WIM System Field Calibration and Validation Handout Guide

Illinois, SPS-6
SHRP ID – 170600

Validation Date: August 5, 2013

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1 Site Information

Site ID:	170600	**State:**	Illinois
LTPP Region:	North Central	**Configuration:**	Loop- BP-BP-Loop
Controller Type:	iSINC	**Sensor Type:**	Bending Plate
Power:	AC	**Communication:**	Landline
Class Scheme:	LTPP	**CPU type/setup:**	

2 Contact Information

Agency	Contact	Position	Phone	E-mail
FHWA	Debbie Walker	COTR	202-493-3068	deborah.walker@dot.gov
FHWA	Hal Wakefield	Division Office	217-492-4646	hal.wakefield@fhwa.dot.gov
RSC	Frank Meyer	Project Manager	716-632-0804	fmeyer@stantec.com
IL DOT	David Lippert	LTPP Coord.	217-782-6732	david.lippert@illinois.gov
IL DOT	Mark Gawedzinski	LTPP Contact	217-782-2799	mark.gawedzinski@illinois.gov
IL DOT	Ramon Taylor	Traffic Contact	217-785-2353	ramon.taylor@illinois.gov
IL DOT	Amy Schutzbach	LTPP Contact	217-785-4888	amy.schutzbach@illinois.gov
IL DOT	Bill Morgan	Traffic Contact	217 785-2910	Bill.morgan@illinois.gov
ARA	Dean Wolf	Task Leader	717-512-6638	dwolf@ara.com
ARA	Olga Selezneva	Project Manager	410-540-9949	oselezneva@ara.com

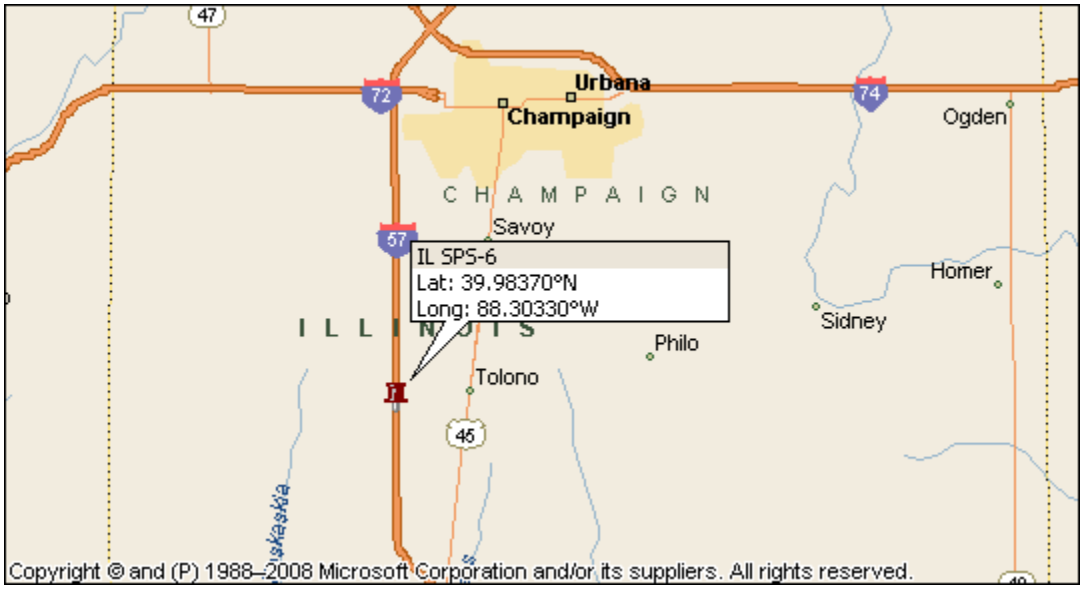
3 Schedule of Events

Date	Event	Location	Start Time
Date	Event	Location	Start Time
8/4/13	Travel	Champaign	TBD
8/5/13	Test Truck Weigh/Measure/Inspection	Road Ranger, Tuscola	7:00 am
8/5/13	Equipment Assessment	WIM Site	8:00 am
8/5/13	Initial Performance Evaluation	WIM Site	8:30 am
8/5/13	System Test/Class and Speed Study	WIM Site	TBD
8/6/13	Test Truck Weigh/Measure/Inspection	Road Ranger, Tuscola	7:00 am
8/6/13	Calibration/Validation	WIM Site	7:30 am
8/7/13	Travel	Camp Hill, PA	TBD

