

WIM System Field Calibration and Validation Handout Guide

Virginia, SPS-1 and Additional Lane
SHRP ID – 510100

Validation Date: June 25, 2013



Table of Contents

1	Site Information.....	3
2	Contact Information.....	3
3	Schedule of Events	4
4	Maps	5
4.1	Site Location	5
4.2	Truck Scale Location	5
4.3	Airport Location.....	6
4.4	Hospital Location.....	6
5	Occupational Health and Safety Plan	7
6	Contingency Plan.....	7

1 Site Information

Site ID:	510100	State:	Virginia
LTPP Region:	North Atlantic	Configuration:	Loop-2 Bending Plates-Loop
Controller Type:	iSINC	Sensor Type:	Bending Plate
Power:	AC	Communication:	Landline
Class Scheme:	LTPP Mar 06	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	Lorenzo Casanova	FHWA Division	804-775-3362	lorenzo.casanova@dot.gov
RSC	Frank Meyer	Project Manager	716-632-0804	fmeyer@stantec.com
VDOT	Thomas Shinkel	Traffic Contact	804-225-3123	tom.schinkel@vdot.virginia.gov
VDOT	Hamlin Williams	Traffic Contact	804-786-0134	hamlin.williams@vdot.virginia.gov
VDOT	Richard Bush	Traffic Contact	804-786-7006	richard.bush@vdot.virginia.gov
VDOT	Doug Meador	Traffic Contact	804-236-3559	doug.meador@vdot.virginia.gov
ARA	Dean Wolf	Task Leader	717-512-6638	dwolf@ara.com
ARA	Olga Selezneva	Project Manager	410-540-9949	oselezneva@ara.com

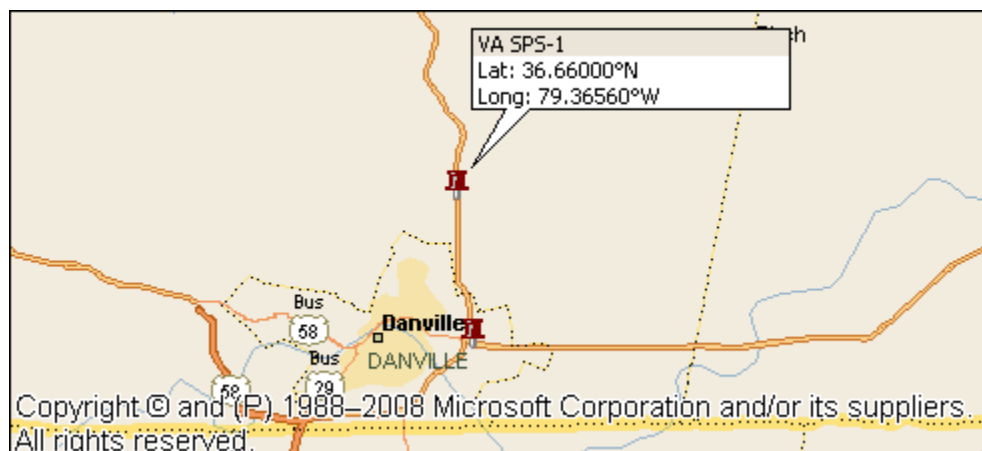
3 Schedule of Events

Date	Event	Location	Start Time
6/24/13	Travel	Danville, VA	TBD
6/25/13	Test Truck Weigh/Measure/Inspection	Kangaroo Travel Center	6:30 am
6/25/13	Equipment Assessment	WIM Site	7:30 am
6/25/13	Initial Performance Evaluation	WIM Site	8:00 am
6/25/13	System Test/Class and Speed Study	WIM Site	TBD
6/26/13	Test Truck Weigh/Measure/Inspection	Kangaroo Travel Center	6:30 am
6/26/13	Initial Performance Evaluation (cont.)	WIM Site	7:30 am
6/26/13	Calibration/Validation (if required)	WIM Site	TBD
6/27/13	Test Truck Weigh/Measure/Inspection	Kangaroo Travel Center	6:30 am
6/27/13	Validation (cont.)	WIM Site	7:30 am
6/27/13	Travel	Camp Hill, PA	TBD

