Assessment Report for
Pennsylvania, 420600

Visit date: November 6, 2003

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1 Executive Summary

A visit was made to the Pennsylvania SPS 6 site on November 6th, 2003 for the purposes of conducting an assessment of the WIM system located on US Interstate 80 at milepost 151. This site is currently not a candidate for a field performance evaluation and calibration.

The site is instrumented with two, half-lane, MSI piezo sensors in a staggered array and a PAT America DAW100 controller.

The equipment is not in working order. The following actions will be needed to make the equipment fully operational:

- Replace each piezo sensor
- Replace the loop sensor
- Install an additional solar panel
- Install an additional battery
- Replace the communications equipment

There was insufficient data to support a Sheet 16 for classification verification. This will need to be part of the next assessment or evaluation.

The pavement condition is such that it may contribute to an inability to calibrate the system to obtain research quality data. The range of WIM Index values are between 0.48 and 2.27. The higher values are associated with possible problems in the immediate vicinity of the sensors. A reevaluation of the site smoothness after repair is suggested as replacement may involve relocation or pavement remediation. Among the distresses observed that influence truck motion is a transverse dip in the pavement approximately 161 feet before the leading WIM sensor, low severity rutting and medium severity longitudinal (environmental) cracking.

A review of the speed information collected on site indicates that the range of truck speeds to be covered during an evaluation is 45 and 65 mph (Posted speed limit at this site is 65 mph).

This site has 4 years of historical data. Between 1993 and 2001 all loading data is effectively sampled rather than continuous. Based on available calibration information and review of the data submitted through last year, this site still needs 5 years of data to meet the LTPP requirement for five years of research quality data.

Due to the lack of landline communication accessibility, and the recommendation of the FHWA for AC power and PCC pavement for all WIM sites, the relocation of the WIM site to a new location was investigated during the assessment. The relocation of the site was deemed unfeasible due to median restrictions (width and wooded areas), and the continued lack of AC power and landline communication services accessible within a 5-mile radius of the present site location. Relocation further from the site should be supported by a Truck O-D survey to verify that the weighed traffic stream is in fact essentially the same trucks as are crossing the LTPP sections.

If it is determined that reinstallation of WIM is not appropriate, every effort should be made to have a working classification system at this location for the remaining life of the SPS project.

2 Corrective Actions Recommended

The leading weigh sensor must be replaced because of diminished performance due to low resistance and high capacitance values. The lagging weigh sensor must be replaced because of complete sensor failure due to shorted sensor components. The loop sensor must be replaced because of diminished operation and ultimate failure due to low insulation resistance values.

The temperature sensor is working properly, however, the sensor is installed adjacent to the leading weigh sensor within the same saw cut, and replacement of the leading sensor will require the replacement of the temperature sensor.

For the reasons described in the following section (Equipment inspection and diagnostics), an additional solar panel must be installed in series with the existing panel. Another battery must also be installed. Due to the lack of available landline communications, and the failure of the present equipment, other communication methods need to be investigated. One option could be a CDPD modem.

The pavement conditions at this site have been adversely affected by numerous sensor replacements/relocations as well as the transverse dip noted prior to the WIM sensor location. At a minimum, the asphalt pavement overlay should be rehabilitated or replaced throughout the WIM scale area. In accordance with FHWA LTPP WIM standards, it is recommended that the pavement be replaced with new Portland Cement Concrete from 425 feet prior to the WIM area to 75 following the WIM sensor location.

3 Equipment inspection and diagnostics

In addition to the sensor failures described above the following system deficiencies were found:

The WIM equipment power and communication requirements are not being served by the support equipment presently installed. The cellular modem is not operational. The single 53-Watt solar panel does not provide enough power to keep the system batteries fully charged.

Although the power requirements of the cellular modem are believed to be causing this problem, a CDPD modem would require the same power requirements and would not eliminate the need for an additional solar panel and battery.

The pull box serving both of the westbound lanes has been severely damaged by lawnmowers and should be replaced.

A #8 bare copper ground wire should be installed from the ground rod installed in the service mast pedestal to the cabinet back panel.

4 Classification Verification with test truck recommendations

The agency uses the 13-bin classification scheme. The algorithm information downloaded from the unit indicates classification is based on number of axles, axle spacing limits and weight ranges. All vehicles not falling within the identified bins are considered as unclassified. Unknown is not an agency option.

A sample of 100 *trucks* was collected at the site. Video was taken at the site to provide ground truth for the evaluation. There is no comparison data available. For the week prior to the site visit only cars are reported on the LTPP Lane.

A review of the site data both collected on site indicated that only Class 9 is present as more than 10 percent of the heavy truck population. This is consistent with the Thursday data for October 2001, the closest available comparison set. Based on this information in addition to the air-suspension 3S2, the second vehicle used for evaluation should also be a Class 9. Due to the length of the truck turn around one additional vehicle should be used. It is recommended that it also be a Class 9. Based on the historical data loaded trucks are preferable to unloaded for the additional vehicles.

5 Profile Evaluation

Profile data collected at the SPS WIM location by Stantec Inc. on September 9, 2002 was processed through the LTPP SPS WIM Index software. This WIM scale is installed on a Portland Cement Concrete surfaced pavement. The results are shown in Table 1.

A total of 15 profiler passes were conducted over the WIM site. These included 5 passes at the center of the lane, 5 passes shifted to the left side of the lane, and 5 passes shifted to the right side of the lane. Shifts to the sides of the lane 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), the center of the vehicle, and the right wheel path (RWP).

Table 1 shows the computed index values for all the 15 profiler passes for this WIM site. The average values over the five passes at each path were also calculated, as shown in the right most column of the table. Values failing to meet the index limits are presented in italics.

