

WIM System Field Calibration and Validation Handout Guide

Pennsylvania, SPS-6
SHRP ID – 420600

Validation Date: October 1, 2013



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1 Site Information

Site ID:	420600	State:	Pennsylvania
LTPP Region:	North Atlantic	Configuration:	Loop-quartz-quartz-Loop
Controller Type:	iSINC	Sensor Type:	Quartz- Piezo
Power:	AC	Communication:	Cellular
Class Scheme:	LTPP	CPU type/setup:	iSINC

2 Contact Information

Agency	Contact	Position	Phone	E-mail
FHWA	Debbie Walker	COTR	202-493-3068	deborah.walker@dot.gov
FHWA	Jennifer Albert	Division Office	717-221-3410	jennifer.albert@dot.gov
RSC	Frank Meyer	Project Manager	716-632-0804	fmeyer@stantec.com
PennDOT	Steve Koser	Coordinator	717-787-1199	skoser@pa.gov
PennDOT	Lydia Peddicord	LTPP contact	717-787-4246	lpeddlicord@pa.gov
PennDOT	Andrea Bahoric	Traffic Contact	717-705-2382	abahoric@pa.gov
PennDOT	Todd Rottet	Traffic Contact	717-787-4574	trottet@pa.gov
PennDOT	Andrew O'Neill	Traffic Planning	717-346-3250	andoneill@pa.gov
ARA	Dean Wolf	Task Leader	717-512-6638	dwolf@ara.com
ARA	Olga Selezneva	Project Manager	410-540-9949	oselezneva@ara.com
Allison Crane	Andrew Kremser	Truck Vendor	570-494-4010	akremser@allisoncrane.com

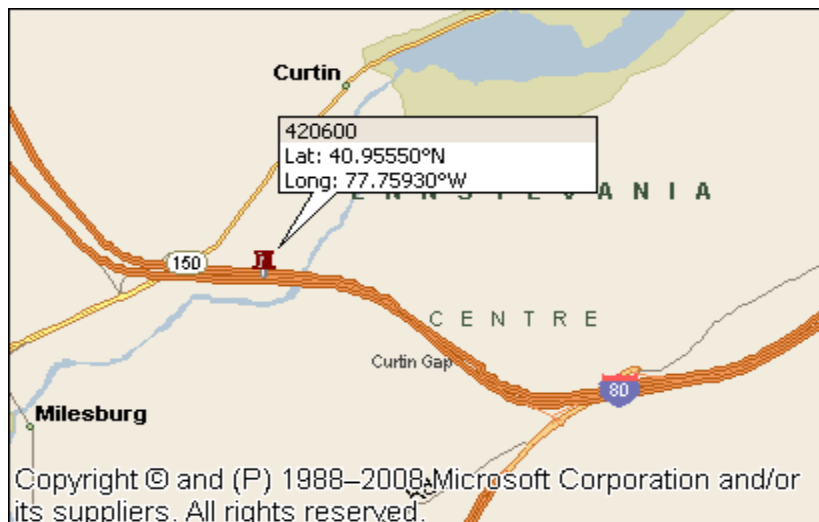
3 Schedule of Events

Date	Event	Location	Start Time
10/1/13	Travel	Camp Hill, PA to site	5:30 am
10/1/13	Test Truck Weigh/Measure/Inspection	CAT Scale - Milesburg	7:00 am
10/1/13	Equipment Assessment	WIM Site	7:30 am
10/1/13	Initial Performance Evaluation	WIM Site	8:00 am
10/1/13	System Test/Class and Speed Study	WIM Site	TBD
10/2/13	Test Truck Weigh (if required)	CAT Scale - Milesburg	7:00 am
10/2/13	Calibration/Validation (if required)	WIM Site	8:00 am
10/2/13	Class and Speed Study (if required)	WIM Site	TBD
10/2/13	Travel	Site to Camp Hill, PA	TBD

4 Maps

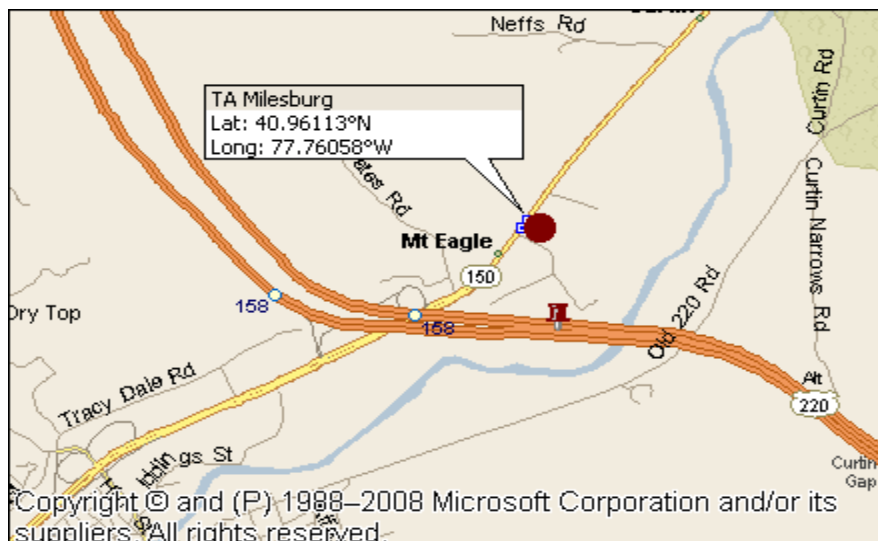
4.1 Site Location

Location:	I-80 at milepost 158.2		Direction:	WB
Latitude:	40.9555°	Longitude:	-77.7593°	



