

WIM System Field Calibration and Validation Handout Guide

Colorado, SPS-2
SHRP ID – 080200

Validation Date: February 21, 2012



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1 Site Information

Site ID:	080200	State:	Colorado
LTPP Region:	Western	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	Donna Harmelink	FHWA Division	720-963-3021	donna.harmelink@fhwa.dot.gov
RSC	Kevin Senn	Project Manager	775-329-4955	KSenn@nce.reno.nv.us
CO DOT	Roberto E. de Dios	LTPP Coordinator	303-757-9975	roberto.dedios@dot.state.co.us
CO DOT	Leo Livecchi	Traffic Coordinator	303-757-9498	Leo.Livecchi@dot.state.co.us
CO DOT	George Ventura	contact	303-757-9492	george.ventura@dot.state.co.us
CO DOT	Skip Outcalt	Contact	303-757-9984	Skip.Outcalt@dot.state.co.us
ARA	Dean Wolf	Task Leader	717-512-6638	dwolf@ara.com
ARA	Olga Selezneva	Project Manager	410-540-9949	oselezneva@ara.com

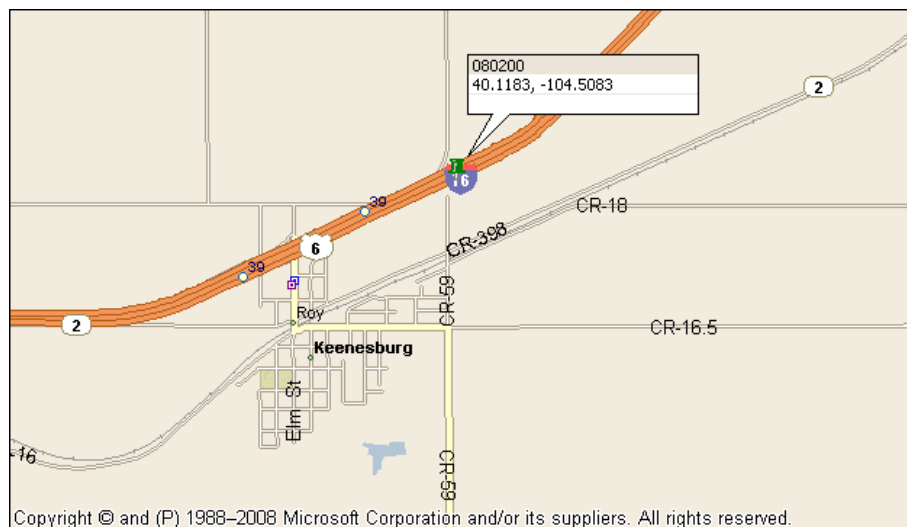
3 Schedule of Events

Date	Event	Location	Start Time
2/20/12	Travel	Denver, CO	TBD
2/20/12	Equipment Assessment	WIM Site	3:30 pm
2/21/12	Test Truck Weigh/Measure/Inspection	CAT Scale	6:30 am
2/21/12	Initial Performance Evaluation	WIM Site	8:30 am
2/21/12	System Test/Class and Speed Study	WIM Site	TBD
2/22/12	Test Truck Weigh	CAT Scale	7:00 am
2/22/12	Calibration/Validation (if required)	WIM Site	8:00 am
2/23/12	Travel	Camp Hill, PA	TBD

4 Maps

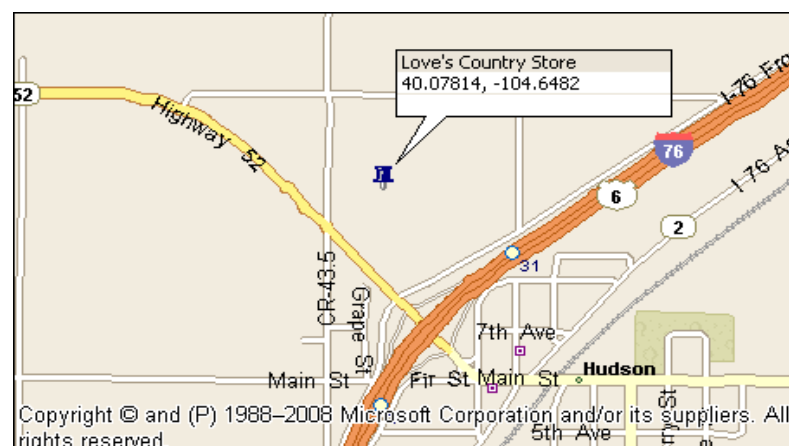
4.1 Site Location

Location:	I-76 East at M.P. 39.7 .75 miles east of Market Street interchange		Dir:	EB
Latitude:	40.11830°	Longitude:	-104.50830°	



