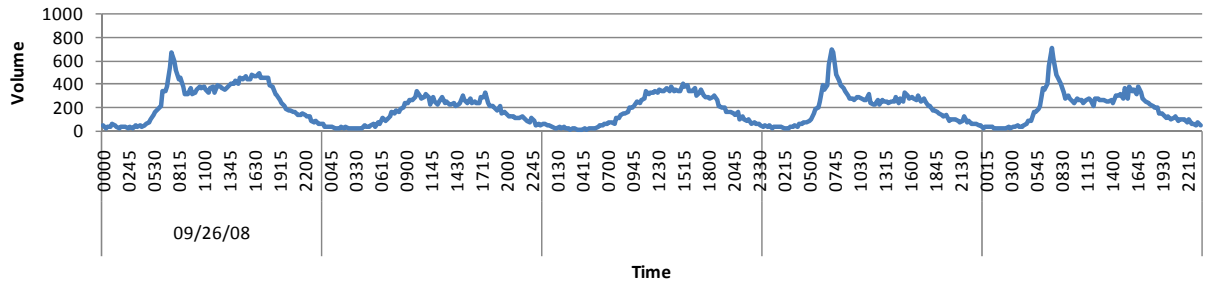
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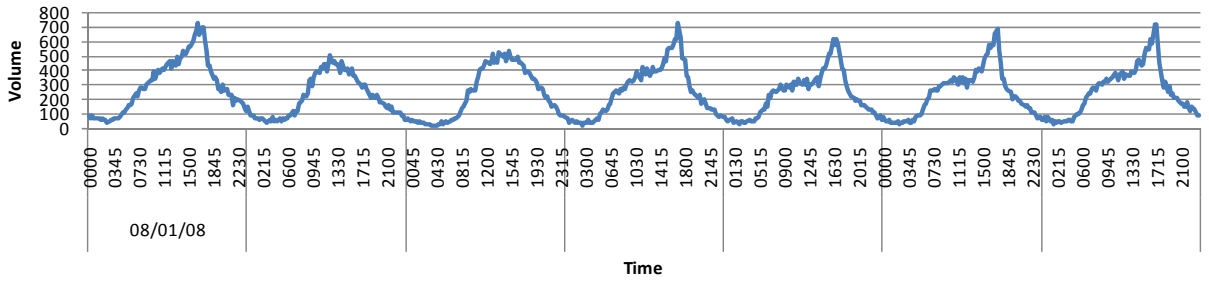
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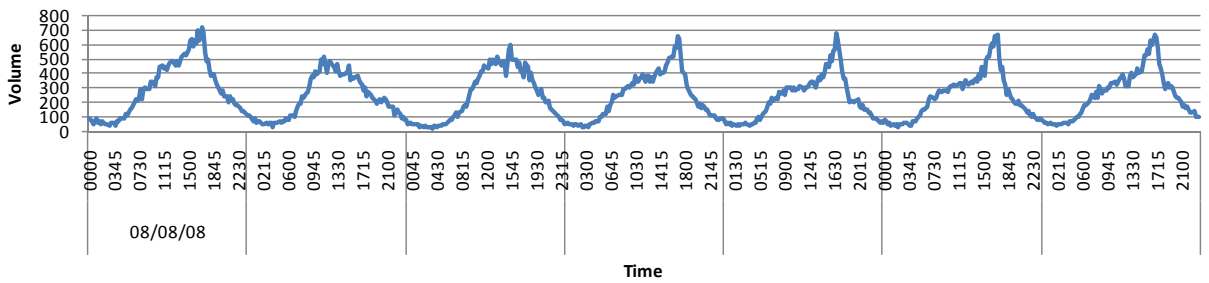
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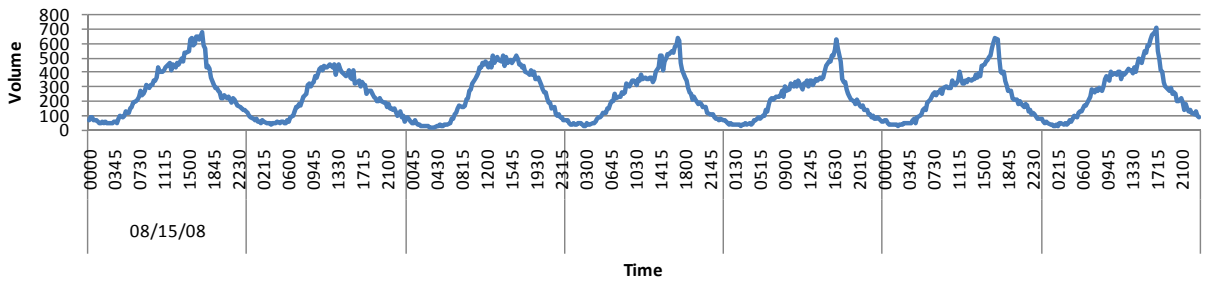
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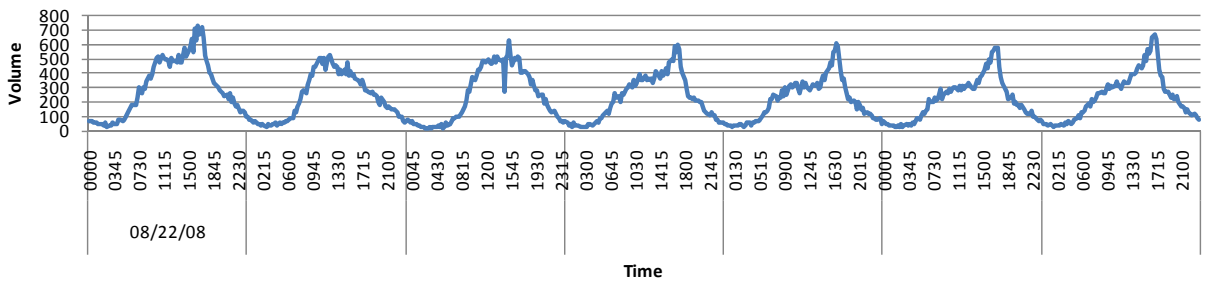
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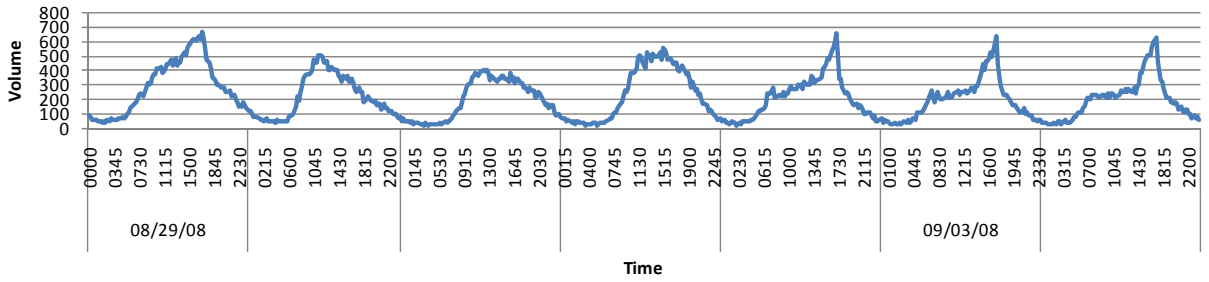
M2852W - 37 to 38 Westbound



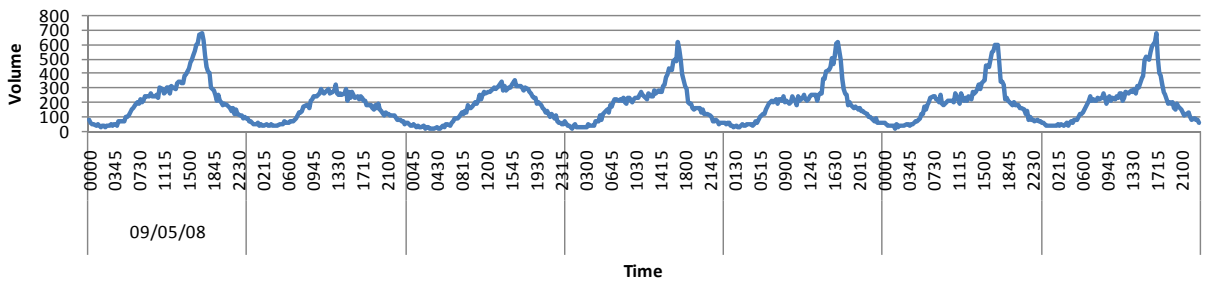
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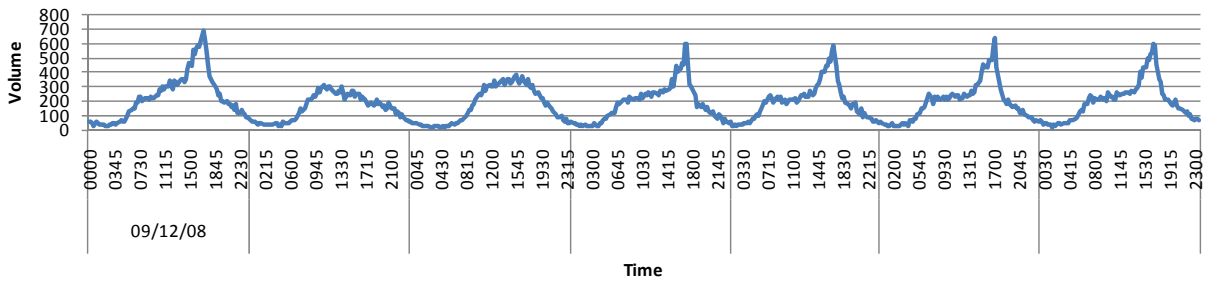
M2852W - 37 to 38 Westbound



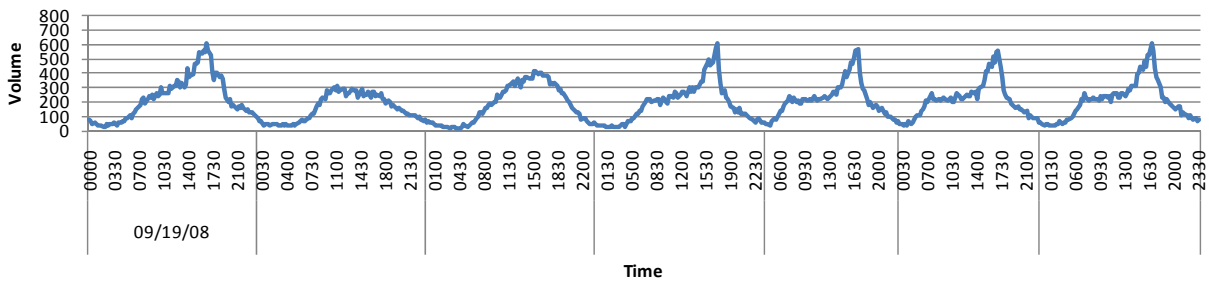
M2852W - 37 to 38 Westbound



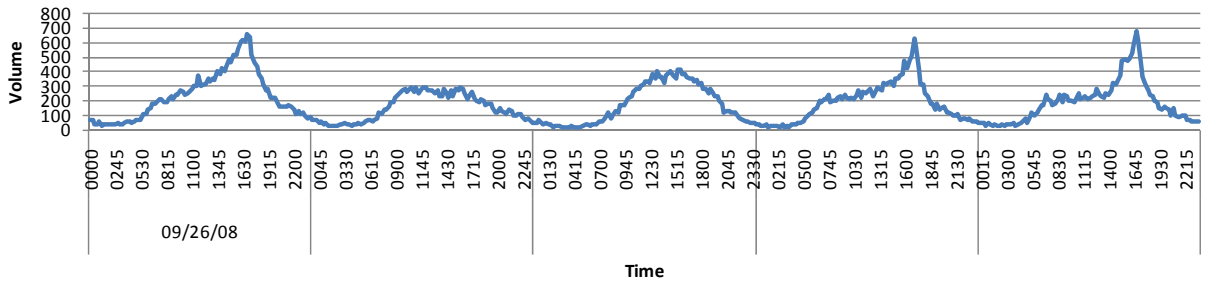
M2852W - 37 to 38 Westbound

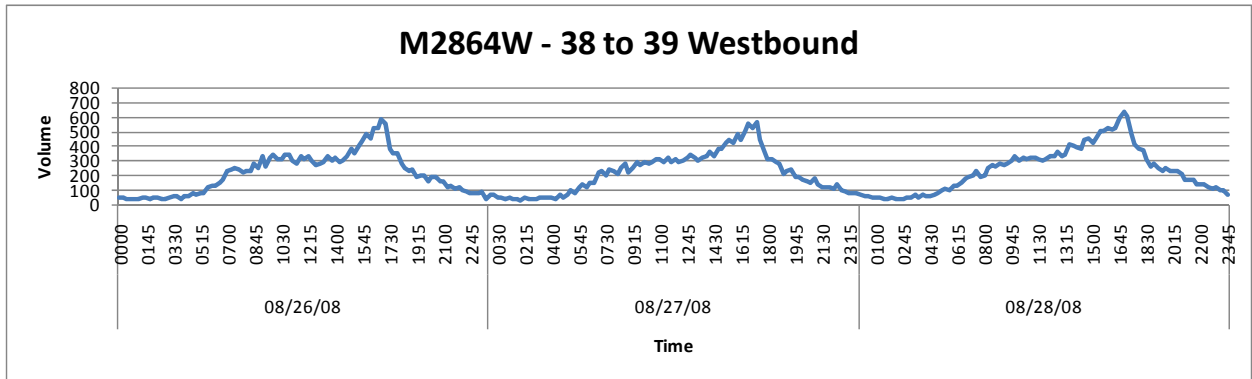
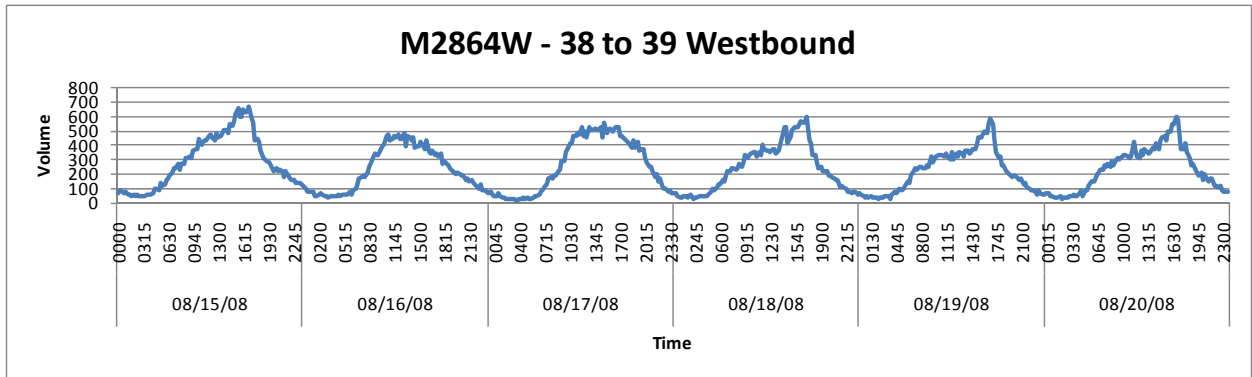
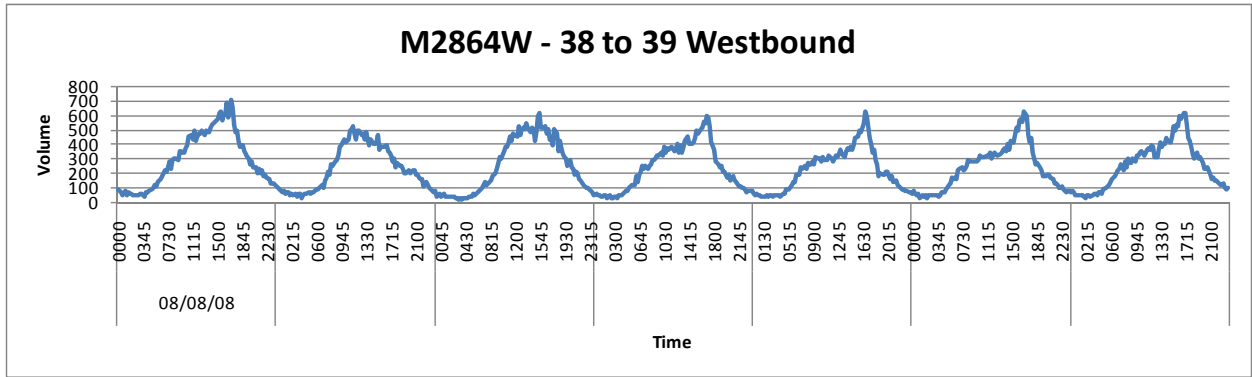
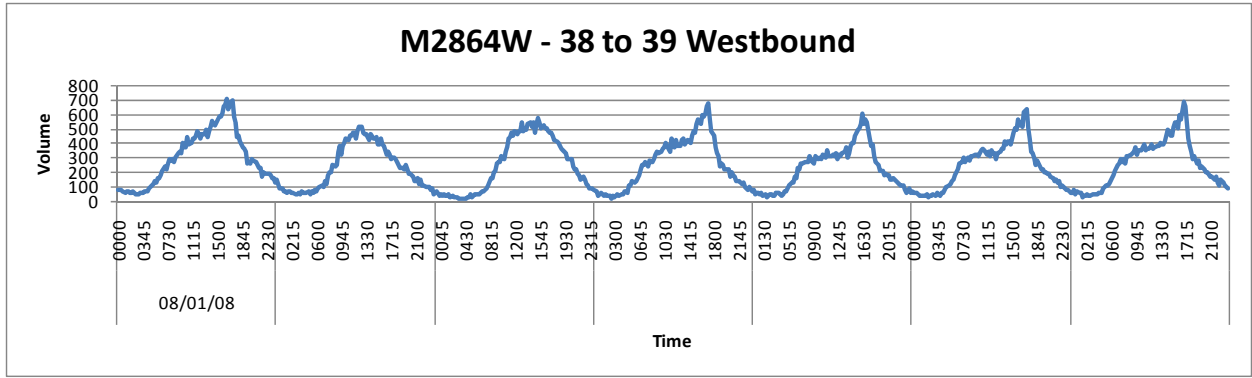