Table 1 Long Range Index (LRI) and Short Range Index (SRI)

Profiler Passes			Pass 1	Pass 2	Pass 3	Pass 4	Pass 5	**Ave.**
Center	LWP	LRI (m/km)	0.642	0.642	0.664	0.634	0.681	**0.653**
		SRI (m/km)	*0.926*	*0.949*	*0.973*	*0.905*	*0.987*	***0.948***
	RWP	LRI (m/km)	0.789	*0.817*	0.766	*0.806*	0.702	**0.776**
		SRI (m/km)	0.483	0.548	0.544	0.493	0.565	**0.527**
Left Shift	LWP	LRI (m/km)	*0.811*	0.772	*0.828*	0.761	0.785	***0.791***
		SRI (m/km)	*1.233*	*1.212*	*1.214*	*1.214*	*1.219*	***1.218***
	RWP	LRI (m/km)	0.579	0.601	0.607	0.645	0.600	**0.606**
		SRI (m/km)	0.703	0.756	0.721	0.770	0.725	**0.735**
Right Shift	LWP	LRI (m/km)	*0.859*	*0.811*	*0.810*	0.631	*0.882*	***0.799***
		SRI (m/km)	*1.126*	*0.990*	*1.037*	*1.126*	*1.108*	***1.077***
	RWP	LRI (m/km)	*1.645*	*0.884*	*0.888*	*0.891*	*1.132*	***1.088***
		SRI (m/km)	*2.273*	*1.013*	*1.054*	*0.851*	*1.260*	***1.290***

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 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 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.

There are 33 locations 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. Based on the profile data analysis, the Pennsylvania SPS-6 WIM site 420600 does not meet the requirements for WIM site locations since nearly half of the calculated LRI and SRI values for the pavement site are higher than the index limits. The highest numbers tend to be SRI Index numbers, which reflect conditions in the immediate vicinity of the scale. Repair of sensors will affect these values. Since repair may include relocation or pavement remediation the smoothness evaluation should be redone before an evaluation is considered.

6 Distress survey and any applicable photos

Based on visual survey the pavement condition is generally good except for a transverse dip in the pavement approximately 161 feet before the leading WIM sensor, low severity rutting in the wheel path and medium severity longitudinal cracking at the edge of the pavement and shoulder. The distresses noted are not significantly affecting the movement of the trucks. It is the roughness condition that is leading to the pavement remediation recommendation.

Figure 13-1 shows the overall condition of the pavement, Figure 13-2 shows the environmental cracking.

7 Vehicle-pavement interaction discussion

The truck movements, such as bouncing are not significantly affected due to the presence of the distresses mentioned above. The speed of the trucks does not diminish as they approach or leave the sensors. However, most of the trucks are traveling closer to the edge of the mainline and the shoulder rather than the typical the wheel path.

8 Speed data with speed range recommendations for evaluation

Based on the data collected on site the 15^{th} and 85^{th} percentile speeds for Class 9s are 45 and 65 respectively. The speeds are below the posted speed limit of 65 mph. This range does not vary significantly for other truck classes. As a result the recommended speeds for test trucks in an evaluation are 45, 55, and 65 mph

The review of drive axle spacing for Class 9 vehicles indicates that speed errors have probably not affected the measurements of length and therefore vehicle classification. From on-site observation, verified by video data, the predominant drive axles for Class 9 vehicles are standard tandem. This indicates that the average drive axle spacing should be about 4.2 feet. However, the LTPP database indicates that the drive axle spacing for Class 9s averages 3.9 to 4.0 feet with a standard deviation of 0.3 feet. This indicates that the axle spacing may have been underestimated.

9 Traffic Data review: Overall Quantity and Sufficiency

As of November 6, 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 2 Calibration information has been provided for April 30, 2000. 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.

Table 2 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)

The amount and coverage for the site is shown in Table 3. While a sufficient quantity of classification data exists, this site lacks 5 years of research quality loading data.

Table 3 Amount of Traffic Data Available

Year	Classification Days	Months	Coverage	Weight Days	Months	Coverage
1993	0	N/A	N/A	4	1	Weekdays and weekends
1995	0	N/A	N/A	4	1	Weekdays and weekends
2000	230	9	Full Week	88	4	Full Week
2001	132	6	Full Week	60	3	Full 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, ESAL graphs, average daily steering axle weights for Class 9 vehicles, and GVW distributions both over all years and by month within years.

Data that has validation information available is reviewed in light of the patterns present in the two weeks immediately following the 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 being considered research quality.

9.1 SPS Summary Report

The overall report is the SPS Summary Report. This report using sets of benchmark data based on calibration information or consistent, rational data patterns 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 numbers, 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 submitted. Counts derived from weight data are available for all months. Loading 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 was used as the basis of comparison. . An LTPP Traffic Sheet 16 was provided for the site indicating a validation was done April 30, 2000. However, the first month with sufficient data available in the LTPP traffic database is July 2000. That formed the basis for the comparison values dated January 1, 1993 as well as July 29, 2000.According to the results shown in Table 4in 2000 when more than 210 days of classification data was collected the percentage of class 9 vehicles was significantly higher from January till May 2000 compared to the period from June till September. It and was also higher than the comparison values. The loading information for 2000 and 2001 reflects essentially constant loading patterns up to October 2001.

Table 4 SPS Summary Report

Comparison Date Weight - 01-January-1993 Classification - 01-January-1993

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		35.7		2806	0.94	9,457	57,901	34,507
AUG 1993			4	2003				
JUN 1995			4	2247	1.56	7,175	73,503	33,773
JAN 2000	10	50.1						
FEB 2000	28	50.8						
MAR 2000	31	49.0	7	3152	1.07	9,414	69,447	34,113
APR 2000	29	44.0						
MAY 2000	30	42.9						
JUN 2000	10	38.1						
JUL 2000	31	34.1	22	2106	0.94	9,450	69,724	34,184

Table 5 SPS Summary Report (continued)

Comparison Date Weight - 29-July-2000 Classification - 29-July-2000

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		35.7		2806	0.94	9,457	57,907	34,507
JUL 2000	31	34.1	22	2106	0.94	9,450	69,724	34,184
AUG 2000	31	36.8	30	2931	0.95	9,458	69,729	34,237
SEP 2000	30	38.4	29	2927	0.94	9,460	69,667	34,201
FEB 2001	24	39.5						
MAR 2001	31	39.2						
APR 2001	4	41.0						
JUN 2001	24	40.7						
JUL 2001	29	28.6						
AUG 2001			14	3395	1.09	10,125	69,438	35,110
SEP 2001			25	3193	1.03	10,050	65,762	35,193
OCT 2001	20	47.7	21	3516	0.68	8,821	57,629	34,694

