Assessment Report for
Florida, SPS Experiment 1

Visit date: December 3, 2003

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1 Executive Summary

A visit was made to the Florida SPS-1 site on December 3, 2003 for the purpose of conducting an assessment of the WIM system located on US Route 27, located 13.8 miles south of US Route 80. The LTPP lane is the driving lane in the southern direction and is identified as lane number 4 in the WIM controller. This site is conditionally recommended for a site validation.

The site is instrumented with Kistler Quartz weighing sensors. The WIM system utilizes a PAT America DAW-190 WIM Controller. All of the WIM system components are in working order.

Sufficient data was collected to provide a Sheet 16 for classification verification at this site. There are one percent-unclassified vehicles. This is below the percentage of 2% defined as the criteria for research data. Class 5 had an error rate of 25% exceeding the threshold 2% of matches for truck classes. The classification verification process will need to be repeated at the next assessment or validation. The State was previously aware of the problem and is taking steps to address this.

The pavement condition is satisfactory for conducting a performance evaluation. The WIM Smoothness Index was exceeded on either side of the normal wheelpath. This may have an impact on equipment performance for measuring truck characteristics of vehicle driven on the right-hand or left-hand side of the lane. There were no distresses observed that would influence truck motions significantly.

A merge lane 12 feet in width exists directly adjacent to the LTPP lane. It begins approximately 450 feet prior to the WIM scale area, begins to merge with traffic 96 feet following the WIM area, and is completely merged into to mainline 336 feet after the WIM area. This lane does not appear to routinely be used by vehicles for merging, and does not appear to even moderately affect the flow of traffic or the performance of the WIM system.

A review of the speed information collected on-site and provided prior to the visit indicates that the range of truck speeds to be covered during an evaluation is 45 to 65 mph. The posted speed limit is 65 mph.

This site has 4 years of data. Based on available information and review of the data submitted through this year, this site still needs 5 years of data to meet the requirement for 5 years of research quality data.

2 Corrective Actions Recommended

No repair of system equipment is required at this time.

A correction of the system classification algorithm needs to be performed to circumvent Class 5 vehicles being classified as Class 3 vehicles. This can be achieved by reducing the minimum axle spacing of Class 5 vehicles, reducing the maximum axle spacing of Class 3 vehicles and including weight characteristics in the classification process for these two vehicle types. Class 5 vehicles may weight 2 to 4 times a Class 3 vehicle and thus loading estimates may be affected if the volumes of misclassified Class 5s are high. The agency is aware of this problem and is in the process of addressing it. No information was available on the anticipated correction date for this site.

Since all the WIM Smoothness Index LRI and SRI values for the right shift exceed the threshold, grinding is recommended in the extreme right side of the travel lane as a corrective action.

Validation of the traffic data could be done to consider accepting it as nominally of research quality if information about the precision of the data prior to sensor replacement is available.

3 Equipment inspection and diagnostics

The site is instrumented with Kistler Quartz weighing sensors, installed in a staggered configuration, 16 feet apart. A 6- foot by 6-foot loop sensor is installed between the quartz sensors for vehicle presence detection. The WIM system utilizes a PAT America DAW-190 WIM Controller for signal processing, data storage, user interface and remote operation.

A complete electrical check of all support service components including the solar power equipment and telephone service was performed. All support equipment is operating properly.

An electronic check of all WIM components was performed. All in-road sensors and WIM controller components are working properly. The left side component of the leading quartz sensor indicated a lower than normal insulation resistance, but not below acceptable tolerances for proper performance. Other performance values for this sensor were normal.

A visual inspection of all system components, including in-road sensors, cabinet, pull boxes, service mast, solar panels and conduit as well as the telephone service components was conducted. All components are in excellent physical condition.

4 Classification Verification with test truck recommendations

The agency uses the FHWA 13-bin classification scheme.

A sample of 100 trucks was collected at the site. Video was taken at the site to provide ground truth for the evaluation. Based on a 100 percent sample it was determined that there are 0 percent unknown vehicles and one percent unclassified vehicles. The unclassified vehicle was a Class 9.

The second check is the ability of the algorithm to correctly distinguish between truck classes with no more than 2% errors in such classifications. The following are the error rates by class:

Table 1 Error rates for Truck Classification

Class	Error rate	Class	Error rate	Class	Error rate
4	0	5	25	6	0
7	0				
8	0	9	1	10	0
11	N/A	12	N/A	13	N/A

A correction of the system classification algorithm needs to be performed to circumvent Class 5 vehicles being classified as Class 3 vehicles. This can be achieved by reducing the minimum axle spacing of Class 5 vehicles, reducing the maximum axle spacing of Class 3 vehicles and including weight characteristics in the classification process for these two vehicle types. Class 5 vehicles may weight 2 to 4 times a Class 3 vehicle and thus loading estimates may be affected if the volumes of misclassified Class 5s are high.

A review of the site data both collected on site and previously submitted by the agency indicated that Class 9s constitute more than 70 percent of the truck population. Based on this information in addition to the air-suspension 3S2, the second vehicle used for evaluation should be a Class 9. Since unloaded Class 9s represent a larger share of the Class 9 population than loaded ones, an unloaded Class 9 would be an acceptable second vehicle.

Due to the length of the truck turn around no additional vehicles are required.

5 Profile Evaluation

The WIM site is a section of pavement that is 305 meters long with the WIM scale located at 274.5 meters from the beginning of the test section. An ICC profiler was used to collect longitudinal profiles of the test section with a sampling interval of 25 millimeters. The Long Range Index (LRI) incorporates the pavement profile starting 25.8 m prior to the scale and ending 3.2 m after the scale in the direction of travel. The short Range Index (SRI) incorporates a shorter section of pavement profile beginning 2.7 m prior to the WIM scale and ending 0.5 m after the scale.

Profile data collected at the SPS WIM location by Fugro BRE Inc. on November 11, 2003 was processed through the LTPP SPS WIM Index software. This WIM scale is installed on an asphalt concrete pavement. The results are shown in Table 2.

A total of 10 profiler passes were conducted over the WIM site. Since the issuance of the LTPP directive on collection of longitudinal profile data for SPS WIM section, the requirements have been a minimum of 3 passes in the center of the lane and one shifted to each side. For this site the RSC has done 6 passes at the center of the lane, 2 passes shifted to the left side of the lane, and 2 passes shifted to the right side of the lane. Shifts to the sides of the lanes were made such that data were collected as close to the lane edges as was safely possible. For each profiler pass, profiles were recorded under the left wheel path (LWP), and the right wheel path (RWP).

Table 2 shows the computed index values for all the 10 profiler passes for this WIM site. The average values over the passes at each path were also calculated when three or more passes are completed. These are shown in the right most column of the table. Values above the index limits are presented in italics.

Table 2 Long Range Index (LRI) and Short Range Index (SRI)

Profiler Passes			**Pass 1**	**Pass 2**	**Pass 3**	**Pass 4**	**Pass 5**	**Pass 6**	**Ave.**
Center	LWP	LRI (m/km)	0.712	0.685	0.653	0.484	0.593	0.574	**0.617**
		SRI (m/km)	*0.822*	*0.842*	0.774	0.272	0.664	0.755	**0.688**
	RWP	LRI (m/km)	0.690	0.779	0.705	*0.928*	*0.821*	0.724	**0.775**
		SRI (m/km)	0.578	0.671	0.693	*0.918*	0.516	*0.845*	**0.704**
Left Shift	LWP	LRI (m/km)	*0.848*	*0.909*					
		SRI (m/km)	0.579	*1.113*					
	RWP	LRI (m/km)	0.634	0.688					
		SRI (m/km)	0.696	0.687					
Right Shift	LWP	LRI (m/km)	*1.008*	*0.812*					
		SRI (m/km)	*1.764*	*1.356*					
	RWP	LRI (m/km)	*1.039*	*1.416*					
		SRI (m/km)	*0.907*	*1.098*					

There are 17 passes at which the WIM Index value of 0.789 m/km is exceeded as can be seen in the table. When all values are less than 0.789 it is presumed unlikely that pavement conditions will significantly influence sensor output. Values above that level may or may not influence the reported weights and potentially vehicle spacings. Since all the LRI and SRI values in the right shifted path exceed the threshold, grinding is recommended in the extreme right side of the travel lane as a corrective action. In view of that, during evaluation the test trucks should travel only in the wheel path and refrain from traveling away from the wheel path towards the extreme right side of the lane. This is intended to reduce the influence of the lack of pavement remediation on the results. If resources permit, the impact of the high values on the precision of the data could be investigated.

6 Distress survey and any applicable photos

The pavement appears to be in good condition with little or no distress. Figure 13-1 shows the condition of the pavement in the downstream direction and Figure 13-2 shows in the condition of the pavement in the upstream direction.

7 Vehicle-pavement interaction discussion

A visual inspection of the pavement 425 feet in advance of the WIM area and 75 feet following the WIM area was conducted. No significant pavement distress that would affect the performance of the WIM scales was detected.