M2852W - 37 to 38 Westbound

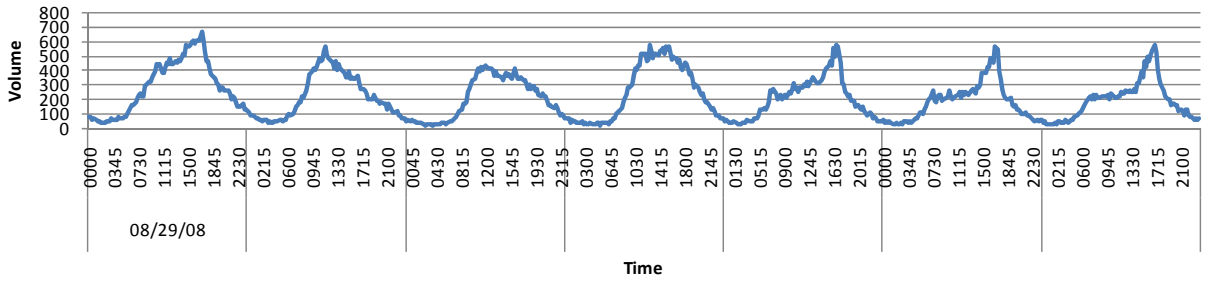


M2852W - 37 to 38 Westbound

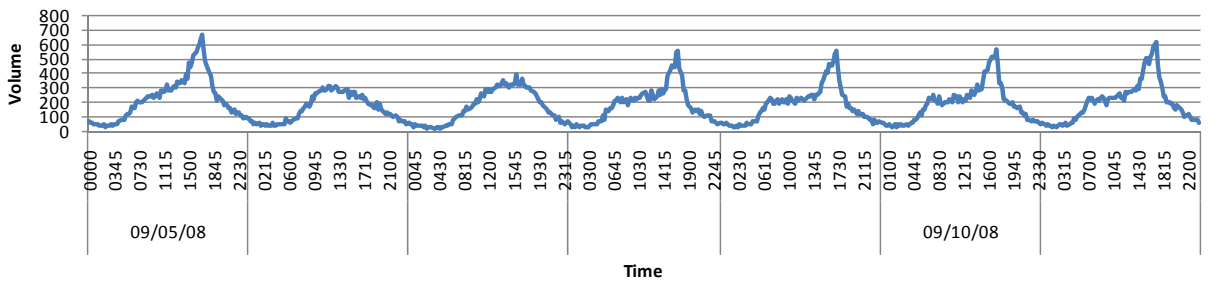




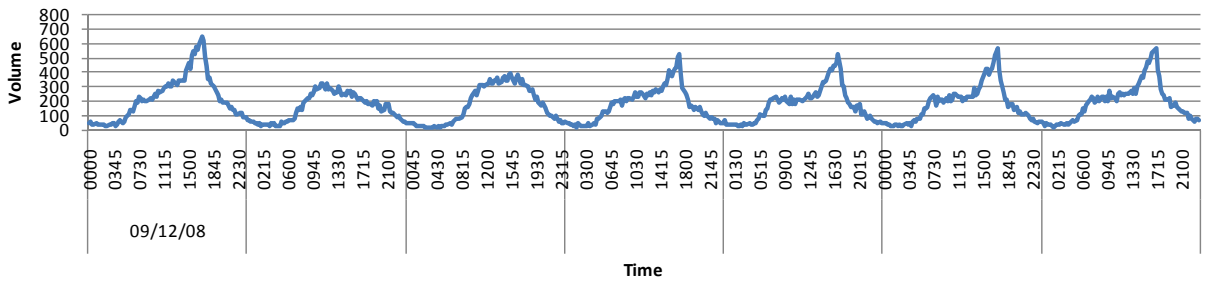
M2864W - 38 to 39 Westbound



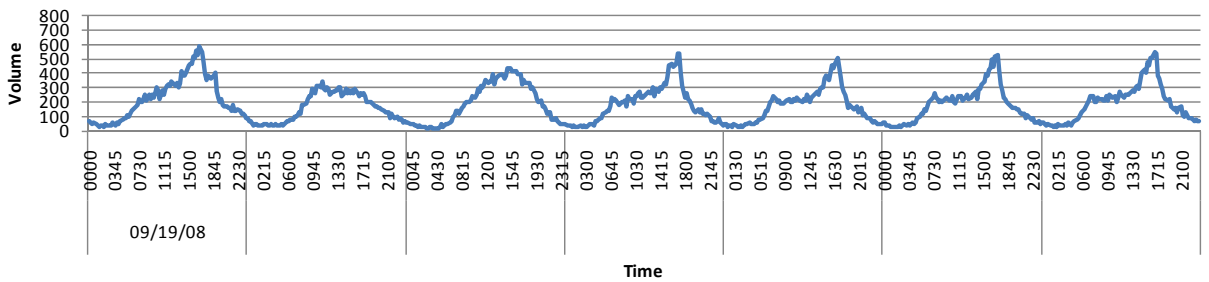
M2864W - 38 to 39 Westbound



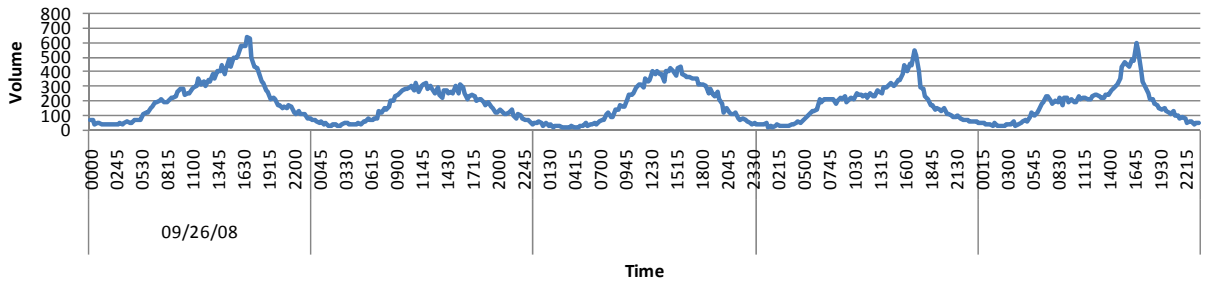
M2864W - 38 to 39 Westbound



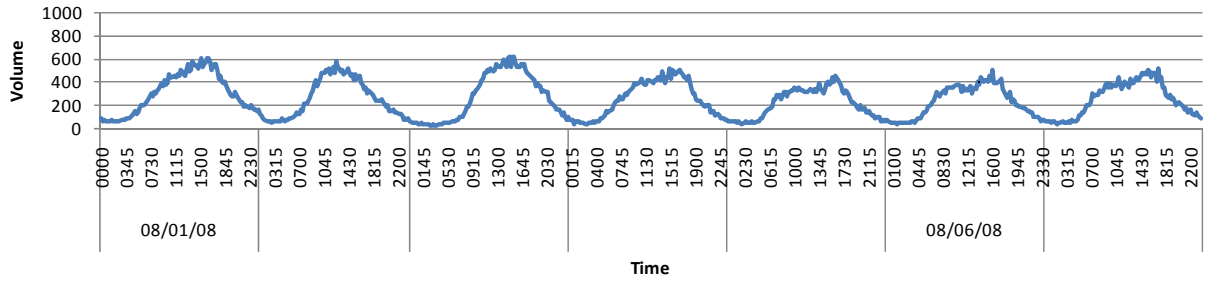
M2864W - 38 to 39 Westbound



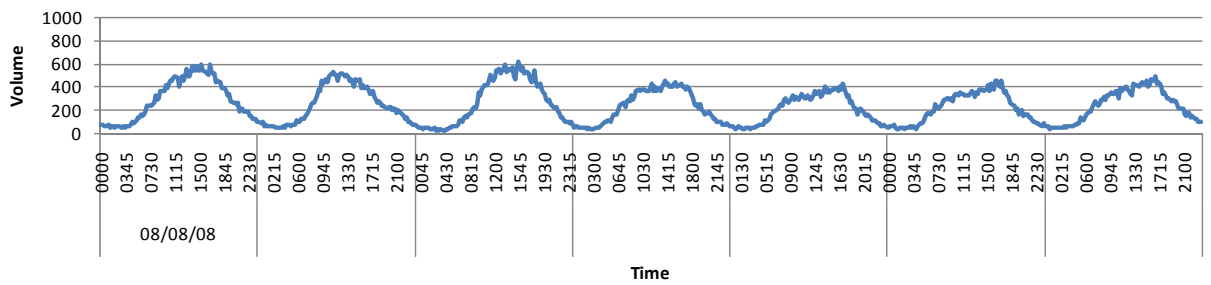
M2864W - 38 to 39 Westbound



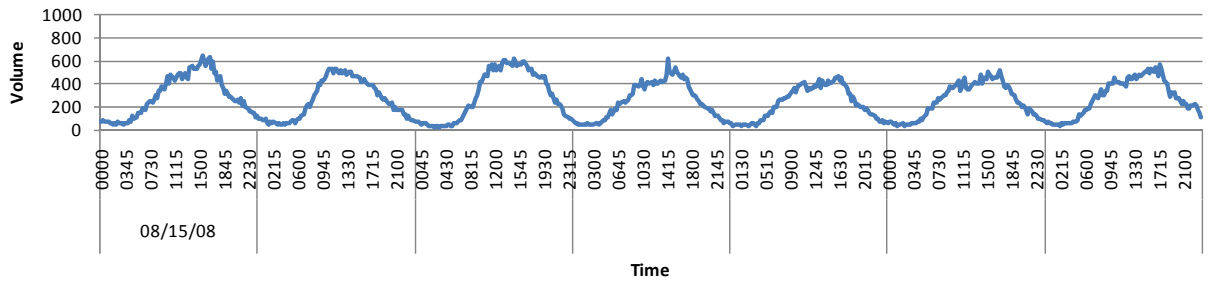
M2945W - 39 to 40 Westbound



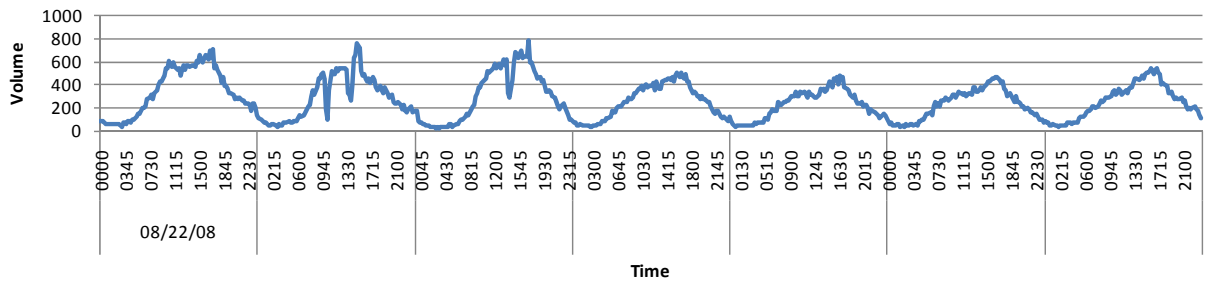
M2945W - 39 to 40 Westbound

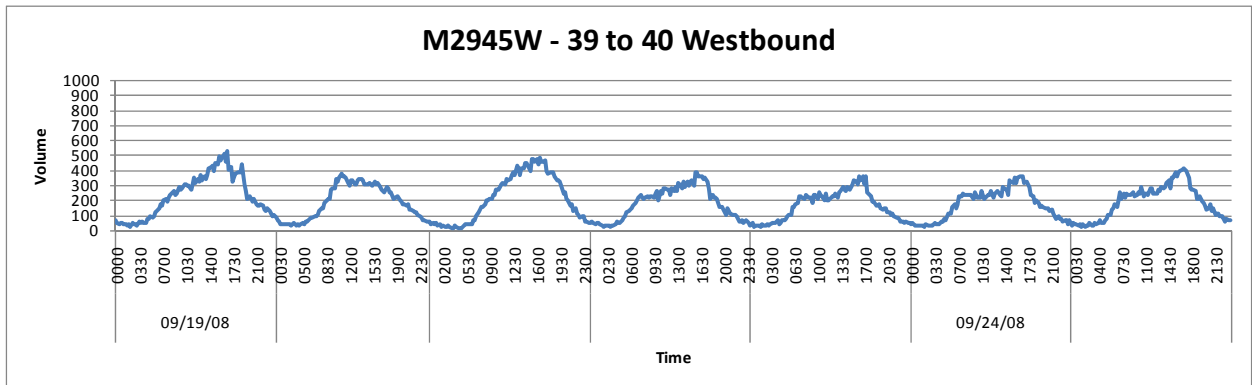
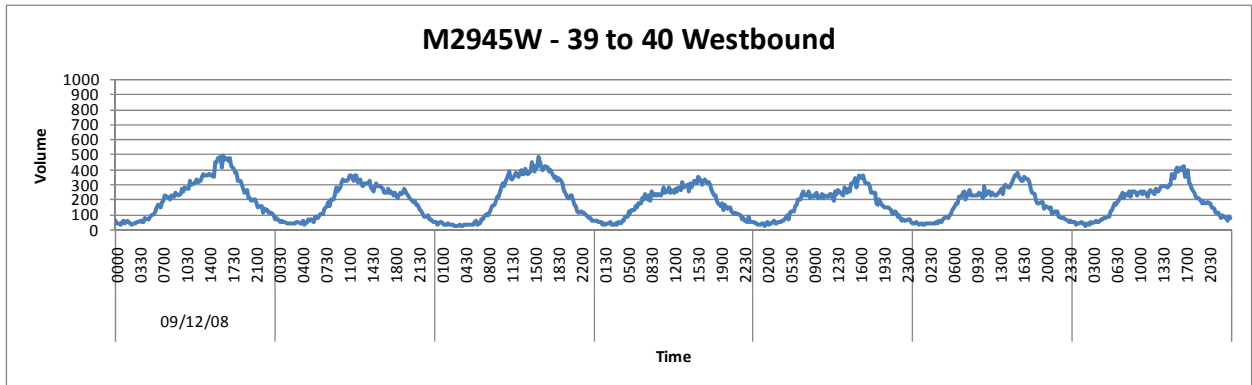
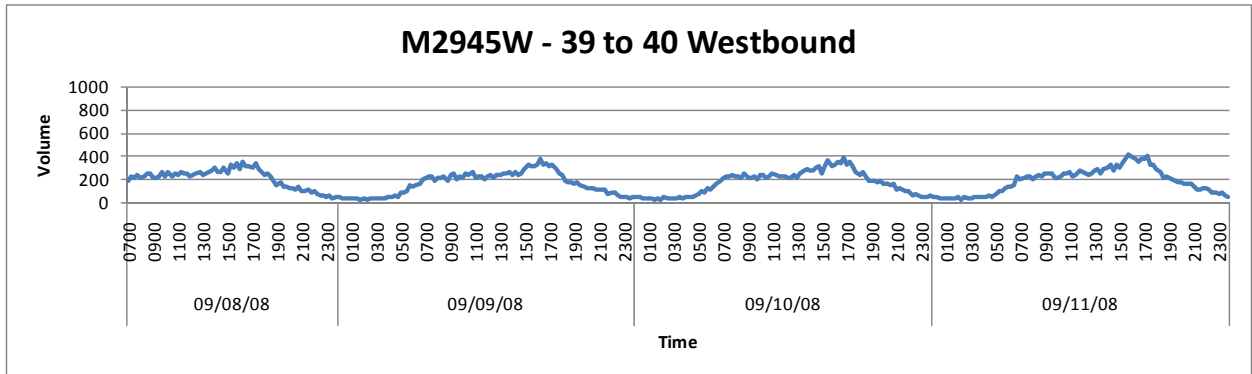
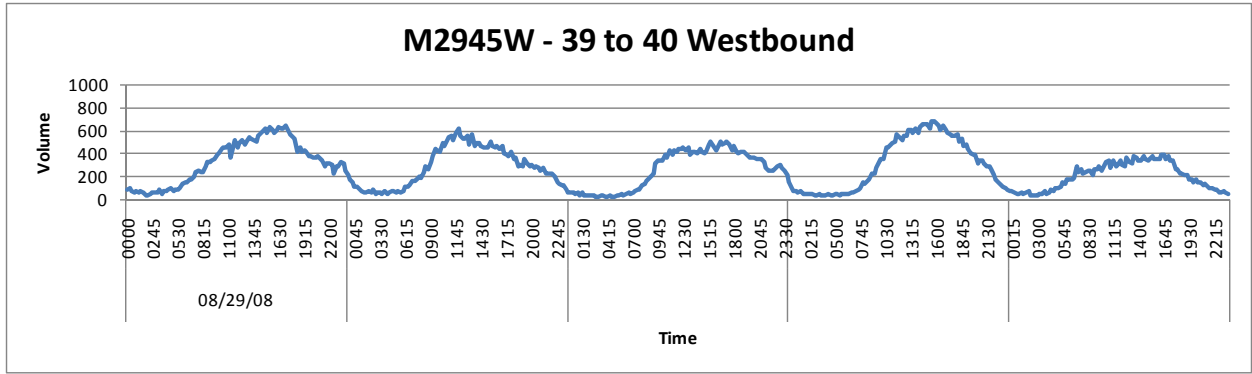


M2945W - 39 to 40 Westbound

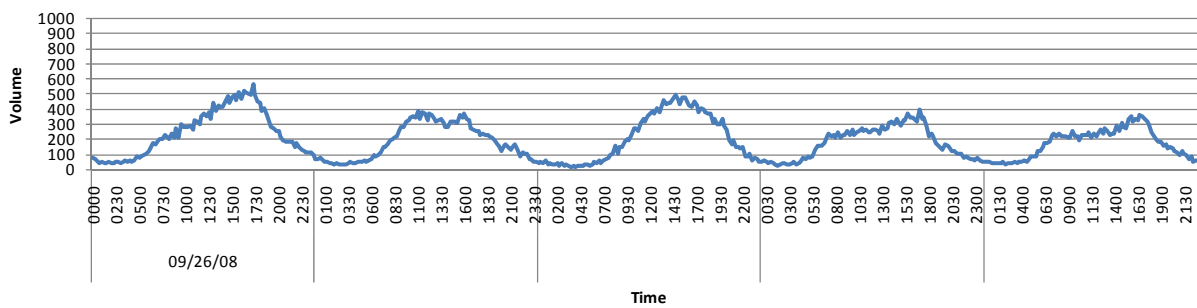


M2945W - 39 to 40 Westbound

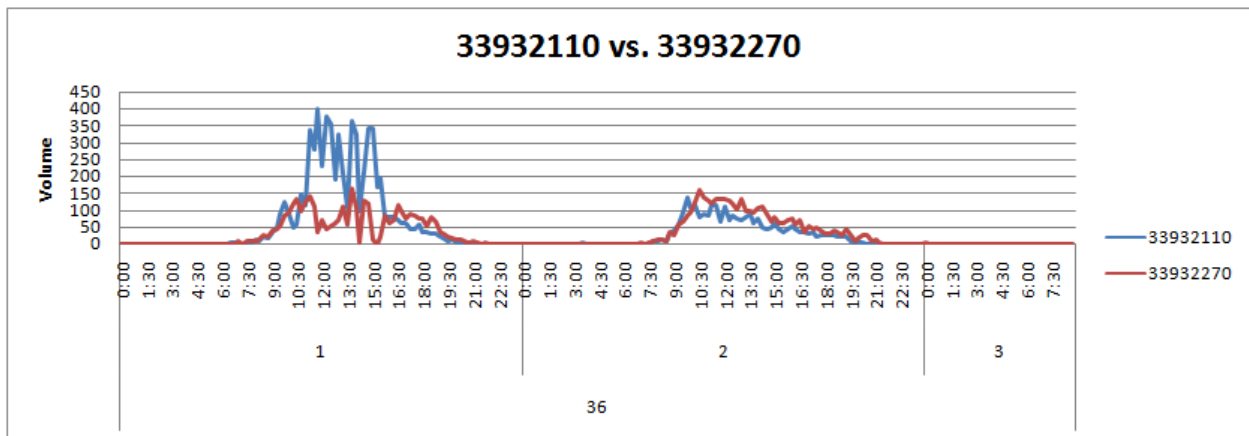
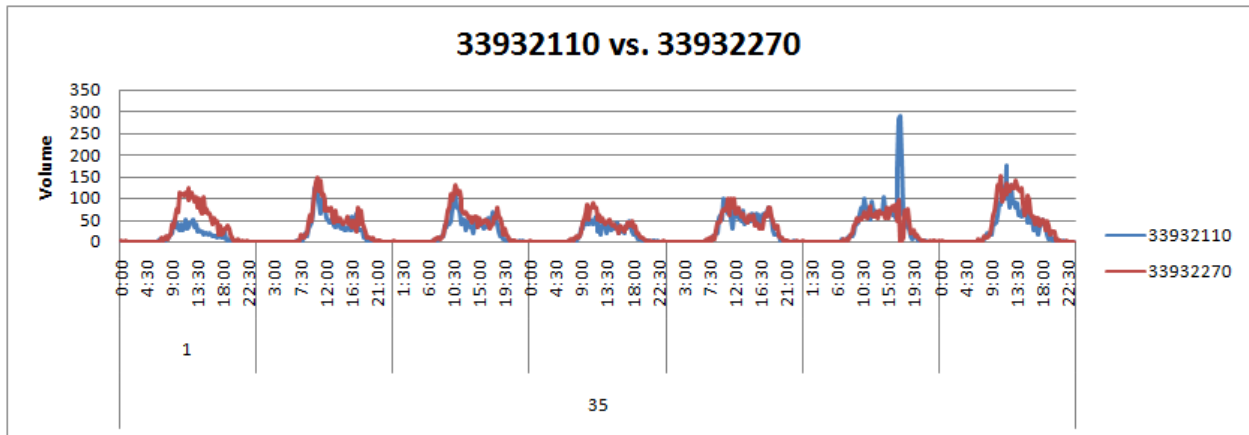
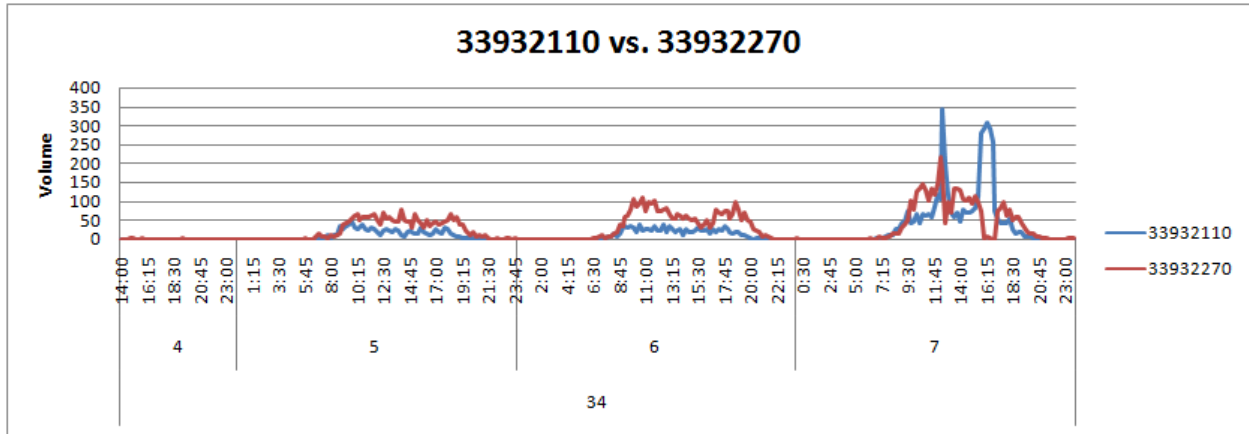




M2945W - 39 to 40 Westbound



Comparison between Upper & Lower Orange lot entrances (33932110 = exit 6 entrance and 33932270 = exit 7 entrance)

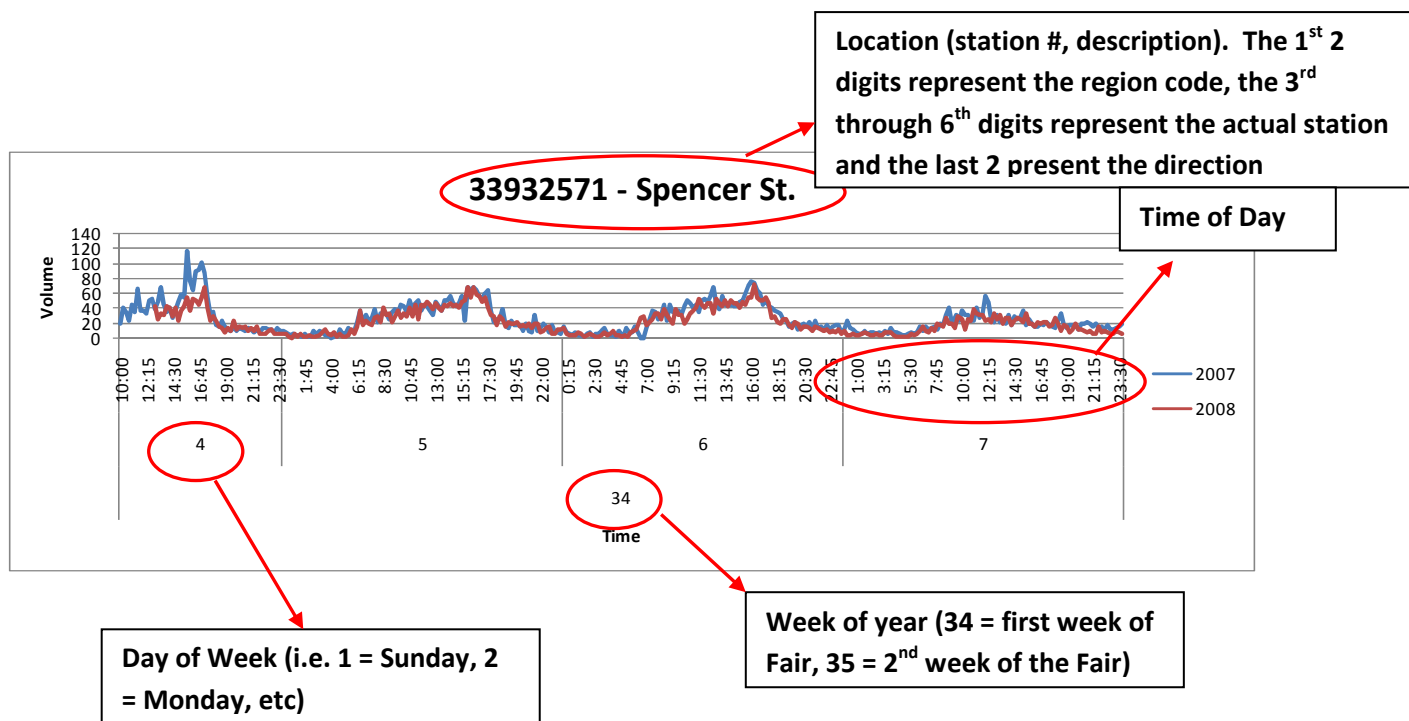


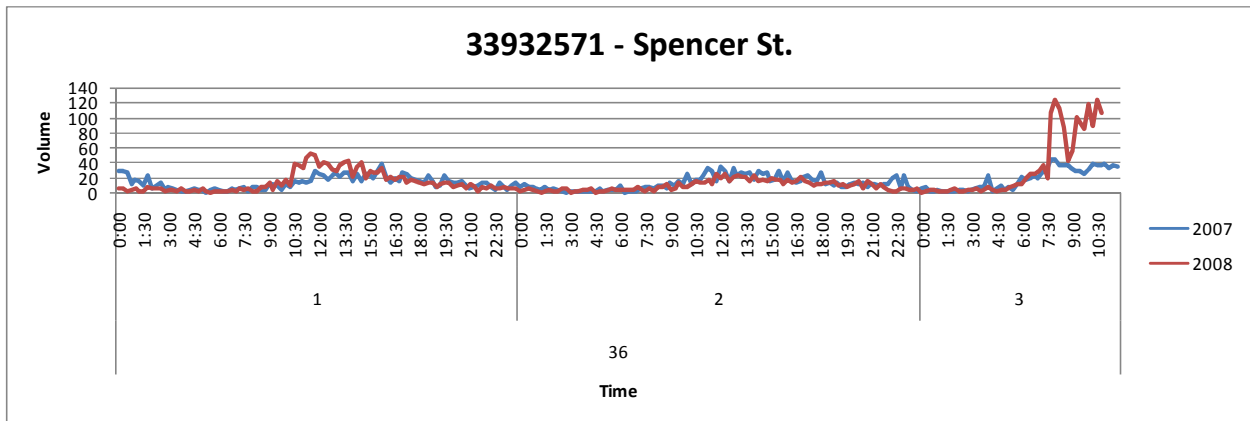
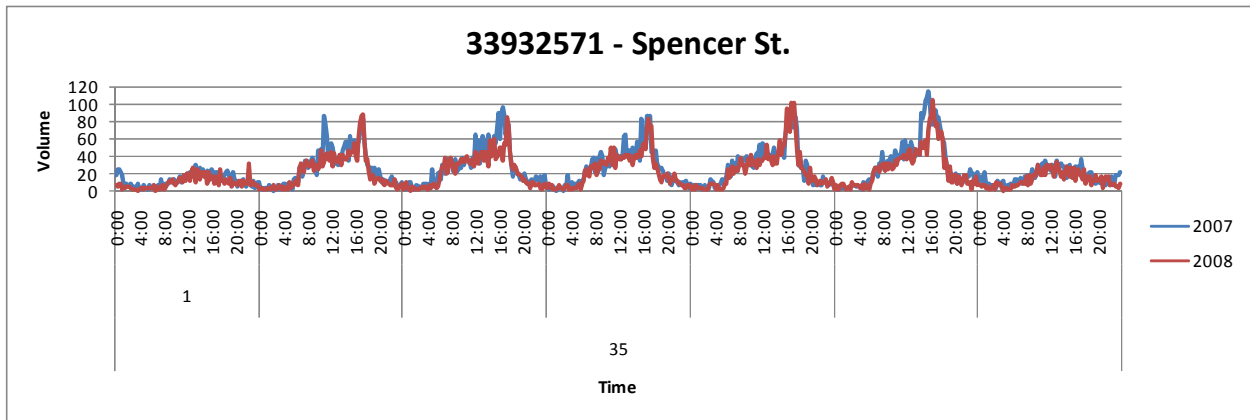
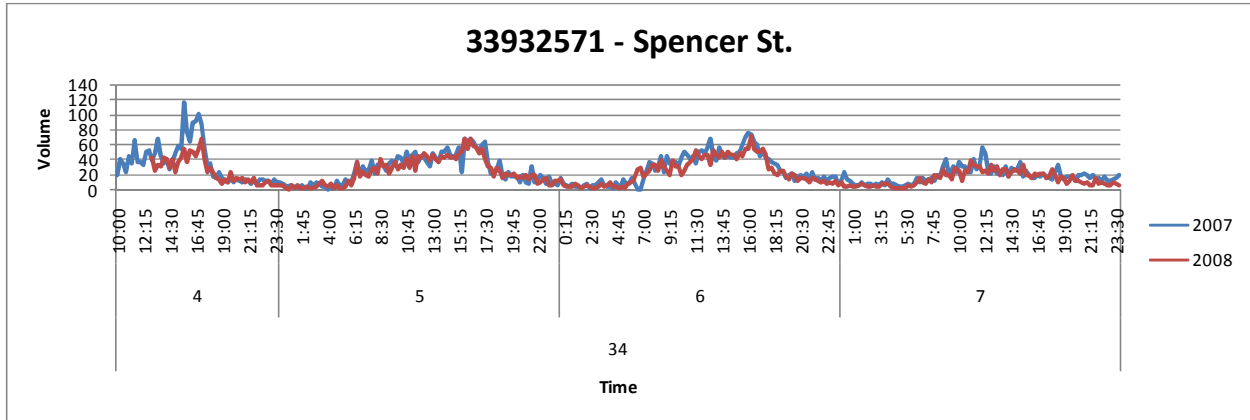
APPENDIX C