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 generally labeled with a 4 is for classification data. The right hand column of the pair, labeled with a 7, 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 classification data. The individual weeks show essentially the same mix to the fleet. 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 calibration. 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 comparatively stable between January 2000 and July 2001. However, after July 2001 there is a sudden decrease in Class 8 vehicles and a minor increase in Class 11 vehicles. A typical graph for this period is shown in Figure 14-2. This is similar to the distribution in the 1993 and 1995 data. It may represent a true shift or ghost axles from a temperature sensitive sensor may have added axles. The reason cannot be determined at this point in time. 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. The data collected in the months of March, July, August and September of the year 2000 by both classifier and WIM equipment appear to be similar except for the month of July where classifier data is significantly higher than the WIM equipment data. The pattern observed in the weekly graphs is also present in the available 2001 data.

9.3 ESALs per year

Average ESALs for Class 9 vehicles are a very crude method of identifying loading shifts. Figure 14-4 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. Average ESALs per Class 9 are not used as an indicator of research quality data.

In the years 2000 and 2001 the ESALs per year appear to be similar. However, the ESALs per year for 1995 appear to be significantly different from the years 2000 and 2001.

9.4 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 14-5, the weight of the front axle was essentially constant in the months when data was collected. Where the 2000 data was slightly less than 10,000 lb, the 2001 data was slightly over 10,000 lb before dropping in mid- September to 8,000 lb by the end of the data collection period

9.5 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. 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 14-6 shows the shift from the expected bimodal curve to a unimodal curve over time.

To investigate any seasonal variations the Class 9 GVW distributions are graphs by month by year. As shown in, there is no significant difference between the three months. This is also an indicator that the unusual annual pattern is not influenced by one or two months.

9.6 Axle Distributions

GVW graphs were not available for 1993. For all years axle distribution graph for Class 9 vehicles was created to evaluate that loading information. For 1995, a year with a rational pattern, the tandem axle graph was also produced to be used as a reference for1993 to 2000. As can be seen in Figure 14-8 the pattern for 1993 data is very similar to that for 1995. Thus a 1993 GVW graph for Class 9s would be similar to that for 1995 since the weight of a Class 9 is dominated by its tandem axles.

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 contacts and conditions for assessments and evaluations has been attached following the updated handout guide.

12 Traffic Sheet 16(s) (Omitted)

There was no comparison data available from the equipment to validate the classification data collection. However, the distribution of vehicles classes on site is similar to that observed in available data.

13 Distress Photographs

Figure 13-1 Pavement Condition of Pennsylvania 420600

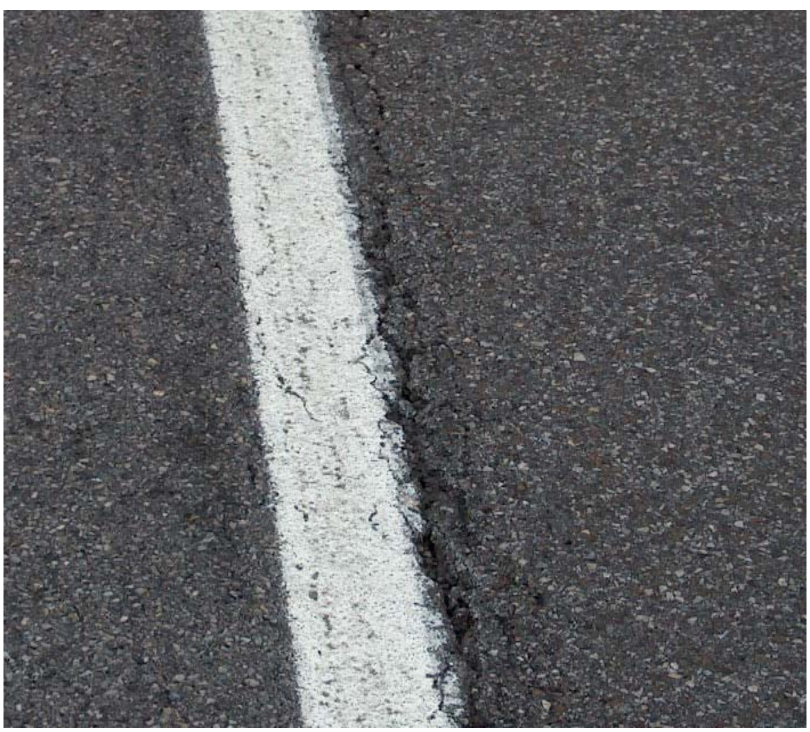


Figure 13-2 Longitudinal Cracking in pavement of Pennsylvania 420600

14 Traffic Graphs

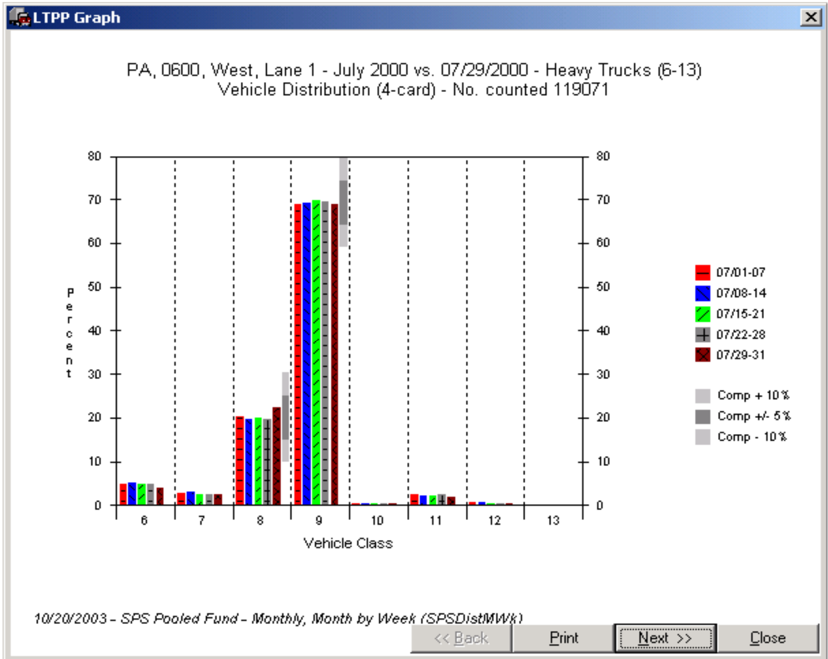


Figure 14-1 Typical Heavy Truck Distribution Pattern for Classification Data at 420600