4 Maps

4.1 Site Location

Location:	I-57 at M.P. 225.6			**Direction:**	NB
Latitude:	39.98370°	**Longitude:**	-88.30330°		

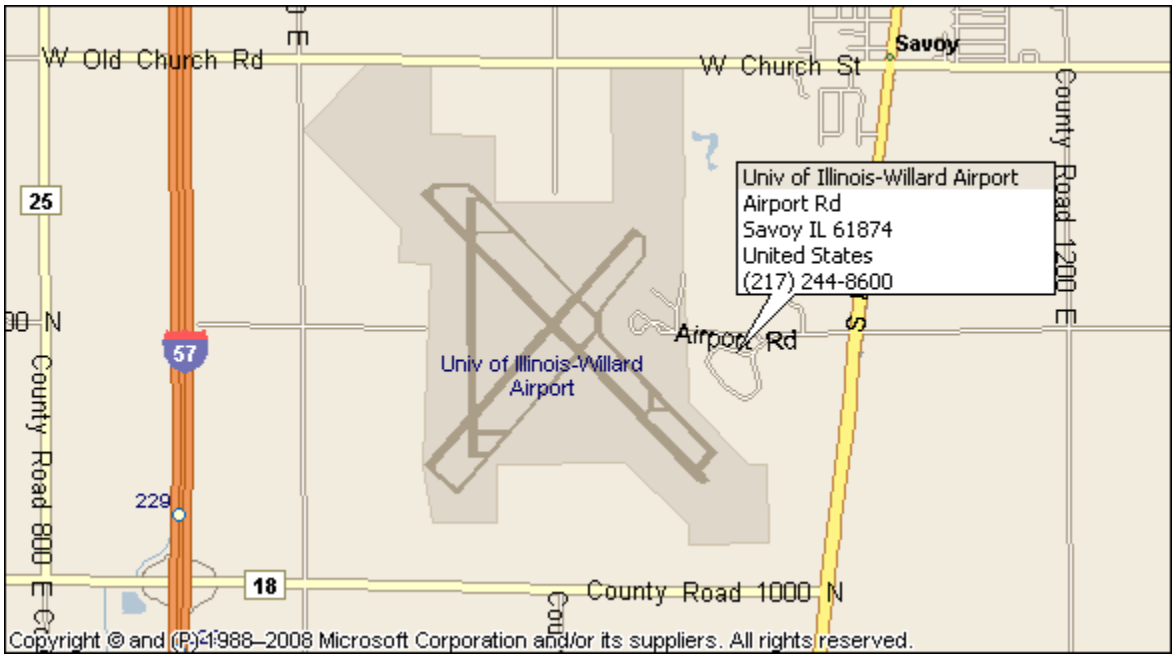


4.2 Truck Scale Location

Name:	Road Ranger, Tuscola	**Location:**	I-57 & HWY 36, Exit 212
Latitude:	39.79258°	**Longitude:**	-88.26687°