4 Maps

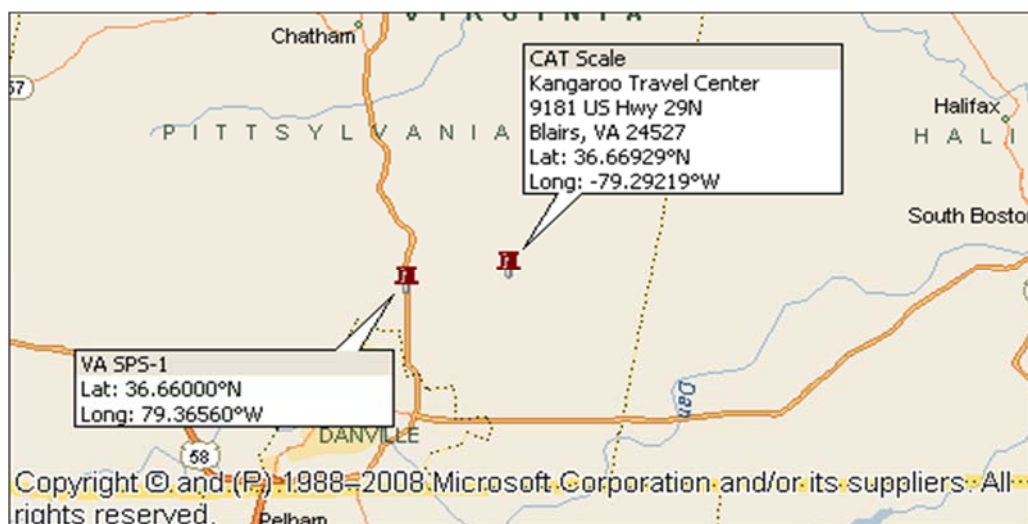
4.1 Site Location

Location:	US-29 bypass at M.P. 12.8, 5.3 miles north of US 360		Dir:	SB
Latitude:	36.660°	Longitude:	-79.3656°	



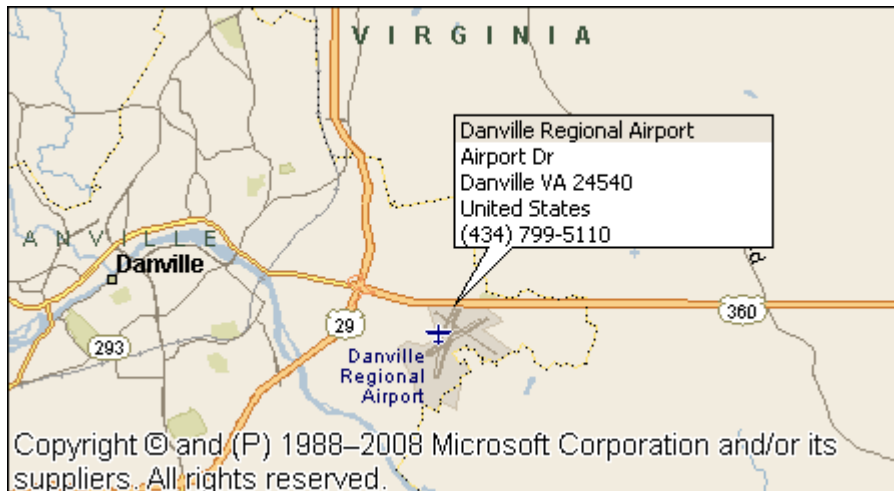
4.2 Truck Scale Location

Name:	Kangaroo Travel Center	Location:	9181 US Hwy 29N, Blairs, VA
Latitude:	36.66929°	Longitude:	-79.29219°