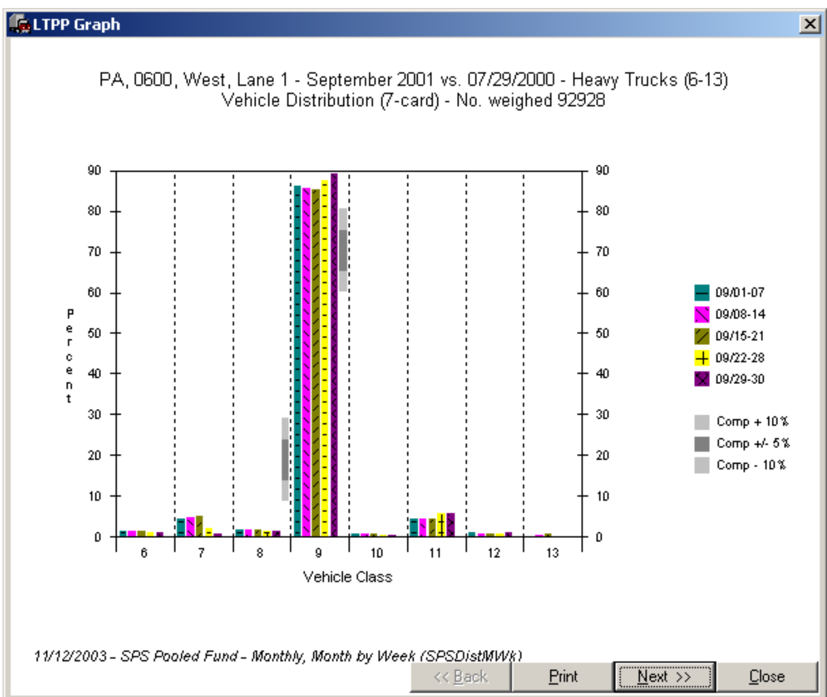


Figure 14-2 Shift in Heavy Truck Mix at 420600 - Fall 2001

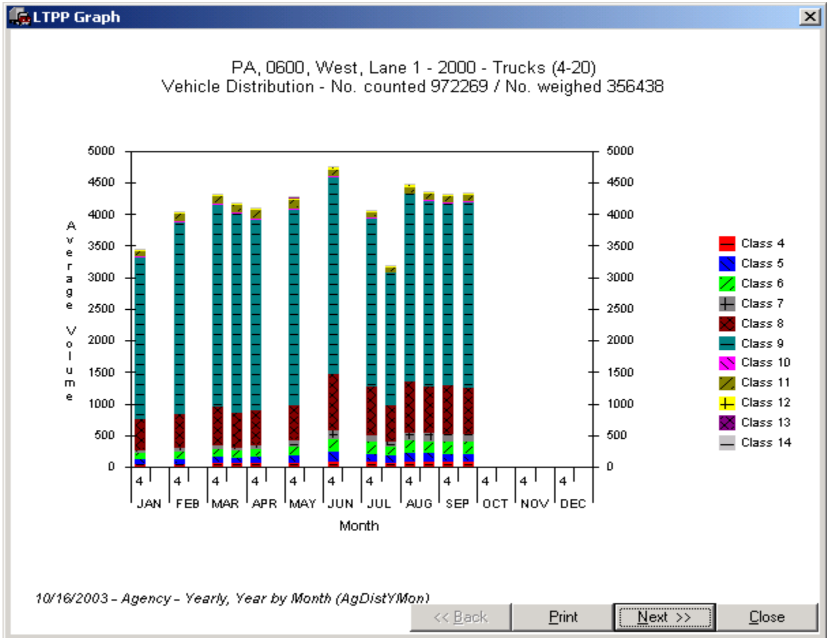


Figure 14-3 Vehicle Distribution by Month for the Year 2000 for 420600

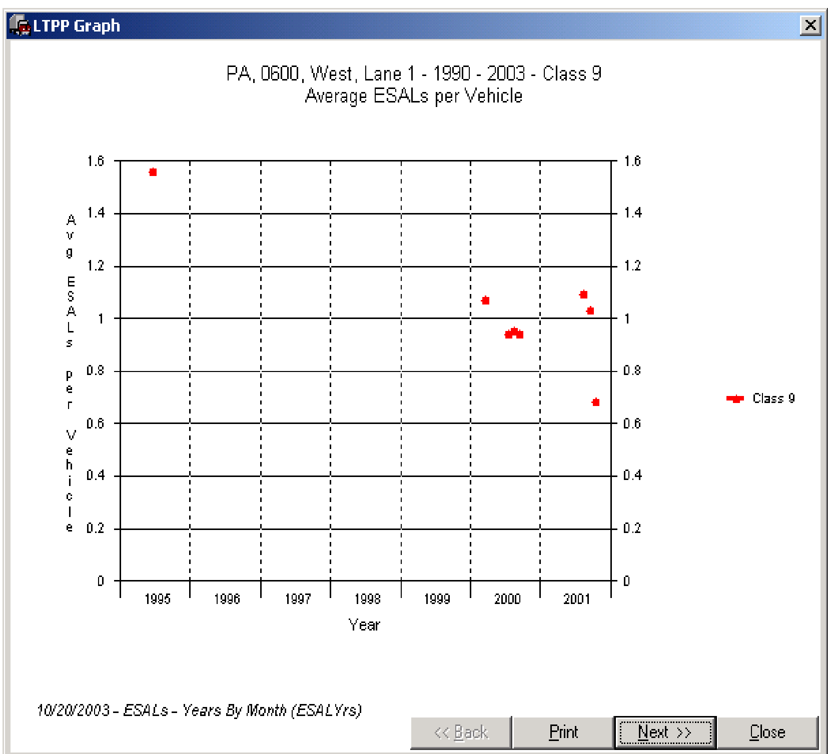


Figure 14-4 Average Class 9 ESALs for site from 1995 to 2001 for 420600

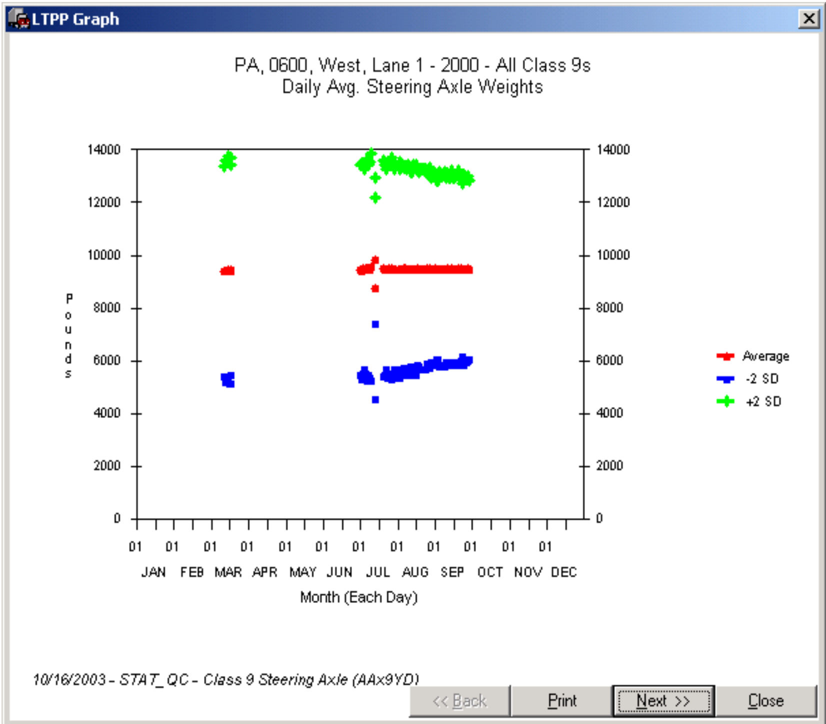


Figure 14-5 Average Daily Class 9 Steering Axle Weight - 2000 – 420600

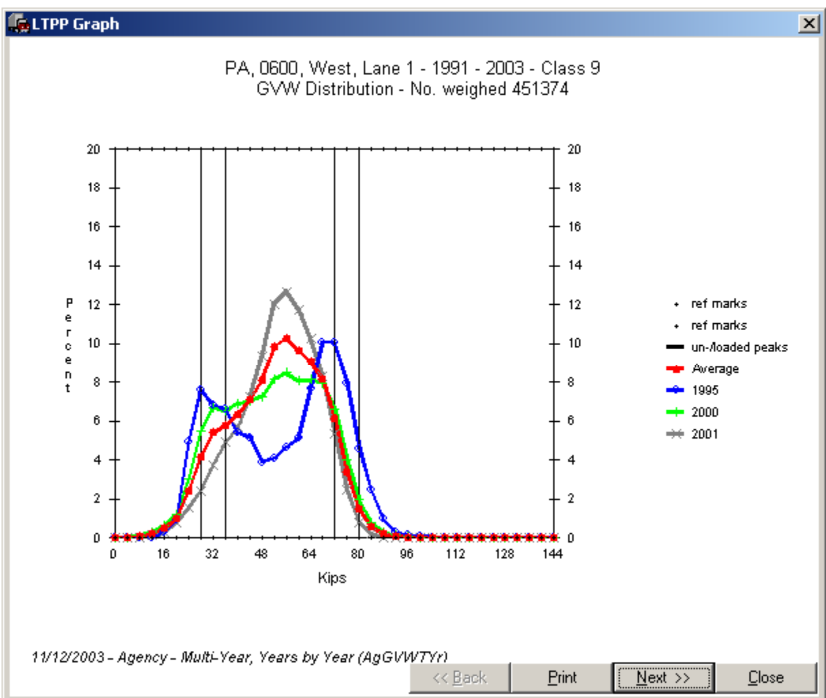


Figure 14-6 Class 9 GVW Distribution over years of available data - 420600

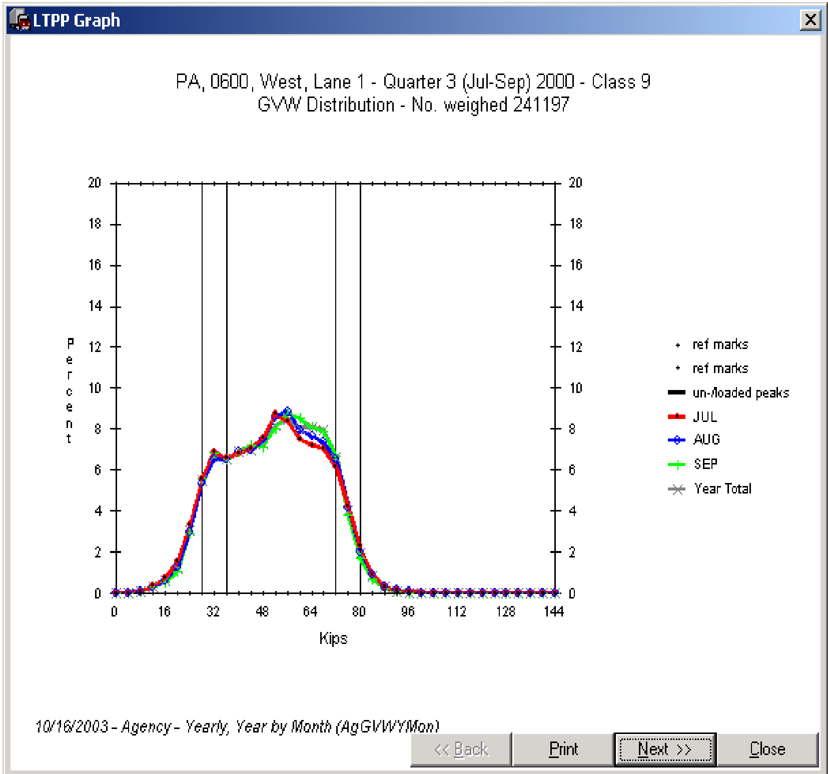


Figure 14-7 Class 9 GVW Distribution – September/2000 to August/2000 – 420600

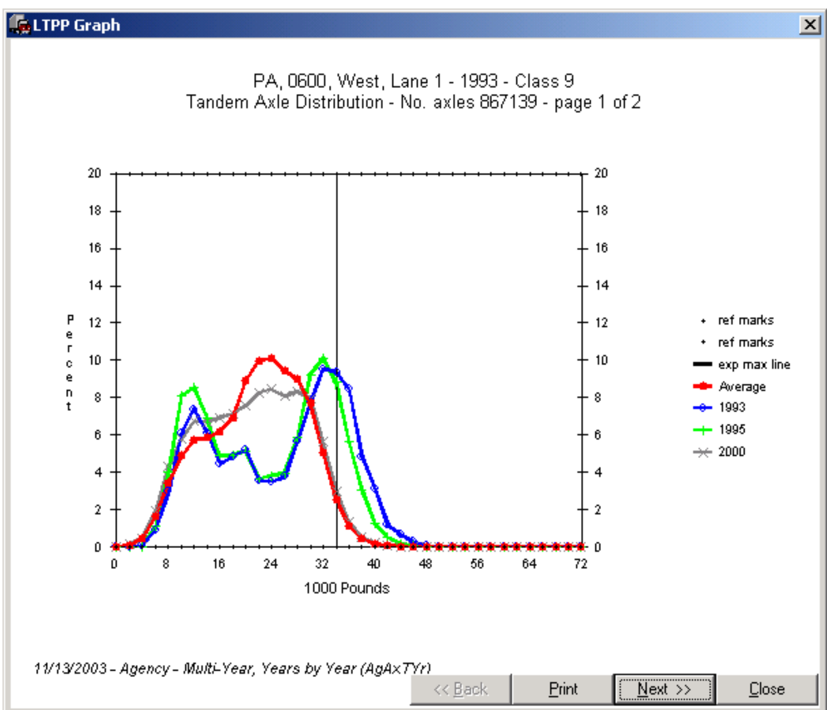


Figure 14-8 Class 9 Axle Distribution – 1993 to 2000 – 420600

HANDOUT GUIDE FOR SPS WIM ASSESSMENT

STATE: Pennsylvania

SHRP ID: 0600

Figures

1. General Information

SITE ID: *420600*

LOCATION: *I-80 West, milepost 151, near Snow Shoe*

VISIT DATE: *November 6, 2003*

VISIT TYPE: *Assessment*

2. Contact Information

POINTS OF CONTACT:

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

Highway Agency: *Dennis Williams, 717-346-5971, denwilliam@state.pa.us*

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

FHWA Division Office Liaison: *Unknown*

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

3. Agenda

TRAVEL DATE (S): *November 6, 2003*

BRIEFING DATE: *November 6, 2003 at 9:00 am at the District 2-1 Maintenance Facility; 1000 East Bishop St., Bellefonte, PA*

ON SITE PERIOD: *November 6, 2003*

TRUCK ROUTE CHECK: *Done (See Truck Route)*

4. Site Location/ Directions

NEAREST AIRPORT: *Pittsburgh International Airport, Pittsburgh, PA*

DIRECTIONS TO THE SITE: *Approximately 7 miles West of SR 26*

MEETING LOCATION: *Maintenance District 2-1, 1000 East Bishop St., Bellefonte, PA*