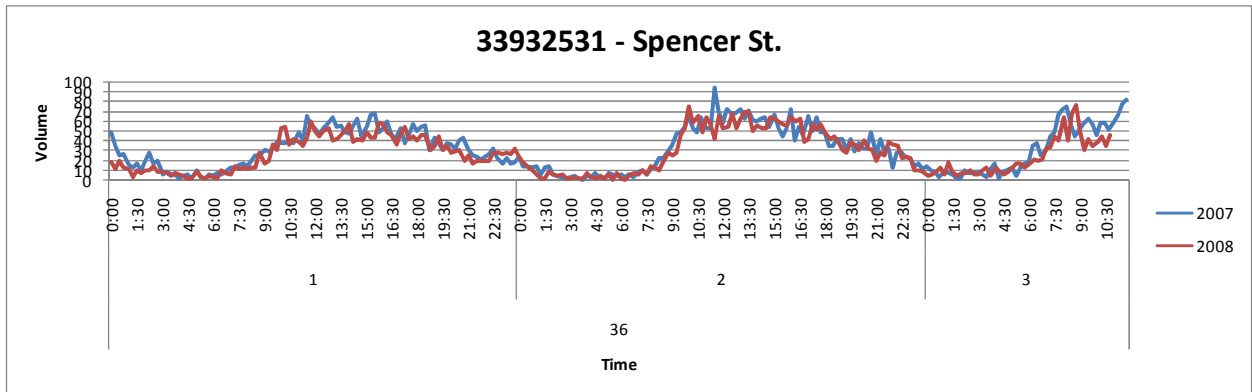
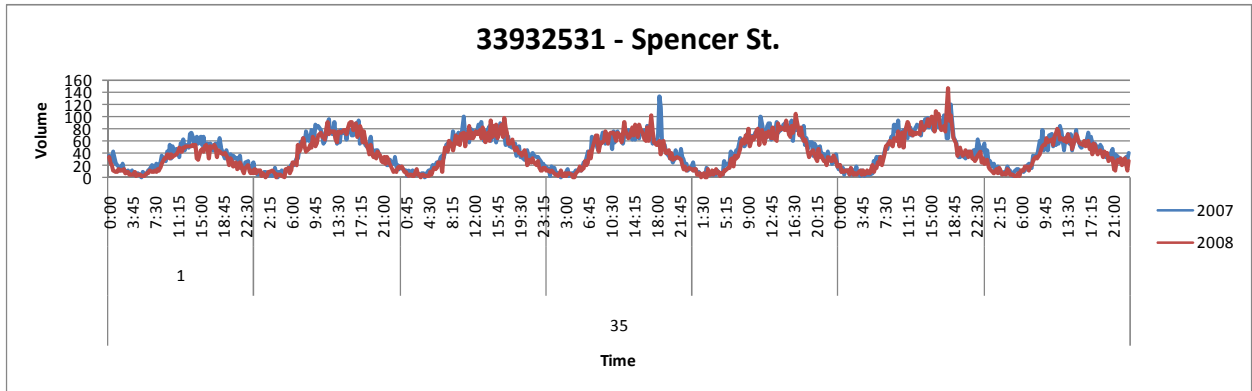
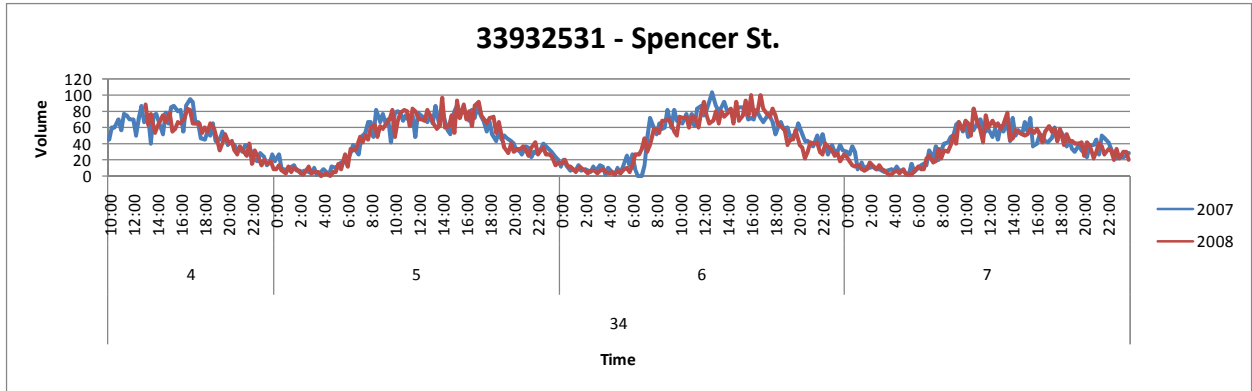
Volume Comparison between 2007 & 2008

NYS Fair Count Sites

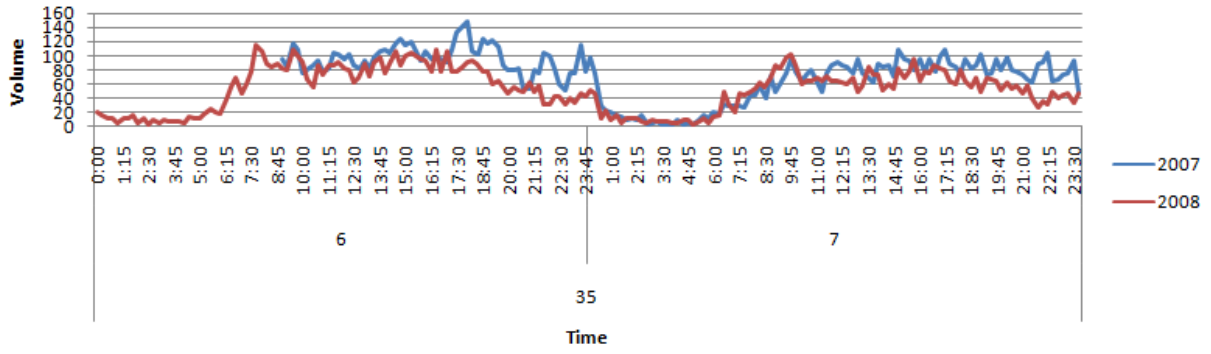
Sample on how to read the attached charts:



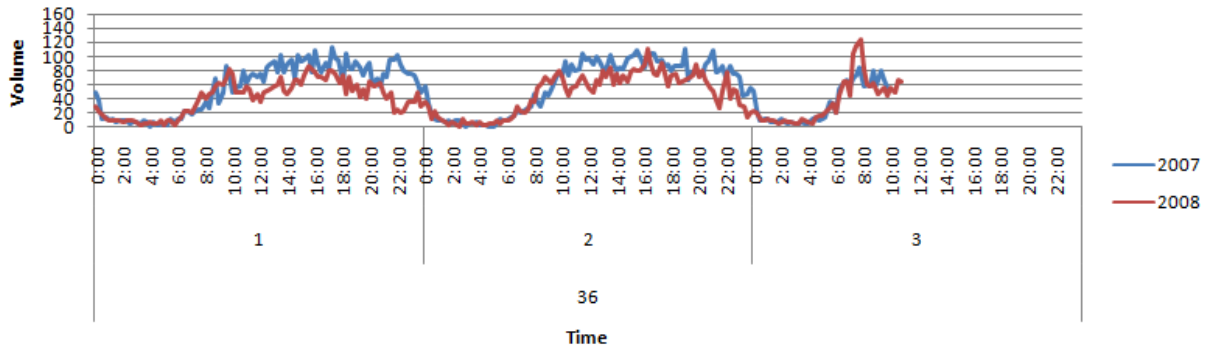




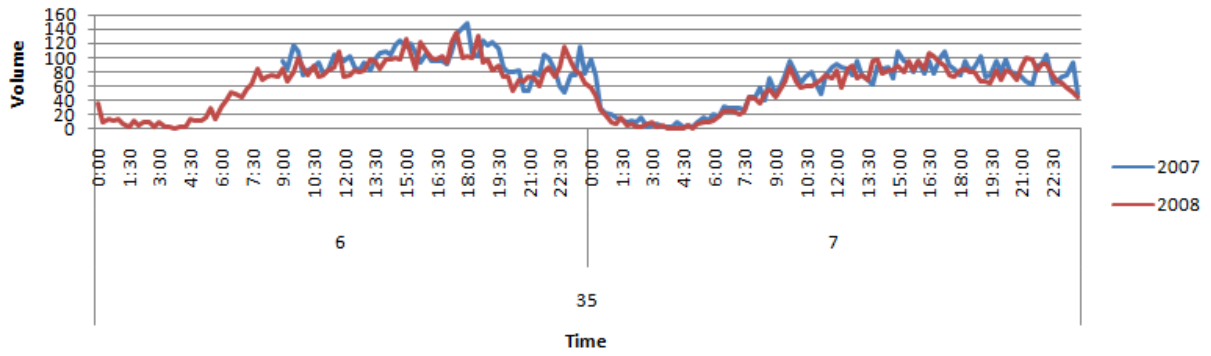
33932451 - State Fair Blvd. Gate 12



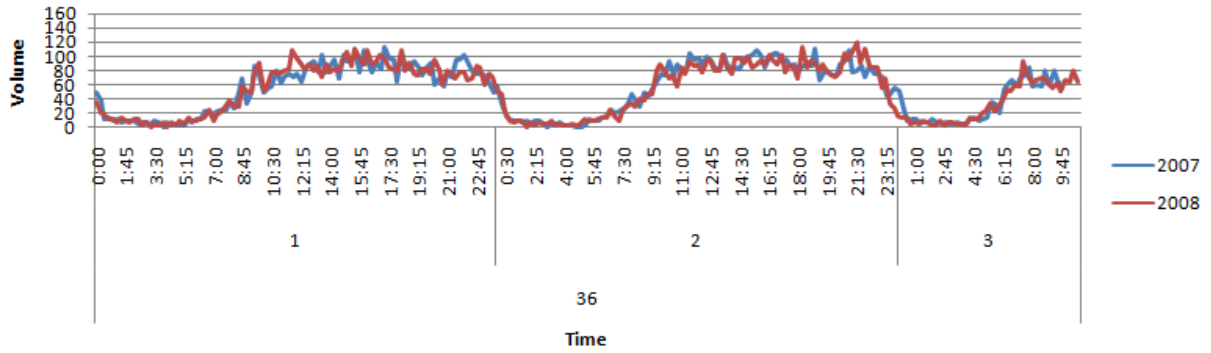
33932451 - State Fair Blvd. Gate 12

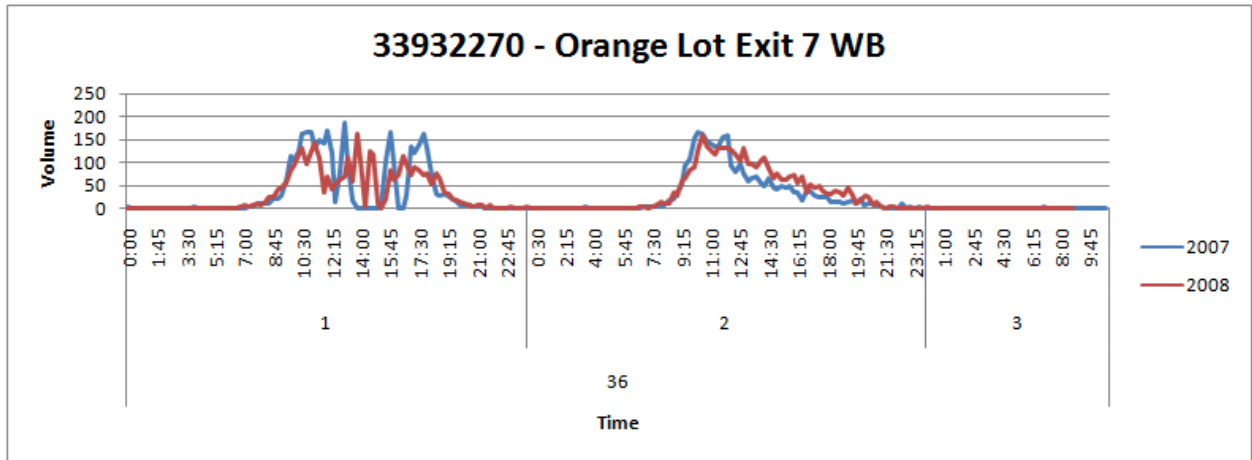
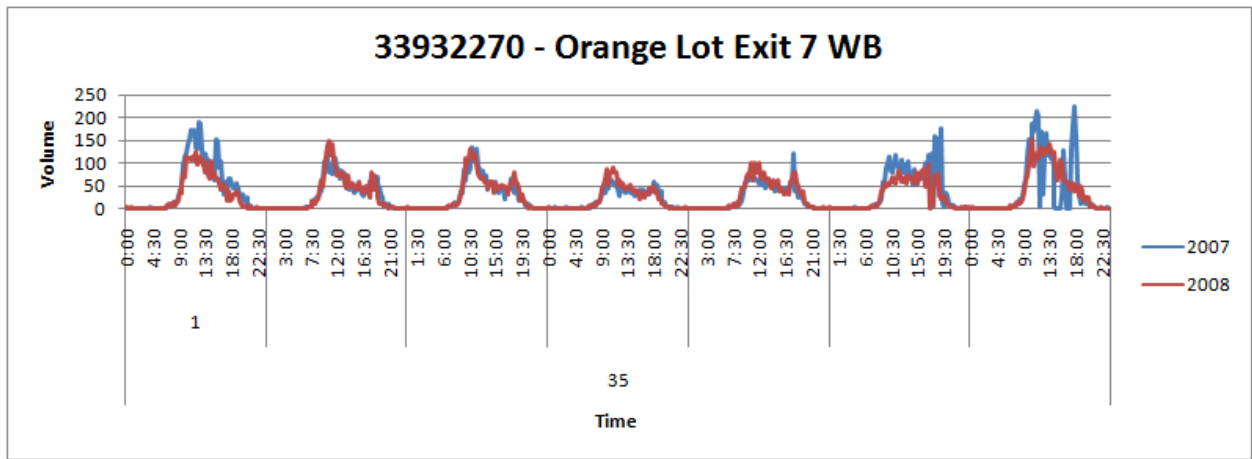
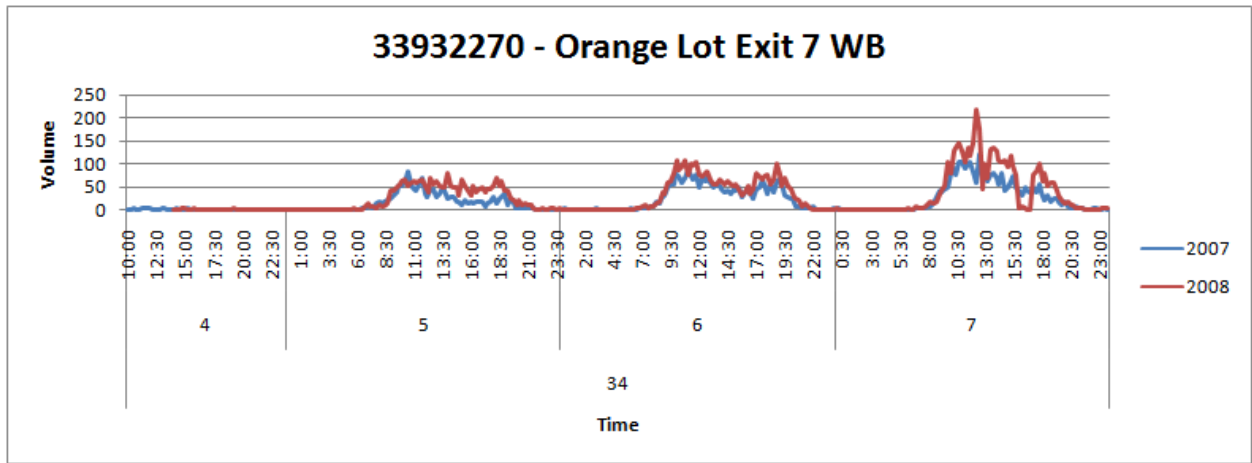


