Assessment Report for
New Mexico, SPS 5

Visit date: February 18, 2004

List of Tables

List of Figures

1 Executive Summary

A visit was made to the New Mexico SPS-5 site on February 17th and 18th, 2004 for the purpose of conducting an assessment of the WIM system located on Interstate 10, at milepost 50.214, approximately 2 miles west of the Grant/Luna County Line. **This site is not recommended for evaluation/calibration.**

The site is instrumented with MSI piezo weighing sensors and an ITC Mikros RAKTEL-8000 WIM controller. All of the equipment is in working order with the exception of the trailing piezo weighing sensor, which is operating below minimum resistance levels. Sensor replacement is among the corrective actions recommended for this site.

Sufficient data was collected to provide a Sheet 16 for classification verification at this site. There are zero percent-unclassified vehicles. This is below the percentage of 5% defined as the criteria for research data. The truck classes had an error rate exceeding 2% of matches for Class 8, 9 and 11 vehicles. It was observed that the RVs were being assigned to these classes. **The algorithm for classification should be reviewed and the classification verification repeated at the next assessment or evaluation.**

The pavement condition appears to be satisfactory for conducting a performance evaluation. There was no pavement distress discovered that would significantly influence truck motions. A visual survey determined that there was slight truck bouncing from approximately 600 to 400 feet prior to the WIM scales, but the trucks appear to stabilize when moving over the WIM scale area. There was no discernable avoidance by trucks in the sensor area. **The WIM index was not exceeded in any of the locations.**

A review of the speed information collected on site indicates that the range of truck speeds to be covered during an evaluation is 55 to 75 mph. The posted speed limit at this location is 75 mph.

This site has 3 partial years of classification and weight data. Based on available information and review of the data submitted through last year, **this site still needs 5 years of data to meet the need for 5 years of research quality data**. There is no validation data for this site as of December 2003 upload.

2 Corrective Actions Recommended

The trailing sensor has a low resistance reading and should be replaced. Since piezo weighing sensors are considered a "matched set", the leading sensor should be replaced at the same time.

The steel conduit used to route the power leads from the solar panel is not grounded. A ground bushing should be installed at the conduit end and a #8 bare copper wire should be attached to the bushing and to the ground rod installed in the bottom of the cabinet.

There are a significant number of recreational vehicles traveling over the site. A large proportion of these vehicles (approximately 85 to 90 percent) are being classified as 8, 9, and 11 class vehicles. A close review of the WIM equipment's classification algorithms should be performed to try to eliminate or greatly reduce this problem.

The traffic data for all the years should be reviewed given its internal inconsistencies and atypical distributions.

3 Equipment inspection and diagnostics

The LTPP lane is in the eastern direction and is identified as lane number 1 in the WIM controller.

The 12-foot weighing sensors are installed 13 feet apart. A 6-foot wide by 8-foot long loop sensor is installed between the piezo sensors for vehicle presence detection. The WIM system utilizes an ITC Mikros RAKTEL-8000 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 appears to be working properly.

An electronic check of all WIM components was performed. The trailing sensor measured below resistance tolerance levels. All other in-road sensors and the WIM controller are working properly.

During 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, it was discovered that the steel conduit used for the solar panel lead-in is not grounded. All other components are in excellent physical condition.

4 Classification Verification with test truck recommendations

The agency uses the 6-digit truck weight study with unknowns assigned the value 15. However, there is no information on any weight ranges associated with the scheme.

A sample of 4 hour of video data was collected at the site to provide ground truth for the evaluation. The below statistics are from the video data in comparison with the equipment data. The data from the machine has nine types of vehicles and 61% Class 9s. The video sample using a truck subset (classes 4-13) has 8 types and 90% Class 9s. Recreational vehicles (RVs) under the Traffic Monitoring Guide 13-bin scheme are defined as Class 3s and thus not considered trucks in this analysis. If RVs are included in the classification verification pool, there are ten types and 76% Class 9s.

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	N/A	5	0	6	N/A
7	Unknown				
8	800	9	-18	10	Unknown
11	133	12	Unknown	13	N/A

These error rates are normalized to represent how many vehicles of the class are expected to be over or under-counted for every hundred of that class observed by the equipment. Thus a value of 0 means the class is identified correctly every time. A number between 1 and –100 indicates the number of vehicles either missed or not assigned to the class by the equipment. It is not possible to miss more than all of them or one hundred out of one hundred. Values 1 or larger indicate how many more vehicles are assigned to the class than the actual “hundred observed”. Class marked Unknown are those identified by the equipment but no vehicles of the type were seen the observer. There is no way to tell how many more than those that might actually present exist. N/A means no vehicles of the class recorded by either the equipment or the observer.

Figure 4-1 below shows the vehicle distribution comparison for this site based on the various observation subsets. The left-most column in each set is taken from the WIM data files during the site visit. The middle column in each set is the vehicle distribution if the observer includes RVs as a part of the truck population. The right-most column in each set is the distribution if the observed excludes RVs from the population. Note that if the observers distribution without RV’s were applied to a 100-vehicle sample there would be fifty percent more Class 9s (90) than the WIM equipment would report (60).

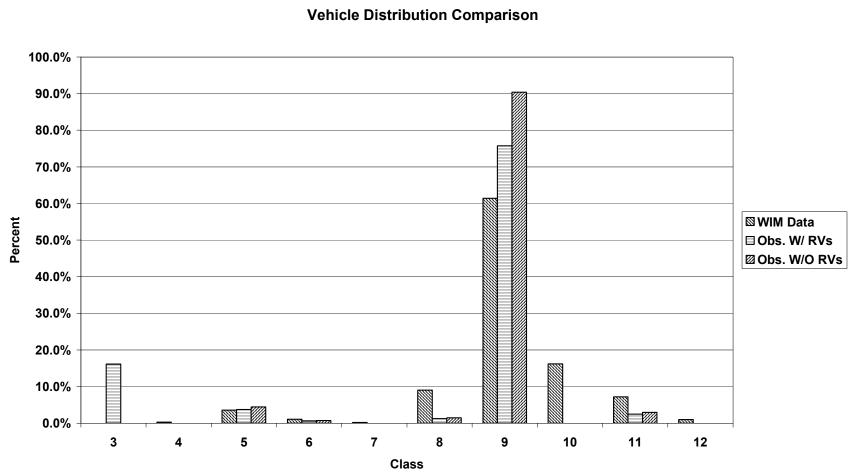


Figure 4-1 Vehicle Distribution Comparison of 350500

A review of the site data both collected on site and previously submitted by the agency indicated that Class 9constitutes more than 75 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. Due to the length of the truck turn around 1 additional vehicle should be used. It is recommended that it also include a Class 9. Since the site is essentially a loaded site, using two fully loaded and one partially loaded test truck should be used for the validation process.