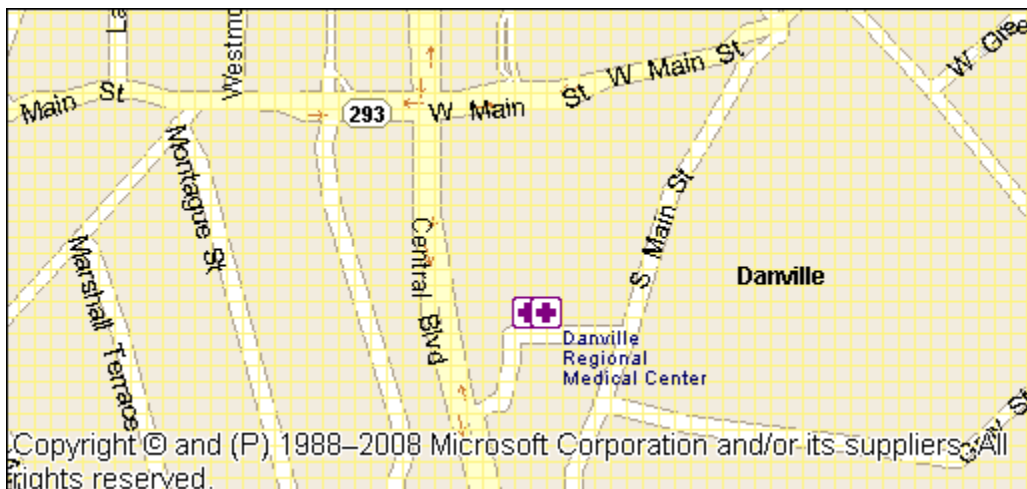
4.3 Airport Location

Name:	Danville Regional Airport	Location:	Airport Drive, Danville, VA
Latitude:	36.5750°	Longitude:	-79.3400°



4.4 Hospital Location

Name:	Danville Regional Medical Center - ER		
Phone:	434-799-2100	Location:	142 South Main Street, Danville, VA



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: 51 SPS WIM ID: 510100 DATE (mm/dd/yyyy) 6/25/2013
--	---

1. ROUTE: US-29 MILEPOST: 12.8 LTPP DIRECTION: south

2. WIM SITE DESCRIPTION

Grade: <1% Sag Vertical: N
Nearest Upstream SPS Section: 510104
Distance from sensors to SPS Section: 395 feet

3. LANE CONFIGURATION

Lanes in LTPP direction: 2 Median: 3 - grass
Lane width: 12' Shoulder: 2 - paved AC
Shoulder width: 11'

4. PAVEMENT TYPE PCC

5. PAVEMENT SURFACE CONDITION - Distress Survey

Date: 6/25/13 Photo Filename: 510100_downstream_6_25_13.jpg
Date: 6/25/13 Photo Filename: 510100_trailing_loop_6_25_13.jpg
Date: Photo Filename:

6. SENSOR SEQUENCE

Loop - 2 Bending Plate - 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*): 1 - Open to Ground
Clearance under plate (in.): 6"
Clearance /access to flush fines from under system: N

Traffic Sheet 17 LTPP MONITORED TRAFFIC DATA WIM SITE INVENTORY	STATE CODE:	51
	SPS WIM ID:	510100
	DATE (mm/dd/yyyy)	6/25/2013

10. CABINET LOCATION

Same side of road as LTPP lane: Y
 Distance from edge of traveled lane: 27 ft
 distance from system: 41 ft
 type: M

Cabinet access controlled by: Agency and LTPP

Contact name: Hamlin Williams Phone # 804-786-7006
 Alternate name: Roy Czinku Phone # 306-653-6627

11. POWER

Distance to cabinet from drop: 4 ft
 Type: AC
 AC in cabinet? Y
 Service provider: _____ Phone # _____

12. TELEPHONE

Distance to cabinet from drop: 4 ft
 Type: landline
 Service provider: Verizon Phone # _____

13. SYSTEM

Software and version no. iSINC
 Computer connection: Ethernet

14. TEST TRUCK TURNAROUND TIME

Duration: 14 minutes Distance: 11.6 miles

15. PHOTOS

Filename

Power source: 510100_power_box_6_25_13.jpg
 Phone source: 510100_telephone_service_6_25_13.jpg
 Cabinet exterior: 510100_cabinet_exterior_6_25_13.jpg
 Cabinet interior: 510100_cabinet_interior_front_6_25_13.jpg
 Weight sensors: 510100_leading_WIM_sensor_6_25_13.jpg
 510100_trailing_WIM_sensor_6_25_13.jpg
 Other sensors: 510100_leading_loop_6_25_13.jpg
 510100_trailing_loop_6_25_13.jpg
 Downstream from sensors on LTPP lane: 510100_downstream_6_25_13.jpg
 Upstream from sensors on LTPP lane: 510100_upstream_6_25_13.jpg

Traffic Sheet 18 LTPP MONITORED TRAFFIC DATA WIM SITE COORDINATION	STATE CODE: 51 SPS WIM ID: 510100 DATE (mm/dd/yyyy) 6/25/2013
---	---