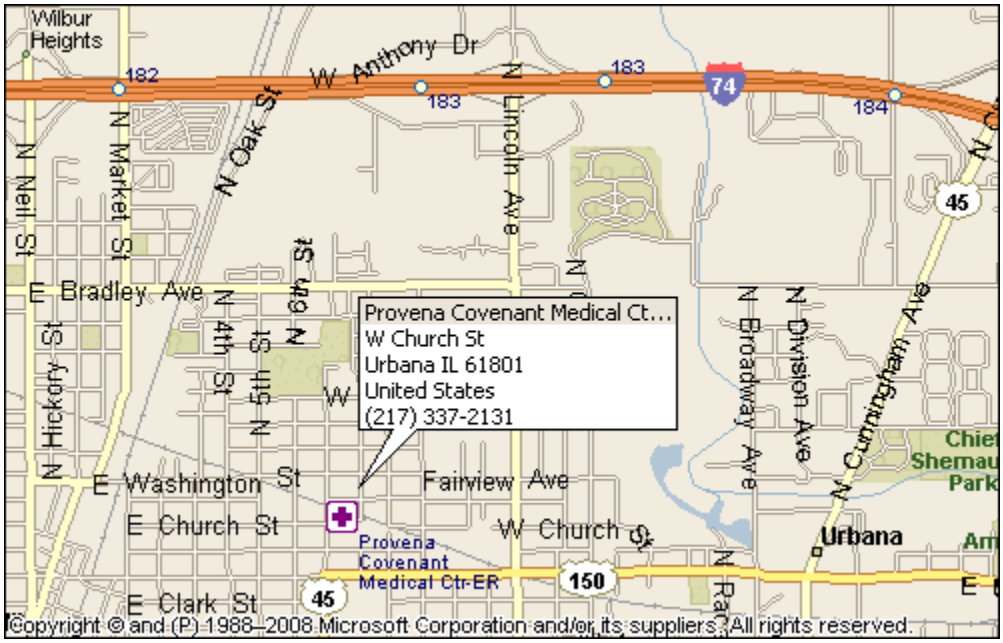
4.3 Airport Location

Name:	Univ. of Illinois-Willard Airport	**Location:**	Champaign, IL
Latitude:	40.0393°	**Longitude:**	-88.2744°



4.4 Hospital Location

Name:	Provena Covenant Medical Center-ER		
Phone:	(217) 337-2131	**Location:**	W. Church Street, Urbana, IL



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	STATE CODE:	17
LTPP MONITORED TRAFFIC DATA	SPS WIM ID:	170600
WIM SITE INVENTORY	DATE (mm/dd/yyyy)	8/5/2013

1. ROUTE: I-57 **MILEPOST:** 225.6 **LTPP DIRECTION:** north

2. WIM SITE DESCRIPTION

Grade: <1% Sag Vertical: N
Nearest Upstream SPS Section: 200212
Distance from sensors to SPS Section: 780 feet

3. LANE CONFIGURATION

Lanes in LTPP direction: 2 Median: 3 - grass
Lane width: 12' Shoulder: 3 - paved PCC
Shoulder width: 10'

4. PAVEMENT TYPE PCC

5. PAVEMENT SURFACE CONDITION - Distress Survey

Date: 8/5/13 Photo Filename: 170600_downstream_8_5_13.jpg
Date: 8/5/13 Photo Filename: 170600_trailing_loop_8_5_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)* : 2 - Pipe to culvert
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: 17 SPS WIM ID: 170600 DATE (mm/dd/yyyy) 8/5/2013

10. CABINET LOCATION

Same side of road as LTPP lane: Y
Distance from edge of traveled lane: 62 ft
distance from system: 68 ft
type: 3B

Cabinet access controlled by: Agency and LTPP
Contact name: Roy Czinku Phone # 306-653-6627
Alternate name: Ray Taylor Phone #

11. POWER

Distance to cabinet from drop: 777 ft
Type: AC
AC in cabinet? Y
Service provider: Phone #

12. TELEPHONE

Distance to cabinet from drop: 12 ft
Type: landline
Service provider: Phone #

13. SYSTEM

Software and version no. iSINC
Computer connection: RS-232

14. TEST TRUCK TURNAROUND TIME

Duration: 20 minutes Distance: 18 miles

15. PHOTOS

	Filename
Power source:	0
Phone source:	170600_telephone_pedestal_8_5_13.jpg
Cabinet exterior:	170600_cabinet_exterior_8_5_13.jpg
Cabinet interior:	170600_cabinet_interior_front_8_5_13.jpg
Weight sensors:	170600_leading_WIM_sensor_8_5_13.jpg
	170600_trailing_WIM_sensor_8_5_13.jpg
Other sensors:	170600_leading_loop_8_5_13.jpg
	170600_trailing_loop_8_5_13.jpg
Downstream from sensors on LTPP lane:	170600_downstream_8_5_13.jpg
Upstream from sensors on LTPP lane:	170600_upstream_8_5_13.jpg

Traffic Sheet 18 LTPP MONITORED TRAFFIC DATA WIM SITE COORDINATION	STATE CODE: 17 SPS WIM ID: 170600 DATE (mm/dd/yyyy) 8/5/2013

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 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 Portland Concrete Cement

b. Allowable Rehabilitation activities Grinding and maintenance as needed

c. Profile Site Markings Temporary

Traffic Sheet 18	STATE CODE:	17
LTPP MONITORED TRAFFIC DATA	SPS WIM ID:	170600
WIM SITE COORDINATION	DATE (mm/dd/yyyy)	8/5/2013