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 on December 12, 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 8 profiler passes have been conducted over the WIM site. Since the issuance of the LTPP directive on collection of longitudinal profile data for SPS WIM sections, 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 4 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 are made such that data are collected as close to the lane edges as is safely possible. For each profiler pass, profiles are recorded under the left wheel path (LWP), and the right wheel path (RWP).

Table 2 shows the computed index values for all 8 profiler passes for this WIM site. The average values over the passes at each path are 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**	**Ave.**
Center	LWP	LRI (m/km)	0.548	0.532	0.571	0.523	**0.544**
		SRI (m/km)	0.522	0.577	0.607	0.589	**0.574**
	RWP	LRI (m/km)	0.733	0.608	0.659	0.650	**0.663**
		SRI (m/km)	0.411	0.640	0.694	0.723	**0.617**
Left Shift	LWP	LRI (m/km)	0.554	0.485			
		SRI (m/km)	0.533	0.448			
	RWP	LRI (m/km)	0.600	0.651			
		SRI (m/km)	0.566	0.553			
Right Shift	LWP	LRI (m/km)	0.559	0.454			
		SRI (m/km)	0.497	0.656			
	RWP	LRI (m/km)	0.574	0.535			
		SRI (m/km)	0.485	0.494			

All locations are below the WIM Index value of 0.789 m/km as can be seen in the table. When all values are less than 0.789 it is presumed unlikely that pavement roughness will significantly influence sensor output. Values above that level may or may not influence the reported weights and potentially vehicle spacings. Since the pavement is in good condition as indicated by the WIM Index values no pavement remediation is recommended at present.

6 Distress survey and any applicable photos

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

There are several abandoned WIM sensor installations within the present WIM installation as well as an abandoned WIM site approximately 27 feet after the present WIM installation. None of these sensors or installations appears to be adversely affecting the trucks dynamics as they pass over the WIM scale area.

Figure 13-1 shows the condition of the pavement in downstream direction, Figure 13-2 shows the condition of the pavement in the upstream direction. Figure 13-3 shows the abandoned WIM sensors.

7 Vehicle-pavement interaction discussion

During a visual survey of the truck dynamics in the area of the WIM scales, no discernable horizontal or vertical truck movement was detected. Although slight bouncing of the trucks in an area 600 to 400 feet prior to the WIM scales was discovered, the trucks dynamics appear to stabilize prior to entering the WIM scale area. The truck tires appear to be fully touching the sensors.

An interstate on-ramp is located approximately 520 feet prior to the WIM scales. There was very little truck traffic utilizing this ramp during our period of observation. Those trucks observed using the ramp, did not appear to exhibit any adverse dynamics as a result of merging with the traffic stream at this location.

8 Speed data with speed range recommendations for evaluation

Based on the data collected on site the 15th and 85th percentile speeds for Class 9s are 60 and 70 mph respectively. The upper end of the range is below the posted speed limit of 75 mph. This range does not vary significantly for other truck classes. As a result the recommended speeds for test trucks in an evaluation are 55, 65 and 75 mph. The wider range is possible due to the low volumes at this site.

Measurements of speeds on-site indicated that the equipment is currently measuring speeds with a bias of 0.3 mph and an associated standard deviation of 0.8 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. The average drive axle spacing of a class 9 noted by the equipment is 4.3 feet.

9 Traffic Data review: Overall Quantity and Sufficiency

As of 18 February 2004 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.

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 there is not a sufficient quantity to be considered complete years of data. There is no validation data for this site in the traffic database as of December 2003 upload. In the absence of previously gathered validation information it can be seen that at least 5 additional years of research quality data are needed to meet the goal of a minimum of 5 years of research weight data.**

Table 4 Amount of Traffic Data Available

Year	**Class Days**	**Months**	**Coverage**	**Weight Days**	**Months**	**Coverage**
1998	12	3	Weekends and Weekdays	9	2	Complete Week
2000	22	1	Complete Week	39	2	Complete Week
2002	90	6	Complete Week	N/A	N/A	N/A
2003	N/A	N/A	N/A	161	8	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.

Based on this review it is recommended that further investigation be done for the site as a whole. The vehicle class distribution for weight data in 1998 is inconsistent with other periods although the GVW distribution is rational. The GVW distribution for 2000 is not typical when compared with standard GVW 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. The first month with sufficient classification data was September 2002 and for weight data was November 2000. In view of that, these months were selected for comparison. Excluded months have no data.

Table 5 SPS Summary Report

New Mexico 0500

East Lane 1
Comparison Date Weight - 01-January-1998 Classification - 01-January-1998

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		25.9		325		6,600	73,791	35,060
JUL 1998	5	35.4	9	409	1.89		73,804	35,235
OCT 1998	4	22.6						
NOV 1998	3	34.7						

Comparison Date Weight - 01-November-2000 Classification - 01-November-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		25.9		325	1.06	6,600	81,774	35,044
NOV 2000	22	18.4	26	325	1.06	8,271	57,330	34,818
DEC 2000			13	1583	2.32	11,296	81,823	35,483
MAY 2002	4	15.5						
JUN 2002	3	18.9						
JUL 2002								
AUG 2002								
SEP 2002	14	26.0						
OCT 2002	14	26.3						
NOV 2002	24	25.1						
DEC 2002	31	20.0						
JAN 2003			20	2064	2.78	11,910	81,703	35,055
FEB 2003			28	1274	3.14	10,632	77,892	34,617
MAR 2003			23	54	10.28	8,270	97,429	35,205
APR 2003			22	808	5.54	10,355	89,706	8,784
MAY 2003			26	3420	2.50	9,021	85,945	7,872
JUN 2003			23	3510	1.62	7,646	81,546	6,049
AUG 2003			17	1839	1.86	11,168	73,838	35,440
SEP 2003			2	432	2.84	8,725	57,177	33,770

As seen from Table 5 there is little classification data. However, from the available information it appears that the percent of Class 9s is higher in 1998 compared to the data till June 2002. The percentage suddenly increased after September 2002. The weight data is not sufficient to make any substantive conclusions about the site. The available data suggests that the average number of Class 9s, the average ESALs of Class 9s, the average Class 9s steering axle weights and the mean loaded weight were high in 1998 and dropped in November 2000 and drastically increased in December 2000. In 2003 the average was not consistent through the entire year. The reason for this behavior of classification and weight data is unknown at present. It is possible that the variations in average volumes are associated with the observed classification problems.

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 by week pattern for heavy truck classification data in 2002. The individual weeks show essentially the same heavy truck mix. 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 highly variable over time. There was not sufficient weight data to provide any conclusions on the mix stability.

Figure 14-2 and Figure 14-3 show the patterns for vehicle distribution by month by year for the data collected from the classifier versus the data collected by the WIM equipment in 1998 and 2002. As seen from Figure 14-2 and Figure 14-3 there is not sufficient WIM data to compare with the Classifier data.