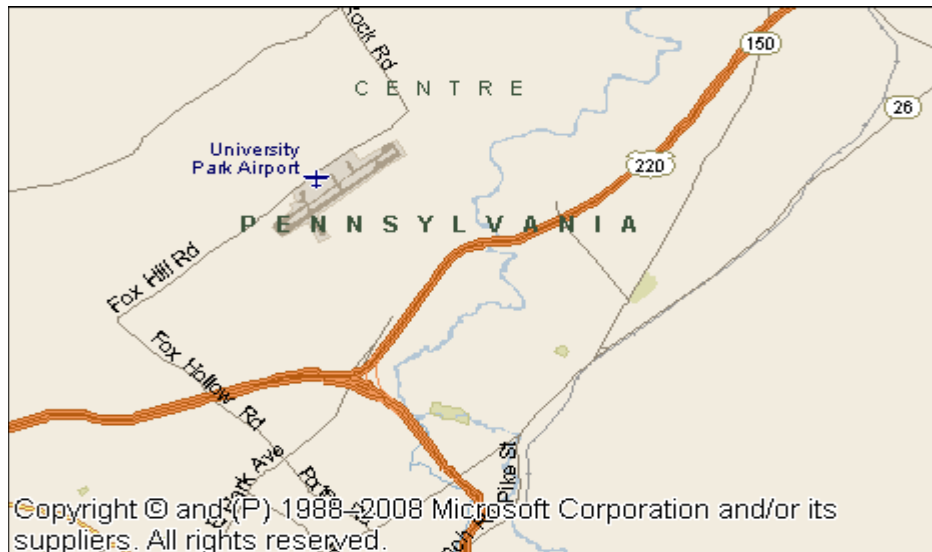
4.2 Truck Scale Location

Name:	TA, Muleshoe	Location:	I-80, Exit 158
Latitude:	40.96113	Longitude:	-77.76058



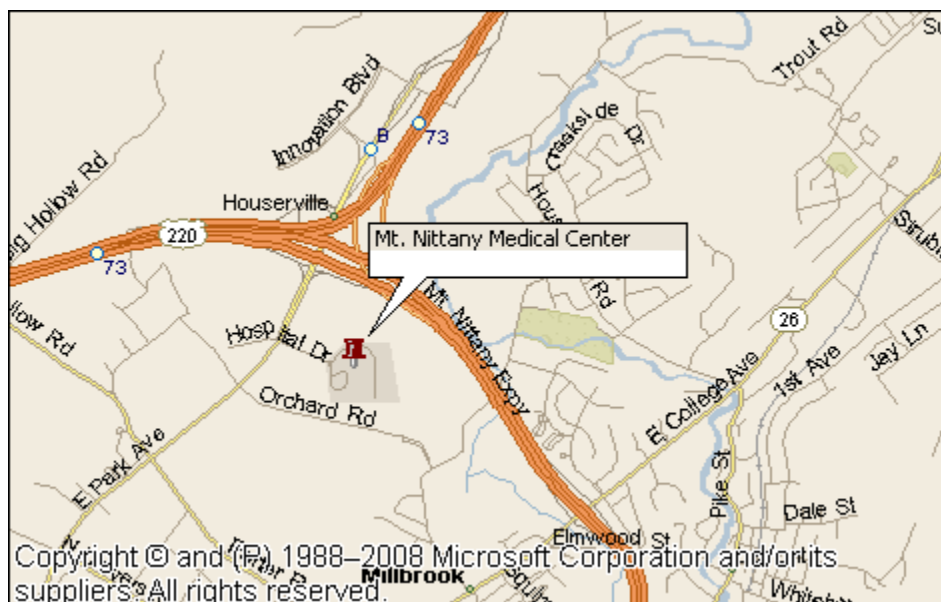
4.3 Airport Location

Name:	University Park Airport	Location:	State College, PA
Latitude:	40.85104	Longitude:	-77.84974



4.4 Hospital Location

Name:	Mt. Nittany Medical Center - ER		
Phone:	814-231-7000	Location:	1800 E. Park Ave, State College, PA



5 Occupational Health and Safety Plan

All fieldwork in the right-of-way will be carried out when the ground visibility is more than 3 km, and when there is no accumulation of water, snow, or ice is on the pavement.

To the extent possible, inspection work during extremely high and low temperatures will be avoided. If the work becomes necessary, workers will be reminded to make appropriate precautions (wear protective clothing, drink fluids, and avoid prolonged exposure to severe weather conditions).

All personnel present on the right-of-way will wear approved safety gear (boots, reflective safety vest, and helmet).

The following items will be available at the site: a standard first-aid kit, a cell phone, and the location of nearby hospital(s).

6 Contingency Plan

If inclement weather is forecasted prior to mobilizing to the site, the Project Manager will make the final decision to postpone the Validation visit. The Task Leader is responsible for contacting all parties involved to inform them of the postponement. He is also responsible for rearranging travel.

Once the Validation team is on-site, the On-Site Task Leader is responsible for making decisions to delay or postpone the Validation. He will contact the Project Manager to make recommendations for completing the Validation, and the Project Manager will make the final decision to cancel or postpone. The On-Site Task Leader is responsible for contacting the COTR and all other participating parties to inform them of the delay or postponement.