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: 17 SPS WIM ID: 170600 DATE (mm/dd/yyyy) 8/5/2013

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 _____ Phone # _____
Agency _____

e. Test Vehicles (trucks, loads, drivers)
Name Tammy Bragg Phone # 217-586-4536
Agency Down River Trucking

f. Traffic control
Name _____ Phone # _____
Agency _____

g. Enforcement coordination
Name _____ Phone # _____
Agency _____

h. Nearest static scale
Name Road Ranger Location: I-57 exit 121
Phone: _____

Traffic Sheet 19 LTPP MONITORED TRAFFIC DATA CALIBRATION TEST TRUCK # 1	STATE CODE: 17 SPS WIM ID: 170600 DATE (mm/dd/yyyy) 8/5/2013

CALIBRATION TEST TRUCK - Primary

PART A

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

3. AXLE WEIGHTS (lbs)

	a. Empty Truck Avg. Axle Weight	b. Pre-test Average Axle Weight	c. Post-Test Avg. Axle Weight	d. Direct or Calculated?
A		10900	10660	Direct
B		13650	13445	Direct
C		13650	13445	Direct
D		19160	19160	Direct
E		19160	19160	Direct
F				

4. GVW (same units as axles)

a. Empty GVW:
b. Average Pre-Test Loaded weight: 76520
c. Post Test Loaded Weight: 75870
d. Difference Post Test - Pre-Tests: -650

5. TRUCK DESCRIPTION

a. Tractor Cab Style: Conventional Sleeper Cab: Yes
photo: ☑

b. Make: Peterbilt
c. Model: unknown

d. Trailer Load Distribution Description:

rock

photo: ☑

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

A to B 19.4 B to C 4.3 C to D 30.5 D to E 4.1 E to F

h. Wheelbase - ☐ Measured ☑ Computed 58.3
i. Kingpin offset from Axle B (units) -2'2" photo: ☐
j. Overall Length - ☑ Measured 65.0

Traffic Sheet 19	STATE CODE:	17
LTPP MONITORED TRAFFIC DATA	SPS WIM ID:	170600
CALIBRATION TEST TRUCK # 1	DATE (mm/dd/yyyy)	8/5/2013

CALIBRATION TEST TRUCK - Primary

6. SUSPENSION

	a. Tire size	b.Suspension description (leaf, air # of leaves, taper or flat leaf, etc.)	c. photo
A	11R24.5	steel spring	☑
B	11R24.5	air	☑
C	11R24.5	air	☑
D	285/75R24.5	air	☑
E	285/75R24.5	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	STATE CODE:	17
LTPP MONITORED TRAFFIC DATA	SPS WIM ID:	170600
CALIBRATION TEST TRUCK # 1	DATE (mm/dd/yyyy)	8/5/2013

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	STATE CODE:	17
LTPP MONITORED TRAFFIC DATA	SPS WIM ID:	170600
CALIBRATION TEST TRUCK # 1	DATE (mm/dd/yyyy)	8/5/2013

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	10920	13630	13630	19160	19160		76500
2	10880	13670	13670	19160	19160		76540
Avg.	10900	13650	13650	19160	19160		76520

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	10640	13460	13460	19160	19160		75880
2	10680	13430	13430	19160	19160		75860
Avg.	10660	13445	13445	19160	19160		75870

Validation Test Truck Run Set - Pre

Measured By: _____

Verified By: _____

Traffic Sheet 19 LTPP MONITORED TRAFFIC DATA CALIBRATION TEST TRUCK # 2	STATE CODE: 17 SPS WIM ID: 170600 DATE (mm/dd/yyyy) 8/5/2013

CALIBRATION TEST TRUCK - Secondary

PART A

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

3. **AXLE WEIGHTS** (lbs)

	a. Empty Truck Avg. Axle Weight	b. Pre-test Average Axle Weight	c. Post-Test Avg. Axle Weight	d. Direct or Calculated?
A		10000	9580	Direct
B		12530	12430	Direct
C		12530	12430	Direct
D		16250	16195	Direct
E		16250	16195	Direct
F				

4. **GVW (same units as axles)**
   - a. Empty GVW:
   - b. Average Pre-Test Loaded weight: 67560
   - c. Post Test Loaded Weight: 66830
   - d. Difference Post Test - Pre-Tests: -730