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 Included with purchase
- c. Maintenance Contract with purchase
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 Portland Concrete Cement
- b. Allowable Rehabilitation activities Maintenance only
- c. Profile Site Markings Temporary

Traffic Sheet 18 LTPP MONITORED TRAFFIC DATA WIM SITE COORDINATION	STATE CODE: 51 SPS WIM ID: 510100 DATE (mm/dd/yyyy) 6/25/2013
---	---

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 State

- c. Authorization to calibrate site State

- 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: 51 SPS WIM ID: 510100 DATE (mm/dd/yyyy) 6/25/2013
---	---

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 Don French Phone # 434-947-6559
Agency VDOT - Lynchburg
- e. Test Vehicles (trucks, loads, drivers)
Name Ed Foust Phone # 434-947-6559
Agency Thompson Trucking
- f. Traffic control
Name _____ Phone # _____
Agency _____
- g. Enforcement coordination
Name _____ Phone # _____
Agency _____
- h. Nearest static scale
Name Kangaroo Travel Center Location: Blair, VA
Phone: 434-792-1180

Traffic Sheet 19 LTPP MONITORED TRAFFIC DATA CALIBRATION TEST TRUCK # 1	STATE CODE: 51
	SPS WIM ID: 510100
	DATE (mm/dd/yyyy) 6/25/2013

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		10370	10210	Direct
B		17460	17335	Direct
C		17460	17335	Direct
D		14800	14795	Direct
E		14800	14795	Direct
F				

4. GVW (same units as axles)

a. Empty GVW: _____
b. Average Pre-Test Loaded weight: 74890
c. Post Test Loaded Weight: 74470
d. Difference Post Test - Pre-Tests: -420

5. TRUCK DESCRIPTION

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

b. Make: Peterbilt
c. Model: unknown

d. Trailer Load Distribution Description:

gravel

photo: ☒

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

A to B 14.5 B to C 4.3 C to D 29.0 D to E 4.4 E to F _____

h. Wheelbase - ☐ Measured _____ ☒ Computed 52.2
i. Kingpin offset from Axle B (units) -2.2' photo: ☐
j. Overall Length - ☒ Measured 58.2

Traffic Sheet 19 LTPP MONITORED TRAFFIC DATA CALIBRATION TEST TRUCK # 1	STATE CODE: 51 SPS WIM ID: 510100 DATE (mm/dd/yyyy) 6/25/2013
--	---

CALIBRATION TEST TRUCK - Primary

6. SUSPENSION

	a. Tire size	b.Suspension description (leaf, air # of leaves, taper or flat leaf, etc.)	c. photo
A	11R22.5	steel spring	☒
B	11R22.5	air	☒
C	11R22.5	air	☒
D	11R22.5	air	☒
E	11R22.5	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: 51 SPS WIM ID: 510100 DATE (mm/dd/yyyy) 6/25/2013
--	--

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: 51 SPS WIM ID: 510100 DATE (mm/dd/yyyy) 6/25/2013
--	---

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	10380	17450	17450	14800	14800		74880
2	10360	17470	17470	14800	14800		74900
Avg.	10370	17460	17460	14800	14800		74890

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	10220	17330	17330	14790	14790		74460
2	10200	17340	17340	14800	14800		74480
Avg.	10210	17335	17335	14795	14795		74470

Validation Test Truck Run Set - Pre

Measured By: Kevin Trousdale

Verified By: Dean J. Wolf

Traffic Sheet 19 LTPP MONITORED TRAFFIC DATA CALIBRATION TEST TRUCK # 2	STATE CODE: 51
	SPS WIM ID: 510100
	DATE (mm/dd/yyyy) 6/25/2013

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		11520	11160	Direct
B		14925	14925	Direct
C		14925	14925	Direct
D		12530	12485	Direct
E		12530	12485	Direct
F				

4. GVW (same units as axles)

a. Empty GVW: _____
b. Average Pre-Test Loaded weight: 66430
c. Post Test Loaded Weight: 65980
d. Difference Post Test - Pre-Tests: -450