During a visual survey of the truck dynamics in the area of the WIM scales, moderate bouncing was detected at an area from 350 feet to 400 feet from the WIM area. However, the trucks were able to stabilize prior to reaching the WIM scale area. Upon re-inspecting of this area, there was no pavement distresses observed that would cause this motion. The existence of a subtle hump or dip is suspected.

There is no visible motion of trucks immediately approaching or leaving the sensor area. Daylight cannot be seen between the tires indicating that the trucks are touching the sensors fully.

8 Speed data with speed range recommendations for evaluation

Based on the data provided by the State prior to the visit and the data collected on site the 15^{th} and 85^{th} percentile speeds for Class 9s are 50 and 65 mph respectively. The upper end of the range meets the posted speed limit. This range does not vary significantly for other truck classes. As a result the recommended speeds for test trucks in an evaluation are 50, slightly less than 60 and 65 mph.

Measurements of speeds on-site indicated that the equipment is currently measuring speeds with a bias of 0.4 mph and an associated standard deviation of 0.7 mph.
The review of drive axle spacings for Class 9 vehicles indicates that this is not affecting the measurements of length and therefore vehicle classification. From onsite observation supported by video recording the site carries standard drive tandems for Class 9s indicating that the average drive axle spacing to be 4.3 feet with a standard deviation of 0.3 feet. The data collected by the equipment shows the average drive axle spacings of Class 9s to be 4.3 feet with a standard deviation of 0.09 feet.

9 Traffic Data review: Overall Quantity and Sufficiency

As of December 4, 2003 this site does not have at least 5 years of research quality data. Research quality data is defined to be at least 210 days in a year of data of known calibration meeting LTPP's precision requirements. The precision requirements are shown in Table 3. There is no validation record for this site in the traffic database as of June 2003 upload.

Table 3 Precision and Bias Requirements for Weight Data

Pooled Fund Site	**95 Percent Confidence Limit of Error**
Single Axles	± 20 percent
Axle groups	± 15 percent
Gross Vehicle Weight	± 10 percent
Vehicle Speed	±1 mph (2 kph)
Axle Spacing	± 0.5 ft (150 mm)

Data that has validation information available is reviewed in light of the patterns present in the two weeks immediately following a validation/calibration activity. A determination of research quality data is based on the consistency with the validation pattern. Data that follows consistent and rational patterns in the absence of calibration information may be considered nominally of research quality pending validation information with which to compare it. Data that is inconsistent with expected patterns and has no supporting validation information is not considered research quality.

The amount and coverage for the site is shown in Table 4. The value for months is a measure of the seasonal variation in the data. The indicator of coverage indicates whether day of week variation has been accounted for on an annual basis. As can be seen from the table only 1996, 2000 and 2001 have a sufficient quantity to be considered complete years of data. In the absence of previously gathered validation information it can be seen that at least 2 additional years of research quality data are needed to meet the goal of a minimum of 5 years of research weight and classification data.

Table 4 Amount of Traffic Data Available

Year	**Classification Days**	**Months**	**Coverage**	**Weight Days**	**Months**	**Coverage**
1996	215	11	Complete Week	319	12	Complete Week
1999	145	6	Complete Week	193	8	Complete Week
2000	263	11	Complete Week	276	11	Complete Week
2001	325	12	Complete Week	287	11	Complete Week

To evaluate the consistency of the existing data and determine its probable quality a series of reports and graphs have been generated. They include the SPS Summary report, vehicle distribution graphs, GVW distributions both over all years and by month within years, average daily steering axle weights for Class 9 vehicles, and ESAL graphs.

9.1 SPS Summary Report

The overall report is the SPS Summary Report. This report uses sets of benchmark data based on calibration information or consistent, rational data patterns. The report shows the trend in some basic statistics at the site over time. It provides a numeric equivalent to the graphs typically run for the comparison evaluation process. It includes the number of days of data and statistics associated with Class 9 vehicles. They include the average volumes, average ESALs, the average steering axle weight and mean loaded and unloaded weight on a monthly basis. Class Days and Percent Class 9s are generated from classification data submissions. All other values come from the weight data submissions. Counts derived from weight data are available for all months. Steering axle and weight statistics are only present when that data was loaded through LTPP's new traffic analysis software, since it is the only software that calculates them. The data is separated into blocks that depend on when the site was validated. Where there is no validation record an initial time point has been picked at which continuous data exists and that data is used as the basis for comparison. Excluded months have no data.

Table 5 SPS Summary Report

Florida 0100

South Lane 1

Comparison Date Weight - 09-March-1996 Classification - 09-March-1996

Month-Year	Class Days	Percent Class 9s	Weight Days	Average No. Class 9s	Avg.ESALs Per Class 9	Average Class 9 Steering	Mean Loaded Weight	Mean Unloaded Weight
Comparison values		25.7		761	1.49	11,082	65,821	33,758
MAR 1996	25	24.0	29	656	1.49	11,091	77,759	34,759
APR 1996	30	25.6	30	755	1.48	11,093	77,786	34,899
MAY 1996	27	24.3	29	657	1.51	11,041	77,727	34,944
JUN 1996	12	27.0	27	555	1.53	11,030	77,792	34,949
JUL 1996	26	25.2	30	670	1.52	11,105	77,712	35,116
AUG 1996	25	24.6	31	635	1.58	11,177	77,978	35,351
SEP 1996			30	611	1.51	11,133	77,646	35,113
OCT 1996	23	31.0	31	745	1.42	11,003	77,707	34,572
NOV 1996	22	32.6	27	859	1.49	9,730	78,079	35,063
DEC 1996	14	33.8	30	822	1.59	10,020	77,685	35,277
APR 1999	28	29.1	28	625	2.28	9,030	85,871	35,091
MAY 1999	27	26.9	28	518	2.38	9,093	97,729	35,175
JUN 1999	18	30.8	30	554	2.41	8,952	85,902	35,073
JUL 1999	20	17.5	17	428	2.40	9,062	89,839	35,191
AUG 1999	31	29.1	31	563	2.44	8,874	89,803	35,134
SEP 1999	21	28.7	22	518	2.37	8,586	85,731	34,887
OCT 1999			16	365	2.07	9,197	57,552	35,261
NOV 1999			21	356	2.07	9,783	57,372	35,571
FEB 2000	7	28.6	8	781	0.97	10,244	69,488	33,625
MAR 2000	31	31.2	31	887	0.89	10,124	65,782	33,213
APR 2000	29	28.5	30	771	0.85	10,095	65,730	33,306
MAY 2000	31	30.1	31	780	0.86	10,116	66,000	33,207
JUN 2000	21	30.5	24	671	0.89	10,123	69,657	30,734
JUL 2000	20	25.0	11	389	0.88	10,018	69,701	30,015
AUG 2000	28	28.6	31	654	0.84	10,074	69,483	30,303
SEP 2000	19	33.2	21	711	0.95	9,321	69,786	30,419

OCT 2000	31	32.7	31	798	0.61	8,487	57,820	30,117
NOV 2000	28	31.2	29	892	0.38	7,260	56,501	30,033
DEC 2000	18	27.6	29	571	0.28	6,669	56,286	29,548
JAN 2001	29	34.7	31	911	0.23	6,339	55,885	29,495
FEB 2001	26	34.4	28	967	0.40	7,357	57,354	33,288
MAR 2001	28	29.9	2	636	0.38	7,525	57,345	29,111
APR 2001	29	29.6	30	812	0.60	8,128	58,033	30,368
MAY 2001	31	30.4	31	769	0.75	8,535	61,770	30,484
JUN 2001	29	30.8	29	763	0.90	8,633	65,613	33,441
JUL 2001	30	30.5	31	754	0.87	8,603	65,564	33,313
AUG 2001	31	29.8	31	698	0.99	8,824	65,644	33,731
SEP 2001	20	30.8	21	723	0.85	8,621	65,394	33,394
OCT 2001	29	23.8	31	434	0.80	8,411	65,434	33,658
NOV 2001	18	30.5						
DEC 2001	25	20.0	22	436	1.42	10,227	69,694	35,141

As can be seen from Table 5 the percent of Class 9s from the classification data were less in 1996 from March to August but increased from October. From October 1996 till November 2001 it was essentially stable. However, in December 2001 the percent of Class 9s dropped by 10%. From weight data collected, the number of Class 9s vehicles remained essentially constant for all the years except in November and December 2001 when the number reduced significantly. The average ESALs per Class 9 were stable in 1996 but increased significantly in 2000. In 2000 the values were essentially stable. In 2001 the values dropped by more than 50% and remained stable till December when the value increased significantly. The average steering axle weights for Class 9 were stable in 1996 except from October when the values decreased significantly. From October 1996 till October 2001 the values were essentially stable. In December 2001 the value increased significantly. The mean loaded weight was essentially stable in 1996. In 1999 the mean loaded weight increased and remained stable except in October and November when it decreased significantly. The mean loaded weight increased in 2000 and remained stable till September 2000. From October 2000 the mean loaded weight decreased significantly and remained stable till May 2001. Later the values increased significantly and remained similar till October 2001. In December 2001 the values increased significantly. The values for the mean unloaded weight were essentially stable from March 1996 till November 1999. From December 1999 the values decreased significantly and remained stable till October 2001. In December 2001 the value increased significantly. Overall weight data values remain stable for a 9-12 month period and then suddenly shift in magnitude.