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 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. In Figure 14-4 it appears that this site is essentially a loaded section. The data in 1998 shows a higher percentage than in 2000. The reason for the significant drop in the percentage is unknown. In 2003, the mean unloaded weight does not represent the weight of a typical Class 9. This weight typically represents classes less than 4 or may be an indicator of sensor failure.

To investigate any seasonal variations the Class 9 GVW distributions are graphed by month by year. As shown in Figure 14-5 there is a significant difference in November and December 2000 the reason for which is unknown.

9.4 Axle Distributions

Axle distribution graphs were not needed for data review as the 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 14-6 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. As seen in the figure there is not sufficient data to suggest any conclusions. However, values much over 2.0 are not normally observed in practice.

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 14-7 there is not sufficient data to provide any conclusions. For 2003 as shown in Figure 14-8 the data is not consistent which reiterates the need to validate the 2003 data.

10 Updated handout guide and Sheet 17

A copy of the Post-Visit Handout has been included following page 18. It includes a current Sheet 17 with all applicable maps and photographs. There are no significant changes in the information provided except the briefing location.

11 Updated Sheet 18

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

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

Sufficient classification information was collected between on February 17 and 18, 2004 to complete a Sheet 16. A copy is attached at the very end of this report.

13 Distress Photographs

Figure 13-1 Pavement Condition of 350500 in downstream direction (Distress Photo 1)

Figure 13-2 Pavement Condition of 350500 in upstream direction (Distress Photo 2)