5. **TRUCK DESCRIPTION**
   - a. Tractor Cab Style: Conventional Sleeper Cab: No
     photo: ☑
   - b. Make: Mack
   - c. Model: Vision
   - d. Trailer Load Distribution Description:
     rock
     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 15.7 D to E 4.1 E to F

   - h. Wheelbase - ☐ Measured ☑ Computed 38.6
   - i. Kingpin offset from Axle B (units) -2'9" photo: ☐
   - j. Overall Length - ☑ Measured 45.0

Traffic Sheet 19	STATE CODE:	17
LTPP MONITORED TRAFFIC DATA	SPS WIM ID:	170600
CALIBRATION TEST TRUCK # 2	DATE (mm/dd/yyyy)	8/5/2013

CALIBRATION TEST TRUCK - Secondary

6. SUSPENSION

	a. Tire size	b.Suspension description (leaf, air # of leaves, taper or flat leaf, etc.)	c. photo
A	11R24.5	steel spring	☑
B	11R22.5	air	☑
C	11R22.5	air	☑
D	11R22.5	steel spring	☑
E	11R22.5	steel spring	☑
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	STATE CODE:	17
LTPP MONITORED TRAFFIC DATA	SPS WIM ID:	170600
CALIBRATION TEST TRUCK # 2	DATE (mm/dd/yyyy)	8/5/2013

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	STATE CODE:	17
LTPP MONITORED TRAFFIC DATA	SPS WIM ID:	170600
CALIBRATION TEST TRUCK # 2	DATE (mm/dd/yyyy)	8/5/2013

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	10000	12530	12530	16250	16250		67560
2	10000	12530	12530	16250	16250		67560
Avg.	10000	12530	12530	16250	16250		67560

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	9580	12420	12420	16200	16200		66820
2	9580	12440	12440	16190	16190		66840
Avg.	9580	12430	12430	16195	16195		66830

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: 17 SPS WIM ID: 170600 DATE: (mm/dd/yyyy): 8/5/2013

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
84.4	65	2	1	10:00:00	22914	65.0	10.2	12.3	12.0	15.9	15.5		66.0	14.3	4.3	15.3	4.0		37.9	45.0
84.4	62	1	1	10:00:09	22915	62.0	11.2	13.8	13.6	19.6	19.0		77.3	19.4	4.3	30.6	4.1		58.4	65.0
91.0	60	2	2	10:19:39	22967	60.0	10.1	12.5	12.2	16.3	15.5		66.3	14.4	4.4	15.4	4.0		38.2	45.0
91.0	59	1	2	10:19:46	22968	59.0	11.0	13.8	13.7	19.2	18.2		75.8	19.4	4.3	30.7	4.1		58.5	65.0
91.5	54	2	3	10:40:04	23023	55.0	10.3	12.4	12.2	16.7	15.6		67.3	14.4	4.3	15.3	4.0		38.0	45.0
91.5	54	1	3	10:40:10	23024	54.0	11.2	14.3	13.5	19.3	18.8		77.1	19.4	4.3	30.6	4.1		58.4	65.0
91.7	65	2	4	10:59:16	23088	65.0	10.1	12.1	12.2	15.6	15.6		65.8	14.3	4.3	15.4	4.1		38.1	45.0
91.7	63	1	4	10:59:47	23089	64.0	11.0	13.5	13.6	18.7	18.5		75.3	19.4	4.4	30.7	4.1		58.6	65.0
94.7	60	2	5	11:20:52	23159	60.0	10.2	12.1	12.1	16.1	15.9		66.4	14.3	4.3	15.2	4.0		37.8	44.0
94.7	59	1	5	11:20:57	23160	59.0	10.9	13.5	13.0	19.2	18.5		75.1	19.4	4.3	30.7	4.0		58.4	65.0
94.8	55	2	6	11:40:46	23231	55.0	10.1	12.4	12.9	16.4	15.5		67.5	14.4	4.3	15.4	4.1		38.2	45.0
94.8	54	1	6	11:40:50	23232	54.0	11.1	13.9	13.6	19.6	19.2		77.5	19.4	4.3	30.7	4.1		58.5	65.0
99.6	65	2	7	12:00:01	23286	65.0	10.1	12.2	12.3	15.6	14.6		64.9	14.4	4.3	15.4	4.1		38.2	45.0
99.6	64	1	7	12:00:12	23287	63.0	10.7	13.9	13.4	19.1	18.8		76.0	19.4	4.3	30.6	4.1		58.4	65.0
93.7	60	2	8	13:22:24	23524	60.0	10.1	12.5	12.7	16.7	15.4		67.5	14.4	4.3	15.3	4.0		38.0	45.0
93.7	58	1	8	13:22:27	23525	59.0	10.8	13.5	13.6	19.2	18.5		75.5	19.3	4.4	30.6	4.1		58.4	65.0
91.4	56	2	9	13:42:22	23583	56.0	10.1	12.4	12.7	16.9	15.3		67.4	14.4	4.4	15.3	4.1		38.2	44.0
91.4	55	1	9	13:42:27	23584	54.0	11.5	13.9	14.1	19.6	19.3		78.4	19.4	4.3	30.7	4.1		58.5	65.0
90.6	65	2	10	14:01:27	23641	65.0	10.1	12.3	12.2	15.7	15.6		65.9	14.4	4.3	15.4	4.0		38.1	45.0
90.6	64	1	10	14:01:36	23644	64.0	10.8	13.7	13.9	18.8	18.8		75.9	19.4	4.3	30.6	4.1		58.4	65.0
88.9	60	2	11	14:20:56	23694	60.0	9.9	12.9	11.9	16.2	15.6		66.4	14.3	4.3	15.4	4.0		38.0	44.0
88.9	58	1	11	14:21:04	23697	58.0	11.0	13.7	13.3	19.2	18.3		75.6	19.4	4.3	30.6	4.0		58.3	65.0
91.5	55	2	12	14:41:03	23753	54.0	10.4	12.8	12.8	16.9	15.9		68.8	14.4	4.4	15.4	4.0		38.2	45.0
91.5	55	1	12	14:41:21	23754	55.0	11.3	14.2	14.1	19.5	19.0		78.0	19.4	4.3	30.6	4.1		58.4	65.0