5. TRUCK DESCRIPTION

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

b. Make: Freightliner
c. Model: unknown

d. Trailer Load Distribution Description:

gravel

photo: ☒

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

A to B 14.2 B to C 4.2 C to D 22.8 D to E 4.3 E to F _____

h. Wheelbase - ☐ Measured _____ ☒ Computed 45.5
i. Kingpin offset from Axle B (units) -1.0' photo: ☐
j. Overall Length - ☒ Measured 52.0

Traffic Sheet 19 LTPP MONITORED TRAFFIC DATA CALIBRATION TEST TRUCK # 2	STATE CODE: 51 SPS WIM ID: 510100 DATE (mm/dd/yyyy) 6/25/2013
--	---

CALIBRATION TEST TRUCK - Secondary

6. SUSPENSION

	a. Tire size	b.Suspension description (leaf, air # of leaves, taper or flat leaf, etc.)	c. photo
A	11R22.5	steel spring	☒
B	11R22.5	air	☒
C	11R22.5	air	☒
D	285/75R245	air	☒
E	275/80R24.5	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: 51 SPS WIM ID: 510100 DATE (mm/dd/yyyy) 6/25/2013
--	--

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: 51 SPS WIM ID: 510100 DATE (mm/dd/yyyy) 6/25/2013
--	---

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	11580	14880	14880	12550	12550		66440
2	11460	14970	14970	12510	12510		66420
Avg.	11520	14925	14925	12530	12530		66430

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	11020	15030	15030	12450	12450		65980
2	11300	14820	14820	12520	12520		65980
Avg.	11160	14925	14925	12485	12485		65980

Validation Test Truck Run Set - Pre

Measured By: _____

Verified By: _____

Traffic Sheet 21 (Wheel Load) LTPP MONITORED TRAFFIC DATA WIM SYSTEM TRUCK RECORDS										STATE CODE: 51 SPS WIM ID: 510100 DATE: (mm/dd/yyyy): 6/25/2013									
---	--	--	--	--	--	--	--	--	--	---	--	--	--	--	--	--	--	--	--

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	D - E space	E - F space	Axle Length	Overall Length
85.0	44	1	1	9:03:20	50554	45.0	9.9	17.2	16.8	14.1	14.6		72.7	14.6	4.4	29.3	4.4		52.7	58.0
85.0	45	2	1	9:03:27	50556	44.0	11.3	15.0	14.4	12.7	12.2		65.5	14.3	4.3	23.2	4.4		46.2	52.0
88.0	54	1	2	9:19:20	50645	54.0	10.4	17.6	17.0	15.2	15.4		75.6	14.6	4.4	29.3	4.3		52.6	58.0
88.0	55	2	2	9:19:29	50646	54.0	11.4	15.3	14.1	12.9	12.7		66.5	14.3	4.3	23.2	4.4		46.2	52.0
92.8	65	1	3	9:34:15	50726	64.0	10.3	17.4	17.3	14.0	15.4		74.5	14.5	4.4	29.2	4.4		52.5	58.0
92.8	65	2	3	9:34:26	50727	64.0	11.5	15.6	15.0	12.8	12.7		67.6	14.3	4.3	23.2	4.4		46.2	52.0
96.2	48	1	4	9:56:12	50853	47.0	10.0	17.6	16.7	14.4	15.0		73.8	14.6	4.4	29.3	4.4		52.7	58.0
96.2	46	2	4	9:56:20	50854	46.0	11.3	15.1	14.6	12.9	12.3		66.3	14.3	4.3	23.2	4.4		46.2	52.0
97.2	56	1	5	10:10:50	50929	55.0	10.1	17.7	17.1	15.0	14.8		74.8	14.6	4.4	29.3	4.4		52.7	58.0
97.2	55	2	5	10:10:57	50930	56.0	12.0	14.8	14.4	13.0	12.8		67.1	14.3	4.3	23.2	4.4		46.2	52.0
98.7	67	1	6	10:25:35	51002	64.0	10.7	17.7	17.9	14.7	15.1		76.2	14.6	4.4	29.1	4.4		52.5	58.0
98.7	65	2	6	10:25:40	51004	64.0	11.7	15.2	14.9	13.0	12.7		67.5	14.3	4.3	23.2	4.4		46.2	52.0
101.5	47	1	7	10:39:45	51070	47.0	9.4	17.5	16.9	15.2	14.1		73.1	14.6	4.4	29.3	4.4		52.7	58.0
101.5	45	2	7	10:39:52	51072	44.0	11.8	15.0	14.7	12.5	12.1		66.1	14.3	4.3	23.2	4.4		46.2	52.0
102.0	53	1	8	10:55:14	51142	55.0	10.4	17.7	17.2	15.7	15.0		76.0	14.6	4.4	29.2	4.4		52.6	58.0
102.0	54	2	8	10:55:21	51143	55.0	11.5	15.4	14.6	13.2	12.7		67.4	14.3	4.3	23.2	4.4		46.2	52.0
104.1	65	1	9	11:30:48	51303	56.0	10.2	17.7	17.4	14.9	14.9		75.2	14.6	4.3	29.3	4.4		52.6	58.0
104.1	64	2	9	11:30:53	51305	59.0	11.6	14.9	14.7	13.7	12.8		67.7	14.3	4.3	23.2	4.5		46.3	52.0
112.7	49	1	10	12:20:35	51532	45.0	9.7	17.4	17.0	14.8	14.1		72.7	14.5	4.4	29.2	4.4		52.5	58.0
112.7	50	2	10	12:20:43	51537	47.0	11.5	15.1	14.5	12.7	12.0		65.9	14.3	4.3	23.2	4.4		46.2	52.0
109.5	55	1	11	12:35:32	51621	54.0	10.6	17.8	17.5	14.6	14.8		75.3	14.6	4.4	29.2	4.4		52.6	58.0
109.5	53	2	11	12:35:40	51622	55.0	11.7	15.0	14.5	13.2	12.9		67.4	14.3	4.3	23.2	4.4		46.2	52.0
113.4	46	1	12	13:04:46	51760	47.0	9.7	17.7	17.3	15.5	14.9		75.0	14.6	4.4	29.3	4.4		52.7	58.0
113.4	46	2	12	13:04:55	51761	46.0	11.7	14.8	14.6	12.9	12.4		66.5	14.3	4.3	23.3	4.4		46.3	52.0