WIM SITE LOCATION: *I -80, milepost 151* near *Snow Shoe*

WIM SITE LOCATION MAP: *See Figure 4.1*

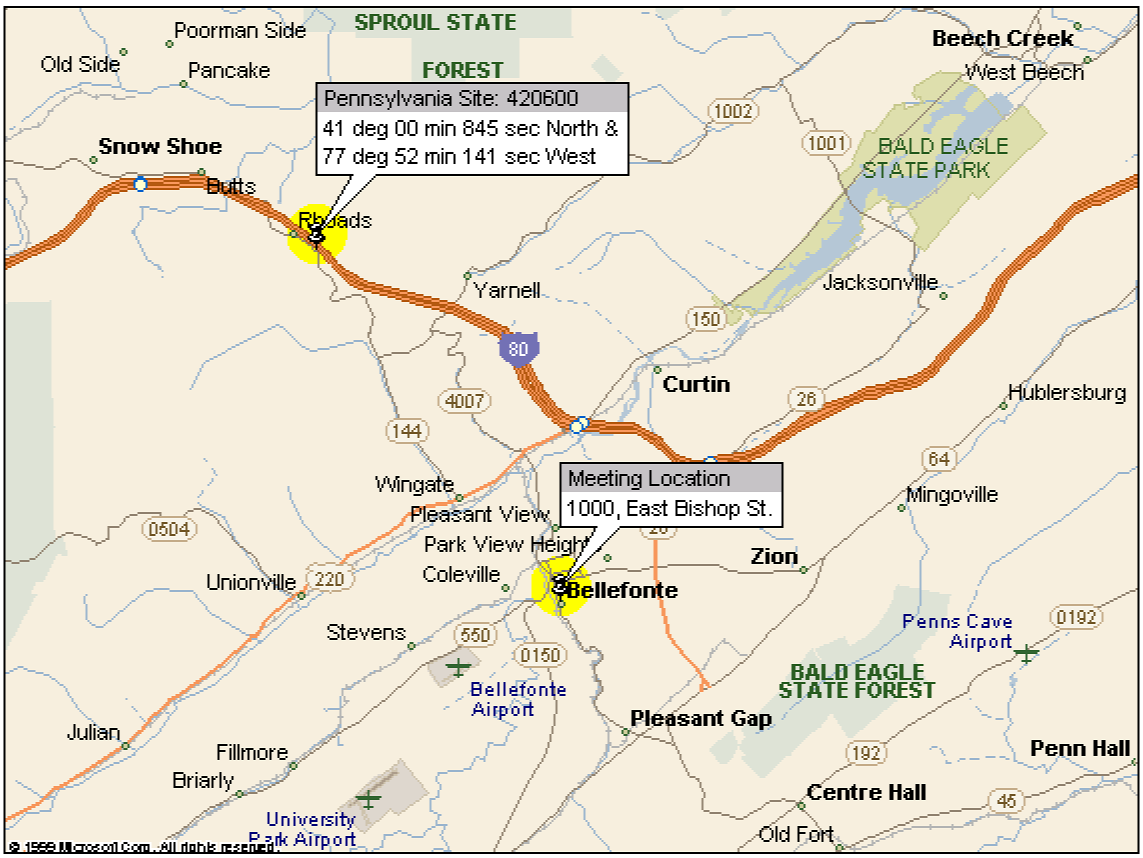


Figure 4.1: Section 420600 near Snow Shoe, Pennsylvania

5. Truck Route Information

ROUTE RESTRICTIONS: *None*

SCALE LOCATION: *TA Milesburg, I 80, exit 158 in Milesburg, PA (approximately 7 miles East of the site). Open 24 hours. Cost is $8 per Run*

TRUCK ROUTE:

- *3.84 miles from site towards West at exit 147 (41^0 01'507" North and 77^0 56' 095" W).*
- *5.75 miles from site towards East at exit 158 (40^0 57'414" North and 77^0 46 084" W).*

6. Sheet 17 – Pennsylvania (420600)

1.* ROUTE ___I-80WB____MILEPOST __ 151___LTPP DIRECTION - N S E W

2.* WIM SITE DESCRIPTION - Grade ___>2_____ % Sag vertical Y / N
Nearest SPS section upstream of the site _0__ _6__ _6__ _2__
Distance from sensor to nearest upstream SPS Section _2_._ _0__ _5__ _5__ mi.

3.* LANE CONFIGURATION
Lanes in LTPP direction __2__ Lane width _1_ _1_ 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 __1_ __1_ ft

4.* PAVEMENT TYPE ___________Portland Cement Concrete/Asphalt Overlay_____

5.* PAVEMENT SURFACE CONDITION – Distress Survey
Date _______11-06-03_____________ Distress Map ~~Filename~~
Photo___Pave_cond_1_TO_1_4A_PA0600_11_06_03.JPG______________
Date ___________11-06-03___________________ Distress Map ~~Filename~~
Photo____Pave_cond_2_TO_1_4A_PA0600_11_06_03.JPG_____________
Date _____________11-06-03_________________ Distress Map ~~Filename~~
Photo____Pave_cond_3_TO_1_4A_PA0600_11_06_03.JPG____________

6. * SENSOR SEQUENCE
___________Piezo-Loop-Piezo_________________________________

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_ _4_ ft
Distance from system __ __ __ ft
TYPE ____DAW – 190 (PAT)______________________

CABINET ACCESS controlled by   LTPP / STATE / JOINT?