Figure 13-3 Abandoned WIM Sensors at 350500

14 Traffic Graphs

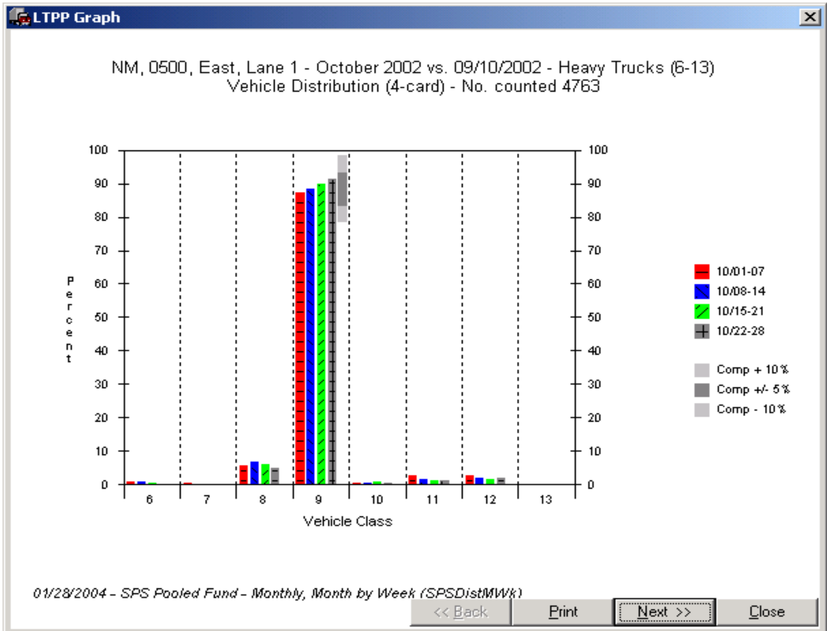


Figure 14-1 Heavy Truck Distribution Pattern for Classification Data for 350500

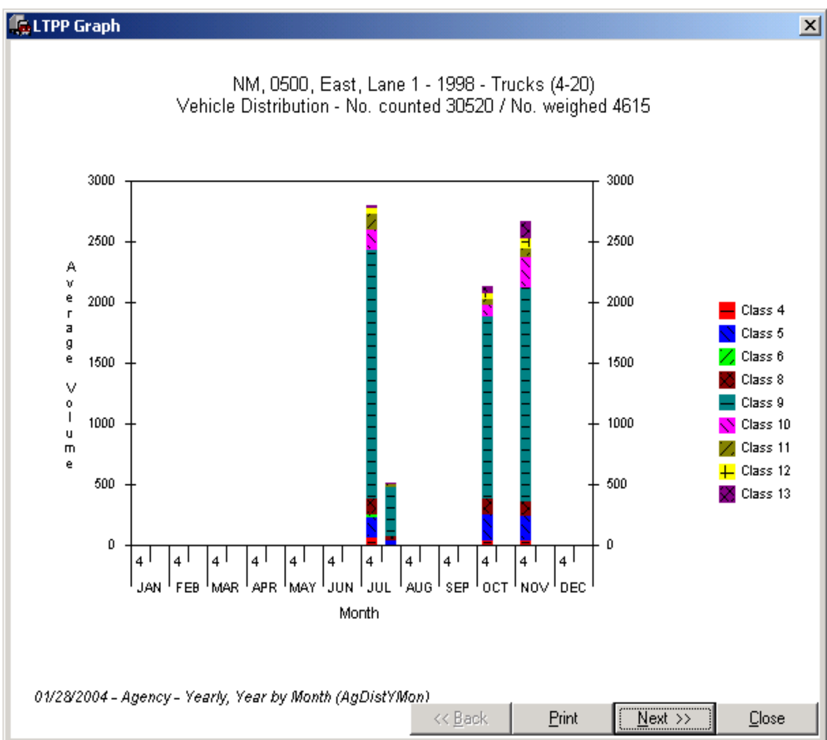


Figure 14-2 Vehicle Distribution by Month for the Year 1998 for 350500

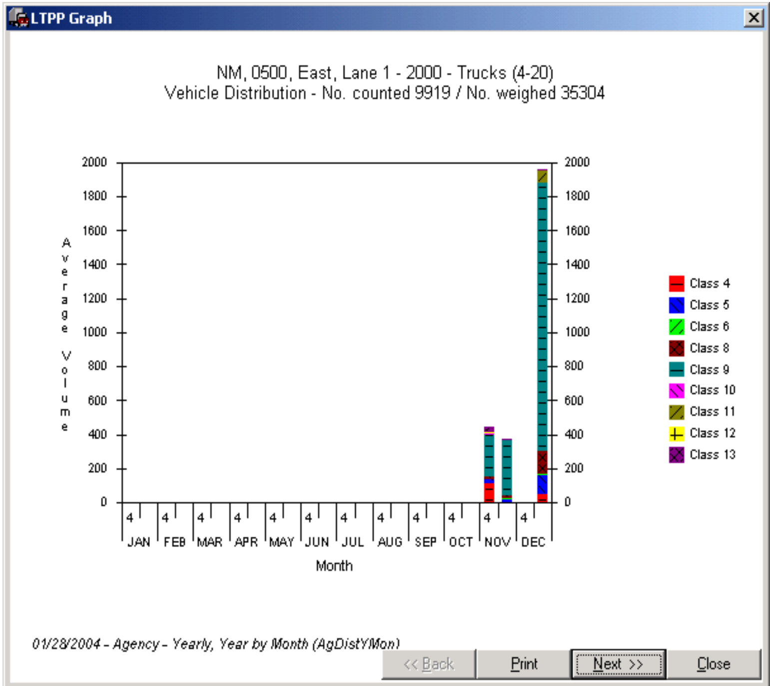


Figure 14-3 Vehicle Distribution by Month for the Year 2000 for 350500

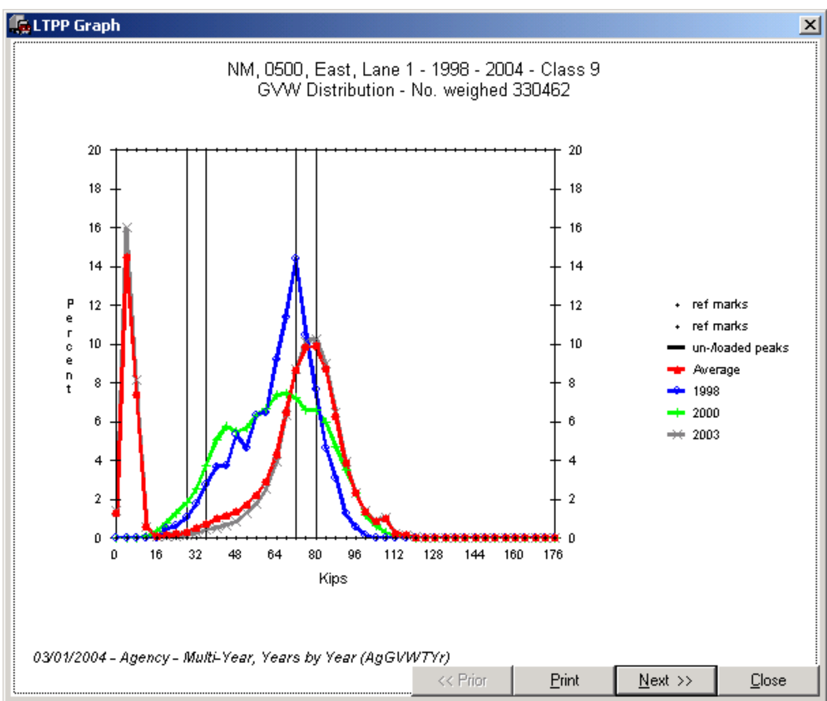


Figure 14-4 Class 9 GVW Distribution - 1998 to 2003 for 350500

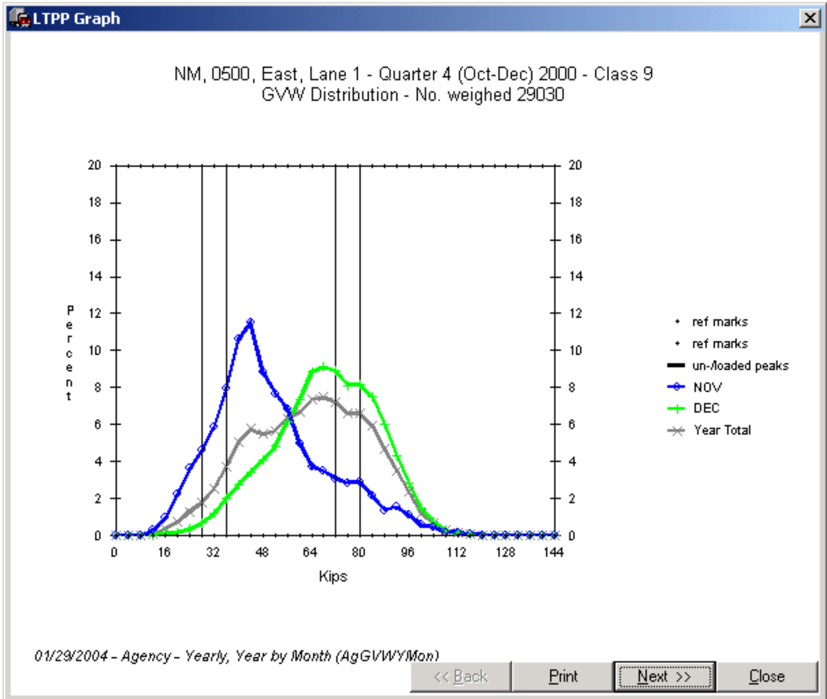


Figure 14-5 Class 9 GVW Distribution – Nov 2000 to Dec 2000 for 350500

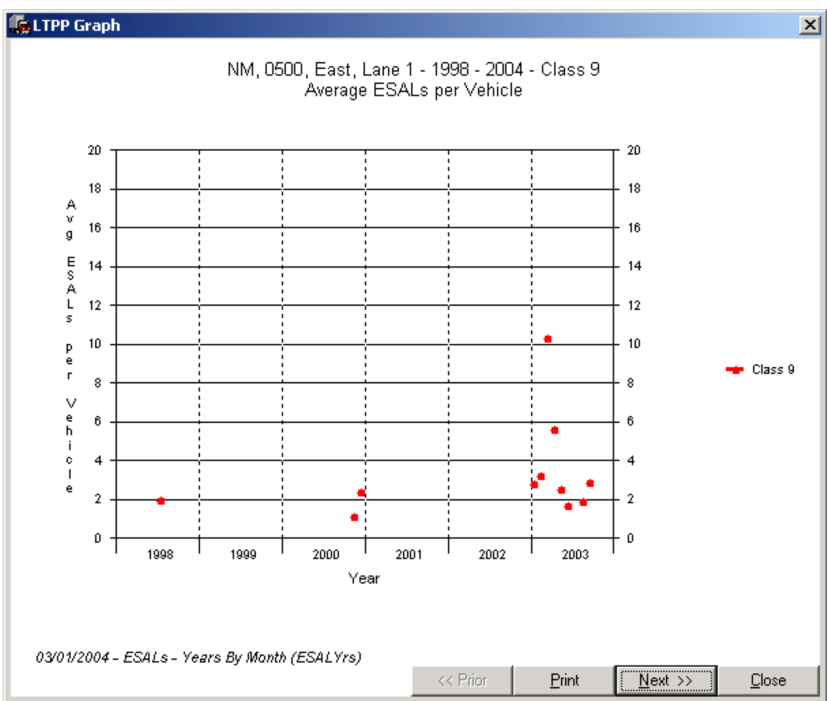


Figure 14-6 Average Class 9 ESALs for site for 1998 to 2003 for 350500

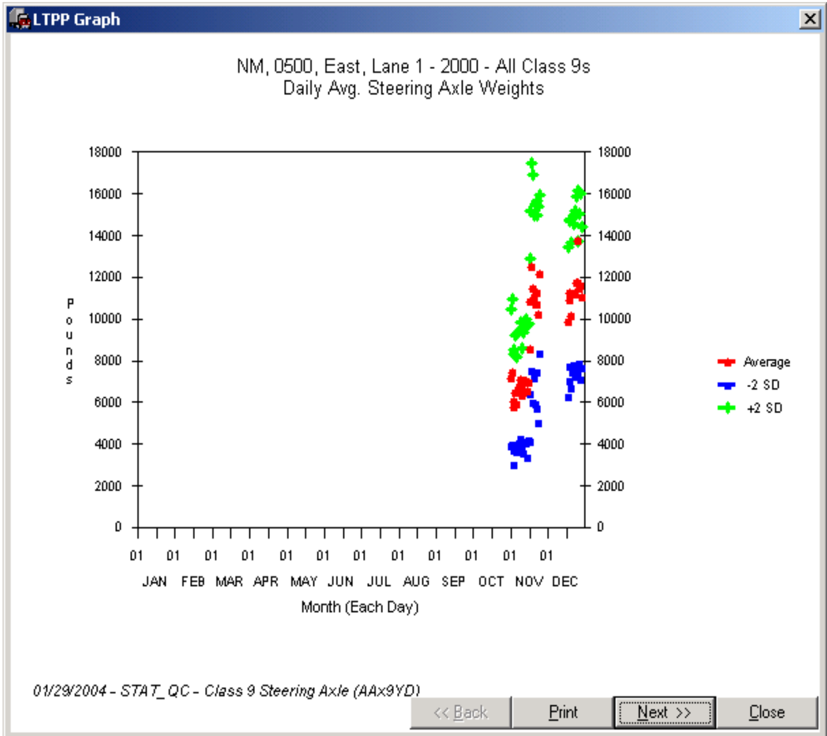


Figure 14-7 Average Daily Class 9 Steering Axle Weight - 2000 for 350500

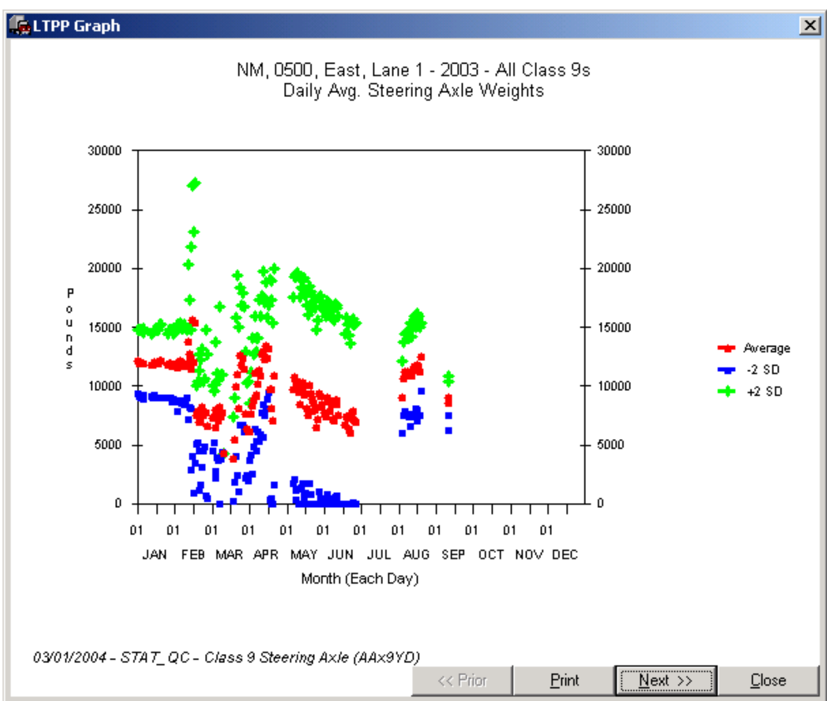


Figure 14-8 Average Daily Class 9 Steering Axle Weight – 2003 for 350500

POST VISIT HANDOUT GUIDE FOR SPS WIM FIELD ASSESSMENT

STATE: New Mexico

SHRP ID: 0500

Figures

1. General Information

SITE ID: *350500*