From the SPS summary report it is clear that the data is not consistent for all years. In view of that, a validation of the data has to be preformed before accepting it as nominally of research quality. Records of validations or calibrations would be useful in explaining the sudden jumps.

9.2 Vehicle Distribution

The vehicle distribution graphs indicate whether the fleet mix is stable over time and any day of week or seasonal patterns that may exist. The vehicle distribution graphs contain two types of comparisons, one between data types and one over time. The between types comparison is represented by the two columns for every time unit present. The column on the left labeled with a 4 is for classification data. The right hand column of the pair is for weight data. Whether or not the data is equivalent is perhaps more important than the variation over time.

Figure 14-1 shows a typical by week pattern for heavy truck classification data. The individual weeks show essentially the same mix of heavy trucks. Every vehicle in Classes 6 through 13 that constitutes at least 10 percent of the population is expected to stay within plus or minus 5 percent of the value observed during the two weeks following validation. This range is shown by the darker band inside the lighter band to the right of the weekly data. Weeks that go outside more than plus or minus 10 percent of the expected value will fall above or below the light gray areas of the band. These are weeks that should have been subjected to additional scrutiny prior to accepting the data as reasonable.

For this site, the fleet mix is essentially stable. A typical graph for this period is shown in Figure 14-3. There was no significant difference in the mix stability graphed for the weight data.

Figure 14-3 shows the typical pattern for vehicle distribution by month by year for the data collected from the classifier versus the data collected by the WIM equipment. From the figure it is shown that the data collected by the classifier and the WIM equipment are not similar. This pattern is the similar for the data collected in 1996, 1999 and 2000.

9.3 GVW Distributions for Class 9s

The Class 9 GVW graph is a generally accepted way to evaluate loading data reported at a site. A typical graph is has two peaks, one between 28,000 and 36,000 pounds and the other between 72,000 and 80,000 pounds. The first is the unloaded peak. The second, the loaded peak, reflects the legal weight limit for a 5-axle tractor-trailer vehicle on the interstate highway system. Additionally, it is expected that less than 3 percent of the trucks will be excessively light (less than 12,000 pounds) and less than 5 percent will be significantly overweight (in excess of 96,000 pounds). Data that falls outside of the expected conditions needs a record of validation to verify that the pattern is in fact correct for the location. Data meeting the expected patterns is not automatically considered to be of research quality, merely rational as bias in scale measurements may shift the peaks in the data from their true values.

The overall assessment of loading patterns is done using a Class 9 GVW graph by year over the available years. Figure 14-4 and Figure 14-5 show the expected bimodal curve except for 1999. The variation in curves is illustrated numerically in the SPS Summary Report. The widely varying shapes are not what would be expected on a year-to-year basis.

To investigate any seasonal variations the Class 9 GVW distributions are graphed by month by year. As shown in Figure 14-6 during the spring season the data is essentially similar. However, during the fall season there is a variation in the data. In this season the percentage of loaded trucks increased in November and December.

9.4 Axle Distributions

Axle distribution graphs were not needed for this site, as GVW graphs were available for all years.

9.5 ESALs per year

Average ESALs for Class 9 vehicles are a very crude method of identifying loading shifts. Figure 14-8 shows the average Class 9 ESALs per month for this location. To remove the influence of changing pavement structure all ESAL values have been computed with and SN = 5 and a p_t of 2.5. As can be seen from the figure the data varies significantly each year.

Average ESALs per Class 9 are not used as an indicator of research quality data.

9.6 Average Daily Steering Axle Weight

A frequently used statistic for checking scale calibration and doing auto-calibration of WIM equipment is the weight of the front axle. This value is site specific and should be relatively constant particularly for loaded Class 9s (vehicles in excess of 60,000 lbs.). Typically when auto calibration is used this value either cycles repeatedly or with very large truck volumes results in an essentially straight line for the mean. As shown in Figure 14-9 the data is essentially stable. However in 2000 the average steering axle weights decreased significantly in the fall season as can be seen from Figure 14-10.

10 Updated handout guide and Sheet 17

A copy of the handout has been included following page 17. It includes a current Sheet 17 with all applicable maps and photographs. There are no significant changes in the information provided.

11 Updated Sheet 18

A current Sheet 18 indicating the contact, conditions for assessments and evaluations has been attached following the updated handout guide.

12 Traffic Sheet 16(s) (Classification Verification only)

Sufficient classification information was collected between 11.50 a.m. and 1.30 p.m. on December 4, 2003 to complete a Sheet 16. A copy is attached.

13 Distress Photographs

Figure 13-1 Pavement Condition of 120100 in Downstream Direction

Figure 13-2 Pavement Condition of 120100 in Upstream Direction

14 Traffic Graphs

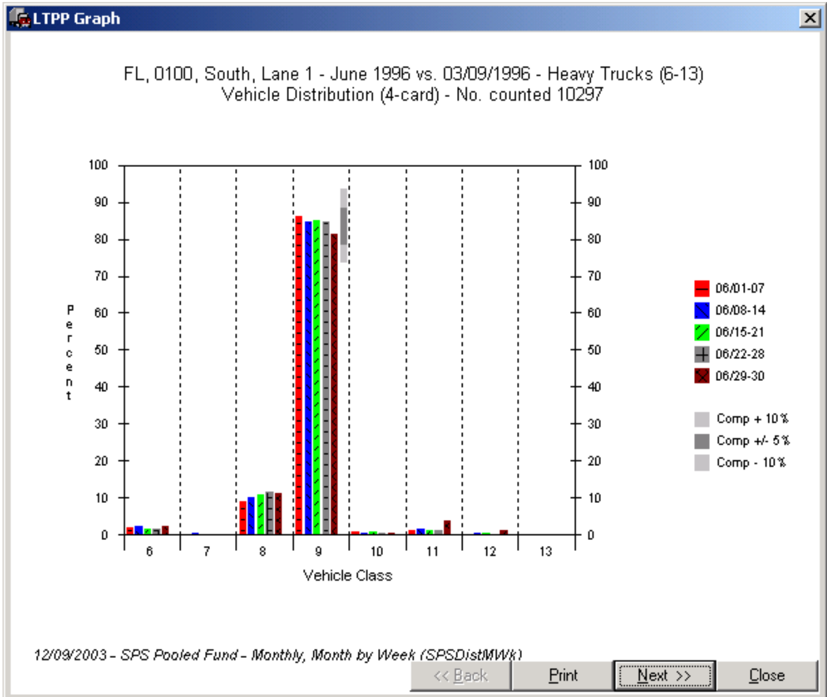


Figure 14-1 Typical Heavy Truck Distribution Pattern for Classification Data at 120100