Recorded By: _____ kt	Verified By: _____ djw	Run Set _____ Pre _____
-----------------------	------------------------	-------------------------

Traffic Sheet 21 (Wheel Load) LTPP MONITORED TRAFFIC DATA WIM SYSTEM TRUCK RECORDS										STATE CODE: 51 SPS WIM ID: 510100 DATE: (mm/dd/yyyy): 6/25/2013									
---	--	--	--	--	--	--	--	--	--	---	--	--	--	--	--	--	--	--	--

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	D - E space	E - F space	Axle Length	Overall Length
110.6	55	1	13	13:20:33	51831	55.0	10.5	17.8	17.8	14.8	14.7		75.6	14.6	4.4	29.3	4.4		52.7	58.0
110.6	54	2	13	13:20:40	51832	55.0	11.4	15.3	14.6	13.2	12.8		67.2	14.3	4.3	23.2	4.4		46.2	52.0
113.8	63	1	14	13:35:47	51910	64.0	9.5	16.5	16.3	14.5	14.7		71.5	14.6	4.4	29.3	4.4		52.7	58.0
113.8	64	2	14	13:35:52	51911	65.0	11.7	15.4	15.0	13.8	12.6		68.4	14.3	4.3	23.2	4.4		46.2	52.0
120.2	44	1	15	14:04:35	52076	45.0	9.9	17.3	16.9	14.3	14.8		73.2	14.6	4.4	29.2	4.4		52.6	58.0
120.2	46	2	15	14:04:40	52077	47.0	11.5	15.2	14.6	13.2	12.6		67.2	14.3	4.3	23.2	4.4		46.2	52.0
111.5	56	1	16	14:19:37	52138	55.0	9.9	17.8	17.5	15.0	15.2		75.4	14.6	4.3	29.3	4.3		52.5	58.0
111.5	54	2	16	14:19:43	52139	54.0	11.9	15.2	14.8	12.6	13.0		67.4	14.3	4.3	23.2	4.4		46.2	52.0
113.7	63	1	17	14:34:38	52226	62.0	9.8	16.8	16.7	14.2	15.2		72.7	14.6	4.4	29.2	4.4		52.6	58.0
113.7	64	2	17	14:34:42	52227	64.0	11.8	15.1	15.1	12.5	12.8		67.4	14.3	4.3	23.2	4.4		46.2	52.0
114.3	48	1	18	14:49:55	52305	47.0	10.4	17.4	17.2	14.9	14.8		74.7	14.5	4.4	29.2	4.4		52.5	58.0
114.3	45	2	18	14:49:59	52306	45.0	11.5	15.3	14.3	12.5	12.7		66.1	14.3	4.3	23.2	4.4		46.2	52.0
109.4	54	1	19	15:05:19	52397	55.0	10.2	17.8	17.3	15.2	14.7		75.3	14.6	4.4	29.4	4.4		52.8	58.0
109.4	54	2	19	15:05:24	52398	55.0	11.7	15.0	14.6	13.0	12.9		67.1	14.3	4.3	23.2	4.4		46.2	52.0
103.7	64	1	20	15:20:42	52497	64.0	10.6	17.5	17.3	15.6	14.8		75.7	14.6	4.4	29.2	4.4		52.6	58.0
103.7	66	2	20	15:20:49	52498	64.0	11.5	15.5	15.4	12.8	12.8		68.0	14.3	4.3	23.2	4.4		46.2	52.0