Contact - name and phone number ________Pete Ellis (717-579-2480)___
Alternate - name and phone number ___Denny Williams (717-346-5971)_

11. * POWER

Distance to cabinet from drop ___ _4__ ___ ft Overhead / underground / solar / AC in cabinet?
Service provider _____________________   Phone number _____________________

12. * TELEPHONE

Distance to cabinet from drop ___ ___ ___ ft   Overhead / under ground / cell?
Service provider ____Verizon_____________Phone Number _______________

13.* SYSTEM (software & version no.)- __________PAT (DAW 190)______________
Computer connection – RS232 / Parallel port / USB / Other ___________________

14. * TEST TRUCK TURNAROUND time _25____ minutes   DISTANCE _19.2___ mi.

15. PHOTOS   FILENAME

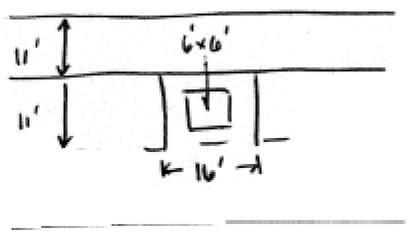
Power source   _Power_Source_TO_1_4A_PA0600_11_06_03.JPG________
Phone source   _____Unavailable__________________
Cabinet exterior   _Cabinet_Exterior_1_TO_1_4A_PA0600_11_06_03.JPG ______
Cabinet interior   _ Cabinet_Interior_1_TO_1_4A_PA0600_11_06_03.JPG _____
Weight sensors   __ Sensor_Location_1_TO_1_4A_PA0600_11_06_03.JPG ____
Classification sensors   __ Sensor_Location_2_TO_1_4A_PA0600_11_06_03.JPG _____
Other sensors   _______________________
Description____________________________
Downstream direction at sensors on LTPP lane __
Downstream_1_TO_1_4A_PA0600_11_06_03.JPG __________________
Upstream direction at sensors on LTPP lane
Upstream_1_TO_1_4A_PA0600_11_06_03.JPG ____________________

COMMENTS _______Amenities – exit - 158____________________________________
_____Hotel – Holiday INN (41^0 57'634" North and 77^0 45' 663" West____
____
___Food – Mc Donald's, Subway, Buck & Horn Restaurant____
____
__ Gas: Amoco & Texaco____
____

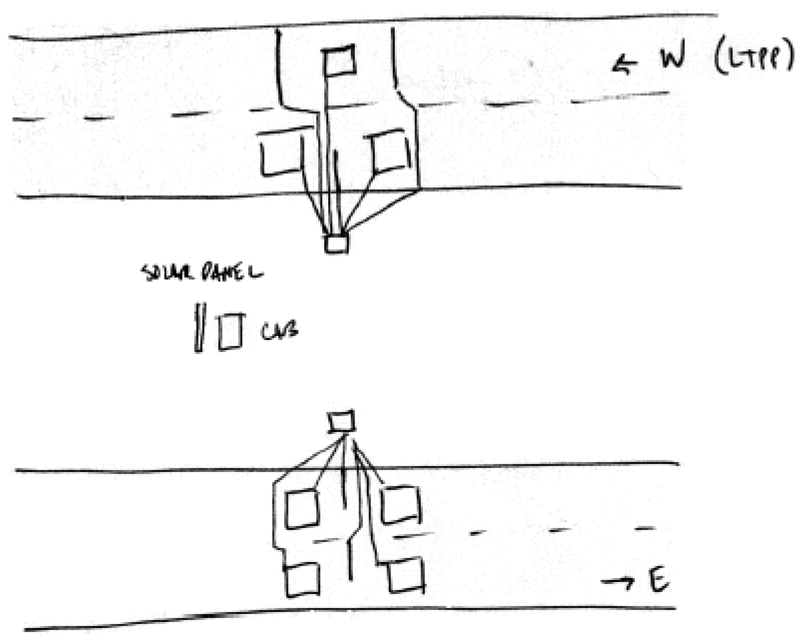
COMPLETED BY ____Dean J. Wolf____________________________