LOCATION: *Interstate 10 East at M.P. 50.214*

VISIT DATE: *February 18th, 2004*

VISIT TYPE: *Assessment*

2. Contact Information

POINTS OF CONTACT:

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

Highway Agency: *Alvaro Vigil, 505-827-5665, alvaro.vigil@nmshtd.state.nm.us*

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

FHWA Division Office Liaison: *Steven Von Stein, 505-820-2028, steven.von.stein@fhwa.dot.gov*

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

3. Agenda

BRIEFING DATE: *February 17th, 2004 at 9.00 a.m. at District 1 Headquarters, 2912 E. Pine Street, Deming, NM 88031-0231,Ph No: 505-544-6530* *****Please note that this is the only briefing which was held.***

ON SITE PERIOD: *February 18th, 2004 beginning at 8:00 a.m.*

TRUCK ROUTE CHECK: *Completed. See Truck Route*

4. Site Location/ Directions

NEAREST AIRPORT: *El Paso International Airport, El Paso, Texas*

DIRECTIONS TO THE SITE: *Approx. 2 miles west of Grant/Luna County Line on Interstate 10.*

MEETING LOCATION: *On site beginning at 8:00 a.m.*

WIM SITE LOCATION: *Interstate 10 East at M.P. 50.214 (Latitude: 32^0 11.594' and Longitude: -108^0 18.066')*