Recorded By: _____ kt	Verified By: _____ djw	Run Set _____ Pre _____
-----------------------	------------------------	-------------------------

Traffic Sheet 22 LTPP MONITORED TRAFFIC DATA SITE EQUIPMENT ASSESSMENT LTPP LANE ONLY	STATE CODE: 51 SPS WIM ID: 510100 STATE ASSIGNED ID 0 DATE (mm/dd/yyyy) 6/25/2013
--	--

SITE EQUIPMENT INFORMATION

1. TYPE OF EQUIPMENT BOTH

2. LANE NUMBER ON SITE 1 3. DIRECTION ON SITE south

4. VENDOR IRD MODEL iSINC SERIAL# 0607 03525

5. WEIGHING SENSOR TYPE bending plate

6. SYSTEM SOFTWARE VERSIONS:

CPU	<u> </u>
LOOP	<u>LSM</u>
PIEZO	<u> </u>
WEIGHPAD/ LOADCELL	<u>SSM</u>
COMMUNICATIONS	<u>WCU-II</u>

7. CLASSIFICATION VIDEO:

TIME FROM: <u> </u>	TO: <u> </u>
TIME FROM: <u> </u>	TO: <u> </u>

SITE CONDITIONS

8. PAVEMENT:

Indicate any deficiencies that may affect the performance of the WIM sytem. List all photos on Sheet 24 that support the evaluation.

There were no pavement distresses noted that may affect the accuracies of the WIM system.

Traffic Sheet 22 LTPP MONITORED TRAFFIC DATA SITE EQUIPMENT ASSESSMENT LTPP LANE ONLY	STATE CODE: 51 SPS WIM ID: 510100 STATE ASSIGNED ID 0 DATE (mm/dd/yyyy) 6/25/2013
---	---

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. None of the in-road sensors show signs of damage or 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 did not indicate any adverse dynamics that would 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: 51 SPS WIM ID: 510100 STATE ASSIGNED ID 0 DATE (mm/dd/yyyy) 6/25/2013
---	---

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: 51 SPS WIM ID: 510100 STATE ASSIGNED ID 0 DATE (mm/dd/yyyy) 6/25/2013
--	--

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	<u>62.8</u> mph	Average WIM Speed	<u>62.7</u> mph
Mean Difference	<u>-0.1</u> mph	SD of mean	<u>1.0</u>
Posted Speed Limit	<u>65</u> mph		
Speed Range	15th percentile - <u>60</u> mph	85th percentile-	<u>68</u> mph

Spacing and Weight - Complete Sheet 21 and attach.

Average distance between axles of drive tandem		<u> </u> feet
% error from 4.25 ft (industry average)	OR	<u>4.35</u> ft (WIM system average)
= <u>2.2</u> %		
Average front axle weight for Class 9 vehicles		<u> </u> lbs
% error from 10.3 kips (industry average) OR		<u>10.9</u> lbs (known site value)
= <u>5.4</u> %		

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: 51 SPS WIM ID: 510100 STATE ASSIGNED ID 0 DATE (mm/dd/yyyy) 6/25/2013
--	--

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 - Weighpad LTPP MONITORED TRAFFIC DATA SITE EQUIPMENT ASSESSMENT LTPP LANE ONLY	STATE CODE:	51
	SPS WIM ID:	510100
	STATE ASSIGNED ID	0
	DATE (mm/dd/yyyy)	6/25/2013