Traffic Sheet 17 LTPP MONITORED TRAFFIC DATA WIM SITE INVENTORY	STATE CODE: 42 SPS WIM ID: 420600 DATE (mm/dd/yyyy) 10/1/2013
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1. ROUTE: I-80 MILEPOST: 158.2 LTPP DIRECTION: west

2. WIM SITE DESCRIPTION

Grade: <1% Sag Vertical: N
Nearest Upstream SPS Section:
Distance from sensors to SPS Section: feet

3. LANE CONFIGURATION

Lanes in LTPP direction: 2 Median: 3 - grass
Lane width: 12' Shoulder: 2 - paved AC
Shoulder width: 12'

4. PAVEMENT TYPE AC

5. PAVEMENT SURFACE CONDITION - Distress Survey

Date: 10/1/13 Photo Filename: 420600_downstream_10_1_13.jpg
Date: 10/1/13 Photo Filename: 420600_trailing_loop_10_1_13.jpg
Date: Photo Filename:

6. SENSOR SEQUENCE

Loop - Quartz - Quartz - Loop

7. REPLACEMENT AND/OR GRINDING

Date:
Date:
Date:

8. RAMPS OR INTERSECTIONS

Intersection within 300' upstream of site: N
Intersection within 300' downstream of site: N
Is shoulder routinely used for turning? N

9. DRAINAGE

Drainage (*bending plate and load cell*):
Clearance under plate (in.):
Clearance /access to flush fines from under system:

Traffic Sheet 18 LTPP MONITORED TRAFFIC DATA WIM SITE COORDINATION	STATE CODE: 42 SPS WIM ID: 420600 DATE (mm/dd/yyyy) 10/1/2013
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1. DATA PROCESSING

- a. Download: LTPP download
- b. Data review: LTPP
If state, how often? _____
- c. Data submission LTPP
If state how often? _____

2. EQUIPMENT

- a. Purchase LTPP
- b. Installation LTPP contract
- c. Maintenance Separate contract LTPP
Expiration Date _____
- d. Calibration LTPP
- e. Manuals and software control: LTPP
- f. Power
i. Type Underground ii. Payment State
- g. Communication
i. Type Landline ii. Payment State

3. PAVEMENT

- a. Type Asphalt Concrete
- b. Allowable Rehabilitation activities Grinding and maintenance as needed
- c. Profile Site Markings Temporary

Traffic Sheet 18
LTPP MONITORED TRAFFIC DATA
WIM SITE COORDINATION

STATE CODE: 42
SPS WIM ID: 420600
DATE (mm/dd/yyyy) 10/1/2013

4. Onsite Activities

- a. WIM Validation Check advance notice required

_____ Days 2 Weeks

- b. Notice for straightedge and grinding check

_____ Days 2 Weeks

i. On site lead LTPP

ii. Accept grinding LTPP

- c. Authorization to calibrate site LTPP

- d. Calibration routine LTPP annually
Other: _____

- e. Test Vehicle Responsibilities

- i. Trucks

1st- Air suspension 3S2 LTPP

2nd- Air Suspension 3S2 LTPP

3rd- _____

4th- _____

ii. Loads LTPP

iii. Drivers LTPP

- f. Contractor(s) with prior experience in wim calibration in state:
IRD

- g. Access to cabinet Joint

- h. State personel required on site No

- i. Traffic control required No

- J. Enforcement coordination required No

Traffic Sheet 18 LTPP MONITORED TRAFFIC DATA WIM SITE COORDINATION	STATE CODE: 42 SPS WIM ID: 420600 DATE (mm/dd/yyyy) 10/1/2013
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5. SITE SPECIFIC CONDITIONS

- a. Funds and accountability: _____
- b. Reports: _____
- c. Other: _____
- c. Special Conditions _____

6. CONTACTS

- a. Equipment (operational status, access, etc.)
Name Roy Czinku Phone # 306-270-9492
Agency IRD
- b. Maintenance (equipment)
Name Roy Czinku Phone # 306-270-9492
Agency IRD
- c. Data Processing and pre-visit data
Name Basel Abukhater Phone # 716-632-0804
Agency Stantec
- d. Construction schedule and verification
Name _____ Phone # _____
Agency _____
- e. Test Vehicles (trucks, loads, drivers)
Name Andrew Kremser Phone # 570-494-4010
Agency Allison Crane & Rigging
- f. Traffic control
Name _____ Phone # _____
Agency _____
- g. Enforcement coordination
Name _____ Phone # _____
Agency _____
- h. Nearest static scale
Name TA Milesburg Location: I-80 exit 158
Phone: _____

Traffic Sheet 19 LTPP MONITORED TRAFFIC DATA CALIBRATION TEST TRUCK # 1	STATE CODE: 42 SPS WIM ID: 420600 DATE (mm/dd/yyyy) 10/1/2013
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CALIBRATION TEST TRUCK - Primary

PART A

1. FHWA CLASS: 9 2. Number of axles: 5

3. AXLE WEIGHTS (1000s lbs)

	a. Empty Truck Avg. Axle Weight	b. Pre-test Average Axle Weight	c. Post-Test Avg. Axle Weight	d. Direct or Calculated?
A		10730	10610	Direct
B		16780	16700	Direct
C		16780	16700	Direct
D		16965	16955	Direct
E		16965	16955	Direct
F				

4. GVW (same units as axles)

a. Empty GVW: _____
b. Average Pre-Test Loaded weight: 78220
c. Post Test Loaded Weight: 77920
d. Difference Post Test - Pre-Tests: -300

5. TRUCK DESCRIPTION

a. Tractor Cab Style: Conventional Sleeper Cab: No
photo: ☒

b. Make: Peterbilt
c. Model: unknown

d. Trailer Load Distribution Description:

jersey barriers

photo: ☒

e. Tractor Tare weight - _____ - _____
f. Trailer Tare weight - _____ - _____
g. Axle Spacing - (feet and inches)

A to B 16.2 B to C 4.3 C to D 40.0 D to E 4.6 E to F _____

h. Wheelbase - ☐ Measured _____ ☒ Computed 65.1
i. Kingpin offset from Axle B (units) -2'2" photo: ☐
j. Overall Length - ☒ Measured 69.7