Recorded By: djw Verified By: ar Run Set Pre

Traffic Sheet 21 (Wheel Load) LTPP MONITORED TRAFFIC DATA WIM SYSTEM TRUCK RECORDS	STATE CODE: 17 SPS WIM ID: 170600 DATE: (mm/dd/yyyy): 8/5/2013

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
94.8	65	2	13	15:00:09	23830	65.0	9.9	12.9	11.8	15.9	15.2		65.7	14.4	4.4	15.3	4.0		38.1	45.0
94.8	64	1	13	15:00:13	23831	63.0	11.0	13.6	12.9	19.1	18.4		74.9	19.4	4.3	30.6	4.1		58.4	65.0
96.7	61	2	14	15:20:12	23879	61.0	9.8	12.3	12.4	16.1	15.4		65.9	14.3	4.3	15.3	4.0		37.9	45.0
96.7	58	1	14	15:20:20	23881	58.0	11.2	13.3	13.5	19.2	18.3		75.6	19.3	4.3	30.6	4.1		58.3	65.0
94.0	55	2	15	15:42:46	23964	55.0	10.0	12.5	12.2	16.9	16.3		67.7	14.3	4.3	15.3	4.0		37.9	45.0
94.0	53	1	15	15:42:49	23965	54.0	11.1	14.2	13.6	19.4	19.1		77.4	19.4	4.3	30.7	4.1		58.5	65.0
93.8	65	2	16	16:02:04	24027	65.0	9.8	12.3	12.2	15.4	15.7		65.3	14.3	4.3	15.3	4.0		37.9	44.0
93.8	63	1	16	16:02:09	24028	63.0	10.8	13.8	13.3	19.1	18.6		75.6	19.5	4.3	30.7	4.1		58.6	66.0
91.0	60	2	17	16:22:54	24093	60.0	10.2	12.0	12.5	16.5	16.0		67.1	14.4	4.3	15.4	4.0		38.1	45.0
91.0	59	1	17	16:22:59	24094	59.0	11.3	13.3	13.6	19.3	18.3		75.8	19.4	4.3	30.6	4.1		58.4	65.0
89.5	56	2	18	16:43:46	24159	55.0	10.0	13.0	12.3	16.7	15.7		67.7	14.3	4.3	15.3	4.0		37.9	44.0
89.5	52	1	18	16:43:50	24160	52.0	11.2	13.5	13.7	19.7	19.1		77.2	19.4	4.3	30.6	4.0		58.3	65.0
89.2	65	2	19	17:03:10	24234	65.0	9.7	12.3	11.7	15.6	15.1		64.4	14.4	4.3	15.4	4.2		38.3	44.0
89.2	62	1	19	17:03:16	24236	63.0	10.9	13.4	12.9	19.2	18.5		75.0	15.9	4.3	34.4	4.1		58.7	65.0
88.4	60	2	20	17:23:44	24297	60.0	10.0	11.9	12.2	16.8	15.2		66.1	14.4	4.3	15.4	4.1		38.2	45.0
88.4	58	1	20	17:23:47	24298	58.0	10.9	13.6	13.6	19.1	18.1		75.4	19.4	4.3	30.7	4.0		58.4	65.0