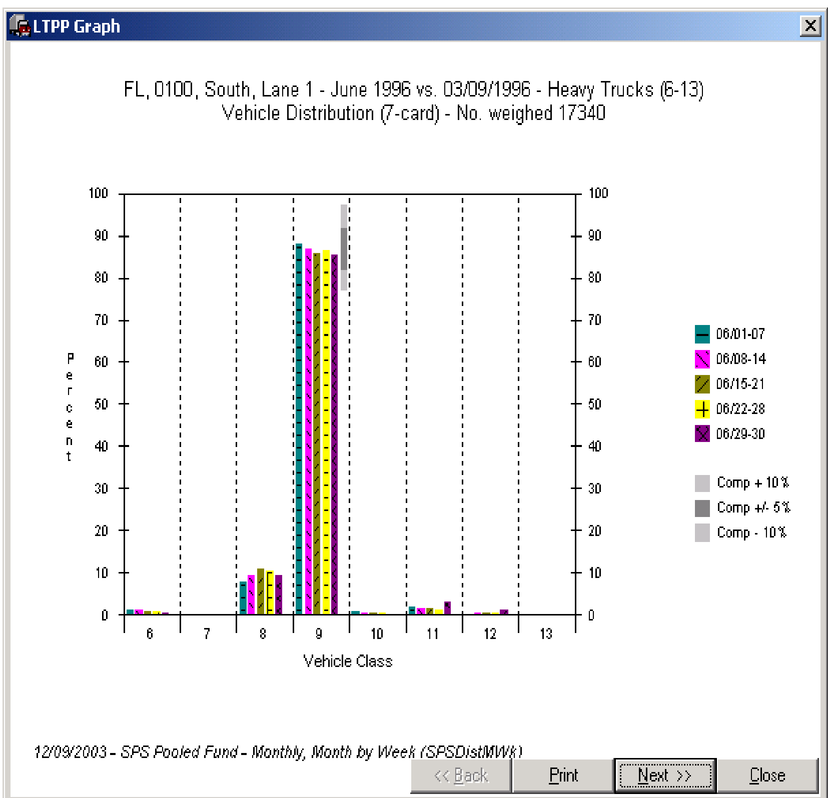


Figure 14-2 Typical Heavy Truck Distribution Pattern for Weight Data at 120100

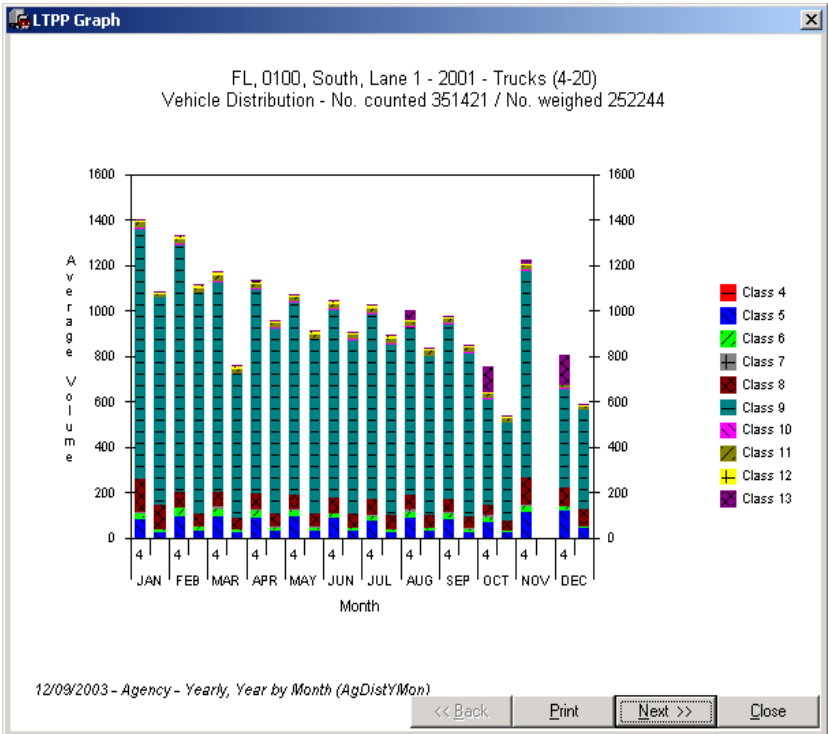


Figure 14-3 Vehicle Distribution by Month for the Year 2001 at 120100

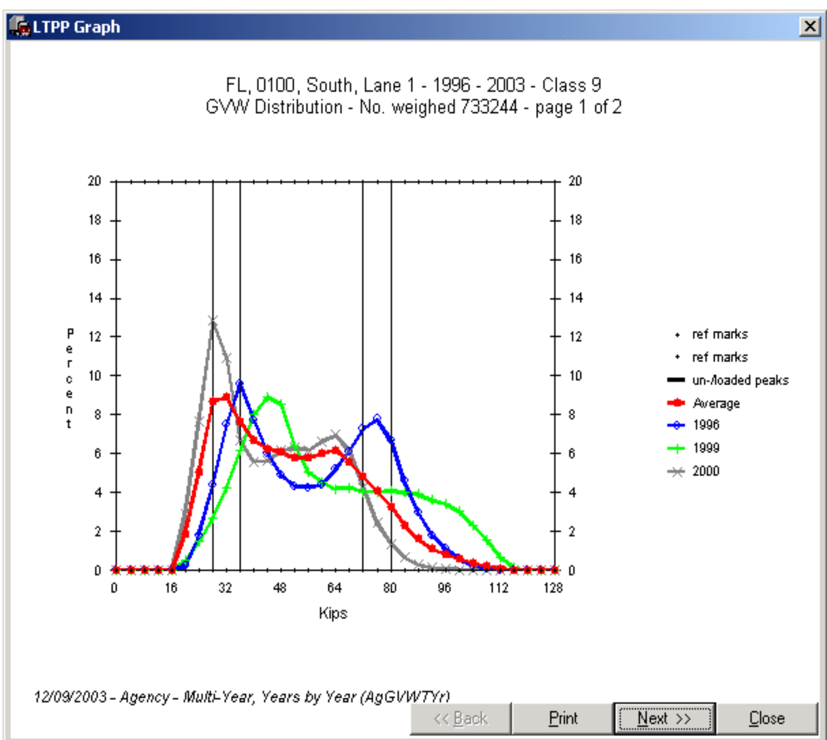


Figure 14-4 Class 9 GVW Distribution - 1996 to 2000 at 120100

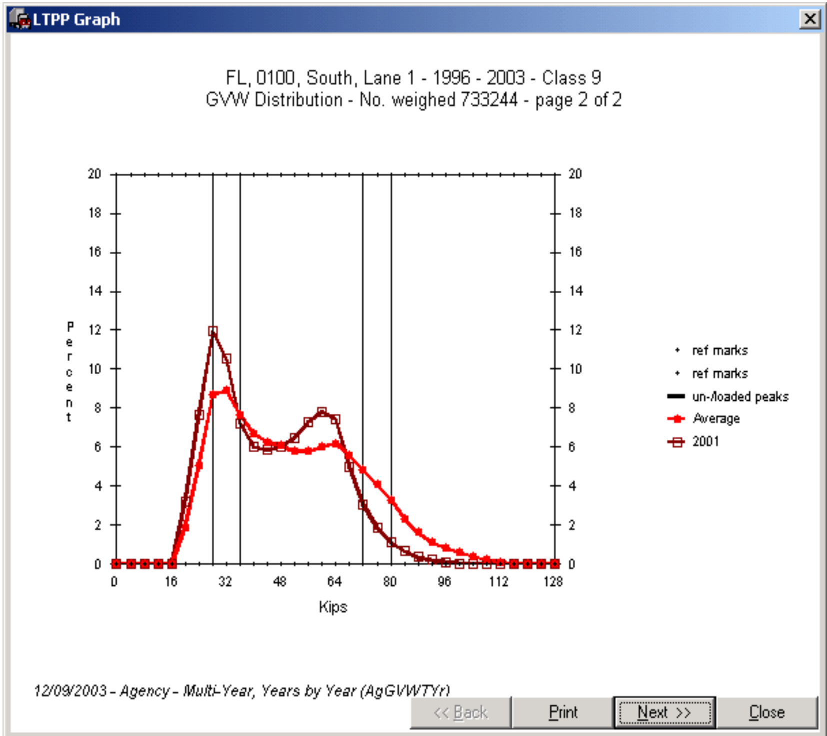


Figure 14-5 Class 9 GVW Distribution - 2001 at 120100

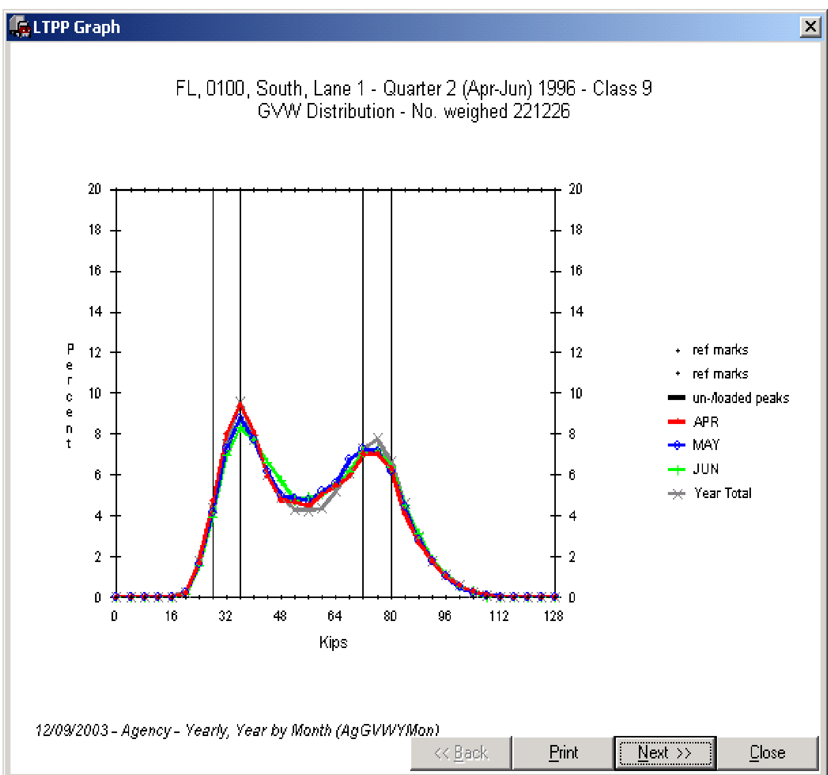


Figure 14-6 Class 9 GVW Distribution - 04/1996 to 06/1996 at 120100

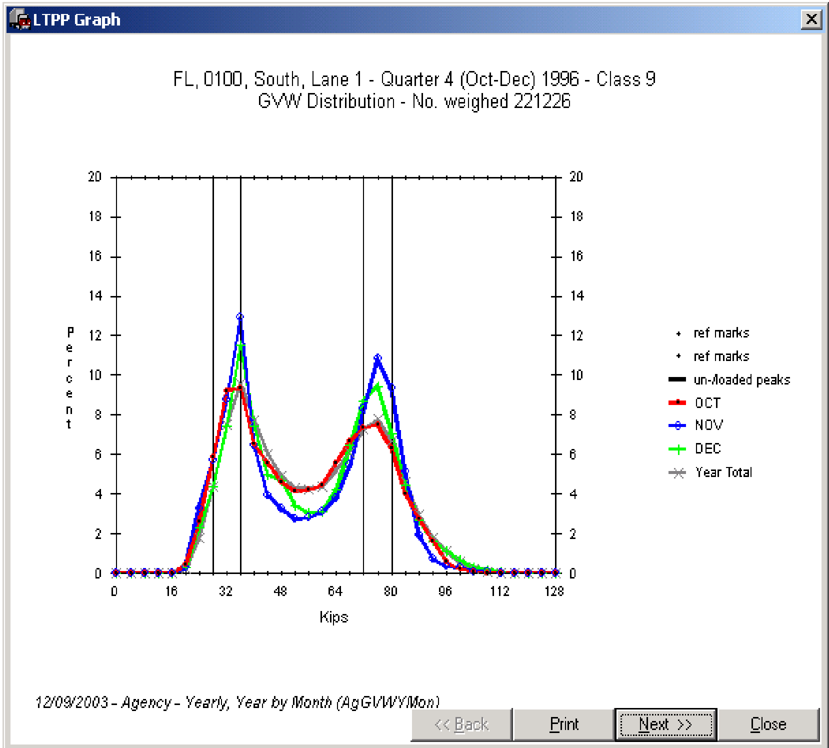


Figure 14-7 Class 9 GVW Distribution - 10/1996 to 12/1996 at 120100

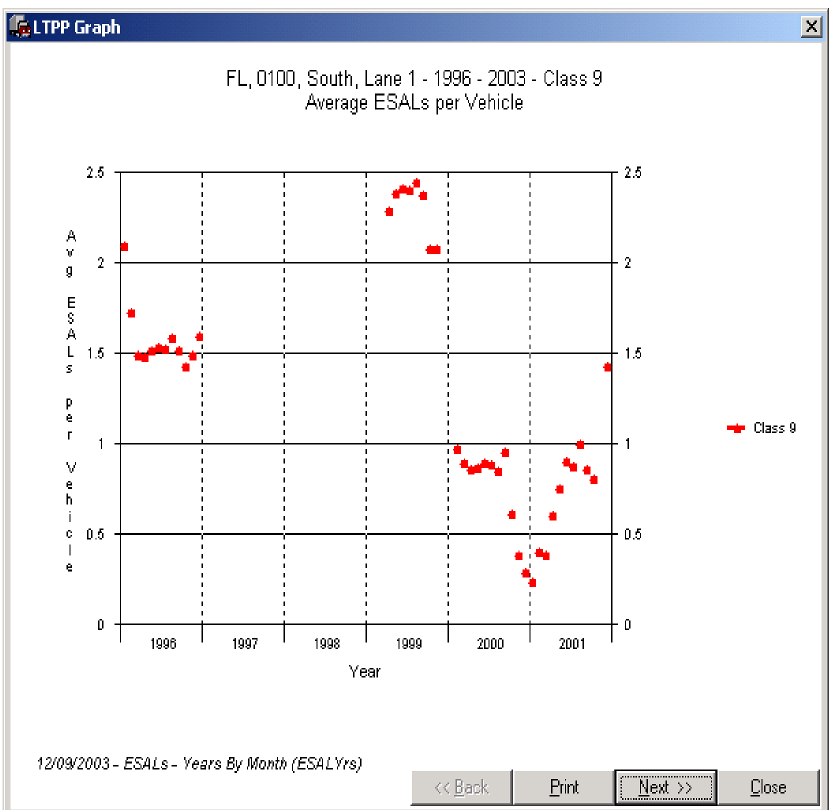


Figure 14-8 Average Class 9 ESALs for site from 1996 to 2003 at 120100

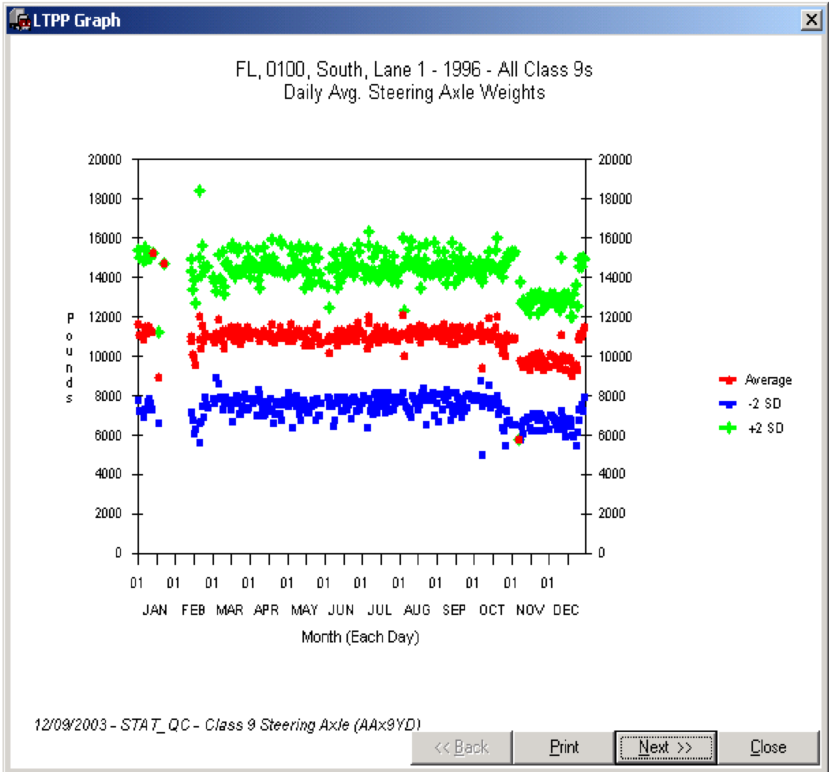