WIM SITE LOCATION MAP: *See Figure 4.1and Figure 4.2*

Figure 4-1: Site 350500 in New Mexico and Briefing Location

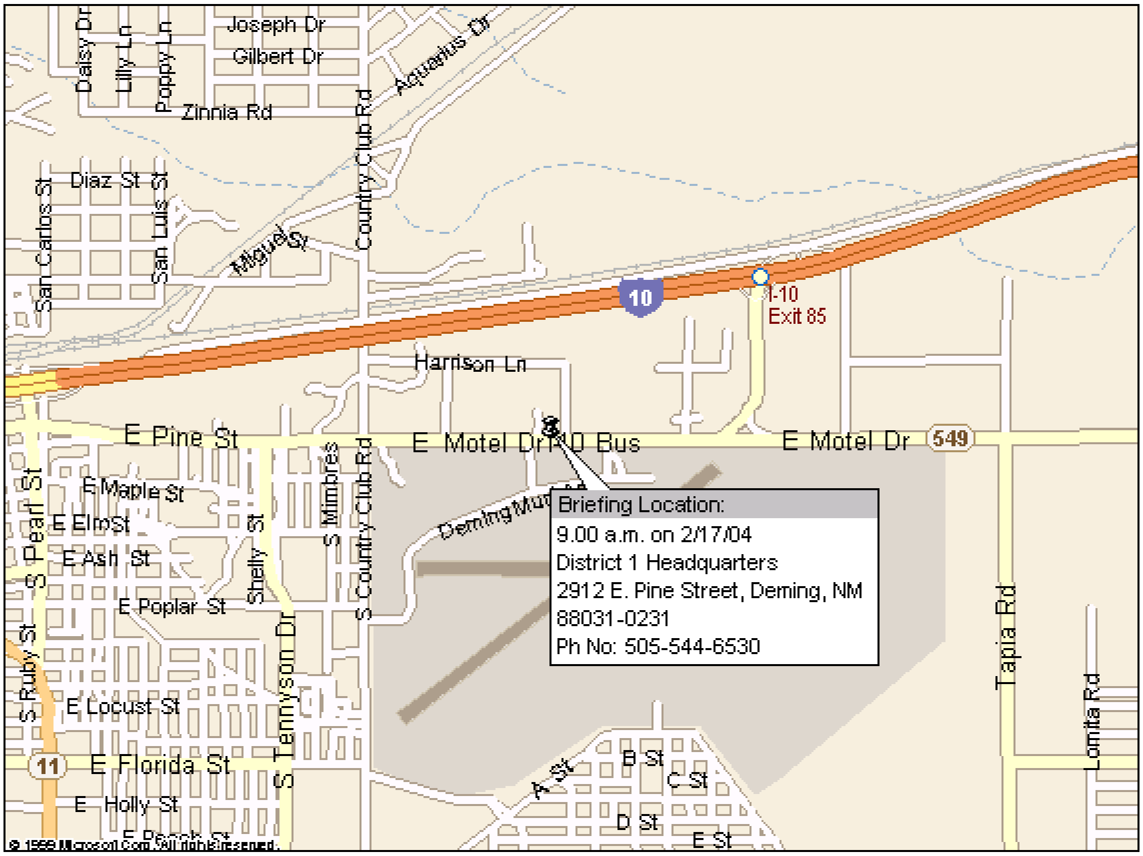


Figure 4-2: Briefing Location of 350500 in New Mexico

5. Truck Route Information

ROUTE RESTRICTIONS: *None*

SCALE LOCATION: *Pilot Travel Center, Lordsburg, NM, I-10, exit 24, 505-542-3100, operator – Heather Mendota, Latitude: 32.34621, Longitude: -108.6935*

TRUCK ROUTE:

- *Eastbound to Exit 55 Interchange (5.4 miles from site)*
- *Westbound to Exit 42 Interchange (8.4 miles from site)*
- *Total Truck Turnaround 13.8 miles*

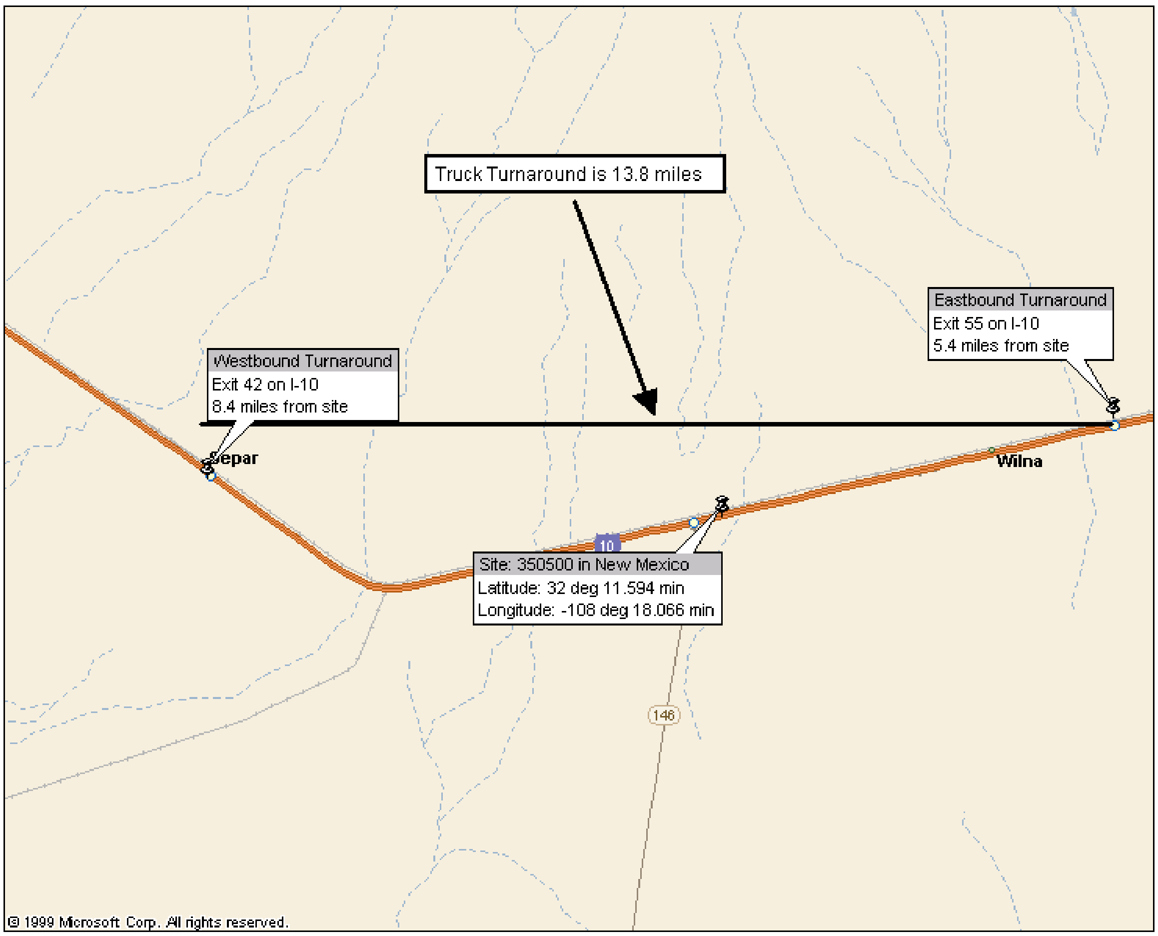


Figure 5-1: Truck Route Map of 350500 in New Mexico

6. Sheet 17 – New Mexico (350500)

1.* ROUTE ___I-10_______MILEPOST ___50.214_LTPP DIRECTION - N S E W

2.* WIM SITE DESCRIPTION - Grade ___<1_____ % Sag vertical Y / N
Nearest SPS section downstream of the site ___ _0501__ ___ ___
Distance from sensor to nearest -downstream SPS Section _5552__ ___ ___ 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 __15.5_ ___ ft

