

WIM System Field Calibration and Validation Handout Guide

Minnesota, SPS-5
SHRP ID – 270500

Validation Date: April 16, 2013



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1 Site Information

Site ID:	270500	State:	Minnesota
LTPP Region:	North Central	Configuration:	Loop-Quartz-Quartz-Loop
Controller Type:	iSINC	Sensor Type:	Quartz Piezo
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	William Lohr	FHWA Division	651-291-6122	william.lohr@dot.gov
RSC	Frank Meyer	Project Manager	716-632-0804	fmeyer@stantec.com
MNDOT	Keith Shannon	Coordinator	651-779-5590	keith.shannon@state.mn.us
MNDOT	Ben Worel	LTPP contact	651-366-3757	ben.worel@state.mn.us
MNDOT	Tim Clyne	LTPP contact	651-336-5473	tim.clyne@state.mn.us
MNDOT	Benjamin Timerson	Traffic Contact	651-366-3855	benjamin.timerson@state.mn.us
MNDOT	Mark Novak	Traffic Contact	651-366-3869	mark.novak@state.mn.us
ARA	Dean Wolf	Task Leader	717-512-6638	dwolf@ara.com
ARA	Olga Selezneva	Project Manager	410-540-9949	oselezneva@ara.com

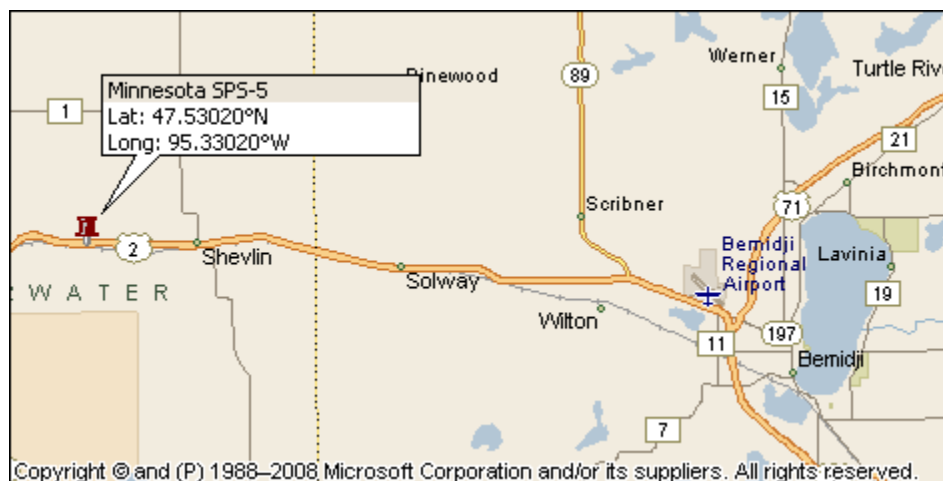
3 Schedule of Events

Date	Event	Location	Start Time
4/15/13	Travel	Bemidji, MN	TBD
4/16/13	Test Truck Weigh/Measure/Inspection	Norbord	6:30 am
4/16/13	Equipment Assessment	WIM Site	7:30 am
4/16/13	Initial Performance Evaluation	WIM Site	8:00 am
4/16/13	System Test/Class and Speed Study	WIM Site	TBD
4/17/13	Test Truck Weigh/Measure/Inspection	Norbord	6:30 am
4/17/13	Calibration/Validation (if required)	WIM Site	7:30 am
4/18/13	Travel	Camp Hill, PA	TBD

4 Maps

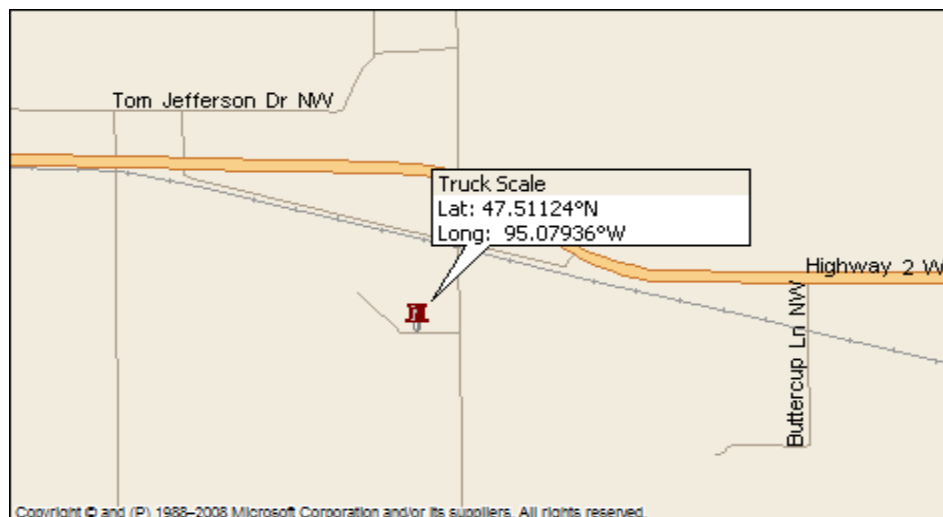
4.1 Site Location

Location:	US-2 at M.P. 91.8, 3.3 miles west of SR 2		Dir:	WB
Latitude:	47.5302°	Longitude:	-95.3302°	