Figure 14-9 Average Daily Class 9 Steering Axle Weight - 1996 at 120100

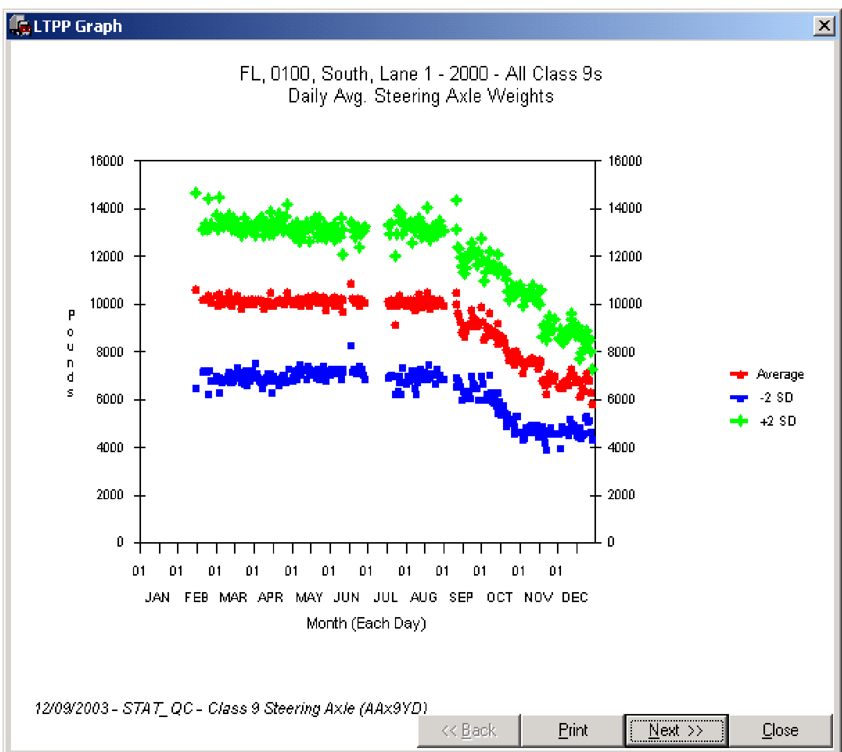


Figure 14-10 Average Daily Class 9 Steering Axle Weight - 2000 at 120100

HANDOUT GUIDE FOR SPS WIM ASSESSMENT

STATE: Florida

SHRP ID: 0100

Figures

1. General Information

SITE ID: *120100*

LOCATION: *US 27 South, 13.8 miles south of SR 80, South Bay*

VISIT DATE: *December 3, 2003*

VISIT TYPE: *Assessment*

2. Contact Information

POINTS OF CONTACT:

Assessment Team: *Dean J. Wolf, 301-210-5105, djwolf@mactec.com*

Highway Agency: *Walton Jones, 850-488-4111, walton.jones@dot.state.fl.us*
Mike Leggett, 850-414-4727, Michael.Leggett@dot.state.fl.us

FHWA COTR: *Debbie Walker, 202-493-3068, deborah.walker@fhwa.dot.gov*

FHWA Division Office Liaison: *Greg Schiess, 850-942-9650, Ext. 3023, greg.scheiss@fhwa.dot.gov*