33932411 - State Fair Blvd. Gate 12

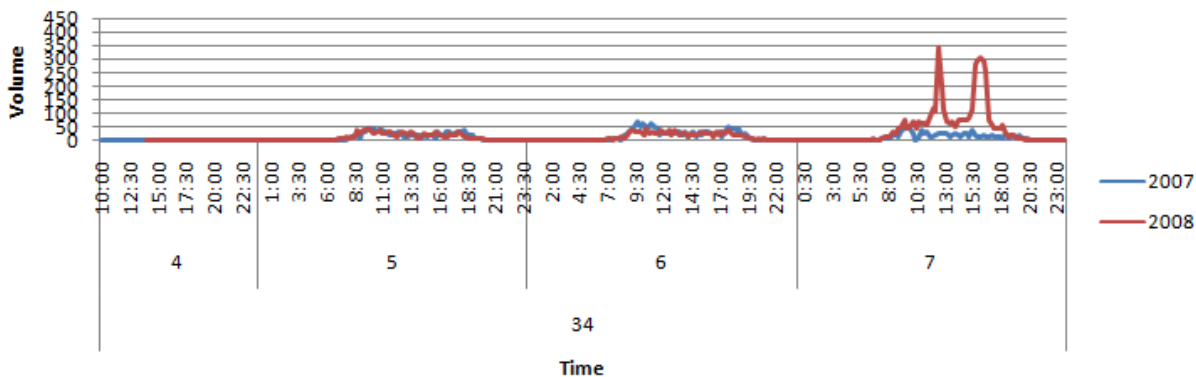


33932411 - State Fair Blvd. Gate 12

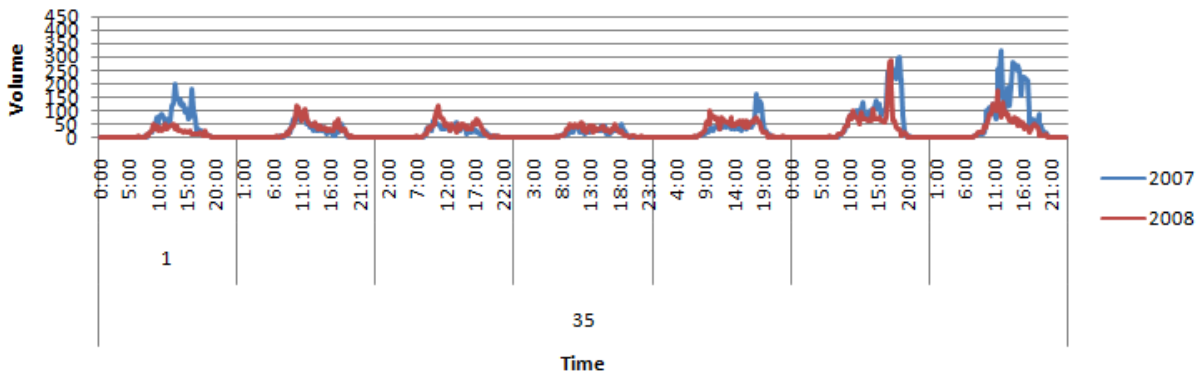




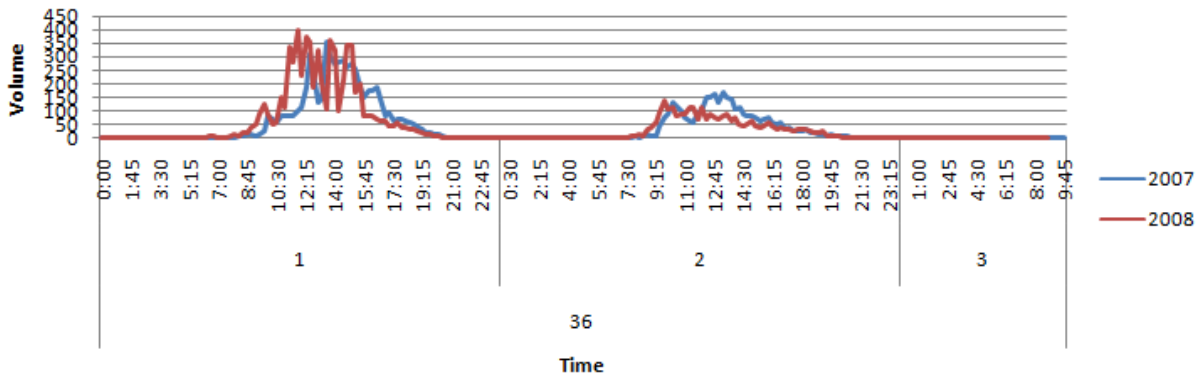
33932110 - Orange Lot 695



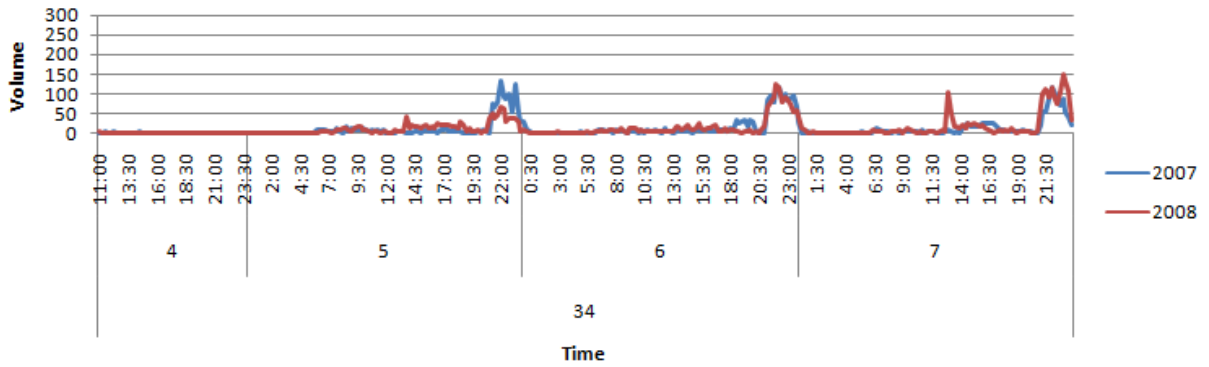
33932110 - Orange Lot 695



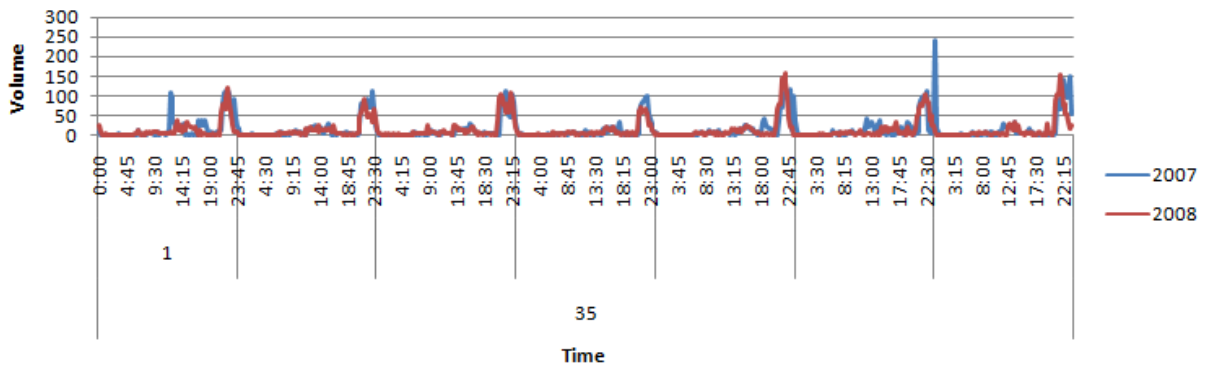
33932110 - Orange Lot 695



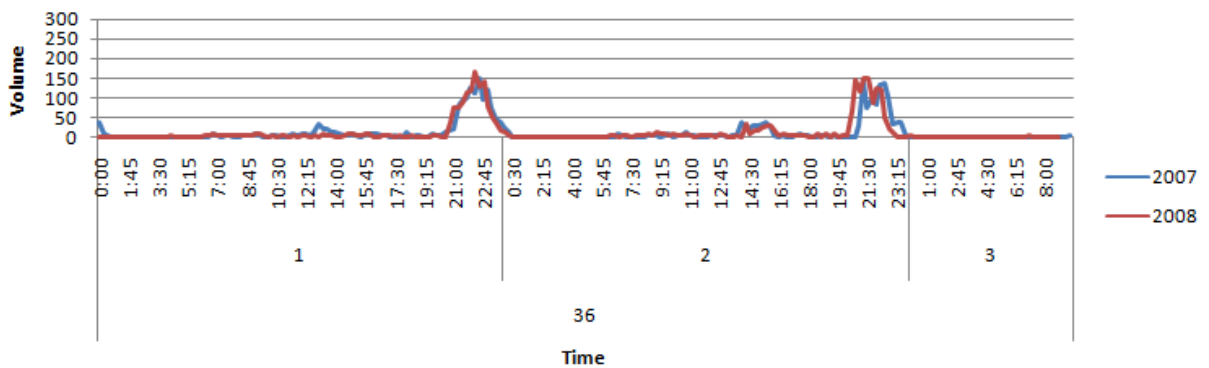
33931312 - State Fair Blvd. Brown Lot



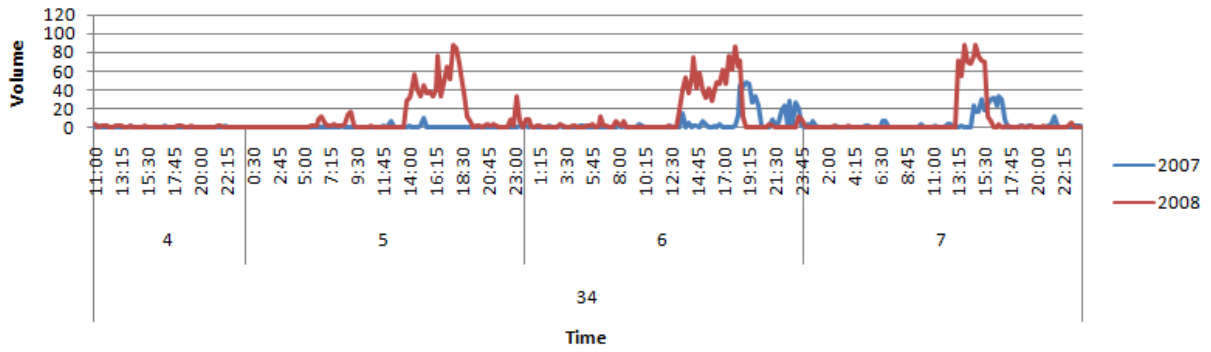
33931312 - State Fair Blvd. Brown Lot



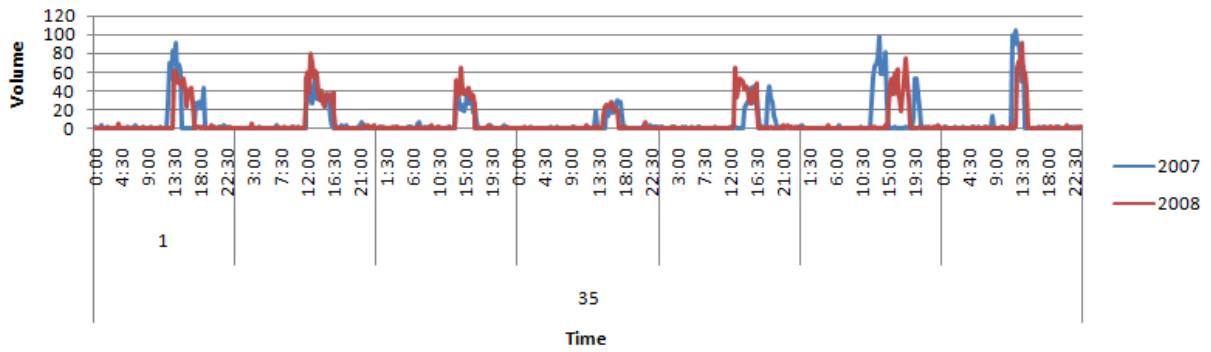
33931312 - State Fair Blvd. Brown Lot



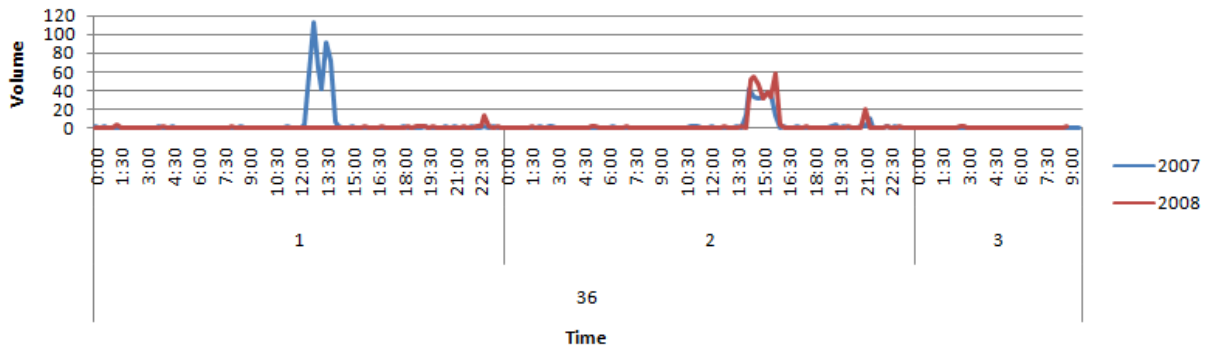
33931311 - State Fair Blvd. Brown Lot



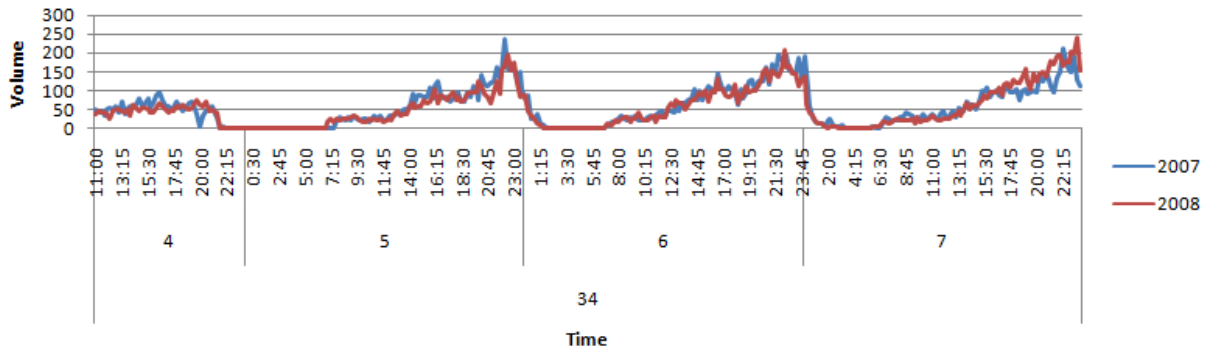
33931311 - State Fair Blvd. Brown Lot



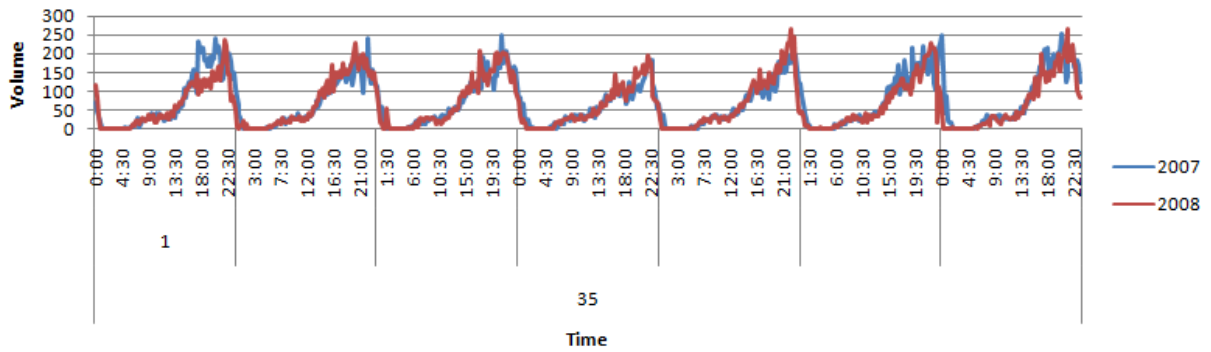
33931311 - State Fair Blvd. Brown Lot



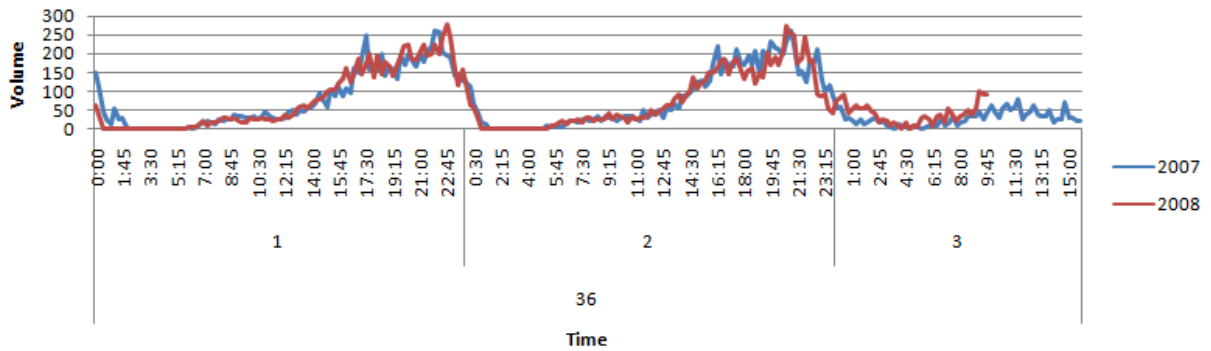
33931111 - State Fair Blvd. Gate 6



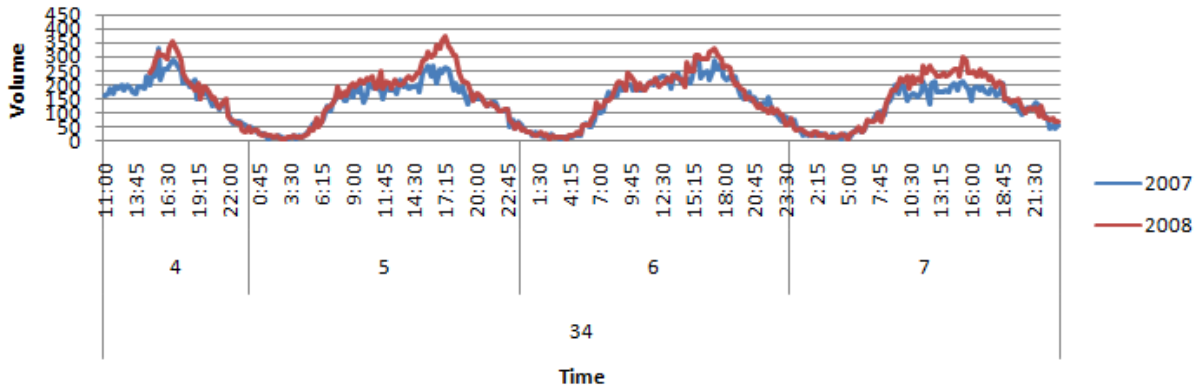
33931111 - State Fair Blvd. Gate 6



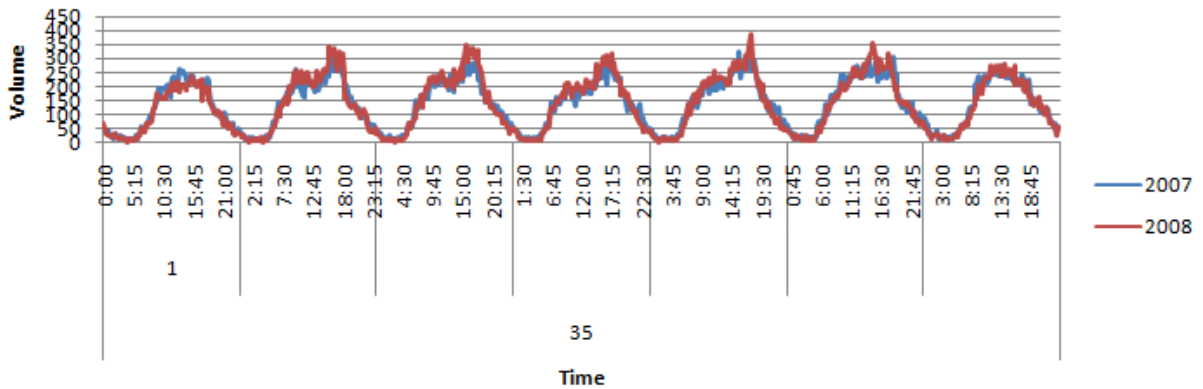
33931111 - State Fair Blvd. Gate 6



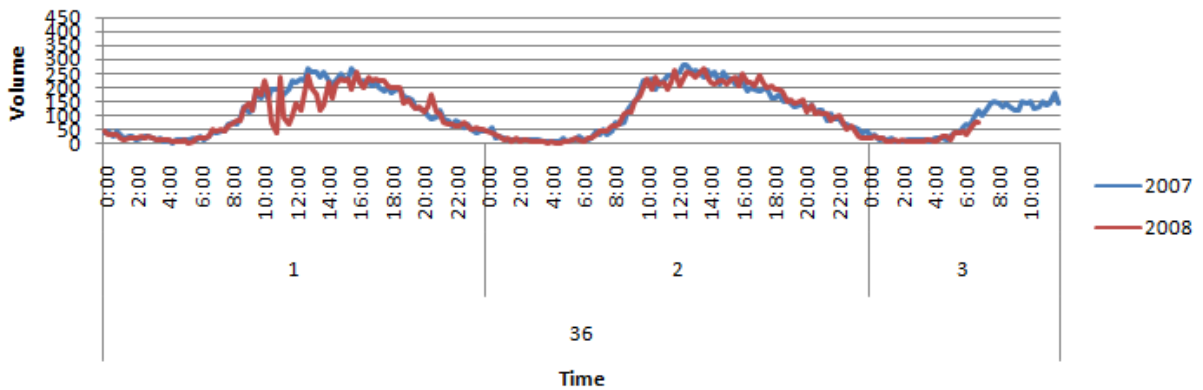
33300770 - I690 WB Bear St.



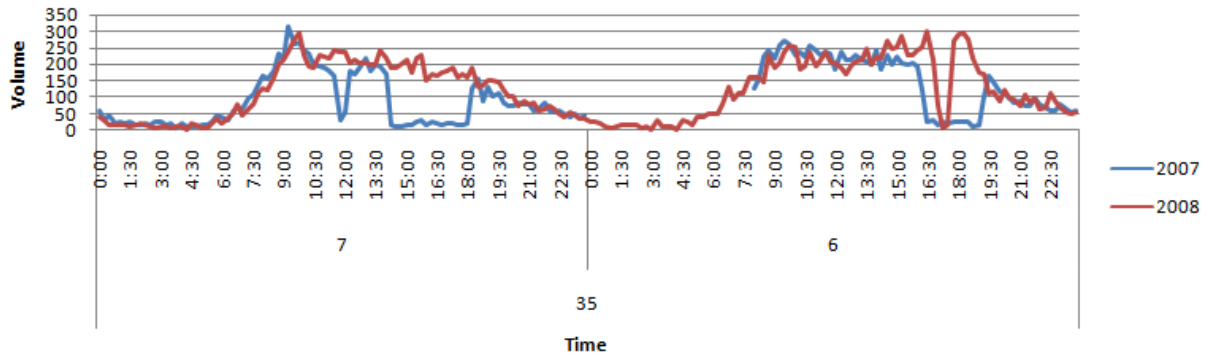
33300770 - I690 WB Bear St.



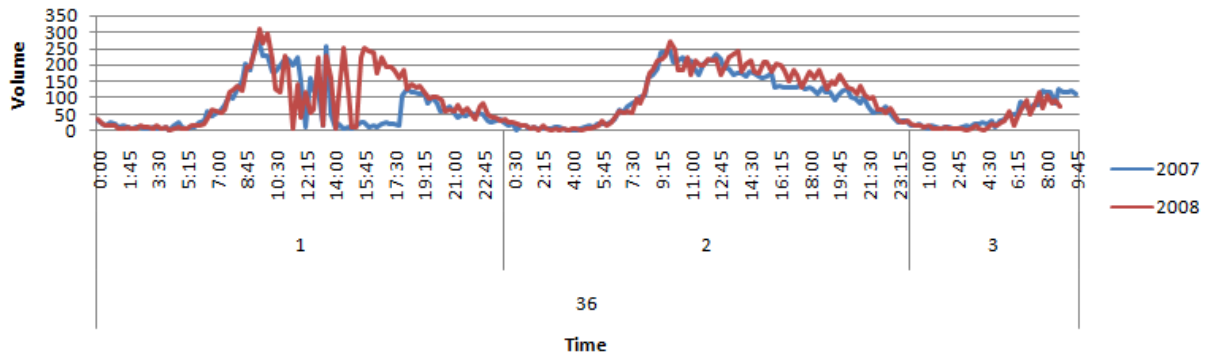
33300770 - I690 WB Bear St.