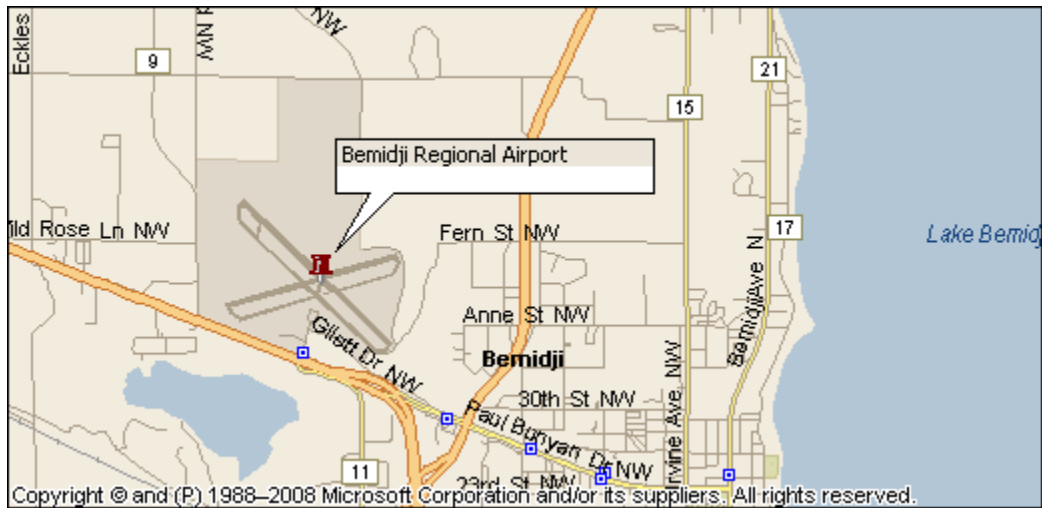


4.2 Truck Scale Location

Name:	Norbord	Location:	4409 Northwood Road, NW, Solway, MN
Latitude:	47.511243°	Longitude:	-95.079356°



Name:	Bemidji Regional Airport	Location:	Bemidji, MN
Latitude:	47.5907°	Longitude:	-94.9333°



Name:	Clearwater County Memorial Hospital - ER		
Phone:	218-694-6501	Location:	203 4 th St. NW, Bagley, MN



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: 27
	SPS WIM ID: 270500
	DATE (mm/dd/yyyy) 4/17/2013

1. ROUTE: US-2 MILEPOST: 91.8 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: 4/17/13 Photo Filename: 270500_downstream_4_16_13.jpg
 Date: 4/17/13 Photo Filename: 270500_trailing_loop_4_16_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 17 LTPP MONITORED TRAFFIC DATA WIM SITE INVENTORY	STATE CODE:	27
	SPS WIM ID:	270500
	DATE (mm/dd/yyyy)	4/17/2013

10. CABINET LOCATION

Same side of road as LTPP lane: Y
 Distance from edge of traveled lane: 47 ft
 distance from system: 53 ft
 type: Other

Cabinet access controlled by: Agency and LTPP
 Contact name: Bob Worel Phone # 651-779-5522
 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: 92 ft
 Type: landline
 Service provider: _____ Phone # _____

13. SYSTEM

Software and version no. iSINC
 Computer connection: Ethernet

14. TEST TRUCK TURNAROUND TIME

Duration: 13 minutes Distance: 5 miles

15. PHOTOS

	Filename
Power source:	<u>270500_power_box_4_16_13.jpg</u>
Phone source:	<u>270500_telephone_service_4_16_13.jpg</u>
Cabinet exterior:	<u>270500_cabinet_exterior_4_16_13.jpg</u>
Cabinet interior:	<u>270500_cabinet_interior_front_4_16_13.jpg</u>
Weight sensors:	<u>270500_leading_WIM_sensor_4_16_13.jpg</u>
	<u>270500_trailing_WIM_sensor_4_16_13.jpg</u>
Other sensors:	<u>270500_leading_loop_4_16_13.jpg</u>
	<u>270500_trailing_loop_4_16_13.jpg</u>
Downstream from sensors on LTPP lane:	<u>270500_downstream_4_16_13.jpg</u>
Upstream from sensors on LTPP lane:	<u>270500_upstream_4_16_13.jpg</u>

Traffic Sheet 18 LTPP MONITORED TRAFFIC DATA WIM SITE COORDINATION	STATE CODE: 27 SPS WIM ID: 270500 DATE (mm/dd/yyyy) 4/17/2013
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1. DATA PROCESSING

- a. Download: LTPP only
- 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 Asphalt Concrete
- b. Allowable Rehabilitation activities Maintenance only
- c. Profile Site Markings Temporary

Traffic Sheet 18 LTPP MONITORED TRAFFIC DATA WIM SITE COORDINATION	STATE CODE: 27 SPS WIM ID: 270500 DATE (mm/dd/yyyy) 4/17/2013
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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	<u>LTPP</u>
2nd-	Air Suspension 3S2	<u>LTPP</u>
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: 27 SPS WIM ID: 270500 DATE (mm/dd/yyyy) 4/17/2013
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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 Steve Thorson Phone # 218-968-2223
 - Agency Thorson Trucking
- f. Traffic control
 - Name _____ Phone # _____
 - Agency _____
- g. Enforcement coordination
 - Name _____ Phone # _____
 - Agency _____
- h. Nearest static scale
 - Name Norbord, Inc. Location: 4409 Northwood
 - Phone: _____