LTPP SPS WIM WEB PAGE: *http://www.tfhrc.gov/pavement/ltpp/spstraffic/index.htm*

3. Agenda

BRIEFING DATE: ***8:00am**, **December 3rd, 2003** at the FDOT District 4 Office, 3400 West Commercial Boulevard, Fort Lauderdale, Florida 33309, (954) 486-1400*

ONSITE PERIOD: *December 3, 2003*

TRUCK ROUTE CHECK: *Done*

4. Site Location/ Directions

NEAREST AIRPORT: *Palm Beach International Airport, West Palm Beach, Florida or Fort Lauderdale/Hollywood International Airport, Fort Lauderdale, Florida.*

DIRECTIONS TO THE SITE: *13.8 miles south of SR 80, south of South Bay.*

MEETING LOCATION: *Same as briefing location.*

WIM SITE LOCATION: *US 27, milepost 12.03 (Latitude: 26.48096; Longitude -80.65128)*

WIM SITE LOCATION MAP:*See Figure 4.1*

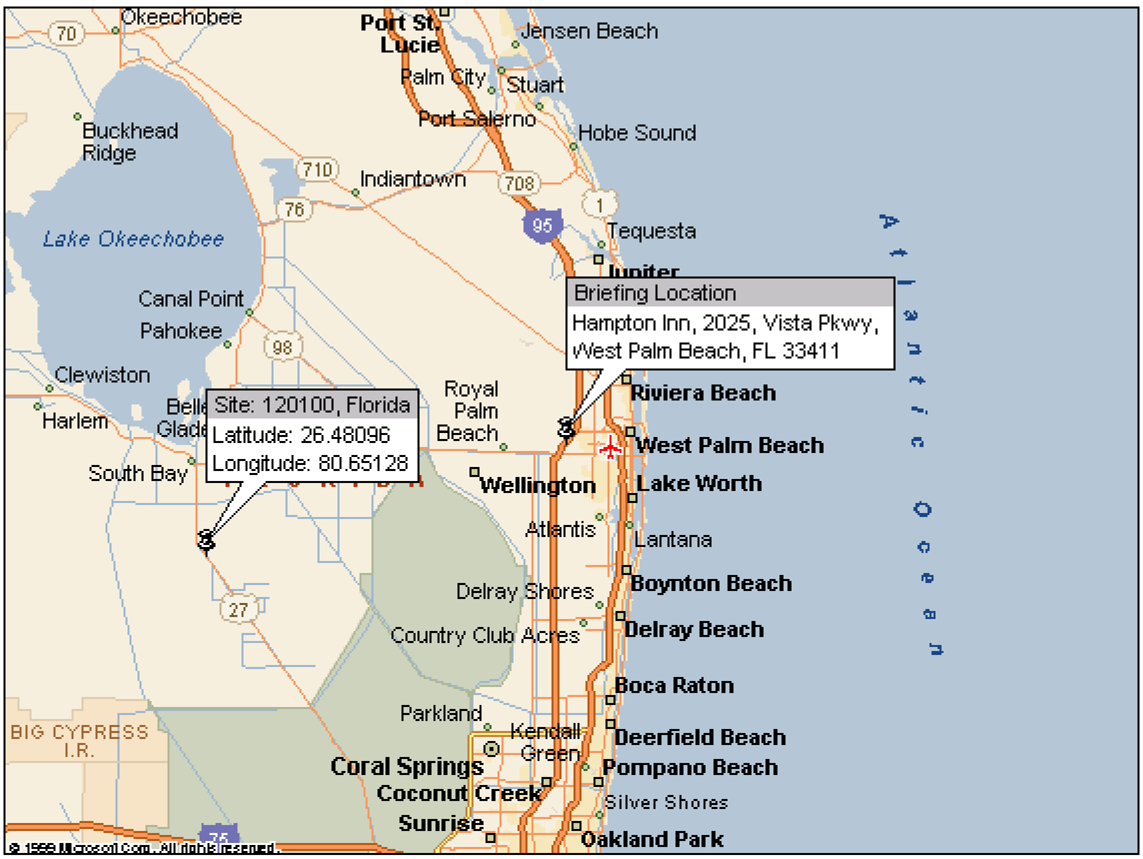


Figure 4.1: Site 120100 in Florida and Briefing Location

5. Truck Route Information

ROUTE RESTRICTIONS: *None.*

SCALE LOCATION: *Atlantic Mayflower Moving and Storage, 125 Northwest 25th Terrace, Ft. Lauderdale, $10.00, open M-F, 7:30am to 5:00pm. Contact – Bob, 954-581-1782. Located 2 blocks west of I-95.*

TRUCK ROUTE:

- *Northbound: Truck Crossing at 0.746 miles from site (26^0 29.396' North and 80^0 39.474' West)(For low speeds).*
- *Northbound: Truck Crossing at 1.372 miles from site (26^0 29.840' North and 80^0 34.817' West)*
- *Southbound: Truck Crossing at 0.848 miles from site (26^0 28.267' North and 80^0 38.599' West).*

6. Sheet 17 – Florida (120100)

1.* ROUTE ___US 27____ MILEPOST __N/A__ ___LTPP DIRECTION - N S E W

2.* WIM SITE DESCRIPTION - Grade __<_1_____ % Sag vertical Y / N
Nearest SPS section upstream of the site _0__ _1__ _0__ _8__
Distance from sensor to nearest upstream SPS Section ___ _7__ _2__ _8__ ft

3.* LANE CONFIGURATION
Lanes in LTPP direction _2___ Lane width _1_ _2_ ft

Median - 1 – painted; 2 – physical barrier; 3 – grass; 4 – none

Shoulder - 1 – curb and gutter; 2 – paved AC; 3 – paved PCC; 4 – unpaved; 5 – none

Shoulder width _4*_ ft * 12' Merge Lane between LTPP Lane and Shoulder

4.* PAVEMENT TYPE _____Asphalt Concrete______ ______________

5.* PAVEMENT SURFACE CONDITION – Distress Survey
Date ______12-03-03________________________ Distress Map ~~Filename~~ Photo Downstream_TO_2_12_12A_0100_12_03_03.JPG_________________
Date ______12-03-03________________________ Distress Map ~~Filename~~ Photo Upstream_TO_2_12_12A_0100_12_03_03.JPG_________________
Date ______________________________ Distress Map Filename _________________

6. * SENSOR SEQUENCE ___left wheelpath__Quartz Sensor – Loop – right wheel path Quartz Sensor_____

7. * REPLACEMENT AND/OR GRINDING __ __ __ / __ __ / __ __ __ __
REPLACEMENT AND/OR GRINDING __ __ __ / __ __ / __ __ __ __
REPLACEMENT AND/OR GRINDING __ __ __ / __ __ / __ __ __ __

8. RAMPS OR INTERSECTIONS
Intersection/driveway within 300 m upstream of sensor location Y / N
distance __________
Intersection/driveway within 300 m downstream of sensor location Y / N
distance __________
Is shoulder routinely used for turns or passing? Y / N

9. DRAINAGE (*Bending plate and load cell systems only)* 1 – Open to ground; 2 – Pipe to culvert; 3 – None

Clearance under plate ___ ___ . ___ in

Clearance/access to flush fines from under system Y / N

10. * CABINET LOCATION

Same side of road as LTPP lane Y / N Median Y/ N Behind barrier Y / N

Distance from edge of traveled lane _6_ _8_ ft

Distance from system __ __ __ ft

TYPE ______334B_____________________

CABINET ACCESS controlled by LTPP / STATE / JOINT ?

Contact - name and phone number ____Kip Jones (850) 414-4726__

Alternate - name and phone number __Michael Leggett (850) 414-4727

11. * POWER

Distance to cabinet from drop ___ _1__ _5__ ft Overhead / underground / solar / AC in cabinet?

Service provider _____________________ Phone number _____________________

12. * TELEPHONE

Distance to cabinet from drop ___ _4__ _5__ ft Overhead / under ground / cell?

Service provider _____________________ Phone Number _____________________

13.* SYSTEM (software & version no.)- _________DAW – 190 Ver. 3.18 4/2/03___

Computer connection – RS232 / Parallel port / USB / Other ____________________

14. * TEST TRUCK TURNAROUND time ___6____ minutes DISTANCE _4_. _4_ mi.