Traffic Sheet 19 LTPP MONITORED TRAFFIC DATA CALIBRATION TEST TRUCK # 1	STATE CODE: 42 SPS WIM ID: 420600 DATE (mm/dd/yyyy) 10/1/2013
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CALIBRATION TEST TRUCK - Primary

6. SUSPENSION

	a. Tire size	b.Suspension description (leaf, air # of leaves, taper or flat leaf, etc.)	c. photo
A	11R24.5	steel spring	☒
B	11R24.5	air	☒
C	11R24.5	air	☒
D	255/75R22.5	air	☒
E	255/75R22.5	air	☒
F			☐

d. Cold Tire Pressures (psi)- from right to left

Steering Axle	Axle B	Axle C	AxleD	AxleE	Axle F

PART B

Table 1 - Raw Measurements -Platform Scale

Axles	Meas.	Pre-test Weight	Instance	Instance	Post-test weight
A	I				
A+B	II				
A+B+C	III				
A+B+C+D	IV				
A+B+C+D+E(1)	V				
A+B+C+D+E+(F)(1)	VI				
B+C+D+E+(F)	VII				
C+D+E+(F)	VIII				
D+E+(F)	IX				
E+(F)	X				
(F)	XI				
A+B+C+D+E+(F)(2)	XII				

Traffic Sheet 19 LTPP MONITORED TRAFFIC DATA CALIBRATION TEST TRUCK # 1	STATE CODE: 42 SPS WIM ID: 420600 DATE (mm/dd/yyyy) 10/1/2013
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CALIBRATION TEST TRUCK - Primary

Table 2 - Axle and GVW Computations -Platform Scale Pre-test

	1		2		Avg.
Axle A	I	0	VI-VII	0	0
Axle B	II-I	0	VII-VIII	0	0
Axle C	III-II	0	VIII-IX	0	0
Axle D	IV-III	0	IX-X	0	0
Axle E	V-IV	0	X-XI	0	0
Axle F	VI-V		XI		
GVW	VI	0	XII	0	0

Table 3- Axle and GVW Computations - Platform Scale - Instance -

	1		2		Avg.
Axle A	I	0	VI-VII	0	0
Axle B	II-I	0	VII-VIII	0	0
Axle C	III-II	0	VIII-IX	0	0
Axle D	IV-III	0	IX-X	0	0
Axle E	V-IV	0	X-XI	0	0
Axle F	VI-V		XI		
GVW	VI	0	XII	0	0

Table 4- Axle and GVW Computations - Platform Scale - Instance -

	1		2		Avg.
Axle A	I	0	VI-VII	0	0
Axle B	II-I	0	VII-VIII	0	0
Axle C	III-II	0	VIII-IX	0	0
Axle D	IV-III	0	IX-X	0	0
Axle E	V-IV	0	X-XI	0	0
Axle F	VI-V		XI		
GVW	VI	0	XII	0	0

Table 5- Axle and GVW Computations - Platform Scale Post-Test

	1		2		Avg.
Axle A	I	0	VI-VII	0	0
Axle B	II-I	0	VII-VIII	0	0
Axle C	III-II	0	VIII-IX	0	0
Axle D	IV-III	0	IX-X	0	0
Axle E	V-IV	0	X-XI	0	0
Axle F	VI-V		XI		
GVW	VI	0	XII	0	0

Traffic Sheet 19 LTPP MONITORED TRAFFIC DATA CALIBRATION TEST TRUCK # 1	STATE CODE: 42 SPS WIM ID: 420600 DATE (mm/dd/yyyy) 10/1/2013
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CALIBRATION TEST TRUCK - Primary

Table 6 - Raw Data -Axle Scales - Pre-test

Pass	Axle A	Axle B	Axle C	Axle D	Axle E	Axle F	GVW
1	10660	16810	16810	16960	16960		78200
2	10800	16750	16750	16970	16970		78240
Avg.	10730	16780	16780	16965	16965		78220

Table 7- Raw Data- Axle scales -

Pass	Axle A	Axle B	Axle C	Axle D	Axle E	Axle F	GVW
Avg.							

Table 8- Raw Data- Axle scales -

Pass	Axle A	Axle B	Axle C	Axle D	Axle E	Axle F	GVW
Avg.							

Table 9 - Raw Data -Axle Scales - Post-test

Pass	Axle A	Axle B	Axle C	Axle D	Axle E	Axle F	GVW
1	10600	16700	16700	16950	16950		77900
2	10620	16700	16700	16960	16960		77940
Avg.	10610	16700	16700	16955	16955		77920

Validation Test Truck Run Set - Pre

Measured By: Dean Wolf

Verified By: Andrew Lewis

Traffic Sheet 19 LTPP MONITORED TRAFFIC DATA CALIBRATION TEST TRUCK # 2	STATE CODE: 42
	SPS WIM ID: 420600
	DATE (mm/dd/yyyy) 10/1/2013

CALIBRATION TEST TRUCK - Secondary

PART A

1. FHWA CLASS: 9 2. Number of axles: 5

3. AXLE WEIGHTS (1000s lbs)

	a. Empty Truck Avg. Axle Weight	b. Pre-test Average Axle Weight	c. Post-Test Avg. Axle Weight	d. Direct or Calculated?
A		10020	9720	Direct
B		13350	13390	Direct
C		13350	13390	Direct
D		13150	13115	Direct
E		13150	13115	Direct
F				

4. GVW (same units as axles)

a. Empty GVW: _____
b. Average Pre-Test Loaded weight: 63020
c. Post Test Loaded Weight: 62730
d. Difference Post Test - Pre-Tests: -290

5. TRUCK DESCRIPTION

a. Tractor Cab Style: Conventional Sleeper Cab: No
photo: ☒

b. Make: Peterbilt
c. Model: unknown

d. Trailer Load Distribution Description:

jersey barrier

photo: ☒

e. Tractor Tare weight - _____ - _____
f. Trailer Tare weight - _____ - _____
g. Axle Spacing - (feet and tenths)