Traffic Sheet 19 LTPP MONITORED TRAFFIC DATA CALIBRATION TEST TRUCK # 1	STATE CODE: 27
	SPS WIM ID: 270500
	DATE (mm/dd/yyyy) 4/17/2013

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		12470	0	Direct
B		16185	0	Direct
C		16185	0	Direct
D		17345	0	Direct
E		17345	0	Direct
F				

4. GVW (same units as axles)

a. Empty GVW: _____
b. Average Pre-Test Loaded weight: 79780
c. Post Test Loaded Weight: 0
d. Difference Post Test - Pre-Tests: -79780

5. TRUCK DESCRIPTION

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

b. Make: Freightliner
c. Model: unknown

d. Trailer Load Distribution Description:

palletized bags of wood chips.

photo: ☒

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

A to B 17.1 B to C 4.3 C to D 33.0 D to E 4.1 E to F _____

h. Wheelbase - ☐ Measured _____ ☒ Computed 58.5
i. Kingpin offset from Axle B (units) -1.2' photo: ☐
j. Overall Length - ☒ Measured 66.5

Traffic Sheet 19 LTPP MONITORED TRAFFIC DATA CALIBRATION TEST TRUCK # <u>1</u>	STATE CODE: 27 SPS WIM ID: 270500 DATE (mm/dd/yyyy) 4/17/2013
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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		steel spring	☒
B		air	☒
C		air	☒
D		air	☒
E		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

Axes	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: 27 SPS WIM ID: 270500 DATE (mm/dd/yyyy) 4/17/2013
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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 # <u>1</u>	STATE CODE: 27 SPS WIM ID: 270500 DATE (mm/dd/yyyy) 4/17/2013
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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	12440	16190	16190	17340	17340		79780
2	12500	16180	16180	17350	17350		79780
Avg.	12470	16185	16185	17345	17345		79780

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
Avg.							

Validation Test Truck Run Set - Pre

Measured By: Greg Helman

Verified By: Dean J. Wolf

Traffic Sheet 19 LTPP MONITORED TRAFFIC DATA CALIBRATION TEST TRUCK # 2	STATE CODE: 27
	SPS WIM ID: 270500
	DATE (mm/dd/yyyy) 4/17/2013

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		11900	0	Direct
B		15355	0	Direct
C		15355	0	Direct
D		15120	0	Direct
E		15120	0	Direct
F				

4. GVW (same units as axles)

a. Empty GVW: _____
b. Average Pre-Test Loaded weight: 72820
c. Post Test Loaded Weight: 0
d. Difference Post Test - Pre-Tests: -72820

5. TRUCK DESCRIPTION

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

b. Make: Kenworth
c. Model: unknown

d. Trailer Load Distribution Description:

palletized bads of wood chips

photo: ☒

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

A to B 19.5 B to C 4.3 C to D 36.3 D to E 4.1 E to F _____

h. Wheelbase - ☐ Measured _____ ☒ Computed 64.2
i. Kingpin offset from Axle B (units) _____ photo: ☐
j. Overall Length - ☒ Measured 72.6

Traffic Sheet 19 LTPP MONITORED TRAFFIC DATA CALIBRATION TEST TRUCK # <u>2</u>	STATE CODE: 27 SPS WIM ID: 270500 DATE (mm/dd/yyyy) 4/17/2013
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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		steel spring	☒
B		air	☒
C		air	☒
D		air	☒
E		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

Axes	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: 27 SPS WIM ID: 270500 DATE (mm/dd/yyyy) 4/17/2013
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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 # <u>2</u>	STATE CODE: 27 SPS WIM ID: 270500 DATE (mm/dd/yyyy) 4/17/2013
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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	11920	15340	15340	15120	15120		72820
2	11880	15370	15370	15120	15120		72820
Avg.	11900	15355	15355	15120	15120		72820

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
Avg.							

Validation Test Truck Run Set - Pre

Measured By: Greg Helman

Verified By: Dean J. Wolf

Traffic Sheet 19 LTPP MONITORED TRAFFIC DATA CALIBRATION TEST TRUCK # 1	STATE CODE: 27
	SPS WIM ID: 270500
	DATE (mm/dd/yyyy) 4/16/2013

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		12470	0	Direct
B		16185	0	Direct
C		16185	0	Direct
D		17345	0	Direct
E		17345	0	Direct
F				

4. GVW (same units as axles)

a. Empty GVW: _____
b. Average Pre-Test Loaded weight: 79780
c. Post Test Loaded Weight: 0
d. Difference Post Test - Pre-Tests: -79780

5. TRUCK DESCRIPTION

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

b. Make: Freightliner
c. Model: unknown

d. Trailer Load Distribution Description:

palletized bags of wood chips.

photo: ☒

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

A to B 17.1 B to C 4.3 C to D 33.0 D to E 4.1 E to F _____

h. Wheelbase - ☐ Measured _____ ☒ Computed 58.5
i. Kingpin offset from Axle B (units) -1.2' photo: ☐
j. Overall Length - ☒ Measured 66.5