15. PHOTOS	FILENAME
Power source	_ Solar_Panels_TO_2_12_12A_0100_12_03_03.JPG__
Phone source	__ Telephone_Drop_TO_2_12_12A_0100_12_03_03.JPG__
Cabinet exterior	__ Cabinet_Exterior_1_TO_2_12_12A_0100_12_03_03.JPG__
Cabinet interior	__ Cabinet_Interior_1_TO_2_12_12A_0100_12_03_03.JPG_
Weight sensors	__ Leading_Quartz_Sensor_TO_2_12_12A_0100_12_03_03.JPG
Classification sensors	___ Loop_Sensor_TO_2_12_12A_0100_12_03_03.JPG__
Other sensors	_______________________

Description ______________________________

Downstream direction at sensors on LTPP lane _ Downstream_TO_2_12_12A_0100_12_03_03.JPG___________________

Upstream direction at sensors on LTPP lane _ Upstream_TO_2_12_12A_0100_12_03_03.JPG___________________

COMMENTS ________GPS Coordinates: Latitude: 26.48096; Longitude -80.65128____

________Amenities:
____________Cleniston (30 miles, Best Western)

____________South Bay (13.5 miles)
____________Chevron, Shell (Mini-Mart)

_____________Belle Glade (17.0) miles)
______________Various Fast Food
______________Bank Of America
______________Various Gas Stations
______________Budget Inn
______________Radio Shack
______________Winn Dixie

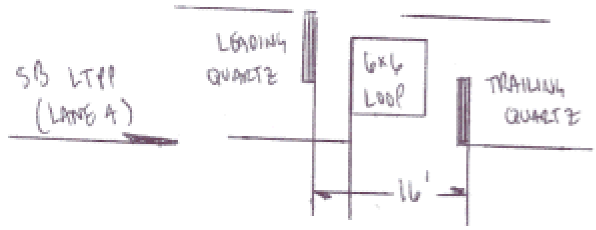
_______________West Palm Beach (55 miles)
________________Various Amenities

______Predominant Trucks – Empty Sugar Cane Haulers, Loaded 500 Haulers________

COMPLETED BY ______Dean J. Wolf__________________________

PHONE __301-210-5105____ DATE COMPLETED _1_ 2_ /_0_ 3_ / _2_ 0_ 0_ 3

Sketch of equipment layout

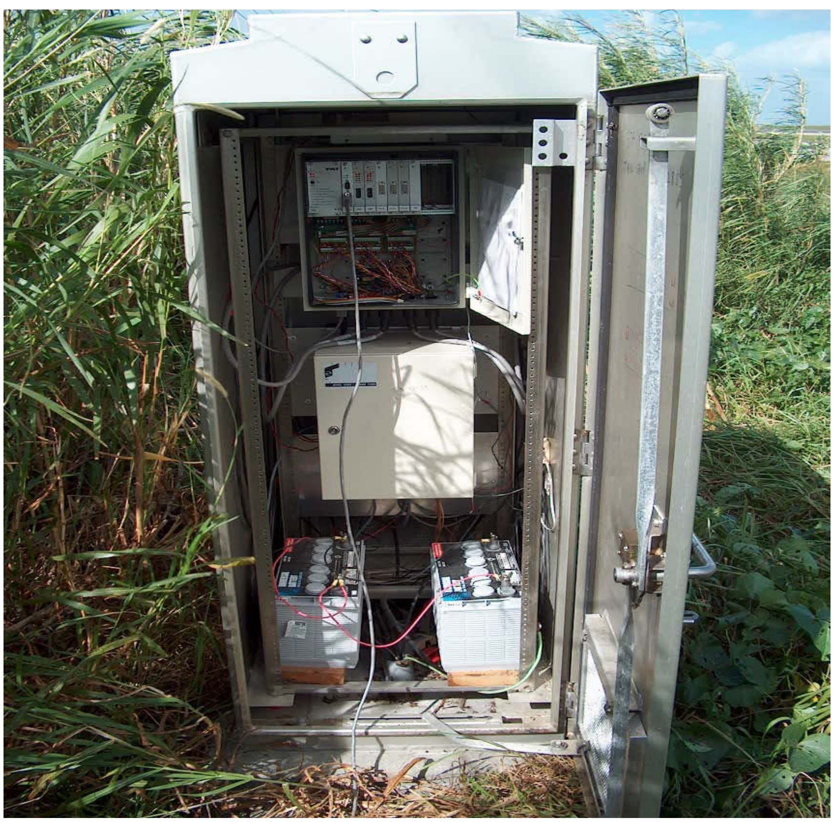


Site Map

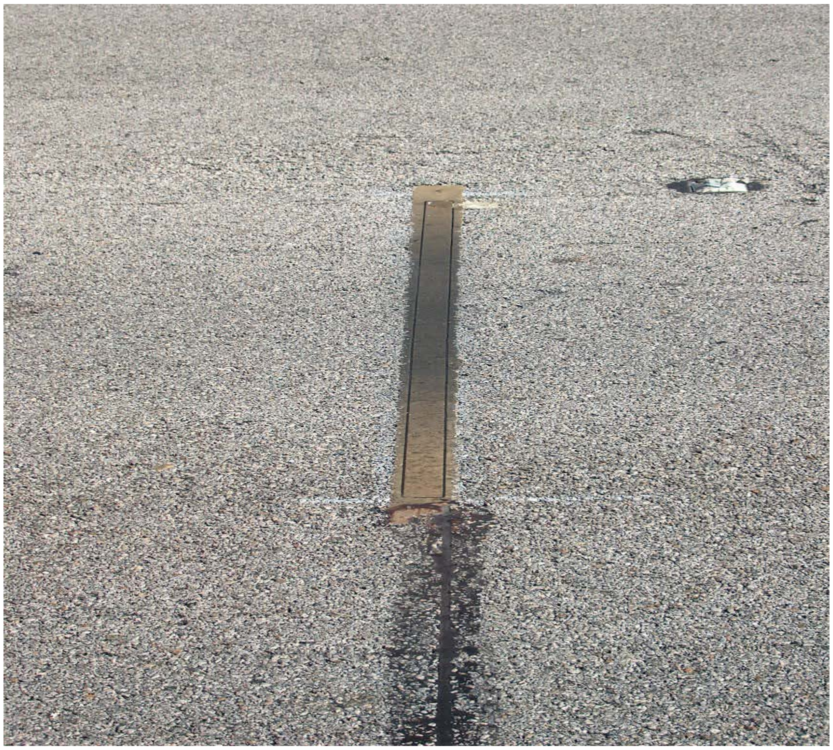
Downstream_TO_2_12_12A_0100_12_03_03.JPG (Distress Photo 1)

Upstream_TO_2_12_12A_0100_12_03_03.JPG (Distress Photo 2)

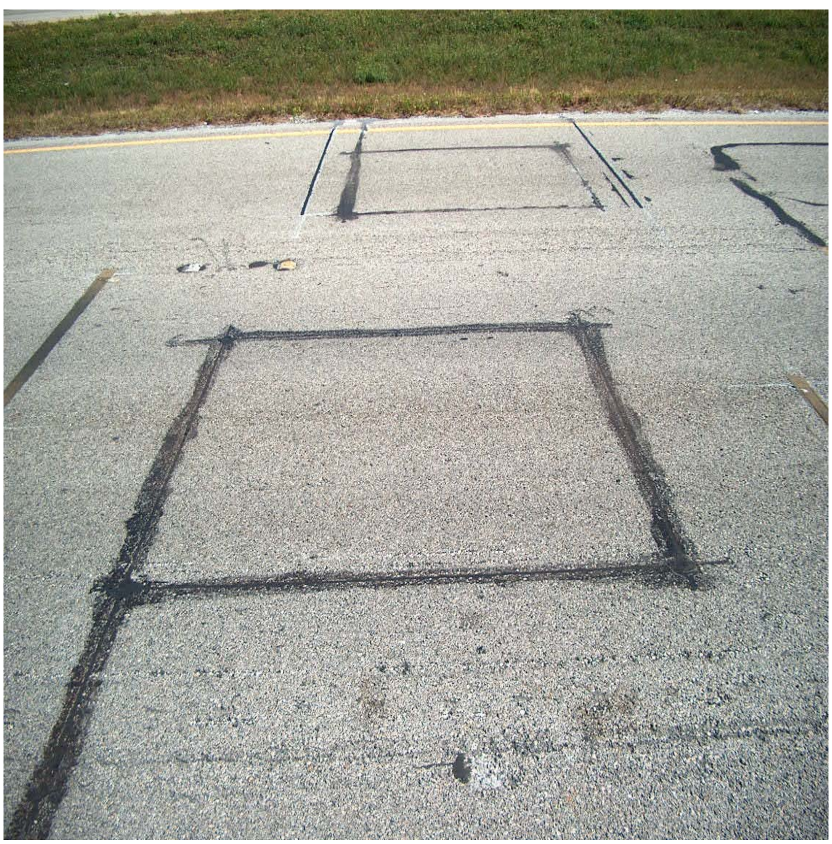
Cabinet_Exterior_TO_2_12_12A_0100_12_03_03.JPG



Cabinet_Interior_TO_2_12_12A_0100_12_03_03.JPG



Leading_Quartz_Sensor_TO_2_12_12A_0100_12_03_03.JPG



Loop_Sensor_TO_2_12_12A_0100_12_03_03.JPG

Downstream_TO_2_12_12A_0100_12_03_03.JPG


Upstream_TO_2_12_12A_0100_12_03_03.JPG

Sheet 18 STATE_CODE _1_ _2_

LTPP Traffic Data

WIM SITE COORDINATION SPS Project_ID _0_ 1_ 0_ 0_

1. Equipment –
   - Maintenance – contract with purchase / separate contract LTPP / separate contract State / state personnel
     Contact _________Kip Jones (850) 414-4726 __________________

   - Purchase by LTPP / State
     Constraints on specifications (sensor, electronics, warranties, maintenance, installation)