A to B 15.9 B to C 4.3 C to D 27.5 D to E 10.2 E to F _____

h. Wheelbase - ☐ Measured _____ ☒ Computed 57.9
i. Kingpin offset from Axle B (units) -2'4" photo: ☐
j. Overall Length - ☒ Measured 65.5

Traffic Sheet 19 LTPP MONITORED TRAFFIC DATA CALIBRATION TEST TRUCK # 2	STATE CODE: 42 SPS WIM ID: 420600 DATE (mm/dd/yyyy) 10/1/2013
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CALIBRATION TEST TRUCK - Secondary

6. SUSPENSION

	a. Tire size	b.Suspension description (leaf, air # of leaves, taper or flat leaf, etc.)	c. photo
A	11R24.5	steel spring	☒
B	11R24.5	air	☒
C	11R24.5	air	☒
D	295/75R22.5	air	☒
E	295/75R22.5	air	☒
F			☐

d. Cold Tire Pressures (psi)- from right to left

Steering Axle	Axle B	Axle C	AxleD	AxleE	Axle F

PART B

Table 1 - Raw Measurements -Platform Scale

Axles	Meas.	Pre-test Weight	Instance	Instance	Post-test weight
A	I				
A+B	II				
A+B+C	III				
A+B+C+D	IV				
A+B+C+D+E(1)	V				
A+B+C+D+E+(F)(1)	VI				
B+C+D+E+(F)	VII				
C+D+E+(F)	VIII				
D+E+(F)	IX				
E+(F)	X				
(F)	XI				
A+B+C+D+E+(F)(2)	XII				

Traffic Sheet 19 LTPP MONITORED TRAFFIC DATA CALIBRATION TEST TRUCK # 2	STATE CODE: 42 SPS WIM ID: 420600 DATE (mm/dd/yyyy) 10/1/2013
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CALIBRATION TEST TRUCK - Secondary

Table 2 - Axle and GVW Computations -Platform Scale Pre-test

	1		2		Avg.
Axle A	I	0	VI-VII	0	0
Axle B	II-I	0	VII-VIII	0	0
Axle C	III-II	0	VIII-IX	0	0
Axle D	IV-III	0	IX-X	0	0
Axle E	V-IV	0	X-XI	0	0
Axle F	VI-V		XI		
GVW	VI	0	XII	0	0

Table 3- Axle and GVW Computations - Platform Scale - Instance -

	1		2		Avg.
Axle A	I	0	VI-VII	0	0
Axle B	II-I	0	VII-VIII	0	0
Axle C	III-II	0	VIII-IX	0	0
Axle D	IV-III	0	IX-X	0	0
Axle E	V-IV	0	X-XI	0	0
Axle F	VI-V		XI		
GVW	VI	0	XII	0	0

Table 4- Axle and GVW Computations - Platform Scale - Instance -

	1		2		Avg.
Axle A	I	0	VI-VII	0	0
Axle B	II-I	0	VII-VIII	0	0
Axle C	III-II	0	VIII-IX	0	0
Axle D	IV-III	0	IX-X	0	0
Axle E	V-IV	0	X-XI	0	0
Axle F	VI-V		XI		
GVW	VI	0	XII	0	0

Table 5- Axle and GVW Computations - Platform Scale Post-Test

	1		2		Avg.
Axle A	I	0	VI-VII	0	0
Axle B	II-I	0	VII-VIII	0	0
Axle C	III-II	0	VIII-IX	0	0
Axle D	IV-III	0	IX-X	0	0
Axle E	V-IV	0	X-XI	0	0
Axle F	VI-V		XI		
GVW	VI	0	XII	0	0

Traffic Sheet 19 LTPP MONITORED TRAFFIC DATA CALIBRATION TEST TRUCK # 2	STATE CODE: 42 SPS WIM ID: 420600 DATE (mm/dd/yyyy) 10/1/2013
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CALIBRATION TEST TRUCK - Secondary

Table 6 - Raw Data -Axle Scales - Pre-test

Pass	Axle A	Axle B	Axle C	Axle D	Axle E	Axle F	GVW
1	10000	13350	13350	13150	13150		63000
2	10040	13350	13350	13150	13150		63040
Avg.	10020	13350	13350	13150	13150		63020

Table 7- Raw Data- Axle scales -

Pass	Axle A	Axle B	Axle C	Axle D	Axle E	Axle F	GVW
Avg.							

Table 8- Raw Data- Axle scales -

Pass	Axle A	Axle B	Axle C	Axle D	Axle E	Axle F	GVW
Avg.							

Table 9 - Raw Data -Axle Scales - Post-test

Pass	Axle A	Axle B	Axle C	Axle D	Axle E	Axle F	GVW
1	9680	13410	13410	13110	13110		62720
2	9760	13370	13370	13120	13120		62740
Avg.	9720	13390	13390	13115	13115		62730