Traffic Sheet 19 LTPP MONITORED TRAFFIC DATA CALIBRATION TEST TRUCK # <u>1</u>	STATE CODE: 27 SPS WIM ID: 270500 DATE (mm/dd/yyyy) 4/16/2013
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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		steel spring	☒
B		air	☒
C		air	☒
D		air	☒
E		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

Axes	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 # <u>1</u>	STATE CODE: 27 SPS WIM ID: 270500 DATE (mm/dd/yyyy) 4/16/2013
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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 # <u>1</u>	STATE CODE: 27 SPS WIM ID: 270500 DATE (mm/dd/yyyy) 4/16/2013
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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	12440	16190	16190	17340	17340		79780
2	12500	16180	16180	17350	17350		79780
Avg.	12470	16185	16185	17345	17345		79780

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
Avg.							

Validation Test Truck Run Set - Cal 1

Measured By: Greg Helman

Verified By: Dean J. Wolf

Traffic Sheet 19 LTPP MONITORED TRAFFIC DATA CALIBRATION TEST TRUCK # 2	STATE CODE: 27
	SPS WIM ID: 270500
	DATE (mm/dd/yyyy) 4/16/2013

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		11900	0	Direct
B		15355	0	Direct
C		15355	0	Direct
D		15120	0	Direct
E		15120	0	Direct
F				

4. GVW (same units as axles)

a. Empty GVW: _____
b. Average Pre-Test Loaded weight: 72820
c. Post Test Loaded Weight: 0
d. Difference Post Test - Pre-Tests: -72820

5. TRUCK DESCRIPTION

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

b. Make: Kenworth
c. Model: unknown

d. Trailer Load Distribution Description:

palletized bads of wood chips

photo: ☒

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

A to B 19.5 B to C 4.3 C to D 36.3 D to E 4.1 E to F _____

h. Wheelbase - ☐ Measured _____ ☒ Computed 64.2
i. Kingpin offset from Axle B (units) _____ photo: ☐
j. Overall Length - ☒ Measured 72.6

Traffic Sheet 19 LTPP MONITORED TRAFFIC DATA CALIBRATION TEST TRUCK # <u>2</u>	STATE CODE: 27 SPS WIM ID: 270500 DATE (mm/dd/yyyy) 4/16/2013
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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		steel spring	☒
B		air	☒
C		air	☒
D		air	☒
E		air	☒
F			☐

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

Steering Axle	Axle B	Axle C	Axle D	Axle E	Axle F

PART B

Table 1 - Raw Measurements -Platform Scale

Axes	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: 27 SPS WIM ID: 270500 DATE (mm/dd/yyyy) 4/16/2013
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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 # <u>2</u>	STATE CODE: 27 SPS WIM ID: 270500 DATE (mm/dd/yyyy) 4/16/2013
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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	11920	15340	15340	15120	15120		72820
2	11880	15370	15370	15120	15120		72820
Avg.	11900	15355	15355	15120	15120		72820

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
Avg.							

Validation Test Truck Run Set - Cal 1

Measured By: Greg Helman

Verified By: Dean J. Wolf

Traffic Sheet 19 LTPP MONITORED TRAFFIC DATA CALIBRATION TEST TRUCK # 1	STATE CODE: 27
	SPS WIM ID: 270500
	DATE (mm/dd/yyyy) 4/17/2013

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		12470	12100	Direct
B		16185	16060	Direct
C		16185	16060	Direct
D		17345	17345	Direct
E		17345	17345	Direct
F				

4. GVW (same units as axles)

a. Empty GVW: _____
b. Average Pre-Test Loaded weight: 79780
c. Post Test Loaded Weight: 79140
d. Difference Post Test - Pre-Tests: -640

5. TRUCK DESCRIPTION

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

b. Make: Freightliner
c. Model: unknown

d. Trailer Load Distribution Description:

palletized bags of wood chips.

photo: ☒

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

A to B 17.1 B to C 4.3 C to D 33.0 D to E 4.1 E to F _____

h. Wheelbase - ☐ Measured _____ ☒ Computed 58.5
i. Kingpin offset from Axle B (units) -1.2' photo: ☐
j. Overall Length - ☒ Measured 66.5

Traffic Sheet 19 LTPP MONITORED TRAFFIC DATA CALIBRATION TEST TRUCK # <u>1</u>	STATE CODE: 27 SPS WIM ID: 270500 DATE (mm/dd/yyyy) 4/17/2013
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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		steel spring	☒
B		air	☒
C		air	☒
D		air	☒
E		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

Axes	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 # <u>1</u>	STATE CODE: 27 SPS WIM ID: 270500 DATE (mm/dd/yyyy) 4/17/2013
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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 # <u>1</u>	STATE CODE: 27 SPS WIM ID: 270500 DATE (mm/dd/yyyy) 4/17/2013
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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	12440	16190	16190	17340	17340		79780
2	12500	16180	16180	17350	17350		79780
Avg.	12470	16185	16185	17345	17345		79780

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	12100	16050	16050	17350	17350		79140
2	12100	16070	16070	17340	17340		79140
Avg.	12100	16060	16060	17345	17345		79140