   - Installation – Included with purchase / separate contract by State / state personnel / LTPP contract

   - Calibration – Vendor / State / LTPP

   - Manuals and software – State / LTPP

   - Pavement PCC/AC – always new / replacement as needed / grinding and maintenance as needed / maintenance only / no remediation

   - Power - overhead / underground / solar billed to State / LTPP / N/A

   - Communication - Landline / Cellular / Other billed to State / LTPP / N/A

2. Site visits – Evaluation

   - WIM Validation Check - advance notice required __14___ days / weeks

   - Trucks – air suspension 3S2 State / LTPP
     2nd common State / LTPP
     3rd common State / LTPP
     4th common State / LTPP
     Loads State / LTPP
     Contact ____

     Drivers State / LTPP
     Contact ____

     Contractors with prior successful experience in WIM calibration in state:
     _____________FTE, DTS___________________________
     Nearest static scale (commercial or enforcement)
     ____

   - Profiling – short wave -- permanent / temporary site marking
     -- long wave – permanent / temporary site marking

WIM SITE COORDINATION SPS Project_ID _0_ 1_ 0_ 0_

- Pre-visit data
  – Classification and speed: Contact ____Richard Reel _(850) 414 4709______________
  --Typical operating conditions (congestion, high truck volumes)
  Contact ______Michael Leggett (850) 414-4727______________
  -- Equipment operational status: Contact _ Michael Leggett (850) 414-4727_

- Access to cabinet
  State only / Joint / LTPP Key / Combination

- State personnel required on site Y / N
Contact information _____ Kip Jones (850) 414-4726 __________________

- Enforcement Coordination required Y / N
Contact information ____

- Traffic Control Required Y/ N
Contact information ____

- Maximum number of personnel on site _5__;
  Invitees ___________________________

- Authorization to calibrate site -- State only / LTPP

- Special conditions ____

3. Data Processing
- Down load State only / LTPP read only / LTPP download / LTPP download and copy to state
- Data Review State per LTPP guidelines / State weekly / LTPP
- Data submission for QC State - weekly; twice a month; monthly / LTPP

4. Site visits – Validation

- WIM Validation Check - advance notice required _14____ days / weeks
LTPP Semi-annually / Sate per LTPP protocol semi-annually / State other

- Trucks – air suspension 3S2 State / LTPP
  2nd common State / LTPP
  3rd common State / LTPP
  4th common State / LTPP
  Loads State / LTPP
  Contact _______________________________________

Drivers State / LTPP
Contact ____

Contractors with prior successful experience in WIM calibration in state:
__________DTS, FTE _______________________

- Profiling – short wave -- permanent / temporary site marking
  -- long wave – permanent / temporary site marking

- Pre-visit data
  – Classification and speed: Contact _Richard Reel __(850) 414
4709________________
  -- Equipment operational status: Contact __ Michael Leggett (850) 414-4727____

- Access to cabinet
  State only / Joint / LTPP Key / Combination

- State personnel required on site Y / N
Contact information ____ Kip Jones (850) 414-4726 ___________________________

- Enforcement Coordination required Y / N
Contact information ____

- Traffic Control Required Y/ N
Contact information ____

- Authorization to calibrate site -- State only / LTPP

- Special conditions ____

5. Site visit – Construction

- Construction schedule and verification – Contact __ Kip Jones (850) 414-4726 ____

- Notice for straightedge and grinding check - ___4___ days / weeks
On site lead to direct / accept grinding – State / LTPP

- WIM Calibration - advance notice required _14____ days / weeks
  Number of lanes -- ___1___
  LTPP / State per LTPP protocol / State Other ________________

- Trucks – air suspension 3S2 State / LTPP
  2nd common State / LTPP
  Loads State / LTPP
  Drivers State / LTPP

WIM SITE COORDINATION SPS Project_ID _0_ 1_ 0_ 0_

Contractors with prior successful experience in WIM calibration in state:
_______________DTS, FTE_________________________________

- Profiling – straight edge -- permanent / temporary site marking
  -- long wave – permanent / temporary site marking

- Pre-visit data
  – Classification and speed: Contact Richard Reel __(850) 414 4709________
  -- Equipment operational status: Contact __ Michael Leggett (850) 414-4727____

- Access to cabinet
  State only / Joint / LTPP Key / Combination

- State personnel required on site Y / N
Contact information ________ Kip Jones (850) 414-4726 _________________

- Enforcement Coordination required Y / N
Contact information ____

- Traffic Control Required Y/ N
Contact information ____

- Authorization to calibrate site -- State only / LTPP

- Special conditions ____

6. Special conditions
   - Funds and accountability
   - Reports
   - Other

SHEET 16 LTPP MONITORED TRAFFIC DATA SITE CALIBRATION SUMMARY	*STATE ASSIGNED ID [9_ _9 _3 _5] *STATE CODE [_1 _2] *SHRP SECTION ID [_0 _1 _0 _0]

SITE CALIBRATION INFORMATION

1. * DATE OF CALIBRATION (MONTH/DAY/YEAR) [_1 _2 / _0 _3 / _2 _0 _0 _3]

2. * TYPE OF EQUIPMENT CALIBRATED __ WIM _XX CLASSIFIER ___ BOTH

3. * REASON FOR CALIBRATION
____ REGULARLY SCHEDULED SITE VISIT ____ RESEARCH
____ EQUIPMENT REPLACEMENT ____ TRAINING
____ DATA TRIGGERED SYSTEM REVISION ____ NEW EQUIPMENT INSTALLATION
_XX_ OTHER (SPECIFY) _________ SITE ASSESSMENT

4. * SENSORS INSTALLED IN LTPP LANE AT THIS SITE (CHECK ALL THAT APPLY):
____ BARE ROUND PIEZO CERAMIC ____ BARE FLAT PIEZO ____ BENDING PLATES
____ CHANNELIZED ROUND PIEZO ____ LOAD CELLS ____ QUARTZ PIEZO
____ CHANNELIZED FLAT PIEZO ____ INDUCTANCE LOOPS ____ CAPACITANCE PADS
_XX_ OTHER (SPECIFY) ________Quartz Sensor – Loop – Quartz Sensor

5. EQUIPMENT MANUFACTURER _______ PAT DAW 190

WIM SYSTEM CALIBRATION SPECIFICS**

6.**CALIBRATION TECHNIQUE USED:
____ TRAFFIC STREAM -- ____STATIC SCALE (Y/N) ____ TEST TRUCKS

__ __ __ NUMBER OF TRUCKS COMPARED __ __ __ NUMBER OF TEST TRUCKS USED

__ __ __ PASSES PER TRUCK

TYPE PER FHWA 13 BIN SYSTEM
SUSPENSION: 1 - AIR; 2 - LEAF SPRING
3 - OTHER (DESCRIBE)

TRUCK	TYPE	SUSPENSION
1	________	________
2	________	________
3	________	________

7. SUMMARY CALIBRATION RESULTS (EXPRESSED AS A PERCENT)
MEAN DIFFERENCE BETWEEN ---
DYNAMIC AND STATIC GVW ___ ___ ___ . __ STANDARD DEVIATION __ __ . __
DYNAMIC AND STATIC SINGLE AXLES ___ ___ ___ . __ STANDARD DEVIATION __ __ . __
DYNAMIC AND STATIC DOUBLE AXLES ___ ___ ___ . __ STANDARD DEVIATION __ __ . __

8. ___ ____ NUMBER OF SPEEDS AT WHICH CALIBRATION WAS PERFORMED

9. DEFINE THE SPEED RANGES USED (MPH) ______ ______ ______ ______ ______ ______ ______ ______
______ ______ ______ ______ ______ ______ ______ ______ ______ ______

10. CALIBRATION FACTOR (AT EXPECTED FREE FLOW SPEED) ___ ___ ___ . ___ ___

11.** IS AUTO-CALIBRATION USED AT THIS SITE? (Y/N) _____
IF YES, LIST AND DEFINE AUTO-CALIBRATION VALUE: ________________

CLASSIFIER TEST SPECIFICS***

12.*** METHOD FOR COLLECTING INDEPENDENT VOLUME MEASUREMENT BY VEHICLE CLASS:
___ VIDEO _XX MANUAL ___ PARALLEL CLASSIFIERS

13. METHOD TO DETERMINE LENGTH OF COUNT ____ TIME _XX_ NUMBER OF TRUCKS

14. MEAN DIFFERENCE IN VOLUMES BY VEHICLES CLASSIFICATION:
*** FHWA CLASS 9 ____ _1____ FHWA CLASS __5__ ____ _25_ ____ ____
*** FHWA CLASS 8 ____ _0__ ____ FHWA CLASS ____ ____ ____ ____ ____
FHWA CLASS ____ ____ ____ ____ ____
FHWA CLASS ____ ____ ____ ____ ____
*** PERCENT "UNCLASSIFIED" VEHICLES: ____ __1_ ____

PERSON LEADING CALIBRATION EFFORT: ____Dean J. Wolf
CONTACT INFORMATION: 301-210-5105 rev. November 9, 1999