33300450 - I690 WB Exit 7



33300450 - I690 WB Exit 7



APPENDIX D

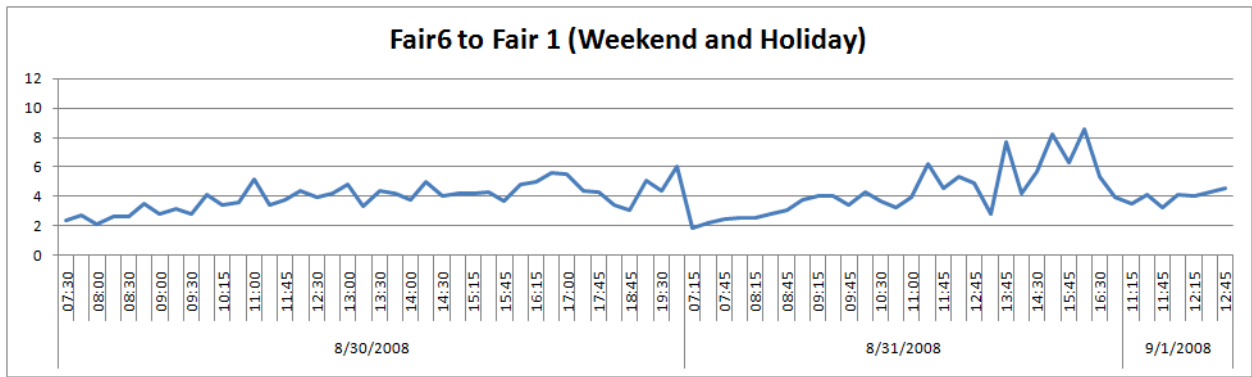
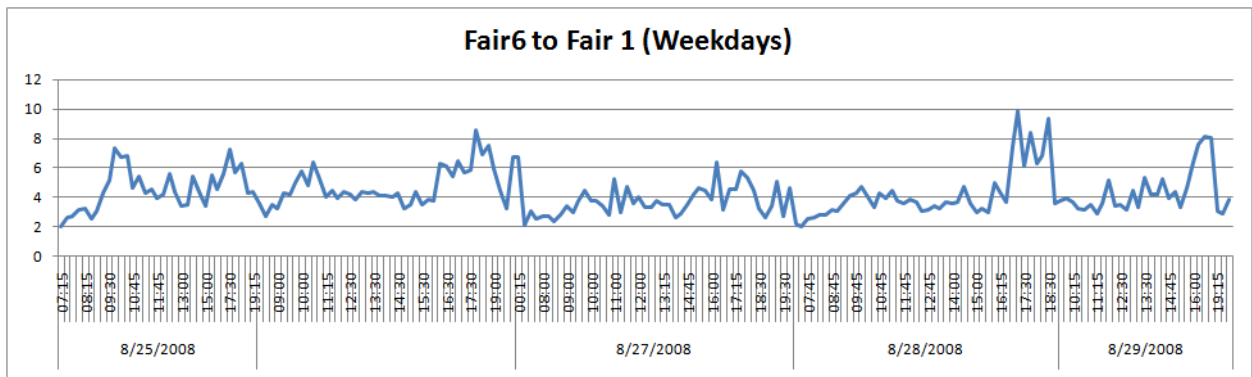
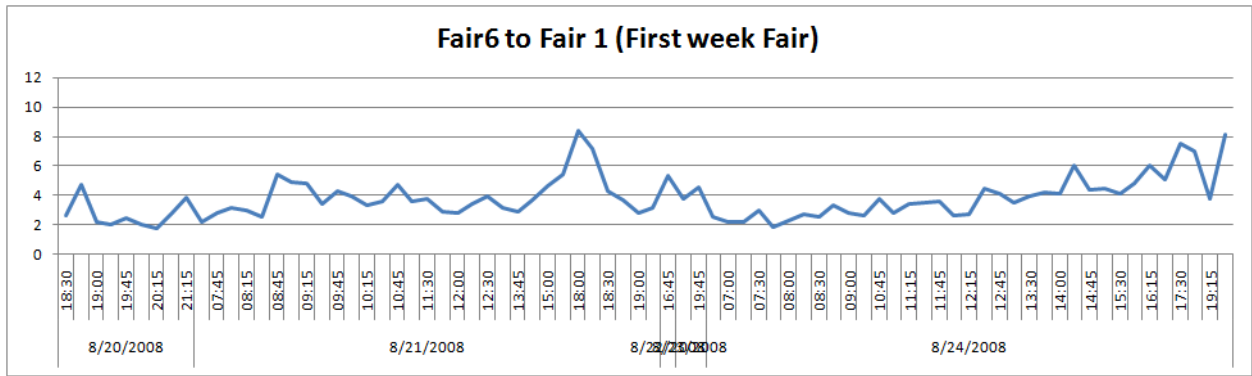
Travel Times Between Tag Readers

(8/20/08 – 9/1/08)

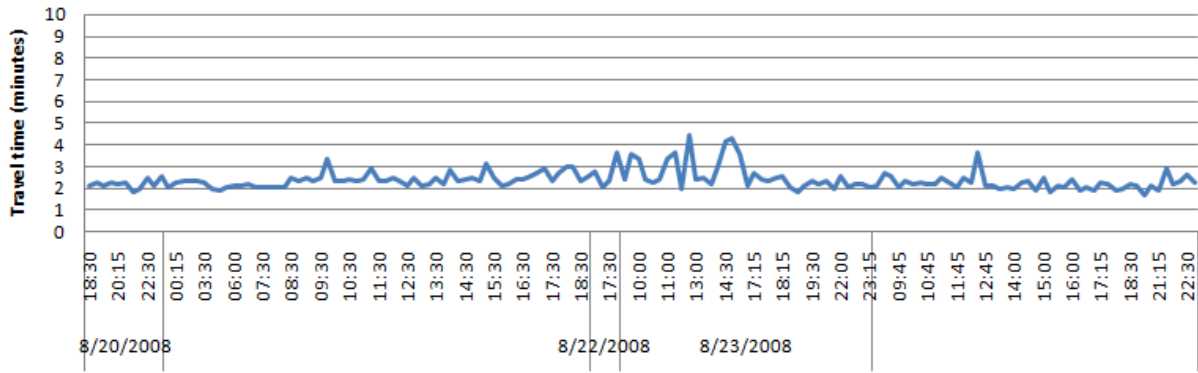


Travel Time Between		Real - Time (Y / N)
From	To	
I-690 WB @ Bear St (ramp & through)	I-690 Exit 7 WB off ramp	Y
I-690 WB @ Bear St (ramp & through)	Orange Lot entrance from exit 7 WB	N
I-690 WB @ Bear St (ramp & through)	Orange Lot entrance from exit 6 WB	N
I-690 Exit 7 WB off ramp	Gate 6 on SFB	Y
I-690 EB (west of temp. signal)	Gate 6 on SFB	Y
I-690 EB (west of temp. signal)	Brown Parking lot	N
I-690 EB (west of temp. signal)	I-690 EB (in work zone)	Y
I-690 EB (in work zone)	I-690 WB @ Bear St (ramp & through)	Y
I-690 EB (in work zone)	Orange Lot entrance from exit 7 WB	N
I-690 EB (in work zone)	Orange Lot entrance from exit 6 WB	N

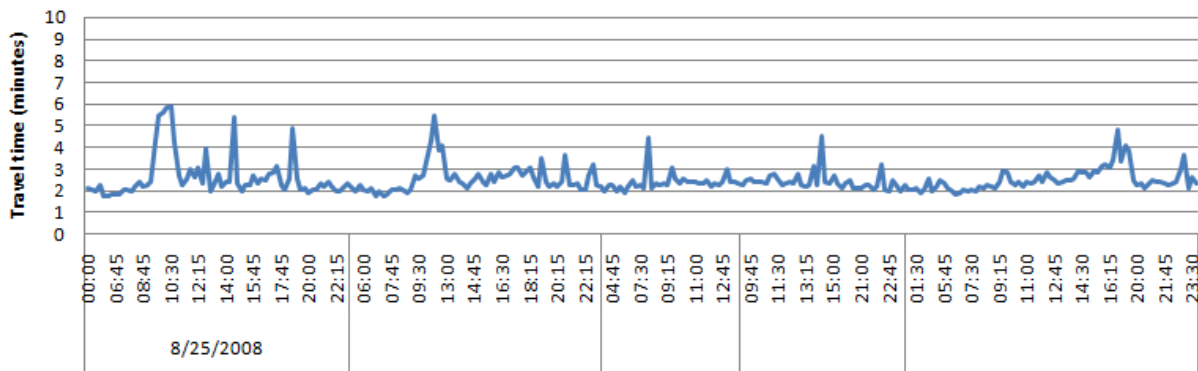
Note: The clocks on all of the RPI tag readers were synced together so the travel times are all unique. The team has made the assumption that the travel times for the other readers (parking & toll plazas) were also synced together. However, the team is unaware if the synced times for the parking readers and the toll plazas were linked to any kind of universal clock. The RPI readers were linked to the time provided by the cellular carrier (Sprint). So the travel times between non-RPI devices to RPI devices may be incorrect in terms of the actual time the patterns can be seen.



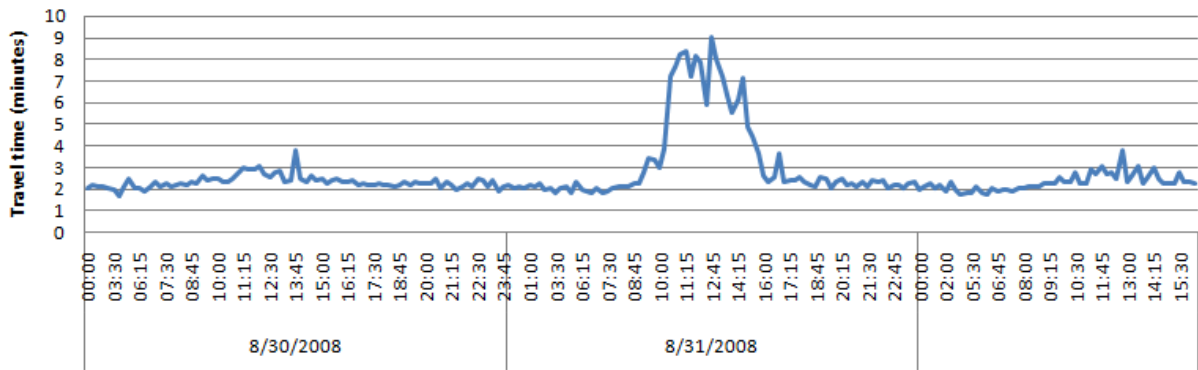
Fair2 to Fair6 (First week Fair)

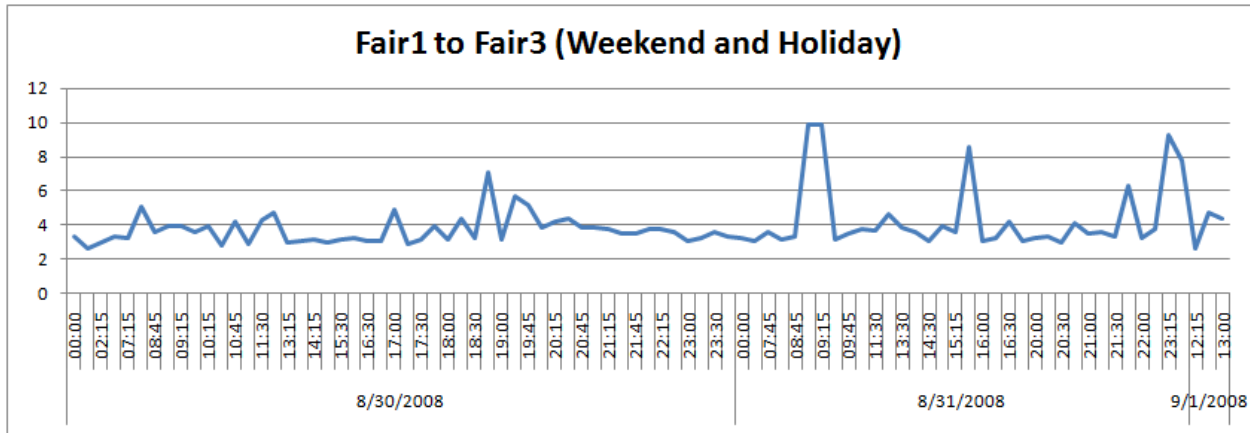
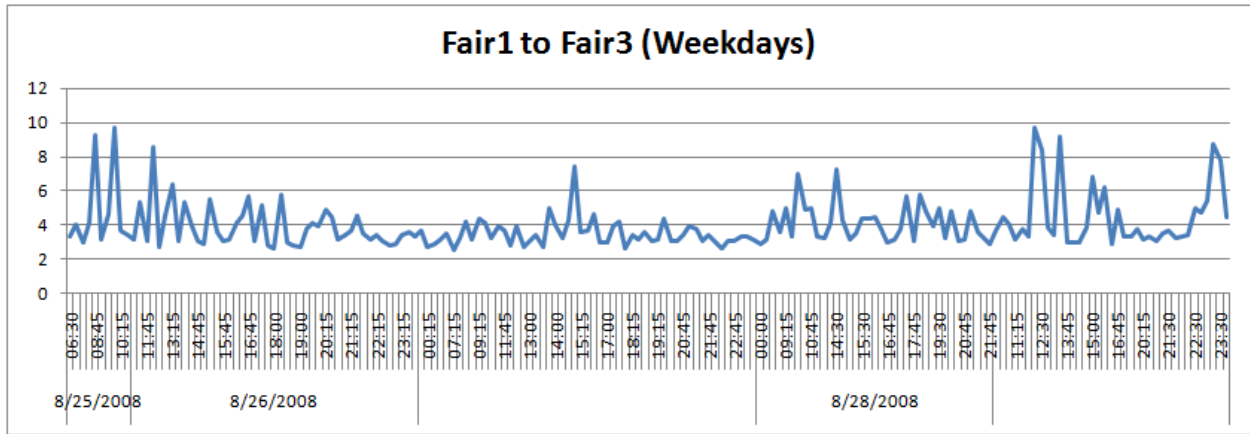
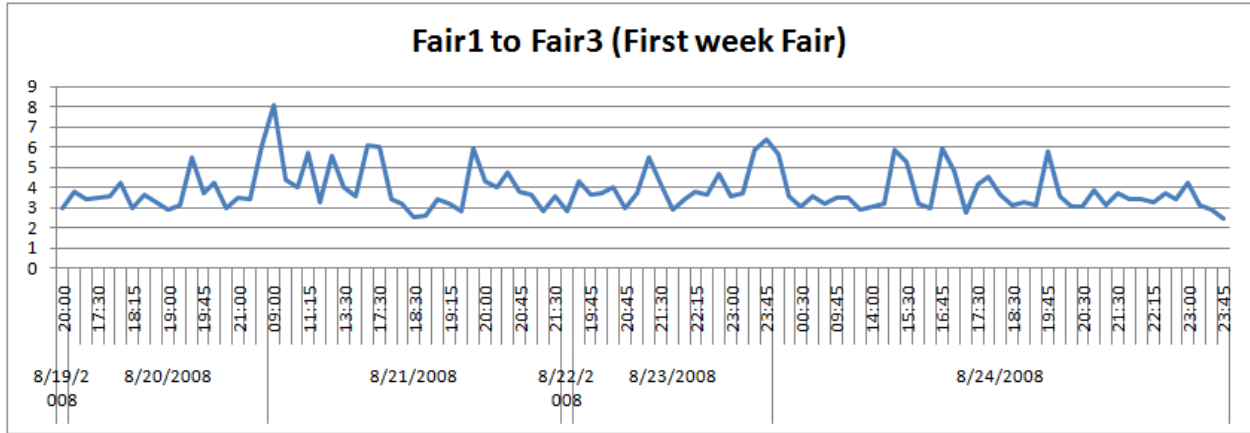


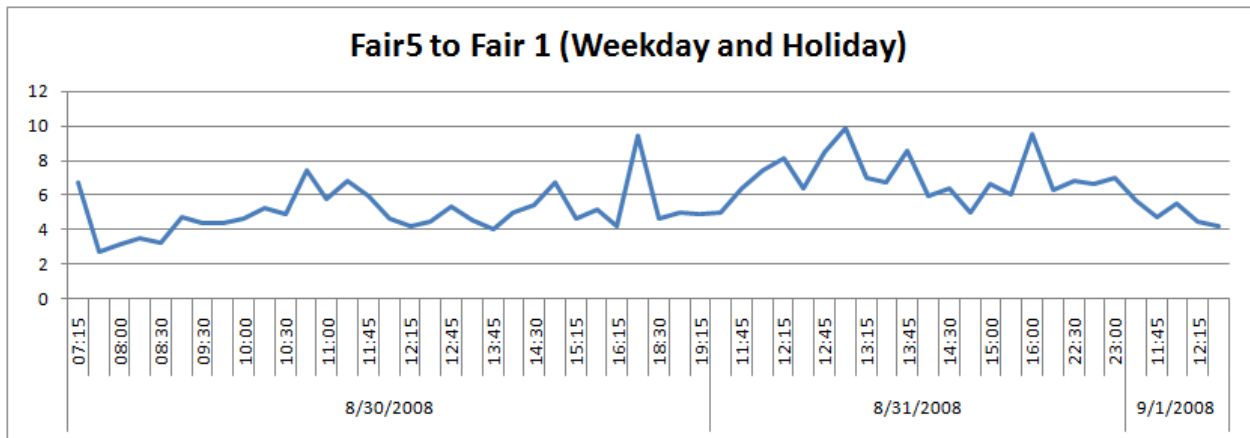
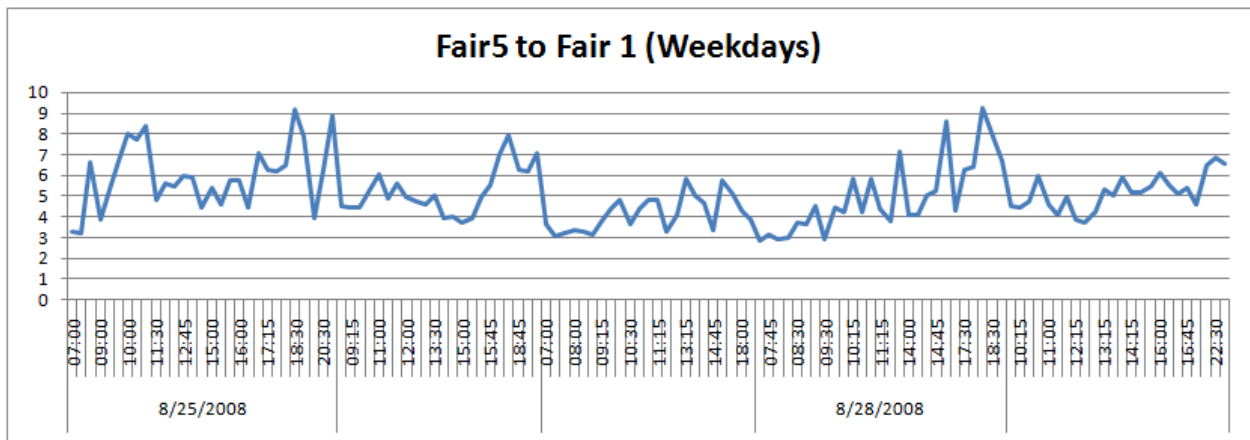
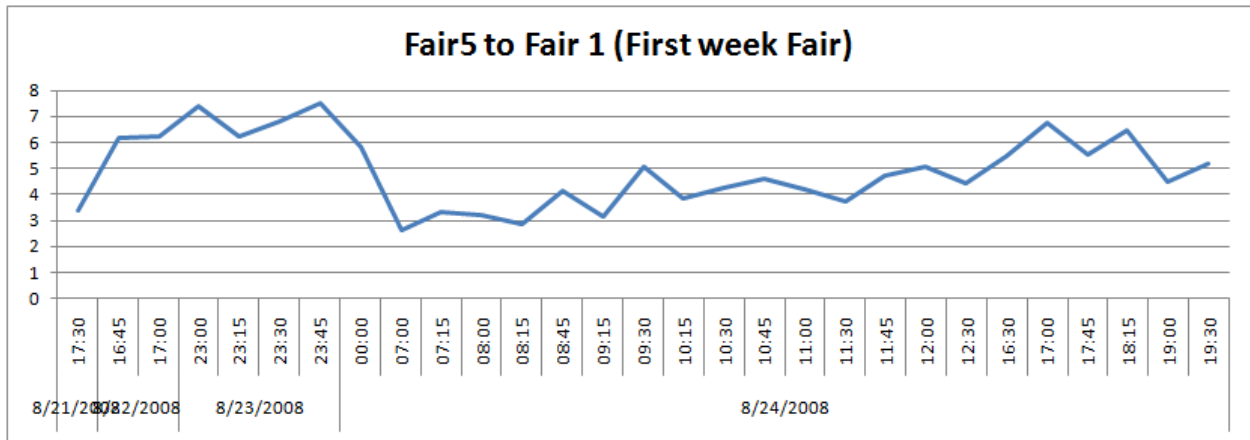
Fair2 to Fair6 (Weekdays)



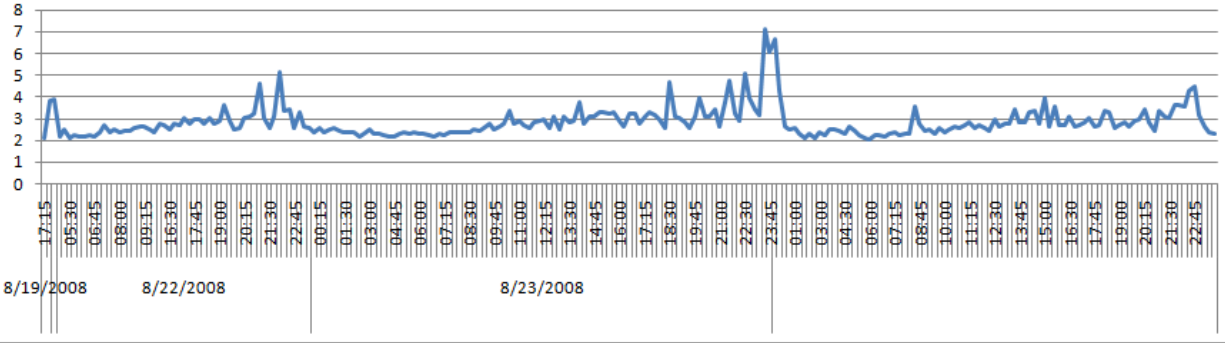
Fair2 to Fair6 (Weekend and Holiday)



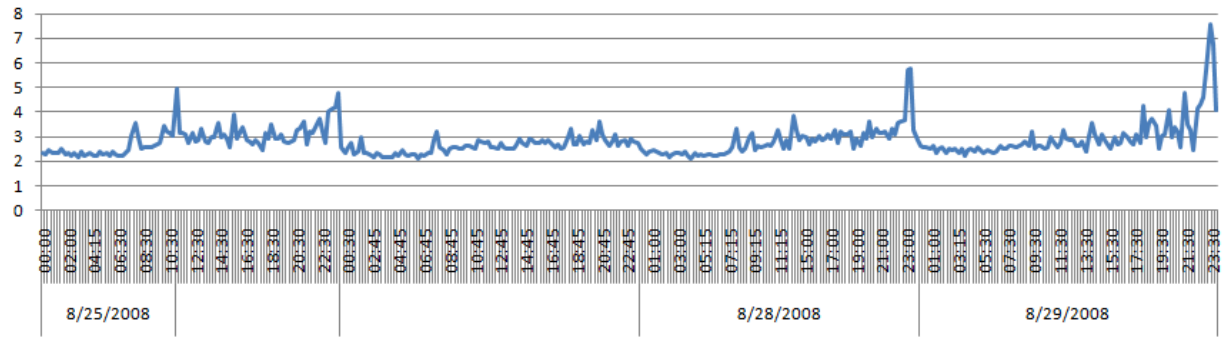




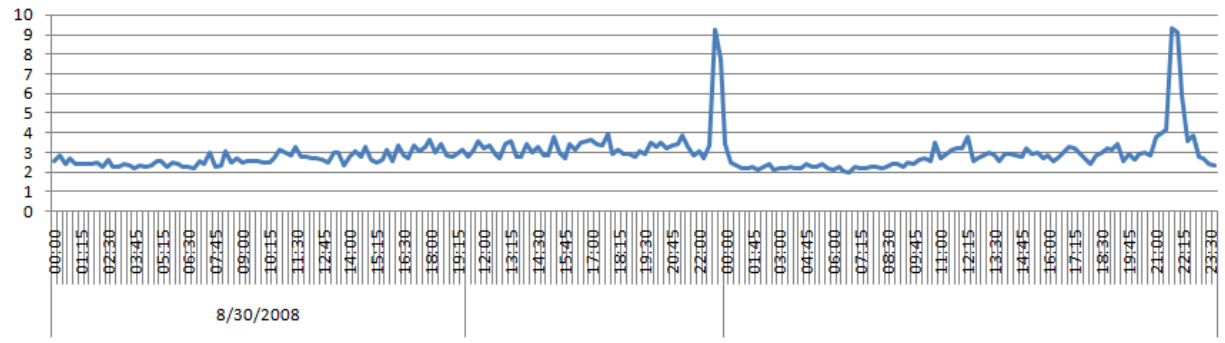
Fair5 to Fair3 (First week Fair)



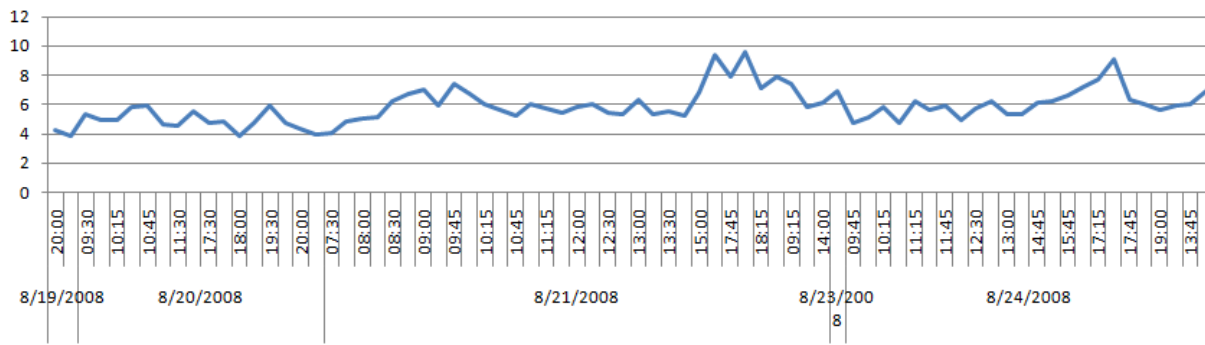
Fair5 to Fair3 (Weekdays)