Validation Test Truck Run Set - Post

Measured By: Greg Helman

Verified By: Dean J. Wolf

Traffic Sheet 19 LTPP MONITORED TRAFFIC DATA CALIBRATION TEST TRUCK # 2	STATE CODE: 27
	SPS WIM ID: 270500
	DATE (mm/dd/yyyy) 4/17/2013

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		11900	11440	Direct
B		15355	15270	Direct
C		15355	15270	Direct
D		15120	15005	Direct
E		15120	15005	Direct
F				

4. GVW (same units as axles)

a. Empty GVW: _____
b. Average Pre-Test Loaded weight: 72820
c. Post Test Loaded Weight: 71950
d. Difference Post Test - Pre-Tests: -870

5. TRUCK DESCRIPTION

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

b. Make: Kenworth
c. Model: unknown

d. Trailer Load Distribution Description:

palletized bads of wood chips

photo: ☒

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

A to B 19.5 B to C 4.3 C to D 36.3 D to E 4.1 E to F _____

h. Wheelbase - ☐ Measured _____ ☒ Computed 64.2
i. Kingpin offset from Axle B (units) _____ photo: ☐
j. Overall Length - ☒ Measured 72.6

Traffic Sheet 19 LTPP MONITORED TRAFFIC DATA CALIBRATION TEST TRUCK # <u>2</u>	STATE CODE: 27 SPS WIM ID: 270500 DATE (mm/dd/yyyy) 4/17/2013
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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		steel spring	☒
B		air	☒
C		air	☒
D		air	☒
E		air	☒
F			☐

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

Steering Axle	Axle B	Axle C	Axle D	Axle E	Axle F

PART B

Table 1 - Raw Measurements -Platform Scale

Axes	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: 27 SPS WIM ID: 270500 DATE (mm/dd/yyyy) 4/17/2013
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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 # <u>2</u>	STATE CODE: 27 SPS WIM ID: 270500 DATE (mm/dd/yyyy) 4/17/2013
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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	11920	15340	15340	15120	15120		72820
2	11880	15370	15370	15120	15120		72820
Avg.	11900	15355	15355	15120	15120		72820

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	11480	15250	15250	15000	15000		71960
2	11400	15290	15290	15010	15010		71940
Avg.	11440	15270	15270	15005	15005		71950

Validation Test Truck Run Set - Post

Measured By: Greg Helman

Verified By: Dean J. Wolf

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
31.9	54	1	1	8:23:13	54694	54.0	11.4	15.5	15.1	15.6	17.0		74.8	17.2	4.3	33.0
31.9	53	2	1	8:23:20	54695	54.0	11.1	14.7	14.7	13.8	14.3		68.4	19.6	4.3	36.5
34.2	59	1	2	8:33:38	54752	59.0	11.8	15.6	15.4	15.6	17.0		75.3	17.2	4.3	33.1
34.2	56	2	2	8:33:48	54756	57.0	11.0	14.7	13.9	14.1	13.3		67.0	19.6	4.3	36.5
35.0	63	1	3	8:48:13	54828	64.0	12.0	16.2	15.4	15.6	17.1		76.3	17.2	4.3	33.1
35.0	63	2	3	8:48:21	54829	64.0	11.1	14.6	13.8	14.1	13.9		67.6	19.6	4.3	36.5
32.4	53	1	4	9:01:38	54903	54.0	11.7	16.2	15.5	15.6	17.1		75.9	17.2	4.3	33.1
32.4	53	2	4	9:01:48	54904	55.0	10.9	15.1	14.6	14.1	13.8		68.5	19.6	4.3	36.5
31.3	60	1	5	9:17:06	54977	59.0	11.7	15.7	15.3	15.8	16.9		75.4	17.2	4.3	33.1
31.3	61	2	5	9:17:14	54978	60.0	11.2	14.8	15.0	13.9	14.0		69.0	19.6	4.3	36.5
32.0	64	1	6	9:30:11	55052	64.0	11.9	16.3	15.5	15.5	16.7		76.0	17.2	4.3	33.0
32.0	65	2	6	9:30:17	55054	65.0	11.0	14.9	13.3	13.5	13.6		66.0	19.5	4.3	36.5
32.5	51	1	7	9:42:44	55111	54.0	11.5	15.8	15.1	15.7	16.7		74.8	17.2	4.3	33.0
32.5	53	2	7	9:42:56	55113	55.0	10.9	14.4	14.1	13.5	12.9		65.8	19.6	4.3	36.5
34.7	60	1	8	9:57:00	55180	60.0	11.6	15.1	14.6	15.3	16.3		72.7	17.2	4.3	33.1
34.7	60	2	8	9:57:04	55181	60.0	11.1	14.6	14.9	13.8	14.8		69.1	19.6	4.3	36.5
34.6	64	1	9	10:10:45	55240	64.0	12.2	15.3	14.5	15.4	16.4		73.7	17.2	4.3	33.0
34.6	65	2	9	10:10:50	55242	65.0	11.0	15.1	14.9	14.0	14.0		68.9	19.6	4.3	36.5
36.2	54	1	10	10:24:55	55326	54.0	11.2	16.0	15.3	15.3	16.8		74.4	17.2	4.3	33.0
36.2	55	2	10	10:25:01	55328	55.0	10.7	15.3	15.0	14.4	13.5		68.8	19.6	4.3	36.5
36.2	59	1	11	10:38:20	55384	59.0	11.7	15.5	14.6	15.2	16.3		73.3	17.2	4.3	33.1
36.2	60	2	11	10:38:31	55385	60.0	10.9	14.5	13.8	13.6	13.3		66.0	19.6	4.3	36.5
42.5	64	1	12	10:53:04	55469	64.0	11.6	16.0	15.7	15.9	17.0		76.1	17.2	4.3	33.0
42.5	65	2	12	10:53:08	55471	65.0	11.0	14.6	14.9	13.7	14.2		68.3	19.6	4.3	36.5
Recorded By: <u> gah </u>																