Validation Test Truck Run Set - Pre

Measured By: Dean Wolf

Verified By: Andrew Lewis

Traffic Sheet 21 (Wheel Load) LTPP MONITORED TRAFFIC DATA WIM SYSTEM TRUCK RECORDS										STATE CODE: SPS WIM ID: DATE: (mm/dd/yyyy):						
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Pvmt Temp	Radar speed	Truck	Pass	Time	Record No.	WIM Speed	Axle A	Axle B	Axle C	Axle D	Axle E	Axle F	GVW	A-B space	B-C space	C-D space
68.4	55	1	1	10:12:01	7282	55.0	10.9	17.0	17.8	18.1	17.7		81.5	16.4	4.4	40.7
68.4	54	2	1	10:12:10	7286	54.0	10.4	13.5	14.2	12.9	13.7		64.7	16.0	4.4	28.0
69.6	59	1	2	10:22:35	7471	59.0	10.7	17.3	17.5	17.9	17.2		80.5	16.3	4.4	40.6
73.0	64	1	3	10:32:47	7678	64.0	10.0	16.6	17.0	16.9	16.5		77.0	16.3	4.4	40.6
81.1	54	1	4	10:43:57	7892	54.0	11.5	17.4	17.5	17.9	17.3		81.6	16.4	4.3	40.5
85.8	59	1	5	10:55:04	8104	60.0	11.0	16.8	17.4	17.7	17.0		79.9	16.3	4.4	40.7
85.8	60	2	2	10:55:38	8116	59.0	10.1	13.2	13.1	13.0	13.2		62.5	16.0	4.4	28.0
76.8	66	1	6	11:06:44	8331	65.0	10.8	17.1	17.3	16.7	16.3		78.2	16.4	4.4	40.8
76.8	65	2	3	11:08:13	8364	64.0	9.9	14.0	12.5	13.1	14.0		63.6	15.9	4.4	27.9
79.6	55	1	7	11:17:26	8545	55.0	11.0	17.4	16.9	17.5	17.3		80.2	16.4	4.4	40.7
79.6	53	2	4	11:18:03	8555	53.0	10.5	13.4	14.0	13.1	13.5		64.4	16.0	4.4	28.0
81.7	60	1	8	11:27:52	8762	60.0	10.7	17.2	17.3	17.3	16.9		79.4	16.4	4.4	40.6
81.7	60	2	5	11:28:04	8764	60.0	10.1	13.8	13.5	13.5	13.2		64.2	16.0	4.4	28.1
82.0	64	1	9	11:38:23	8976	64.0	11.0	17.7	17.2	16.9	16.2		79.0	16.4	4.3	40.5
82.0	64	2	6	11:39:35	9001	64.0	9.8	13.8	12.7	13.2	13.6		63.0	15.9	4.4	28.0
83.4	55	1	10	11:50:06	9210	55.0	10.7	17.1	18.0	17.6	17.1		80.5	16.4	4.4	40.5
83.4	54	2	7	11:50:25	9218	54.0	9.8	14.1	14.4	12.8	13.3		64.5	16.0	4.4	28.0
91.0	64	1	11	13:10:35	10888	64.0	11.5	17.7	17.5	16.8	16.2		79.6	16.3	4.4	40.6
91.0	64	2	8	13:11:52	10922	64.0	10.0	13.8	13.3	12.5	13.0		62.5	16.0	4.4	27.9
92.9	54	1	12	13:21:19	11134	55.0	11.2	17.4	17.3	17.6	17.1		80.6	16.3	4.4	40.6
92.9	54	2	9	13:21:05	11146	54.0	9.7	14.1	13.8	13.3	13.6		64.6	16.0	4.4	28.0
96.9	60	1	13	13:32:01	11377	60.0	10.1	16.4	17.0	17.5	17.0		78.1	16.3	4.4	40.8
96.9	59	2	10	13:32:18	11385	60.0	9.3	12.6	12.8	13.0	13.5		61.2	16.0	4.4	28.0
97.6	64	1	14	13:42:06	11625	65.0	10.4	16.6	17.3	16.3	15.8		76.5	16.3	4.4	40.7

Recorded By: _____ al

Verified By: _____ djw

Traffic Sheet 21 (Wheel Load) LTTP MONITORED TRAFFIC DATA WIM SYSTEM TRUCK RECORDS										STATE CODE: SPS WIM ID: DATE: (mm/dd/yyyy):						
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Pvmt Temp	Radar speed	Truck	Pass	Time	Record No.	WIM Speed	Axle A	Axle B	Axle C	Axle D	Axle E	Axle F	GVW	A-B space	B-C space	C-D space
97.6	60	2	11	13:42:51	11640	60.0	9.5	11.9	12.5	12.7	12.6		59.3	16.1	4.4	28.0
102.0	55	1	15	13:53:28	11893	55.0	10.6	16.9	16.9	17.7	16.9		79.1	16.4	4.4	40.7
102.0	59	2	12	13:54:42	11931	55.0	9.5	13.6	13.2	13.1	12.9		62.3	16.1	4.4	28.1
103.3	64	1	16	14:06:03	12173	66.0	10.5	16.8	17.3	16.2	15.9		76.7	16.4	4.4	40.9
103.3	64	2	13	14:07:17	12202	64.0	9.9	13.2	13.0	13.6	13.2		63.1	16.0	4.4	27.9
104.7	54	1	17	14:18:08	12419	56.0	9.6	16.5	17.2	17.4	16.8		77.5	16.3	4.4	40.8
104.7	54	2	14	14:18:40	12430	55.0	9.4	13.3	13.5	12.2	13.0		61.4	16.2	4.4	28.2
106.0	60	1	18	14:31:18	12763	60.0	10.2	17.0	17.2	17.1	16.8		78.3	16.4	4.4	40.7
106.0	60	2	15	14:31:36	12772	59.0	10.1	13.7	13.3	13.4	13.2		63.7	16.1	4.4	28.0
102.9	65	1	19	14:41:30	12998	65.0	10.2	17.2	17.6	16.5	16.6		77.9	16.3	4.4	40.6
102.9	64	2	16	14:41:57	13007	64.0	9.5	13.5	12.7	12.6	13.5		61.9	16.0	4.4	28.0
98.1	54	1	20	14:55:28	13337	55.0	10.8	17.1	17.7	17.7	17.2		80.4	16.4	4.4	40.7
98.1	55	2	17	14:56:16	13359	55.0	10.4	13.5	13.6	13.0	13.6		63.9	16.1	4.4	27.9
97.8	60	1	21	15:05:50	13577	60.0	10.0	16.9	17.7	17.3	17.0		78.8	16.4	4.4	40.6
97.8	58	2	18	15:06:00	13582	60.0	9.9	13.0	13.8	13.5	13.7		63.8	16.0	4.4	28.0
98.7	64	1	22	15:19:37	13924	65.0	10.9	17.1	17.8	16.1	16.1		78.0	16.4	4.4	40.7
98.7	64	2	19	15:19:54	13934	65.0	9.6	13.2	12.5	12.4	13.1		60.7	16.0	4.4	28.1
94.9	55	1	23	15:33:28	14303	56.0	10.5	17.2	17.4	17.3	16.8		79.2	16.4	4.3	40.6
94.9	55	2	20	15:33:54	14315	55.0	9.7	12.9	14.4	13.4	13.2		63.6	16.0	4.4	28.1