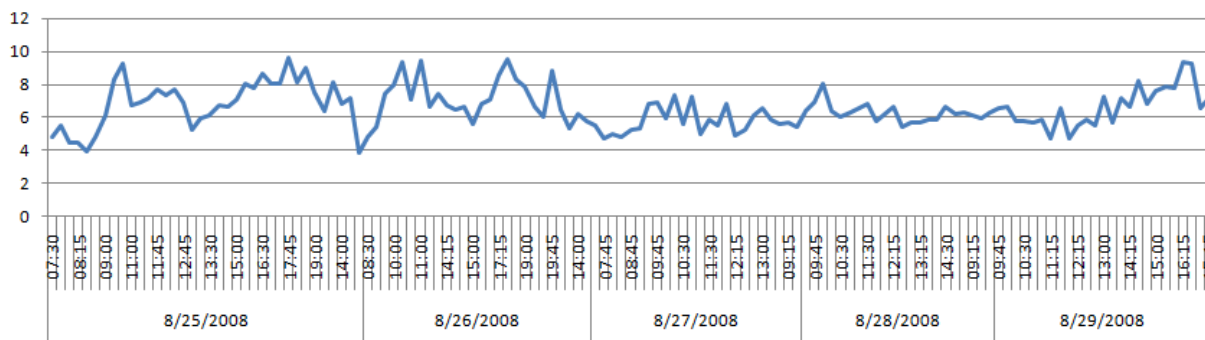
Fair5 to Fair3 (Weekend and Holiday)



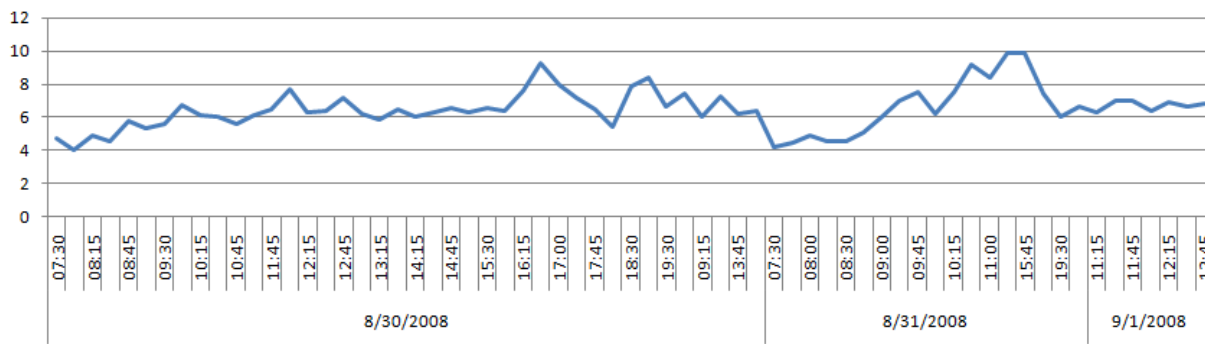
Fair2 to Fair1 (First week Fair)



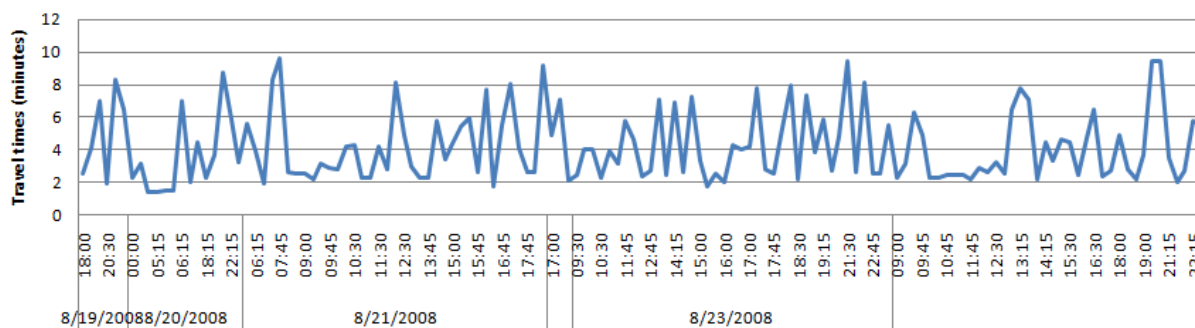
Fair2 to Fair1 (Weekday)



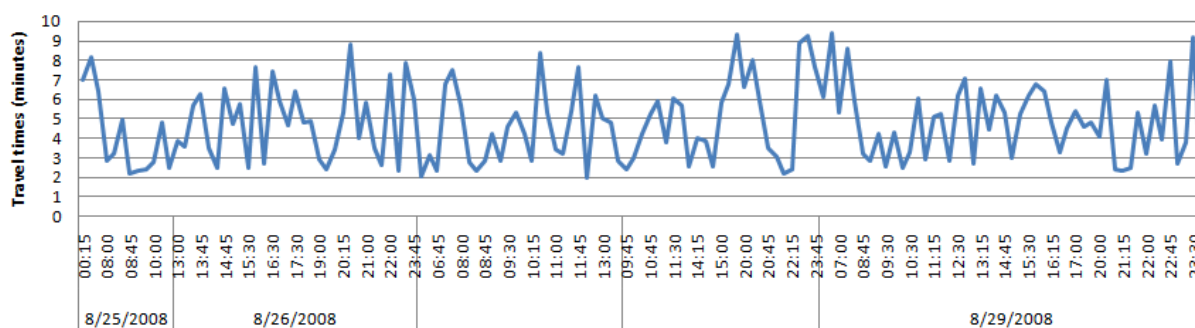
Fair2 to Fair1 (Weekend and Holiday)



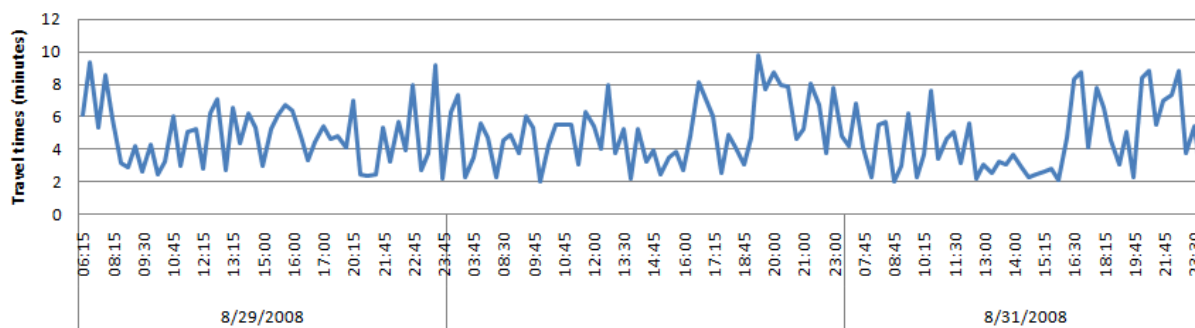
Fair3 to Fair2 (First week Fair)

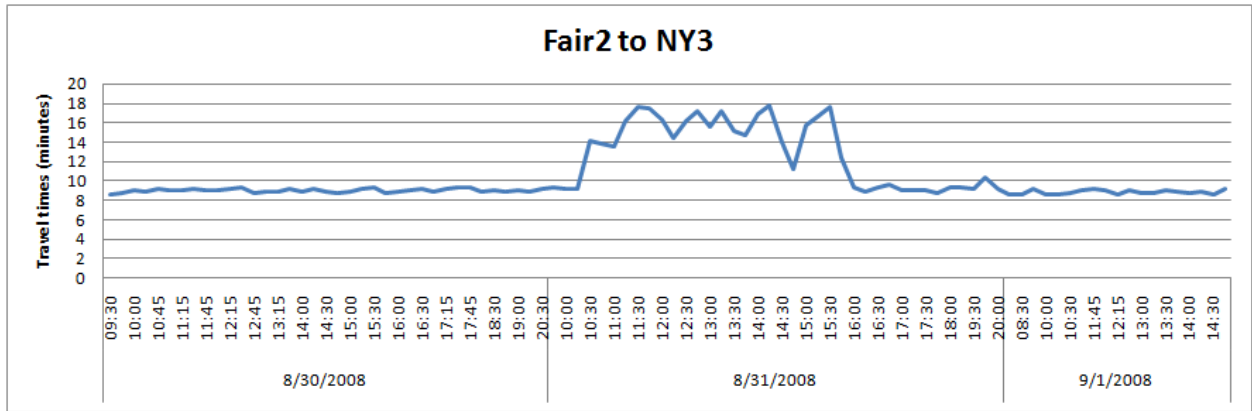
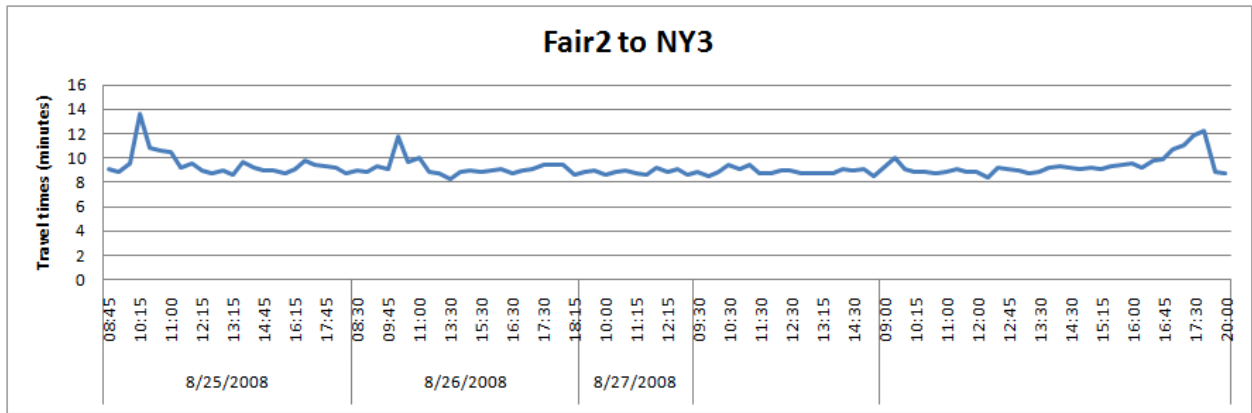
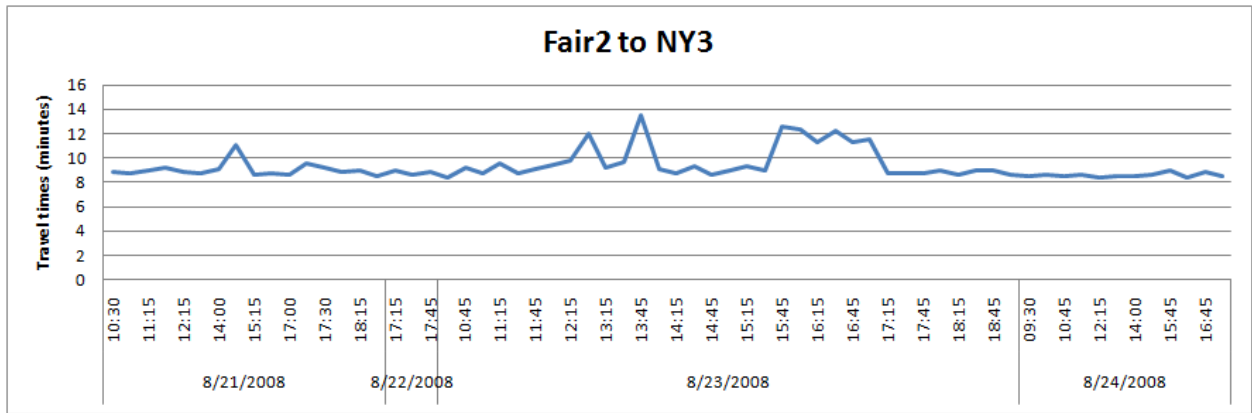


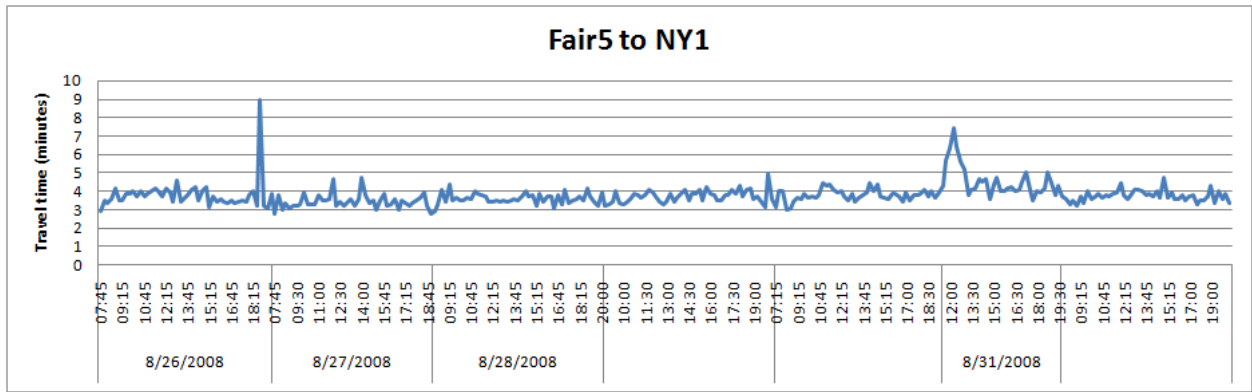
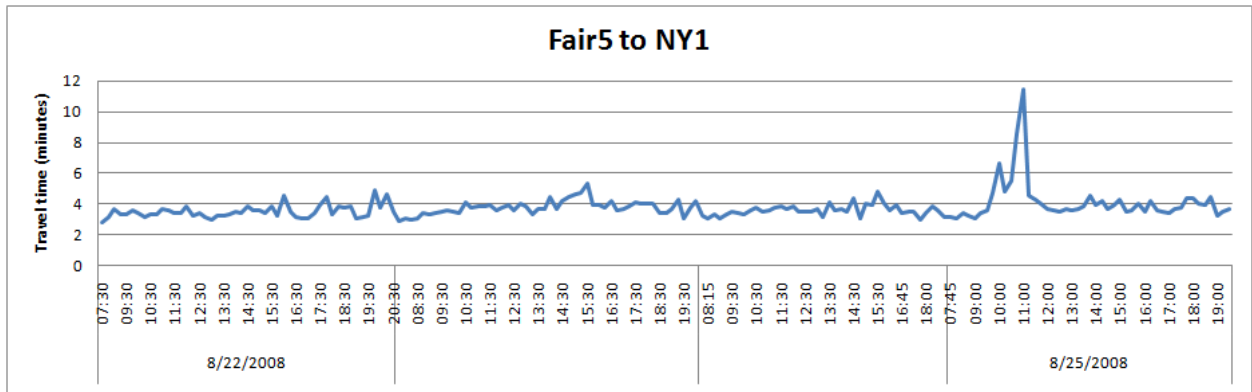
Fair3 to Fair2 (Weekdays)



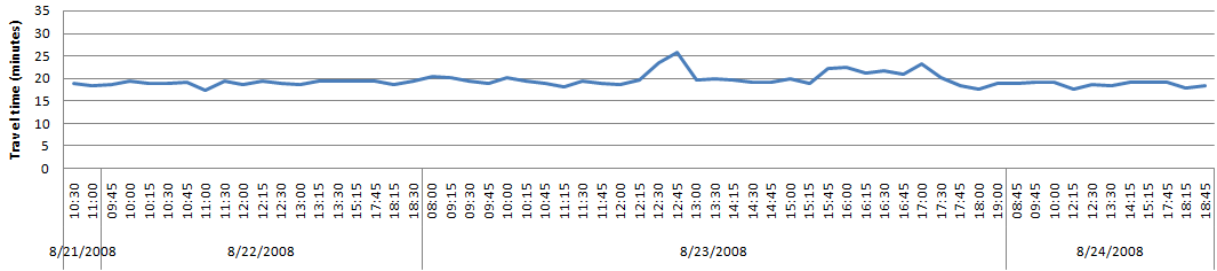
Fair3 to Fair2 (Weekend and Holiday)



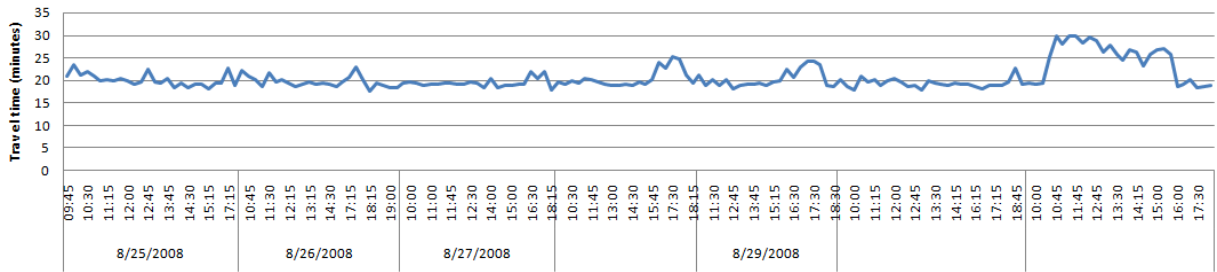


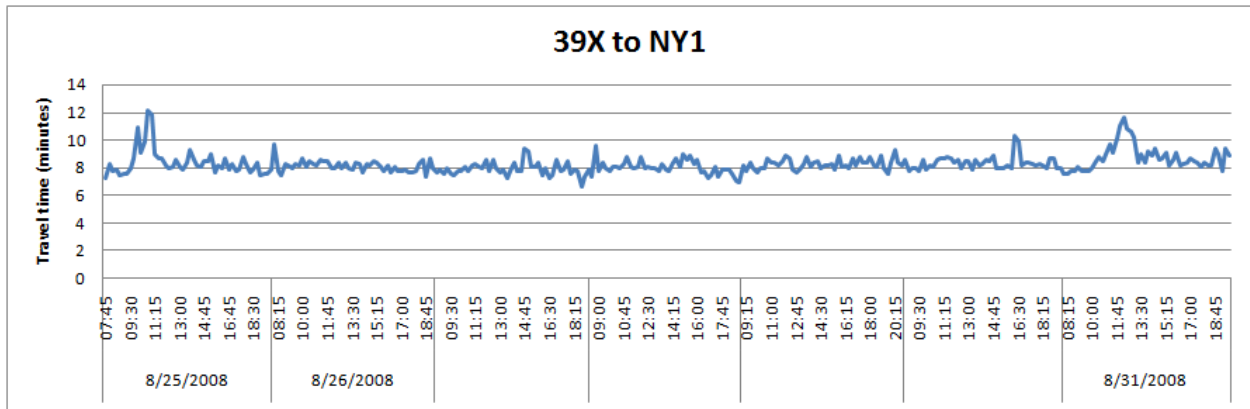
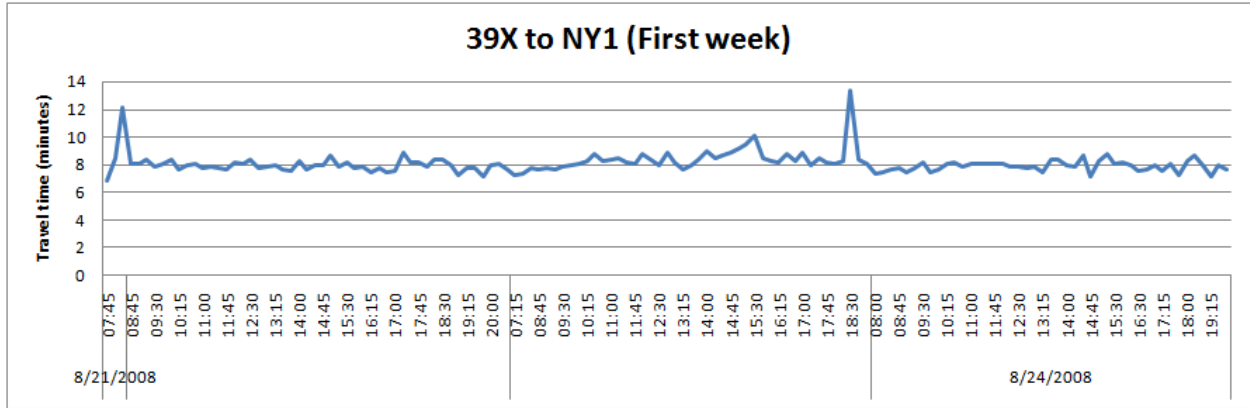


34A to NY3 (First week)