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

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	
43.0	55	1	13	11:07:14	55533	55.0	10.8	15.2	14.5	14.9	16.5		71.9	17.2	4.3	33.0	
43.0	55	2	13	11:07:21	55534	55.0	10.6	15.7	14.2	14.3	14.0		68.8	19.6	4.3	36.5	
44.8	60	1	14	11:20:39	55605	60.0	11.5	15.7	14.9	15.9	16.8		74.9	17.2	4.4	33.1	
44.8	60	2	14	11:20:43	55606	60.0	11.0	14.6	14.3	13.8	13.7		67.3	19.6	4.3	36.5	
44.8	54	2	15	11:48:14	55753	55.0	10.7	14.7	13.4	13.5	13.7		66.1	19.6	4.3	36.5	
44.8	59	1	15	12:01:38	55806	59.0	12.0	16.3	15.9	15.9	17.4		77.3	17.2	4.4	33.1	
44.8	59	2	16	12:01:50	55807	60.0	10.9	14.7	14.2	13.2	13.7		66.6	19.6	4.3	36.5	
45.6	63	1	16	12:15:48	55882	65.0	11.9	16.1	15.5	15.1	17.3		75.9	17.2	4.3	33.0	
45.6	64	2	17	12:15:56	55884	65.0	10.8	15.0	14.2	13.6	14.2		67.7	19.6	4.3	36.5	
46.4	53	1	17	12:29:21	55951	55.0	11.4	15.2	14.9	15.2	16.8		73.5	17.2	4.3	33.0	
46.4	53	2	18	12:29:28	55952	55.0	10.7	14.3	14.8	14.3	13.4		67.5	19.6	4.3	36.5	
46.3	58	1	18	12:43:30	56032	59.0	11.4	16.0	15.4	15.3	16.6		74.8	17.2	4.3	33.1	
46.3	59	2	19	12:43:46	56033	60.0	11.0	14.4	14.6	13.7	14.1		67.8	19.6	4.3	36.5	
44.6	65	1	19	13:06:30	56161	64.0	11.7	15.8	15.4	15.3	16.7		74.8	17.2	4.3	33.1	
44.6	65	2	20	13:06:36	56163	65.0	10.9	14.5	13.0	13.5	14.1		66.1	19.6	4.3	36.4	
45.6	51	1	20	13:19:33	56235	54.0	11.4	15.8	15.0	15.2	16.8		74.1	17.2	4.3	33.0	
45.6	54	2	21	13:19:42	56237	56.0	10.9	14.9	15.0	13.6	13.2		67.5	19.6	4.3	36.5	

Recorded By: gah

Verified By: djw

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

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
44.4	57	1	1	13:33:16	56315	60.0	12.0	16.5	15.6	15.3	17.3		76.6	17.1	4.3	33.0
45.6	56	2	1	13:33:21	56316	60.0	11.9	15.4	14.6	14.4	15.0		71.2	19.5	4.3	36.4
44.4	60	1	2	13:46:58	56398	64.0	12.6	16.7	16.2	16.7	17.6		79.7	17.2	4.3	32.9
44.4	60	2	2	13:47:04	56401	65.0	11.8	16.3	14.9	14.7	15.1		72.7	19.5	4.3	36.4
44.6	55	1	3	14:00:47	56486	55.0	12.1	16.2	15.0	15.9	16.8		76.3	17.1	4.3	32.9
44.6	55	2	3	14:00:53	56487	55.0	11.7	16.0	15.3	14.7	14.5		72.2	19.5	4.3	36.3
45.7	58	1	4	15:03:57	56834	59.0	11.6	17.6	17.2	16.8	18.7		81.8	17.2	4.3	33.1
45.7	58	2	4	15:04:09	56836	59.0	11.8	15.8	15.3	15.0	15.2		73.1	19.5	4.3	36.4
47.5	63	1	5	15:17:22	56917	64.0	12.8	17.5	17.0	16.6	18.3		82.2	17.2	4.3	33.0
47.5	63	2	5	15:17:28	56919	65.0	11.7	16.3	15.1	14.9	14.8		72.8	19.5	4.3	36.4
47.5	53	1	6	15:30:45	56993	54.0	12.5	16.7	15.7	16.7	17.7		79.0	17.2	4.3	32.9
47.5	53	2	6	15:30:54	56994	55.0	11.5	15.5	15.4	14.7	13.8		70.9	19.5	4.3	36.3
47.5	58	1	7	15:44:07	57088	60.0	12.2	16.2	16.1	16.3	17.6		78.4	17.1	4.3	33.0
47.5	58	2	7	15:44:18	57090	59.0	11.8	15.5	15.6	14.5	15.0		72.5	19.5	4.2	36.3
47.0	65	1	8	15:55:47	57165	65.0	12.7	16.2	16.2	16.4	17.7		79.3	17.1	4.3	33.0
47.0	65	2	8	15:55:53	57166	65.0	11.6	15.6	13.8	14.4	14.9		70.3	19.5	4.3	36.3
46.8	53	1	9	16:07:34	57245	54.0	11.4	16.2	15.8	15.9	17.8		77.2	17.1	4.3	32.9
46.8	55	2	9	16:07:41	57249	55.0	11.7	16.0	15.0	14.7	14.4		72.0	19.5	4.3	36.4
45.9	64	1	10	16:29:54	57397	64.0	12.8	17.4	16.7	17.4	18.1		82.4	17.2	4.3	32.9
45.9	64	2	10	16:29:59	57399	64.0	12.0	15.6	14.3	14.7	14.9		71.4	19.5	4.3	36.3
44.7	55	1	11	16:42:38	57529	55.0	12.8	17.7	17.1	16.9	18.9		83.4	17.1	4.4	33.0
44.7	55	2	11	16:42:47	57532	55.0	11.7	15.7	14.2	14.6	14.4		70.6	19.5	4.3	36.3
43.4	62	1	12	17:04:46	57718	64.0	12.7	17.6	17.4	17.1	18.1		83.0	17.1	4.3	33.0
43.4	62	2	12	17:04:55	57721	65.0	11.8	17.0	15.2	15.6	15.9		75.4	19.5	4.3	36.4