Recorded By: _____ al _____	Verified By: _____ djw _____
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Traffic Sheet 22 LTPP MONITORED TRAFFIC DATA SITE EQUIPMENT ASSESSMENT LTPP LANE ONLY	STATE CODE: 42 SPS WIM ID: 420600 STATE ASSIGNED ID 158 DATE (mm/dd/yyyy) 10/1/2013
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9. IN ROAD SENSORS:

Describe any deficiencies regarding the sensor installation. Indicate sensors that show any signs of being broken, severely worn, missing, removed, or loose. List photos on Sheet 24 for

the equipment is operating within the manufacturer's tolerances. The leading WIM sensor has missing eopoxy at the conduit exit in the shoulder. The sensors do not show signs of excessive wear and appear to be fully secured in the pavement.

TRUCK OBSERVATIONS

10. Indicate any irregular truck behaviors such as bouncing, swerving, or braking near the weighing area (within 40 meters). Note the distance from the weighing sensors.

A visual observation of the trucks as they approach, traverse, and leave the sensor area indicated significant truck dynamics at the location of the pavement transition that may affect the accuracy of the WIM system. The trucks appear to track down the center of the lane.

Minimum 15 minute or 35 truck sample video sample for pavement interaction deficiencies:

Tape Filename: _____

Time: From: _____ To: _____

Traffic Sheet 22 LTPP MONITORED TRAFFIC DATA SITE EQUIPMENT ASSESSMENT LTPP LANE ONLY	STATE CODE: 42 SPS WIM ID: 420600 STATE ASSIGNED ID 158 DATE (mm/dd/yyyy) 10/1/2013
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11. CLASSIFICATION VERIFICATION VIDEO:

TAPE 1- NAME: _____

Interval	Filename	From	To
1			
2			
3			
4			
5			
6			
7			
8			

TAPE 2- NAME: _____

Interval	Filename	From	To
1			
2			
3			
4			
5			
6			
7			
8			

TAPE 3- NAME: _____

Interval	Filename	From	To
1			
2			
3			
4			
5			
6			
7			
8			

Traffic Sheet 22 LTPP MONITORED TRAFFIC DATA SITE EQUIPMENT ASSESSMENT LTPP LANE ONLY	STATE CODE: 42 SPS WIM ID: 420600 STATE ASSIGNED ID 158 DATE (mm/dd/yyyy) 10/1/2013
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SYSTEM ACCURACY TESTS

12. CONDUCT THE FOLLOWING SYSTEM ACCURACY TESTS EITHER ON- SITE OR IN OFFICE

Speed Accuracy - Complete Sheet 20 and attach.

Average radar speed	62.9	mph	Average WIM Speed	64.1	mph
Mean Difference	1.2	mph	SD of mean	1.3	

Posted Speed Limit	65	mph			
Speed Range	15th percentile -	63	mph	85th percentile-	73
					mph

Spacing and Weight - Complete Sheet 21 and attach.

Average distance between axles of drive tandem		feet
% error from 4.25 ft (industry average)	OR	4.39
=	3.4	%
		ft (WIM system average)

Average front axle weight for Class 9 vehicles		lbs
% error from 10.3 kips (industry average) OR		10.3
=	-0.2	%
		lbs (known site value)

SUPPORT EQUIPMENT STRUCTURES

17. Indicate any deficiencies with any site equipment other than the in-road sensors. List all photos on the Sheet 24 for each occurrence.

Cabinet/Foundation None ☒

no cabinet or foundation deficiencies

Pull Boxes None ☒

no pull box deficiencies

Mast None ☒

no service mast deficiencies

Solar Panels None ☒

no solar panel deficiencies

Traffic Sheet 22 LTPP MONITORED TRAFFIC DATA SITE EQUIPMENT ASSESSMENT LTPP LANE ONLY	STATE CODE:	42
	SPS WIM ID:	420600
	STATE ASSIGNED ID	158
	DATE (mm/dd/yyyy)	10/1/2013

Telephone D-Mark Box None ☒

no telephone d-mark box deficiencies

Power Service Box None ☒

no power service box deficiencies

Grounding None ☒

no grounding deficiencies

Conduit None ☒

no conduit deficiencies

STATIC AND DYNAMIC ELECTRONIC EQUIPMENT TESTS

18. Complete and attach a Sheet 22 addendum applicable to the installed road equipment.

ADDITIONAL COMMENTS

All values for the WIM sensors and inductive loops were within tolerances. Electronic tests of the power and communication devices indicated that they were operating normally.