4.* PAVEMENT TYPE _______Asphalt_________________

5.* PAVEMENT SURFACE CONDITION – Distress Survey
Date ______2-17-04________________Distress Photo Filename
__Downstream_TO_4_35_22A_0500_02_17_04.JPG_______________
Date ______2-17-04________________Distress Photo Filename
__Upstream_TO_4_35_22A_0500_02_17_04.JPG_______________
Date ______________________Distress Photo Filename _________________

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 ___520 ft_______
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 existing sensors (approx.) _7_0__ ft
Distance from system __ __ __ ft
TYPE ________M___________________

CABINET ACCESS controlled by LTPP / STATE / JOINT?
Contact - name and phone number _______Dar Reed (505) 827-5669 _
Alternate - name and phone number __Billy Larranaga (505) 827-5380 _

11. * POWER
Distance to cabinet from drop ___ ___ _2__ ft Overhead / underground / solar / AC in cabinet?
Service provider _____________________ Phone number _______________

12. * TELEPHONE
Distance to cabinet from drop ___ ___ _2__ ft Overhead / under ground / cell?
Service provider ____Qwest_____ Phone Number _______________

13.* SYSTEM (software & version no.)- _________ITC_Raktel_-_8000 (Ver. 9.7) __
Computer connection – RS232 / Parallel port / USB / Other _________________

14. * TEST TRUCK TURNAROUND time __31_____ minutes DISTANCE _27.6 mi.

15. PHOTOS	FILENAME
Power source	__Solar_Panel_Mast_TO_4_35_22A_0500_02_17_04.JPG__
Phone source	__Phone_Source_TO_4_35_22A_0500_02_17_04.JPG__
Cabinet exterior	__Cabinet_Exterior_TO_4_35_22A_0500_02_17_04.JPG_
Cabinet interior	__Cabinet_Interior_TO_4_35_22A_0500_02_17_04.JPG___
Weight sensors	__First_WIM_Sensor_TO_4_35_22A_0500_02_17_04.JPG_
Classification sensors	__Trailing_Sensor_TO_4_35_22A_0500_02_17_04.JPG__
Other sensors	_______________________

Description ______________________________
Downstream direction at sensors on LTPP lane
__Downstream_TO_4_35_22A_0500_02_17_04.JPG__
Upstream direction at sensors on LTPP lane
__Upstream_TO_4_35_22A_0500_02_17_04.JPG__________________

COMMENTS

__GPS Coordinates: Latitude: 32^0 11’ 51.2” and Longitude: 108^0 16’ 55.5”_____

Closest Amenities in Deming, NM - Various Hotels, Restaurants, Gas Stations Etc., (31 miles) Exits 81, 82A & B, ____

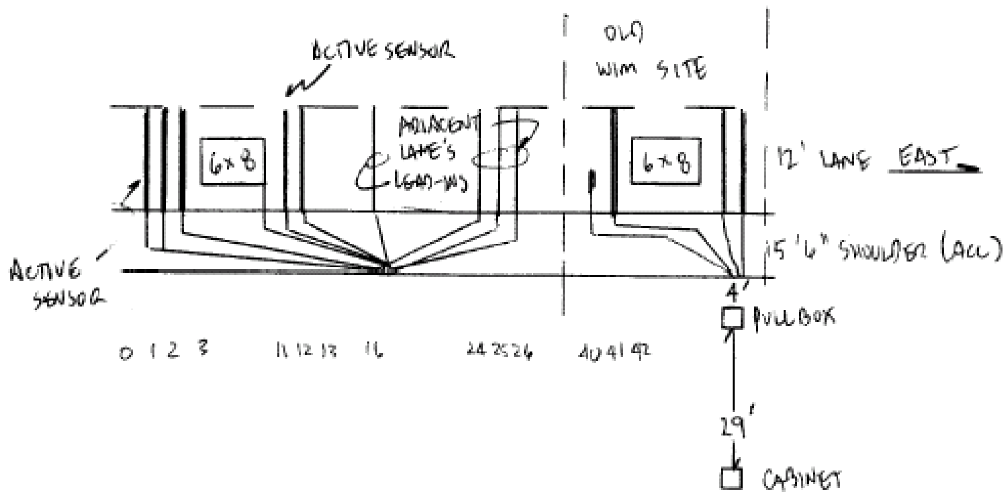
_________Speed Limit – 75 mph___________________________________

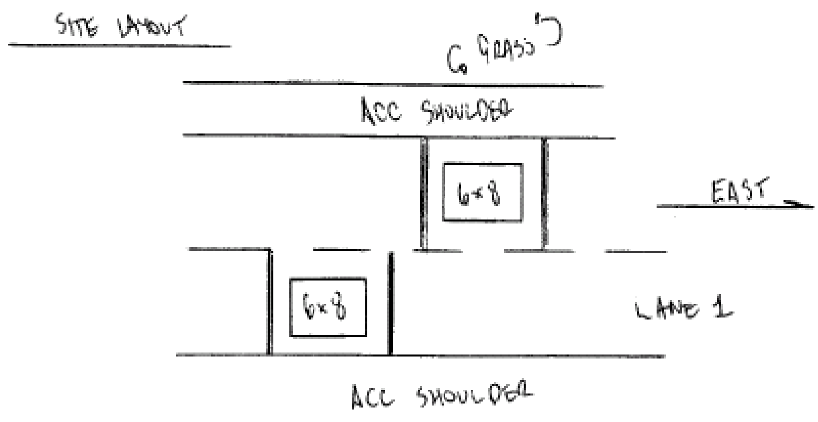
__Communications Software – ITC Telcomm Version 6.03A________________

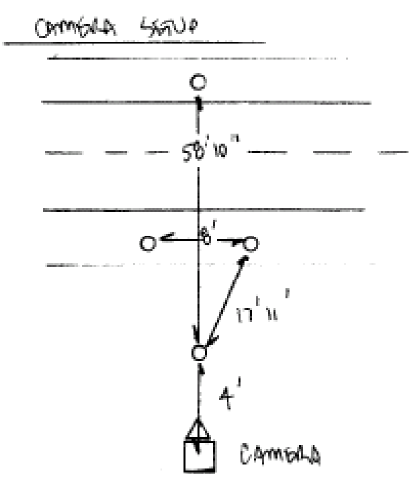
COMPLETED BY _____Dean J. Wolf___________________________