Recorded By: djw Verified By: ar Run Set Pre

Traffic Sheet 22	STATE CODE:	17
LTPP MONITORED TRAFFIC DATA	SPS WIM ID:	170600
SITE EQUIPMENT ASSESSSMENT	STATE ASSIGNED ID	N/A
LTPP LANE ONLY	DATE (mm/dd/yyy)	8/5/2013

SITE EQUIPMENT INFORMATION

1. **TYPE OF EQUIPMENT** BOTH

2. **LANE NUMBER ON SITE** 1 **3. DIRECTION ON SITE** north

4. **VENDOR** IRD **MODEL** iSINC **SERIAL#** 51202225

5. **WEIGHING SENSOR TYPE** bending plate

6. **SYSTEM SOFTWARE VERSIONS:**

CPU	PSM
LOOP	LSM
PIEZO	
WEIGHPAD/ LOADCELL	SSM
COMMUNICATIONS	W-3

7. **CLASSIFICATION VIDEO:**

TIME FROM: _____ TO: _____
TIME FROM: _____ TO: _____

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 is a bump at a pavement transition that may affect the accuracies of the WIM system.

Traffic Sheet 22	STATE CODE:	17
LTPP MONITORED TRAFFIC DATA	SPS WIM ID:	170600
SITE EQUIPMENT ASSESSSMENT	STATE ASSIGNED ID	N/A
LTPP LANE ONLY	DATE (mm/dd/yyy)	8/5/2013

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. 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 dyanamics 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	STATE CODE:	17
LTPP MONITORED TRAFFIC DATA	SPS WIM ID:	170600
SITE EQUIPMENT ASSESSSMENT	STATE ASSIGNED ID	N/A
LTPP LANE ONLY	DATE (mm/dd/yyy)	8/5/2013

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 ASSESSSMENT LTPP LANE ONLY	STATE CODE: 17 SPS WIM ID: 170600 STATE ASSIGNED ID N/A DATE (mm/dd/yyy) 8/5/2013

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 63.6 mph Average WIM Speed 63.7 mph
Mean Difference 0.0 mph SD of mean 0.7

Posted Speed Limit 65 mph
Speed Range 15th percentile - 45 mph 85th percentile- 71 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 4.32 ft (WIM system average)
= 1.5 %

Average front axle weight for Class 9 vehicles _____ lbs
% error from 10.3 kips (industry average) OR 10.6 lbs (known site value)
= 2.4 %

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 occurance.

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 ASSESSSMENT LTPP LANE ONLY	STATE CODE: 17 SPS WIM ID: 170600 STATE ASSIGNED ID N/A DATE (mm/dd/yyy) 8/5/2013

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	STATE CODE:	17
LTPP MONITORED TRAFFIC DATA	SPS WIM ID:	170600
SITE EQUIPMENT ASSESSSMENT	STATE ASSIGNED ID	N/A
LTPP LANE ONLY	DATE (mm/dd/yyy)	8/5/2013

STATIC EQUIPMENT VALUES (SYSTEM OFF)

1. POWER

a. Solar Panel		WATTS		VDC
b. Equipment Power	120.9	VAC		VDC
c. Battery 1	13.4	VDC		
d. Battery 2		VDC		
e. Regulated		VDC		
f. Power Supply	13.4	VDC		VDC
g. System Input		VAC	11.3	VDC
h. Modem Power	120.9	VAC	11.3	VDC
i. Telephone	53.4	VDC		

2. LOOP SENSORS

	Resistance		Inductance		Shield	
a. Leading	0.9	Ω	134.3	µh	inf	MΩ
b. Trailing	0.7	Ω	135.3	µh	inf	MΩ