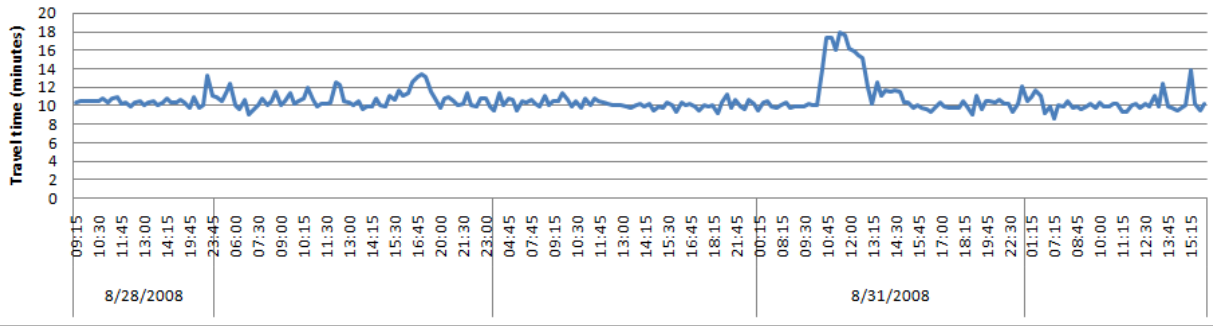


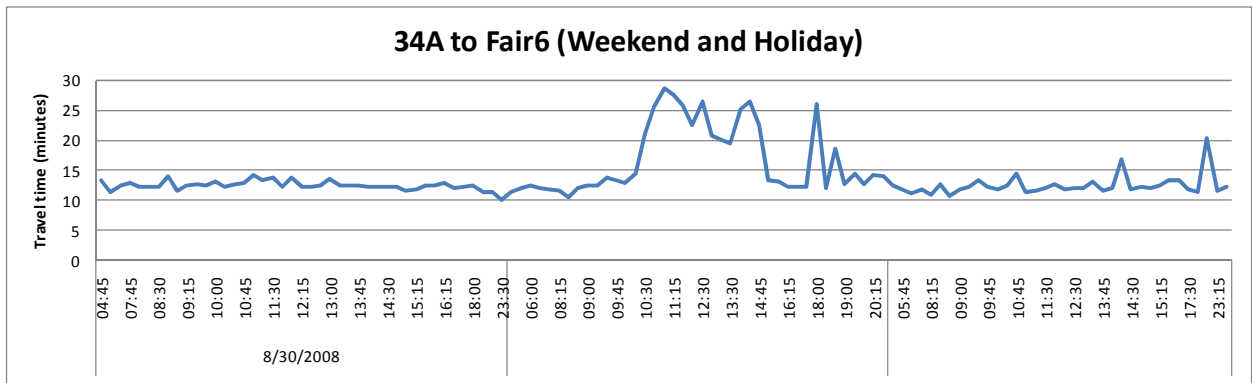
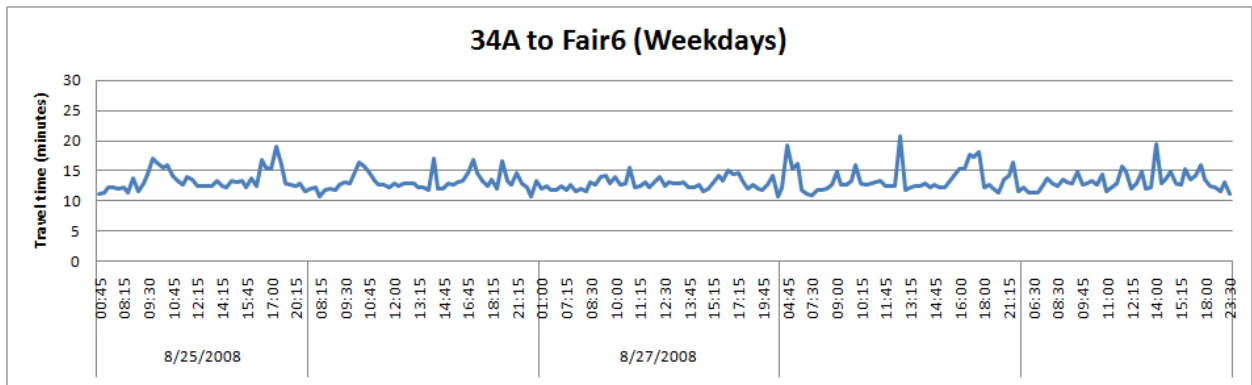
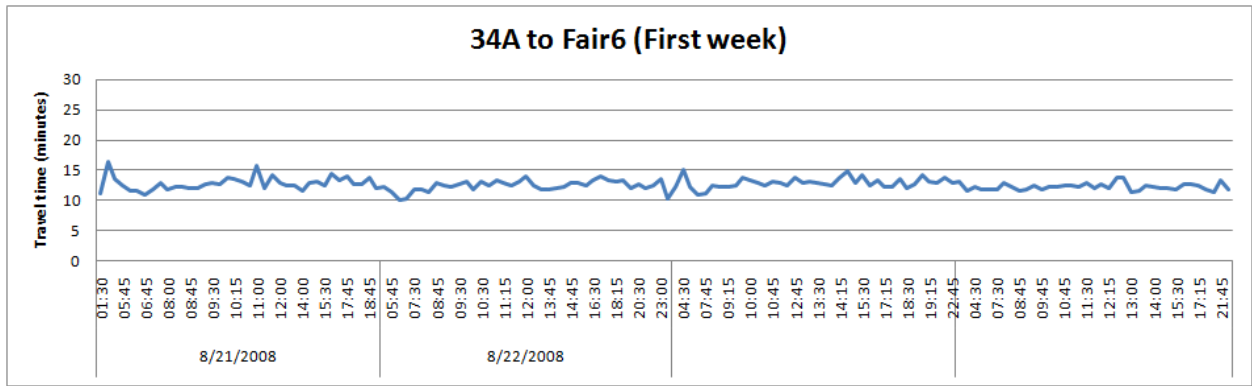
34A to NY3

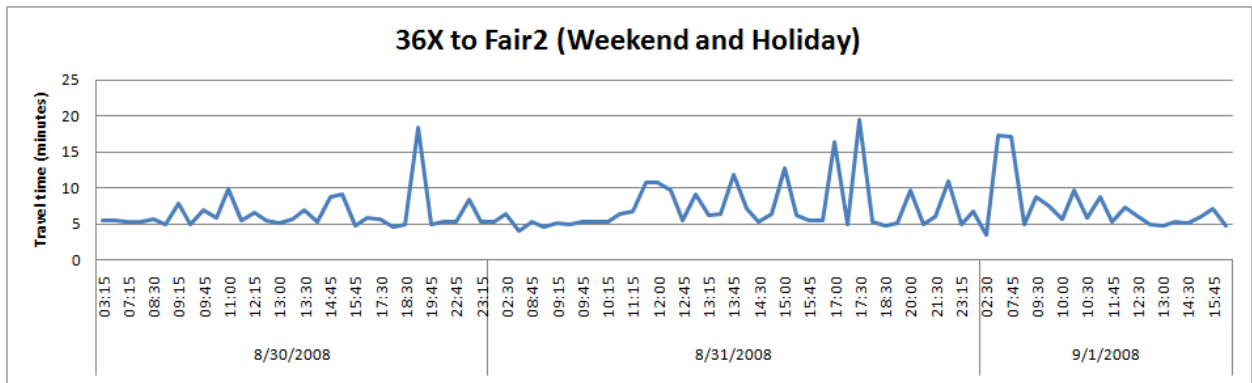
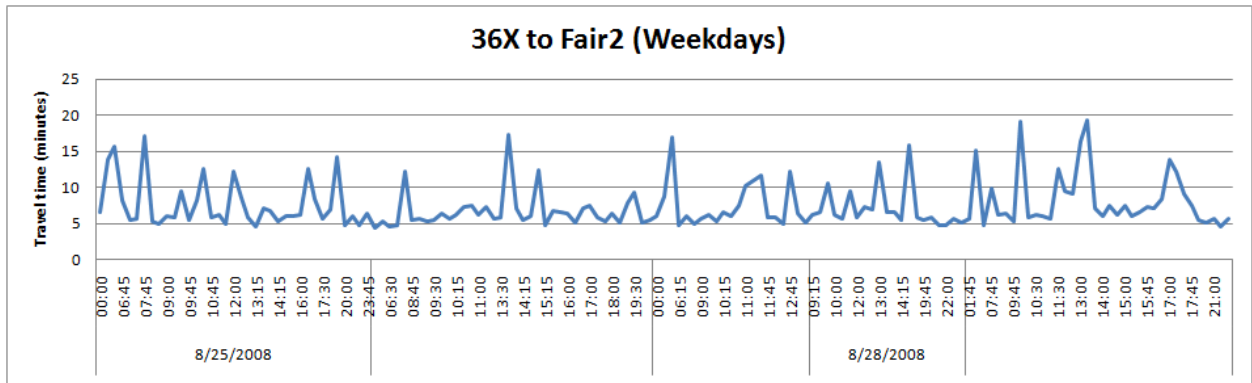
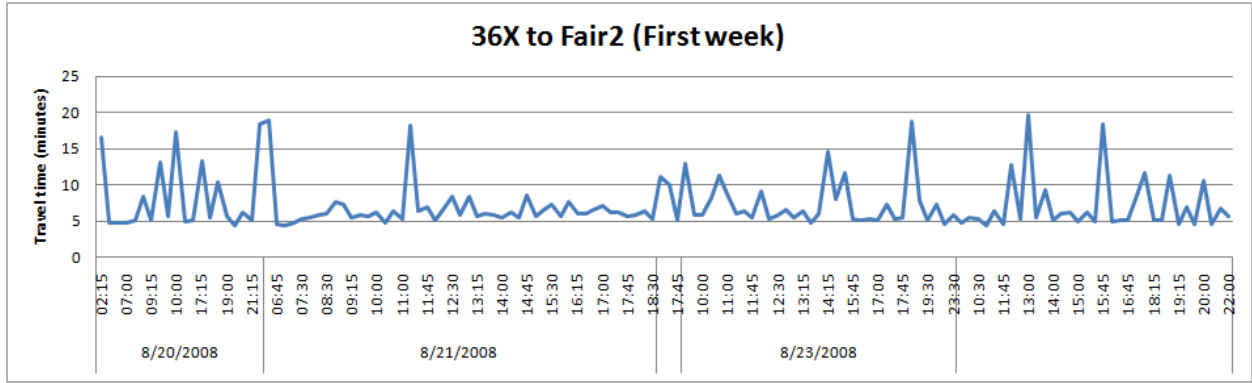


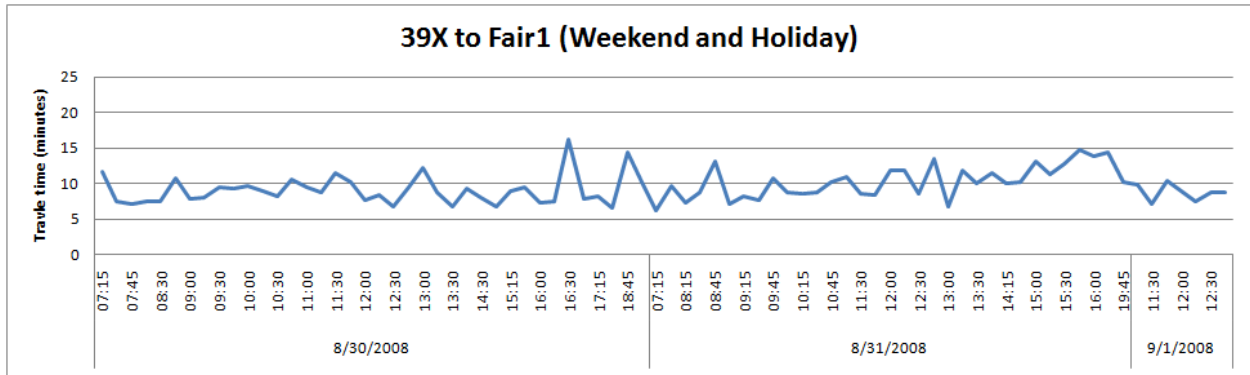
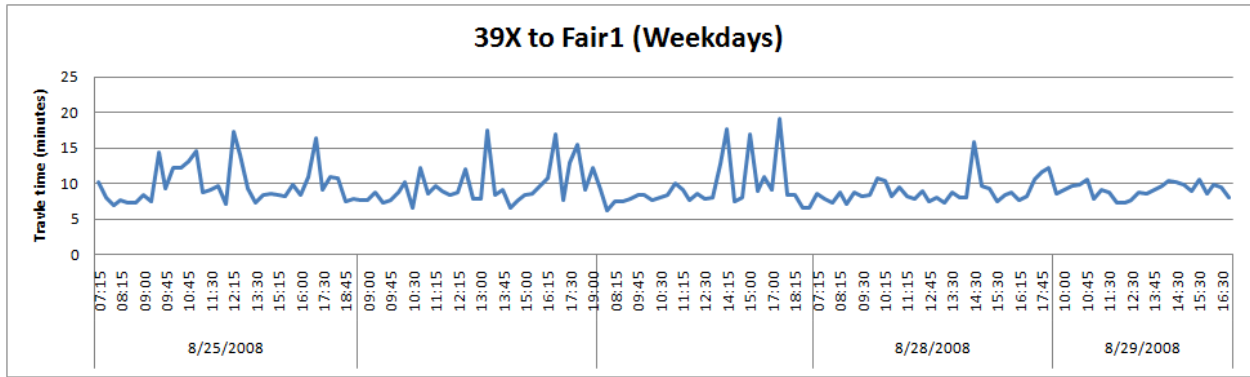
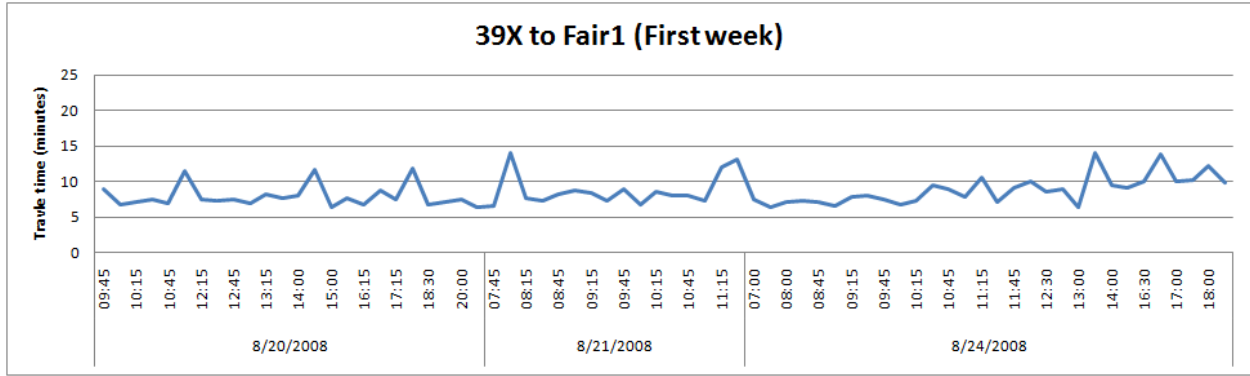


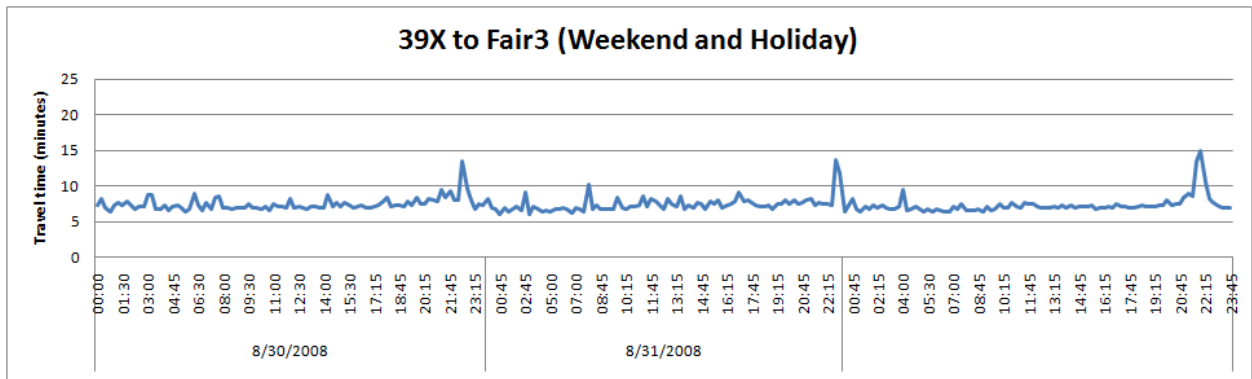
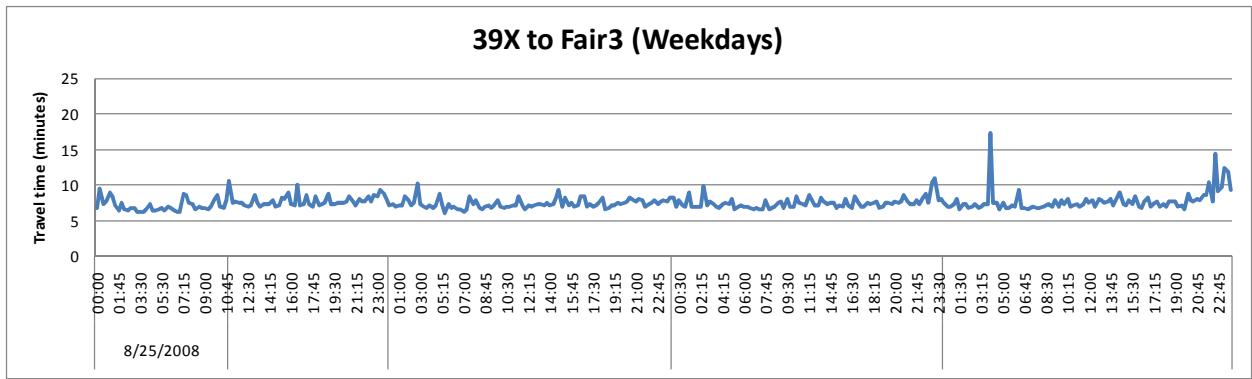
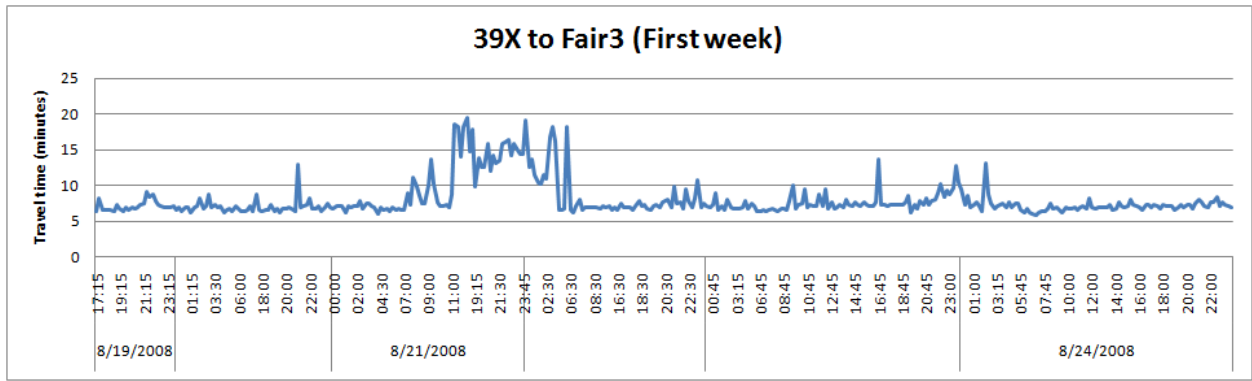
34A to Fair2

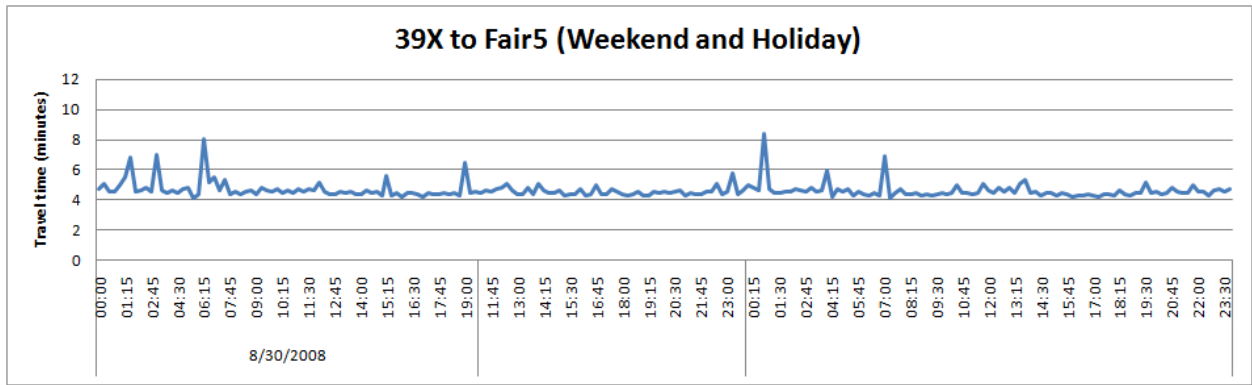
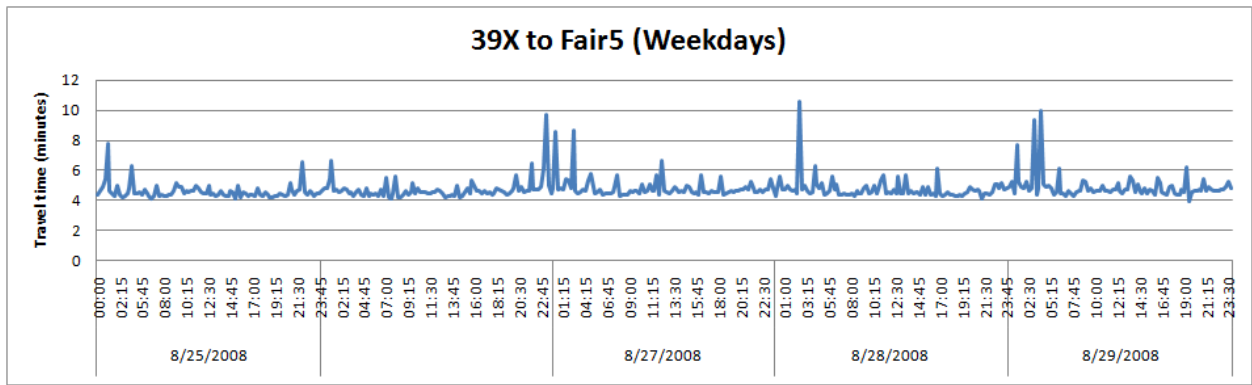
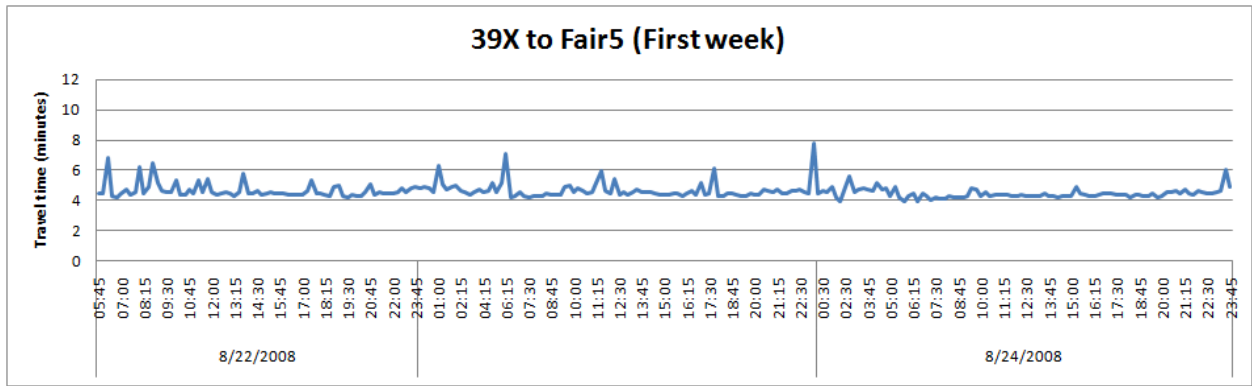