Recorded By: gah

Verified By: djw

Traffic Sheet 21 (Wheel Load)
LTPP MONITORED TRAFFIC DATA
WIM SYSTEM TRUCK RECORDS

STATE CODE:
SPS WIM ID:
DATE: (mm/dd/yyyy):

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
43.0	55	1	13	17:22:16	57843	55.0	12.0	17.9	17.3	17.2	18.9		83.5	17.1	4.4	33.0
43.0	55	2	13	17:22:20	57844	55.0	11.5	16.7	16.2	15.4	14.7		74.5	19.5	4.3	36.4
42.4	60	1	14	17:33:18	57922	59.0	11.6	17.4	17.2	17.1	19.0		82.5	17.1	4.3	33.0
42.4	60	2	14	17:33:23	57923	60.0	11.9	15.6	16.2	15.2	15.1		74.0	19.5	4.3	36.4
41.1	65	1	15	17:43:54	57992	64.0	12.8	16.9	16.7	17.2	18.3		82.0	17.1	4.3	33.0
41.1	65	2	15	17:43:57	57993	65.0	11.8	16.8	14.9	15.4	15.4		74.1	19.5	4.3	36.4
40.9	53	1	16	17:54:39	58043	54.0	12.1	16.7	15.9	16.5	18.2		79.4	17.1	4.4	32.9
40.9	55	2	16	17:54:46	58044	55.0	11.6	15.5	14.4	15.0	14.2		70.9	19.5	4.3	36.4
41.3	60	1	17	18:05:33	58104	59.0	12.5	17.2	16.4	16.8	17.6		80.1	17.1	4.4	33.0
41.3	60	2	17	18:05:37	58106	60.0	11.7	15.7	14.3	15.3	15.5		72.9	19.5	4.3	36.4
41.8	64	1	18	18:17:01	58152	64.0	12.1	16.7	15.6	15.7	18.2		78.1	17.1	4.4	32.9
41.8	65	2	18	18:17:07	58153	65.0	11.9	16.1	15.9	14.7	15.1		73.8	19.5	4.3	36.4
41.8	55	1	19	18:27:59	58193	54.0	12.1	17.1	16.6	17.0	18.1		80.8	17.1	4.4	32.9
41.8	56	2	19	18:28:07	58194	55.0	11.5	16.3	14.9	15.1	14.5		72.3	19.5	4.3	36.4
40.7	59	1	20	18:39:16	58240	60.0	12.5	16.8	15.4	16.5	18.0		79.1	17.1	4.4	33.0
40.7	59	2	20	18:39:24	58241	60.0	11.9	15.7	14.0	14.7	14.8		71.1	19.5	4.3	36.4

Recorded By: gah

Verified By: djw

Traffic Sheet 22 LTPP MONITORED TRAFFIC DATA SITE EQUIPMENT ASSESSMENT LTPP LANE ONLY	STATE CODE: 27 SPS WIM ID: 270500 STATE ASSIGNED ID 35 DATE (mm/dd/yyyy) 4/17/2013
--	---

SITE EQUIPMENT INFORMATION

1. TYPE OF EQUIPMENT BOTH
2. LANE NUMBER ON SITE 4 3. DIRECTION ON SITE west
4. VENDOR IRD MODEL WCU-II SERIAL#
5. WEIGHING SENSOR TYPE quartz
6. SYSTEM SOFTWARE VERSIONS:
- CPU
- LOOP
- PIEZO
- WEIGHPAD/ LOADCELL
- COMMUNICATIONS
7. CLASSIFICATION VIDEO:
- TIME FROM: 8:17:11 TO: 13:05:26
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 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: 27 SPS WIM ID: 270500 STATE ASSIGNED ID 35 DATE (mm/dd/yyyy) 4/17/2013
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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. 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: 27 SPS WIM ID: 270500 STATE ASSIGNED ID 35 DATE (mm/dd/yyyy) 4/17/2013
--	--