3. WEIGHPAD SENSORS

	Input		Output		Shield	
a. Leading	968	Ω	844	Ω	inf	Ω
b. Trailing	967	Ω	844	Ω	inf	Ω

DYNAMIC EQUIPMENT VALUES (SYSTEM ON)

4. LOOP SENSORS

	Frequency	
a. Leading	21	KHz
b. Trailing	21	KHz

5. WEIGHPAD SENSORS

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

Assessor Dean J. Wolf

Traffic Sheet 24A LTPP MONITORED TRAFFIC DATA SITE PHOTO LOG - Equipment	STATE CODE: 17 SPS WIM ID: 170600 DATE (mm/dd/yyy) 8/5/2013

Item	Description	Filename
1	Power Source	
2	Telephone Source	170600_telephone_pedestal_8_5_13.jpg
3	Cabinet Exterior	170600_cabinet_exterior_8_5_13.jpg
4	Cabinet Interior - Front	170600_cabinet_interior_front_8_5_13.jpg
5	Cabinet Interior - Rear	170600_cabinet_interior_back_8_5_13.jpg
6	Leading weight sensor	170600_leading_WIM_sensor_8_5_13.jpg
7	Trailing weight sensor	170600_trailing_WIM_sensor_8_5_13.jpg
8	Leading classification sensor	
9	Trailing classification sensor	
10	Leading loop sensor	170600_leading_loop_8_5_13.jpg
11	Trailing loop sensor	170600_trailing_loop_8_5_13.jpg
12	Downstream from site	170600_downstream_8_5_13.jpg
13	Upstream from site	170600_upstream_8_5_13.jpg
14		
15		
16		
17		
18		
19		
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21		
22		
23		
24		
25		
26		
27		
28		
29		
30		

Traffic Sheet 24B	STATE CODE:	17
LTPP MONITORED TRAFFIC DATA	SPS WIM ID:	170600
SITE PHOTO LOG - Test Trucks	DATE (mm/dd/yyy)	8/5/2013

Item	Description	Filename
1	Tractor, Truck #1	170600_Truck_1_Tractor_8_5_13.jpg
2	Trailer/Load, Truck #1	170600_Truck_1_Trailer_8_5_13.jpg
3	Kingpin Offset, Truck #1	
4	Suspension A, Truck #1	170600_Truck_1_Suspension_1_8_5_13.jpg
5	Suspension B, Truck #1	170600_Truck_1_Suspension_2_8_5_13.jpg
6	Suspension C, Truck #1	170600_Truck_1_Suspension_3_8_5_13.jpg
7	Suspension D, Truck #1	170600_Truck_1_Suspension_4_8_5_13.jpg
8	Suspension E, Truck #1	170600_Truck_1_Suspension_5_8_5_13.jpg
9	Suspension F, Truck #1	
10	Tractor, Truck #2	170600_Truck_2_Tractor_8_5_13.jpg
11	Trailer/Load, Truck #2	170600_Truck_2_Trailer_8_5_13.jpg
12	Kingpin Offset, Truck #2	
13	Suspension A, Truck #2	170600_Truck_2_Suspension_1_8_5_13.jpg
14	Suspension B, Truck #2	170600_Truck_2_Suspension_2_8_5_13.jpg
15	Suspension C, Truck #2	170600_Truck_2_Suspension_3_8_5_13.jpg
16	Suspension D, Truck #2	170600_Truck_2_Suspension_4_8_5_13.jpg
17	Suspension E, Truck #2	170600_Truck_2_Suspension_5_8_5_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		

Traffic Sheet 24C	STATE CODE:	17
LTPP MONITORED TRAFFIC DATA	SPS WIM ID:	170600
SITE PHOTO LOG - Blank	DATE (mm/dd/yyy)	8/5/2013

Item	Description	Filename
1	overgrowth	170600_overgrowth
2	overgrowth	170600_power_meter_overgrowth
3	overgrowth	170600_power_meter_overgrowth (2)
4	overgrowth	170600_power_meter_overgrowth (3)
1	cabinet ants	170600_cabinet_interior_ants
2	cabinet ants	170600_cabinet_interior_ants (2)
3	epoxy	170600_missing_epoxy
	epoxy	170600_missing_epoxy (2)