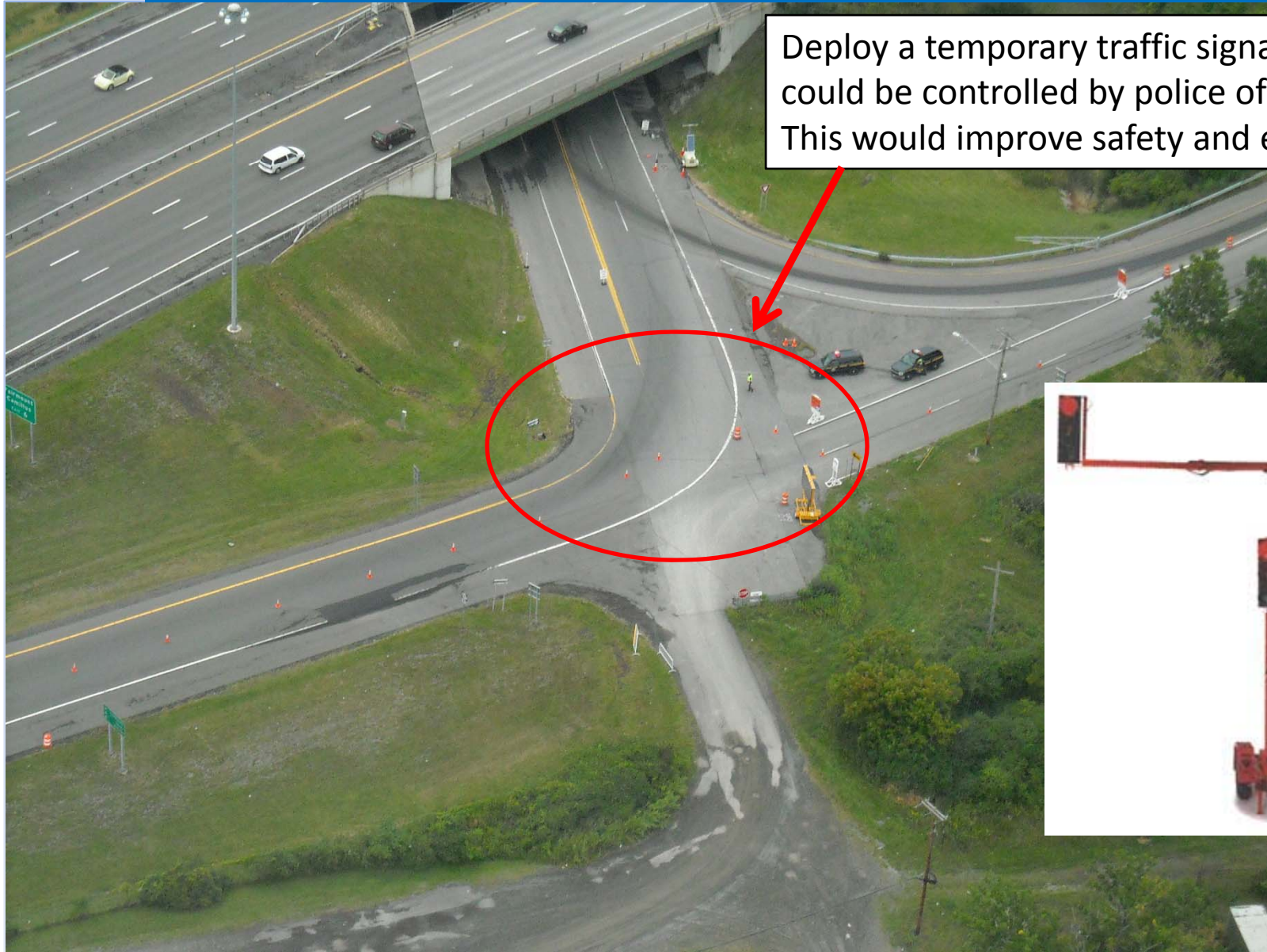




Appendix E

Suggested Improvement Locations

Exit 7 WB off ramp



Deploy a temporary traffic signal that could be controlled by police officer. This would improve safety and efficiency



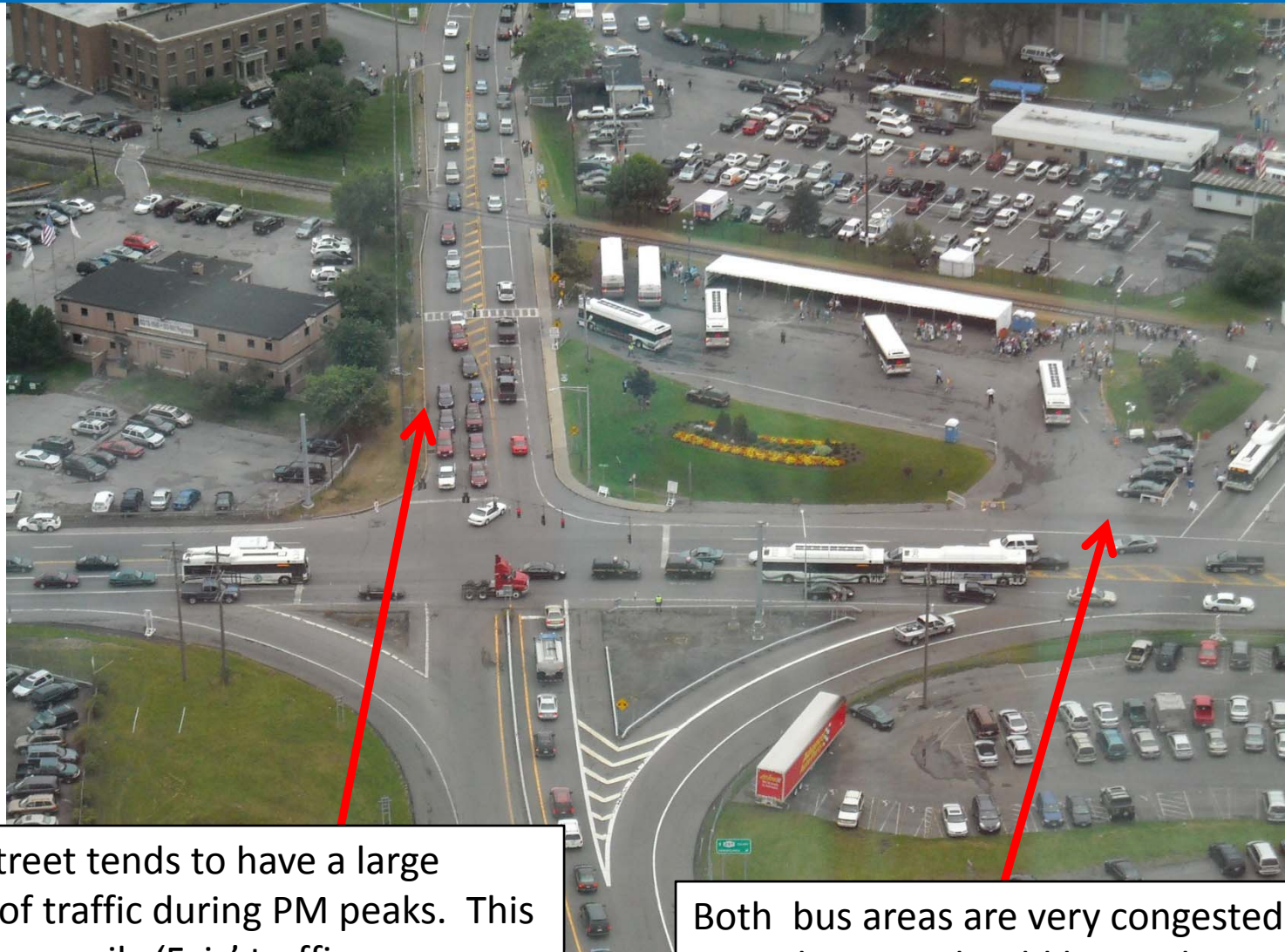
Exit 7 WB off ramp



Add striping showing 2 lanes at Exit 7 WB off ramp (could be temporary)



State Fair Blvd / Bridge St area

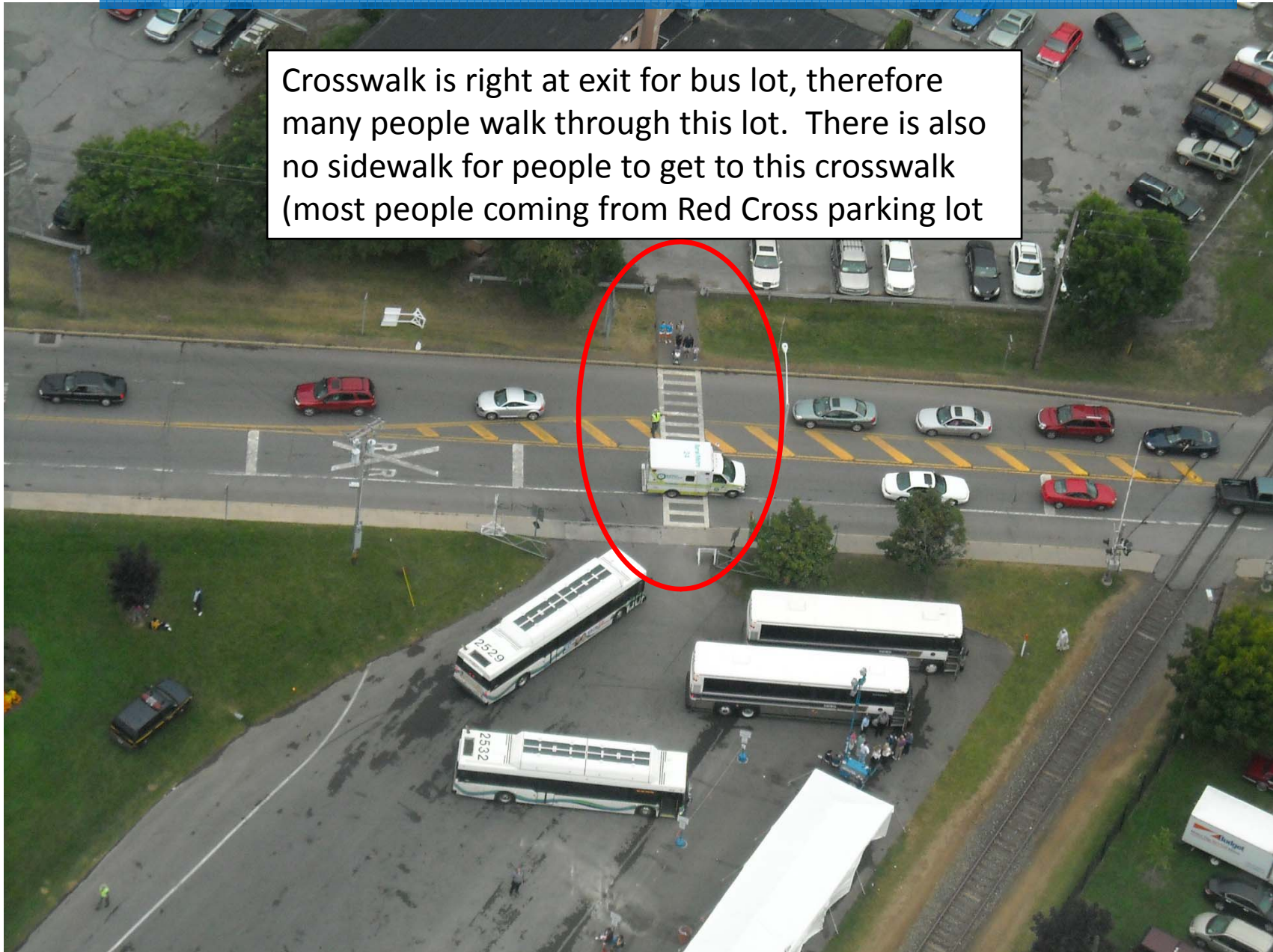


Bridge Street tends to have a large amount of traffic during PM peaks. This is not necessarily 'Fair' traffic.

Both bus areas are very congested. Consideration should be made to move one or both of them or possibly reconfigure

Bus Drop Off Area

Crosswalk is right at exit for bus lot, therefore many people walk through this lot. There is also no sidewalk for people to get to this crosswalk (most people coming from Red Cross parking lot)



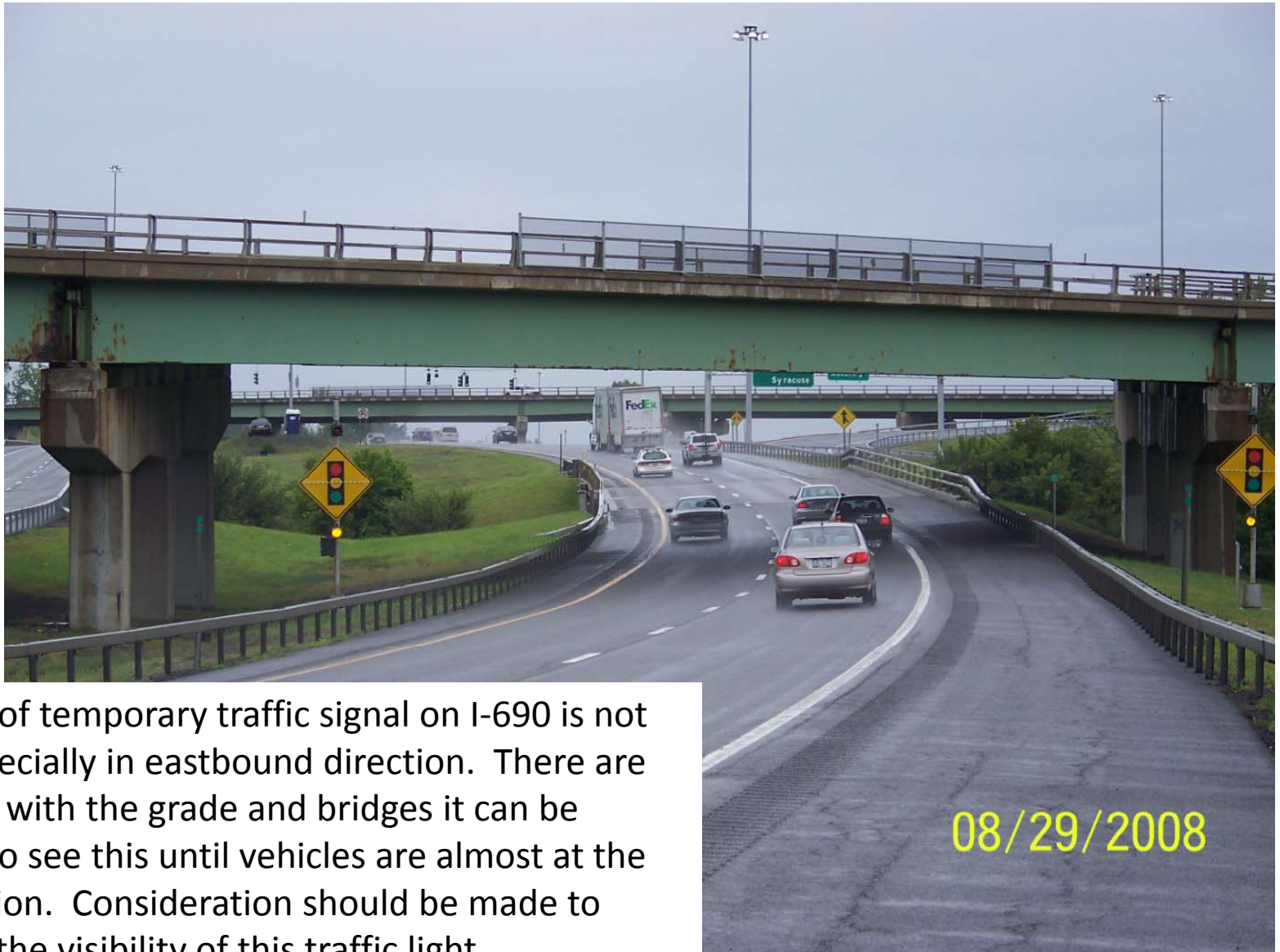
I-690 exit 6 entrance to Orange Lot



Problem: The 2 lanes in the image represent the exit 6 ramp from I-690 WB. During the Fair the traffic from the Orange lot queues back onto this ramp. It is advertised to use the right lane and right shoulder. The signage and road markings are misleading for the motorist; they suggest that the right shoulder should not be used.

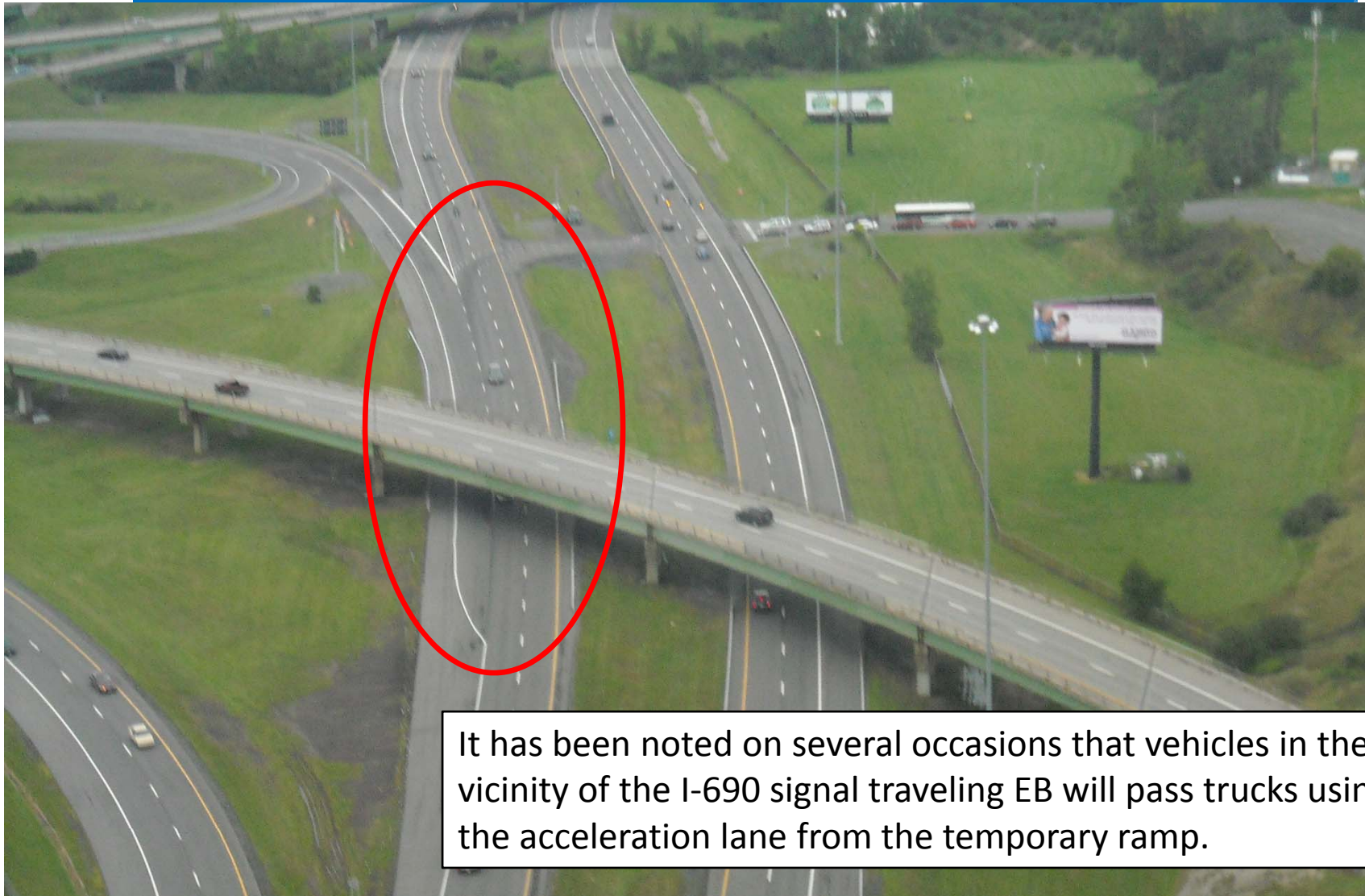
Solution: Expand overhead sign to show 'Parking' in both the right lane and shoulder. Place a break in the solid white stripping to the shoulder.

I-690 traffic signal



Visibility of temporary traffic signal on I-690 is not ideal, especially in eastbound direction. There are signs but with the grade and bridges it can be difficult to see this until vehicles are almost at the intersection. Consideration should be made to improve the visibility of this traffic light.

I-690 EB @ temp ramp from SFB



It has been noted on several occasions that vehicles in the vicinity of the I-690 signal traveling EB will pass trucks using the acceleration lane from the temporary ramp.

State Fair Blvd Crosswalks



Pedestrians that park on the west end of the Brown and Pink lots tend to cross SFB between gates 4 & 6 where there are NO crosswalks. This area is congested with vehicles going to the grey lot. There should be some kind of barrier prohibiting this. *(note that the temp. fence is knocked down in top left picture)*



Potential for Rte 695 ramps

1) Potential for exit and/or entrance ramp to Rte 695 SB from the Black Lot (then to the Grey lot)



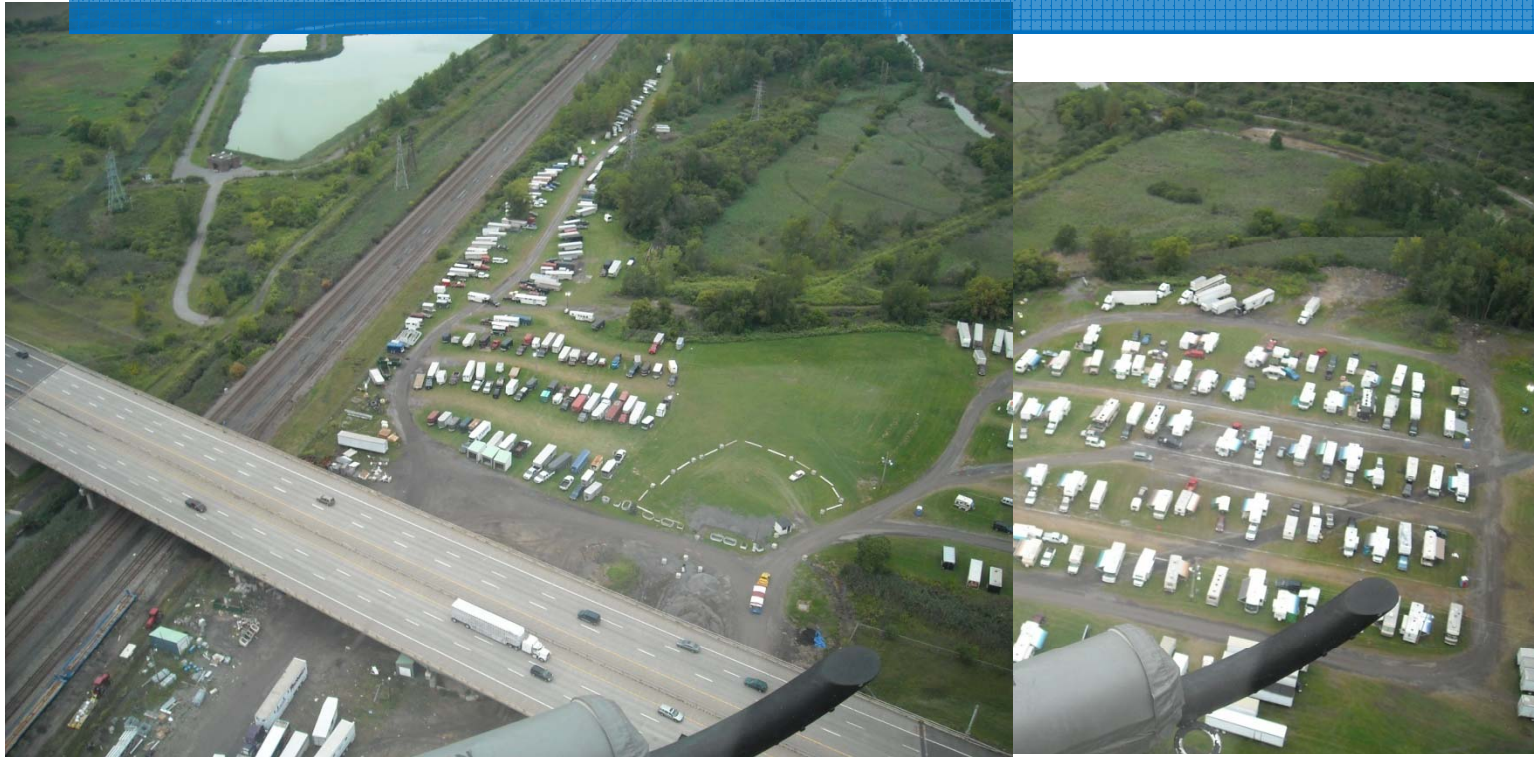
2) Potential for exit to the Grey lot from Rte 695 NB (*see next slide for more info*)

Potential for Rte 695 ramp to Grey Lot



If a temporary ramp were constructed from Route 695 to the Gray lot it would eliminate a fair number of vehicles on State Fair Blvd. The reason for this is that the vehicles coming from the South would not have to go onto I-690 then take Exit 7 to SFB. This ramp would have to be carefully constructed to minimize the land taken from the Gray lot as well as traffic backups onto Rte 695

Black Parking Lot Area



The Black parking lot areas on the west side of Rt 695 (for campers & horse trailers). It is accessible from the Grey lot. If lots were consolidated there could be additional room for more fairgoers, therefore reducing the number of people crossing State Fair Blvd.