STATIC EQUIPMENT VALUES (SYSTEM OFF)

1. POWER

a. Solar Panel		WATTS		VDC
b. Equipment Power	124	VAC		VDC
c. Battery 1	13.6	VDC		
d. Battery 2		VDC		
e. Regulated	11.9	VDC		
f. Power Supply	124	VDC	13.5	VDC
g. System Input	11.9	VAC		VDC
h. Modem Power	11.9	VAC		VDC
i. Telephone	52	VDC		

2. LOOP SENSORS

	Resistance	Inductance	Shield
a. Leading	0.8 Ω	137.2 μ h	inf M Ω
b. Trailing	0.8 Ω	137.5 μ h	inf M Ω

3. WEIGHPAD SENSORS

	Input	Output	Shield
a. Leading	988 Ω	860 Ω	inf Ω
b. Trailing	984 Ω	860 Ω	inf Ω

DYNAMIC EQUIPMENT VALUES (SYSTEM ON)

4. LOOP SENSORS

	Frequency
a. Leading	100.5 KHz
b. Trailing	75.3 KHz

5. WEIGHPAD SENSORS

	Zero Point
a. Leading	0.2 mV
b. Trailing	-0.1 mV

Assessor _____ Dean J. Wolf

Traffic Sheet 24A LTPP MONITORED TRAFFIC DATA SITE PHOTO LOG - Equipment	STATE CODE: 51 SPS WIM ID: 510100 DATE (mm/dd/yyyy) 6/25/2013
---	--

Item	Description	Filename
1	Power Source	510100_power_box_6_25_13.jpg
2	Telephone Source	510100_telephone_service_6_25_13.jpg
3	Cabinet Exterior	510100_cabinet_exterior_6_25_13.jpg
4	Cabinet Interior - Front	510100_cabinet_interior_front_6_25_13.jpg
5	Cabinet Interior - Rear	
6	Leading weight sensor	510100_leading_WIM_sensor_6_25_13.jpg
7	Trailing weight sensor	510100_trailing_WIM_sensor_6_25_13.jpg
8	Leading classification sensor	
9	Trailing classification sensor	
10	Leading loop sensor	510100_leading_loop_6_25_13.jpg
11	Trailing loop sensor	510100_trailing_loop_6_25_13.jpg
12	Downstream from site	510100_downstream_6_25_13.jpg
13	Upstream from site	510100_upstream_6_25_13.jpg
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		

Traffic Sheet 24B LTPP MONITORED TRAFFIC DATA SITE PHOTO LOG - Test Trucks	STATE CODE: 51 SPS WIM ID: 510100 DATE (mm/dd/yyyy) 6/25/2013
---	---

Item	Description	Filename
1	Tractor, Truck #1	510100_Truck_1_Tractor_6_25_13.jpg
2	Trailer/Load, Truck #1	510100_Truck_1_Trailer_6_25_13.jpg
3	Kingpin Offset, Truck #1	
4	Suspension A, Truck #1	510100_Truck_1_Suspension_1_6_25_13.jpg
5	Suspension B, Truck #1	510100_Truck_1_Suspension_2_6_25_13.jpg
6	Suspension C, Truck #1	510100_Truck_1_Suspension_3_6_25_13.jpg
7	Suspension D, Truck #1	510100_Truck_1_Suspension_4_6_25_13.jpg
8	Suspension E, Truck #1	510100_Truck_1_Suspension_5_6_25_13.jpg
9	Suspension F, Truck #1	
10	Tractor, Truck #2	510100_Truck_2_Tractor_6_25_13.jpg
11	Trailer/Load, Truck #2	510100_Truck_2_Trailer_6_25_13.jpg
12	Kingpin Offset, Truck #2	
13	Suspension A, Truck #2	510100_Truck_2_Suspension_1_6_25_13.jpg
14	Suspension B, Truck #2	510100_Truck_2_Suspension_2_6_25_13.jpg
15	Suspension C, Truck #2	510100_Truck_2_Suspension_3_6_25_13.jpg
16	Suspension D, Truck #2	510100_Truck_2_Suspension_4_6_25_13.jpg
17	Suspension E, Truck #2	510100_Truck_2_Suspension_5_6_25_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		