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: 27 SPS WIM ID: 270500 STATE ASSIGNED ID 35 DATE (mm/dd/yyyy) 4/17/2013
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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	<u>63.2</u>	mph	Average WIM Speed	<u>62.7</u>	mph
Mean Difference	<u>-0.5</u>	mph	SD of mean	<u>1.2</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>4.30</u>	ft (WIM system average)	
=		<u>1.3</u>	%	

Average front axle weight for Class 9 vehicles		<u> </u>	lbs	
% error from 10.3 kips (industry average) OR		<u>11.3</u>	lbs (known site value)	
=		<u>9.4</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: 27 SPS WIM ID: 270500 STATE ASSIGNED ID 35 DATE (mm/dd/yyyy) 4/17/2013
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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: 27 SPS WIM ID: 270500 STATE ASSIGNED ID 35 DATE (mm/dd/yyyy) 4/17/2013
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STATIC EQUIPMENT VALUES (SYSTEM OFF)

1. POWER

a. Solar Panel		WATTS		VDC
b. Equipment Power	121	VAC		VDC
c. Battery 1	13.4	VDC		
d. Battery 2		VDC		
e. Regulated	13.1	VDC		
f. Power Supply		VAC	13.4	VDC
g. System Input	121	VAC		VDC
h. Modem Power	121	VAC		VDC
i. Telephone	53.0	VDC		

2. LOOP SENSORS

	Resistance	Inductance	Shield
a. Leading	0.7 Ω	141.2 μh	inf MΩ
b. Trailing	0.5 Ω	143.0 μh	inf MΩ

3. KISTLER SENSORS

	Resistance	Capacitance
a. K1 (lead/left)	10 ¹¹ Ω	nf
b. K2 (lead/middle)	10 ¹¹ Ω	nf
c. K3 (lead mid/right)	10 ¹¹ Ω	nf
d. K4 (lead/right)	10 ¹¹ Ω	nf
e. K5 (trail/left)	10 ¹¹ Ω	nf
f. K6 (trail/mid left)	10 ¹¹ Ω	nf
g. K7 (trail/mid right)	10 ¹¹ Ω	nf
h. K8 (trail/right)	10 ¹¹ Ω	nf

DYNAMIC EQUIPMENT VALUES (SYSTEM ON)

4. LOOP SENSORS

	Frequency
a. Leading	10.65 KHz
b. Trailing	10.79 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: 27 SPS WIM ID: 270500 DATE (mm/dd/yyyy) 4/17/2013
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Item	Description	Filename
1	Power Source	270500_power_box_4_16_13.jpg
2	Telephone Source	270500_telephone_service_4_16_13.jpg
3	Cabinet Exterior	270500_cabinet_exterior_4_16_13.jpg
4	Cabinet Interior - Front	270500_cabinet_interior_front_4_16_13.jpg
5	Cabinet Interior - Rear	
6	Leading weight sensor	270500_leading_WIM_sensor_4_16_13.jpg
7	Trailing weight sensor	270500_trailing_WIM_sensor_4_16_13.jpg
8	Leading classification sensor	
9	Trailing classification sensor	
10	Leading loop sensor	270500_leading_loop_4_16_13.jpg
11	Trailing loop sensor	270500_trailing_loop_4_16_13.jpg
12	Downstream from site	270500_downstream_4_16_13.jpg
13	Upstream from site	270500_upstream_4_16_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: 27 SPS WIM ID: 270500 DATE (mm/dd/yyyy) 4/17/2013
---	--

Item	Description	Filename
1	Tractor, Truck #1	270500_Truck_1_Tractor_4_16_13.jpg
2	Trailer/Load, Truck #1	270500_Truck_1_Trailer_4_16_13.jpg
3	Kingpin Offset, Truck #1	
4	Suspension A, Truck #1	270500_Truck_1_Suspension_1_4_16_13.jpg
5	Suspension B, Truck #1	270500_Truck_1_Suspension_2_4_16_13.jpg
6	Suspension C, Truck #1	270500_Truck_1_Suspension_3_4_16_13.jpg
7	Suspension D, Truck #1	270500_Truck_1_Suspension_4_4_16_13.jpg
8	Suspension E, Truck #1	270500_Truck_1_Suspension_5_4_16_13.jpg
9	Suspension F, Truck #1	
10	Tractor, Truck #2	270500_Truck_2_Tractor_4_16_13.jpg
11	Trailer/Load, Truck #2	270500_Truck_2_Trailer_4_16_13.jpg
12	Kingpin Offset, Truck #2	
13	Suspension A, Truck #2	270500_Truck_2_Suspension_1_4_16_13.jpg
14	Suspension B, Truck #2	270500_Truck_2_Suspension_2_4_16_13.jpg
15	Suspension C, Truck #2	270500_Truck_2_Suspension_3_4_16_13.jpg
16	Suspension D, Truck #2	270500_Truck_2_Suspension_4_4_16_13.jpg
17	Suspension E, Truck #2	270500_Truck_2_Suspension_5_4_16_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		