PHONE ___301-210-5105__DATE COMPLETED _0_ _2_ /_1_ _8_ / _2_ _0_ _0_ _4_

Sketch of equipment layout







Site Map

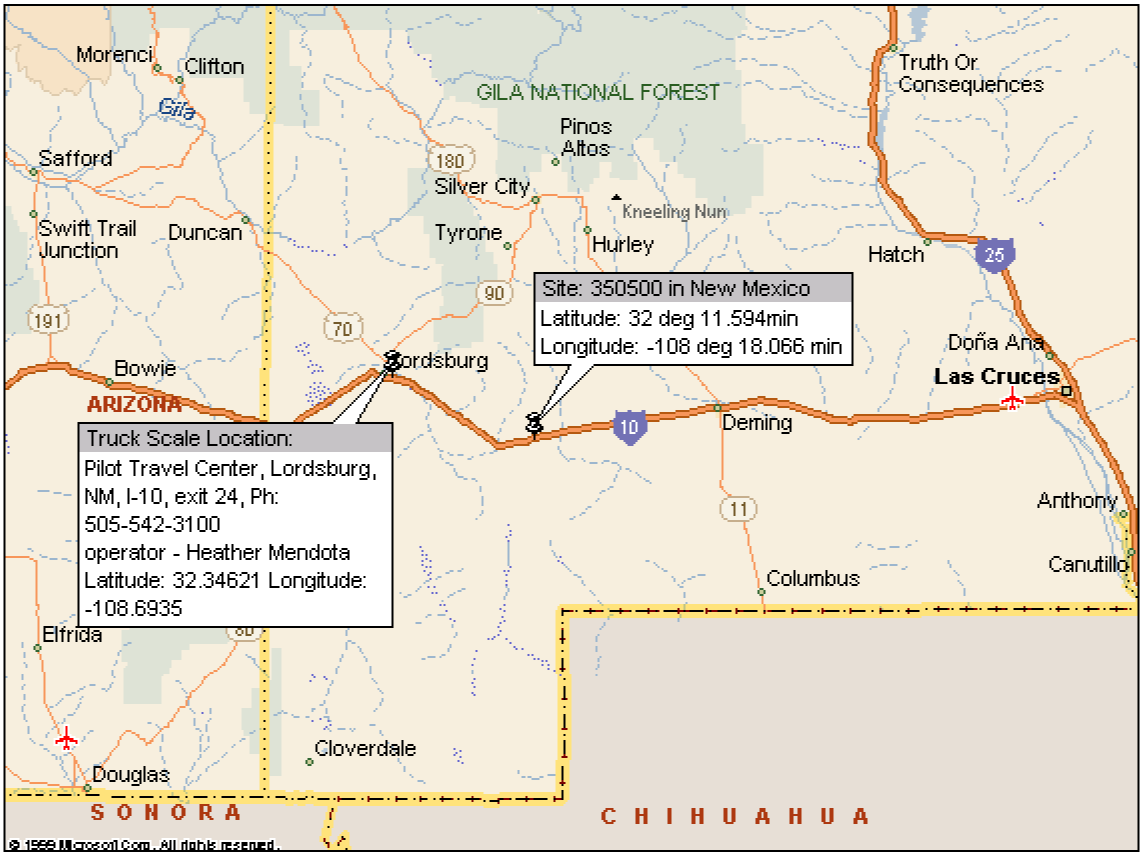


Figure 6-1: Site Map of 350500 in New Mexico

Downstream_TO_4_35_22A_0500_02_17_04.JPG (Distress Photo 1)

Upstream_TO_4_35_22A_0500_02_17_04.JPG (Distress Photo 2)


Solar_Panel_Mast_TO_4_35_22A_0500_02_17_04.JPG


Phone_Source_TO_4_35_22A_0500_02_17_04.JPG

Cabinet_Exterior_TO_4_35_22A_0500_02_17_04.JPG

Cabinet_Interior_TO_4_35_22A_0500_02_17_04.JPG

First_WIM_Sensor_TO_4_35_22A_0500_02_17_04.JPG

Trailing_Sensor_TO_4_35_22A_0500_02_17_04.JPG

Downstream_TO_4_35_22A_0500_02_17_04.JPG

Upstream_TO_4_35_22A_0500_02_17_04.JPG

Sheet 18 STATE_CODE 3 _5_

LTPP Traffic Data

WIM SITE COORDINATION SPS Project_ID _0_5 _0_ 0_

1. Equipment –
   - Maintenance – contract with purchase / separate contract LTPP / separate contract State / state personnel
     Contact: Alvaro Vigil 505-827-5665
   - 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:
     _DTS____
     Nearest static scale (commercial or enforcement)
     _Pilot Travel Center, Lordsburg, NM_____________
   - Profiling– short wave -- permanent / temporary site marking
     long wave – permanent / temporary site marking

STATE_CODE 3 _5_

WIM SITE COORDINATION SPS Project_ID _0_5 _0_ 0_

- Pre-visit data
  – Classification and speed: Contact Alvaro Vigil 505-827-5665
  --Typical operating conditions (congestion, high truck volumes)
  Contact Alvaro Vigil 505-827-5665
  -- Equipment operational status: Contact Alvaro Vigil 505-827-5665

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

- State personnel required on site Y / N
Contact information Alvaro Vigil 505-827-5665
Enforcement Coordination required Y / N
Contact information ____

- Traffic Control Required Y/ N
Contact information ____

- Maximum number of personnel on site 10;
  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____

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

- Pre-visit data
  – Classification and speed: Contact Alvaro Vigil 505-827-5665
  -- Equipment operational status: Contact Alvaro Vigil 505-827-5665

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

- State personnel required on site Y / N
Contact information Alvaro Vigil 505-827-5665

- 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

- 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

SHEET 16 LTPP MONITORED TRAFFIC DATA SITE CALIBRATION SUMMARY	*STATE ASSIGNED ID [_0 _0_ _0_ _4_] *STATE CODE [_3_ _5_] *SHRP SECTION ID [_0_ _5_ _0_ _0_]

SITE CALIBRATION INFORMATION

1. * DATE OF CALIBRATION (MONTH/DAY/YEAR) [_02_ __ / _1_ _8_ / _2_ _0_ _0_ _4_]

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 __XX__ BARE FLAT PIEZO ____ BENDING PLATES
____ CHANNELIZED ROUND PIEZO ____ LOAD CELLS ____ QUARTZ PIEZO
____ CHANNELIZED FLAT PIEZO __XX__ INDUCTANCE LOOPS ____ CAPACITANCE PADS
____ OTHER (SPECIFY) ____

5. EQUIPMENT MANUFACTURER __________ ITC Mikros RAKTEL _________

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 __4 hrs__ TIME ____ NUMBER OF TRUCKS

14. MEAN DIFFERENCE IN VOLUMES BY VEHICLES CLASSIFICATION:
*** FHWA CLASS 9 __-18__ ____ ____ FHWA CLASS __11__ _133__ ____ ____ ____
*** FHWA CLASS 8 _800_ ____ ____ FHWA CLASS ____ ____ ____ ____ ____
FHWA CLASS ____ ____ ____ ____ ____
FHWA CLASS ____ ____ ____ ____ ____
*** PERCENT "UNCLASSIFIED" VEHICLES: ____ _0___ ____

PERSON LEADING CALIBRATION EFFORT: ________Dean J. Wolf___________________________________
CONTACT INFORMATION: ________301-210-5105______________________________ rev. November 9, 1999