Assessor _____ Dean J. Wolf

Traffic Sheet 22 Addendum - Kistler Quartz LTPP MONITORED TRAFFIC DATA SITE EQUIPMENT ASSESSMENT LTPP LANE ONLY	STATE CODE:	42
	SPS WIM ID:	420600
	STATE ASSIGNED ID	158
	DATE (mm/dd/yyyy)	10/1/2013

STATIC EQUIPMENT VALUES (SYSTEM OFF)

1. POWER

a. Solar Panel	_____	WATTS	<u>14.4</u>	VDC
b. Equipment Power	_____	VAC	<u>11.7</u>	VDC
c. Battery 1	<u>13.1</u>	VDC		
d. Battery 2	<u>13.2</u>	VDC		
e. Regulated	_____	VDC		
f. Power Supply	_____	VAC		VDC
g. System Input	_____	VAC	<u>11.3</u>	VDC
h. Modem Power	_____	VAC	<u>13.6</u>	VDC
i. Telephone	_____	VDC		

2. LOOP SENSORS

	Resistance		Inductance		Shield	
a. Leading	<u>0.9</u>	Ω	<u>141.6</u>	μh	<u>inf</u>	MΩ
b. Trailing	<u>1.0</u>	Ω	<u>132.9</u>	μh	<u>inf</u>	MΩ

3. KISTLER SENSORS

	Resistance		Capacitance	
a. K1 (lead/left)	<u>10^10</u>	Ω	<u>13.35</u>	nf
b. K2 (lead/middle)	<u>10^10</u>	Ω	<u>13.35</u>	nf
c. K3 (lead mid/right)	<u>10^10</u>	Ω	<u>14.51</u>	nf
d. K4 (lead/right)	<u>10^10</u>	Ω	<u>14.51</u>	nf
e. K5 (trail/left)	<u>10^10</u>	Ω	<u>13.35</u>	nf
f. K6 (trail/mid left)	<u>10^10</u>	Ω	<u>13.35</u>	nf
g. K7 (trail/mid right)	<u>10^10</u>	Ω	<u>14.51</u>	nf
h. K8 (trail/right)	<u>10^10</u>	Ω	<u>14.51</u>	nf

DYNAMIC EQUIPMENT VALUES (SYSTEM ON)

4. LOOP SENSORS

	Frequency	
a. Leading	<u>10.3</u>	KHz
b. Trailing	<u>10.1</u>	KHz

5. KISTLER SENSORS

Dynamic testing for the Kistler Quartz sensor is not recommended.

Assessor _____ Dean J. Wolf

Traffic Sheet 24A LTPP MONITORED TRAFFIC DATA SITE PHOTO LOG - Equipment	STATE CODE: 42 SPS WIM ID: 420600 DATE (mm/dd/yyyy) 10/1/2013
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Item	Description	Filename
1	Power Source	420600_solar_panel_10_1_13.jpg
2	Telephone Source	420600_cellular_modem_10_1_13.jpg
3	Cabinet Exterior	420600_cabinet_exterior_10_1_13.jpg
4	Cabinet Interior - Front	420600_cabinet_interior_front_10_1_13.jpg
5	Cabinet Interior - Rear	420600_cabinet_interior_back_10_1_13.jpg
6	Leading weight sensor	420600_leading_WIM_sensor_10_1_13.jpg
7	Trailing weight sensor	420600_trailing_WIM_sensor_10_1_13.jpg
8	Leading classification sensor	
9	Trailing classification sensor	
10	Leading loop sensor	420600_leading_loop_10_1_13.jpg
11	Trailing loop sensor	420600_trailing_loop_10_1_13.jpg
12	Downstream from site	420600_downstream_10_1_13.jpg
13	Upstream from site	420600_upstream_10_1_13.jpg
14		
15		
16		
17		
18		
19		
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26		
27		
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29		
30		

Traffic Sheet 24B	STATE CODE: 42
LTPP MONITORED TRAFFIC DATA	SPS WIM ID: 420600
SITE PHOTO LOG - Test Trucks	DATE (mm/dd/yyyy) 10/1/2013

Item	Description	Filename
1	Tractor, Truck #1	420600_Truck_1_Tractor_10_1_13.jpg
2	Trailer/Load, Truck #1	420600_Truck_1_Trailer_10_1_13.jpg
3	Kingpin Offset, Truck #1	
4	Suspension A, Truck #1	420600_Truck_1_Suspension_1_10_1_13.jpg
5	Suspension B, Truck #1	420600_Truck_1_Suspension_2_10_1_13.jpg
6	Suspension C, Truck #1	420600_Truck_1_Suspension_3_10_1_13.jpg
7	Suspension D, Truck #1	420600_Truck_1_Suspension_4_10_1_13.jpg
8	Suspension E, Truck #1	420600_Truck_1_Suspension_5_10_1_13.jpg
9	Suspension F, Truck #1	
10	Tractor, Truck #2	420600_Truck_2_Tractor_10_1_13.jpg
11	Trailer/Load, Truck #2	420600_Truck_2_Trailer_10_1_13.jpg
12	Kingpin Offset, Truck #2	
13	Suspension A, Truck #2	420600_Truck_2_Suspension_1_10_1_13.jpg
14	Suspension B, Truck #2	420600_Truck_2_Suspension_2_10_1_13.jpg
15	Suspension C, Truck #2	420600_Truck_2_Suspension_3_10_1_13.jpg
16	Suspension D, Truck #2	420600_Truck_2_Suspension_4_10_1_13.jpg
17	Suspension E, Truck #2	420600_Truck_2_Suspension_5_10_1_13.jpg
18	Suspension F, Truck #2	
19	Tractor, Truck #3	
20	Trailer/Load, Truck #3	
21	Kingpin Offset, Truck #3	
22	Suspension A, Truck #3	
23	Suspension B, Truck #3	
24	Suspension C, Truck #3	
25	Suspension D, Truck #3	
26	Suspension E, Truck #3	
27	Suspension F, Truck #3	
28	Scale	
29		
30		