PHONE ____301-210-5105_______________ DATE COMPLETED _1_ _1_ /_0_ _6_ / _2_ _0_ _0_ _3_

Sketch of equipment layout



Site Map



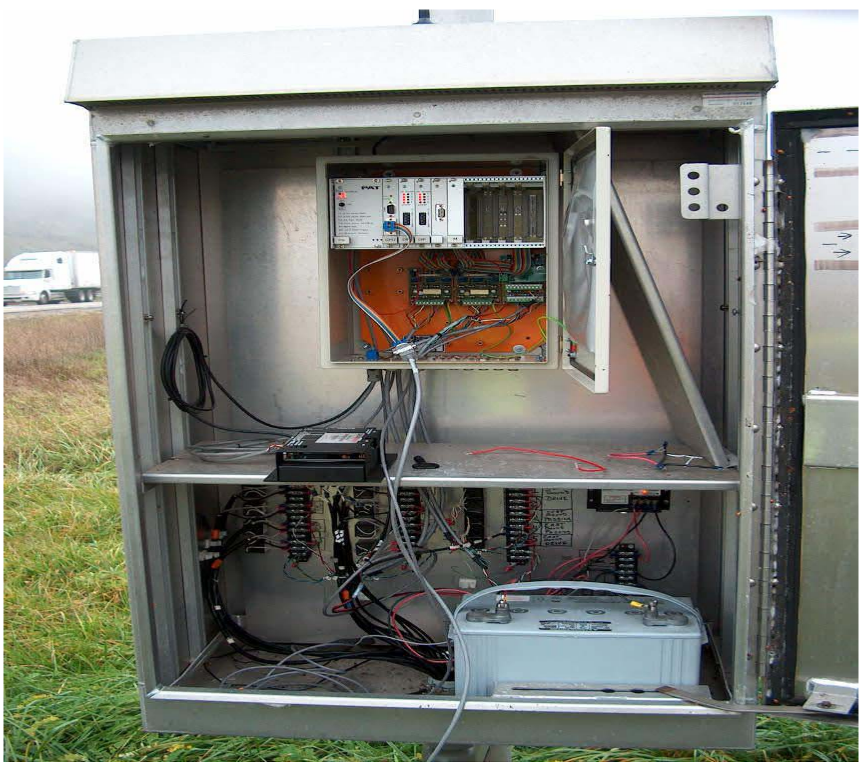
Pave_cond_1_TO_1_4A_PA0600_11_06_03.JPG

Pave_cond_2_TO_1_4A_PA0600_11_06_03.JPG

Pave_cond_3_TO_1_4A_PA0600_11_06_03.JPG

Power_Source_TO_1_4A_PA0600_11_06_03.jpg

Cabinet_Exterior_1_TO_1_4A_PA0600_11_06_03.jpg



Cabinet_Interior_1_TO_1_4A_PA0600_11_06_03.jpg

Sensor_Location_1_TO_1_4A_PA0600_11_06_03.jpg

Sensor_Location_1_TO_1_4A_PA0600_11_06_03.jpg

Downstream_1_TO_1_4A_PA0600_11_06_03.jpg

Upstream_1_TO_1_4A_PA0600_11_06_03.jpg

Sheet 18
LTPP Traffic Data
WIM SITE COORDINATION

STATE_CODE PA

SPS Project_ID 0600

1. Equipment –
   - Maintenance – contract with purchase / separate contract LTPP / separate contract State / state personnel
     Contact GAYE LIDDICK 717-787-5983

   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 - PCC overlayed w/ Asphalt

   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 7 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:

   Nearest static scale (commercial or enforcement)
   I-80, EXIT 158, MILESBURG

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

Sheet 18
LTPP Traffic Data
WIM SITE COORDINATION

STATE_CODE PA
SPS Project_ID 0600

Pre-visit data
- Classification and speed: Contact DENNY WILLIAMS
--Typical operating conditions (congestion, high truck volumes)
Contact DENNY WILLIAMS 717-346-5971
-- Equipment operational status: Contact PETE ELLIS 717-579-2480

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

- State personnel required on site Y / N
Contact information GAGE LIDDICK

- Enforcement Coordination required Y / N
Contact information

- Traffic Control Required Y/ N
Contact information

Maximum number of personnel on site 4;
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
2^{nd} common	State / LTPP
3^{rd} common	State / LTPP
4^{th} common	State / LTPP
Loads	State / LTPP
Contact	
Drivers	State / LTPP

Sheet 18
LTPP Traffic Data
WIM SITE COORDINATION

STATE_CODE PA

SPS Project_ID 0600

Contact ______

Contractors with prior successful experience in WIM calibration in state:

______

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

Pre-visit data
– Classification and speed: Contact DENNIS WILLIAMS
-- Equipment operational status: Contact DENNIS WILLIAMS

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

- State personnel required on site Y / N
Contact information GAYE WODICK

- 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 ______

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

WIM Calibration - advance notice required _____ days / weeks
Number of lanes -- ______
LTPP / State per LTPP protocol / State Other

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

Contractors with prior successful experience in WIM calibration in state:

WIM SITE COORDINATION

STATE_CODE PA

SPS Project_ID 0600

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

Pre-visit data
– Classification and speed: Contact ______________________
-- Equipment operational status: Contact ______________________

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

- State personnel required on site Y / N
Contact information ______________________

- 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