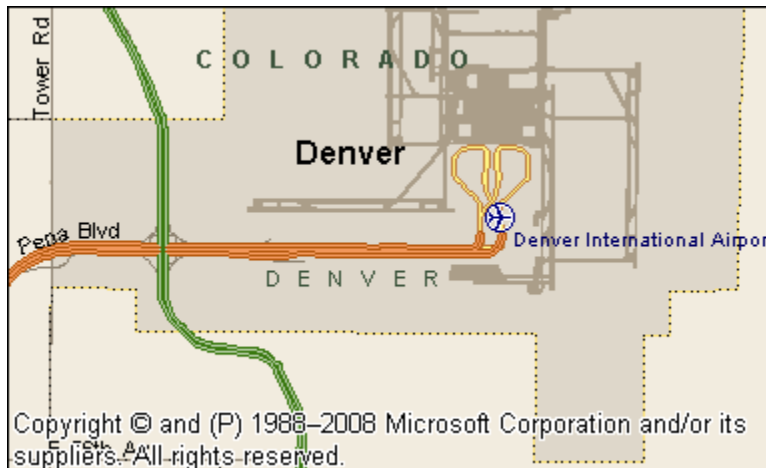
4.2 Truck Scale Location

Name:	Love's Country Store	Location:	I-76/CO HWY 52 Exit 31
Latitude:	40.07814	Longitude:	-104.64816



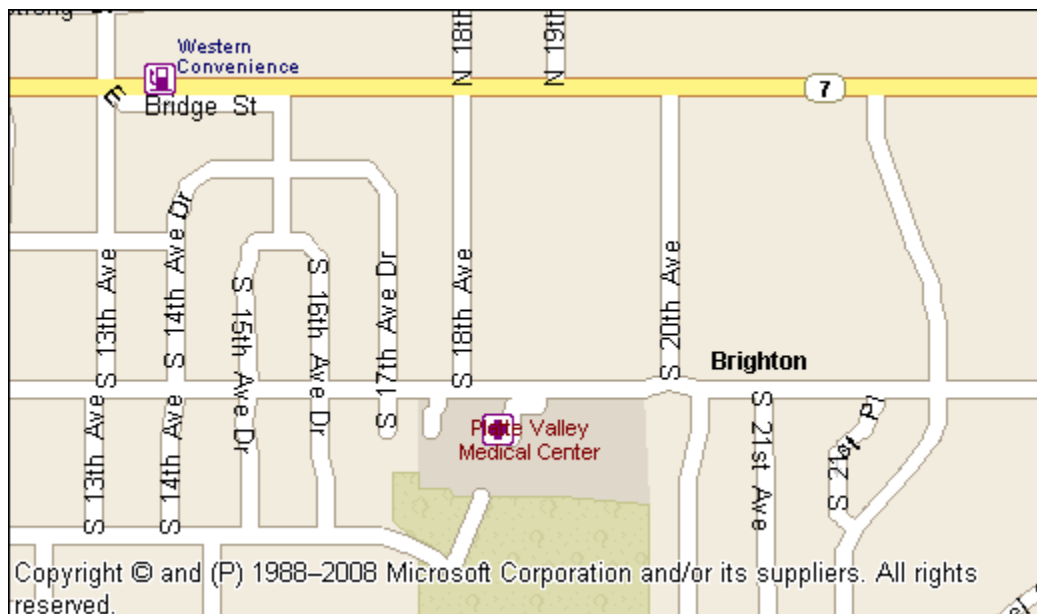
4.3 Airport Location

Name:	Denver International Airport	Location:	Pena Blvd, Denver, CO
Latitude:	39.8360°	Longitude:	-104.6717°



4.4 Hospital Location

Name:	Platte Valley Med Center		
Phone:	(303) 498-1600	Location:	1600 Egbert Street Brighton, CO



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: 08 SPS WIM ID: 080200 DATE (mm/dd/yyyy) 2/21/2012
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10. CABINET LOCATION

Same side of road as LTPP lane: Y
Distance from edge of traveled lane: 45 ft
distance from system: 55 ft
type: M

Cabinet access controlled by: Agency and LTPP
Contact name: Roberto E. de Dios Phone # 303-757-9975
Alternate name: Roy Czinku Phone # 306-653-6627

11. POWER

Distance to cabinet from drop: 287 ft
Type: AC
AC in cabinet? Y
Service provider: _____ Phone # _____

12. TELEPHONE

Distance to cabinet from drop: 228 ft
Type: landline
Service provider: _____ Phone # _____

13. SYSTEM

Software and version no. MBUS v5.0
Computer connection: RS-232

14. TEST TRUCK TURNAROUND TIME

Duration: 25 minutes Distance: 28 miles

15. PHOTOS

	Filename
Power source:	<u>080200_solar_panel_2_21_12.jpg</u>
Phone source:	<u>080200_cellular_modem_2_21_12.jpg</u>
Cabinet exterior:	<u>080200_cabinet_exterior_2_21_12.jpg</u>
Cabinet interior:	<u>080200_cabinet_interior_front_2_21_12.jpg</u>
Weight sensors:	<u>080200_cabinet_interior_rear_2_21_12.jpg</u>
	<u>080200_leading_WIM_sensor_2_21_12.jpg</u>
Other sensors:	<u>0</u>
	<u>080200_leading_loop_2_21_12.jpg</u>
Downstream from sensors on LTPP lane:	<u>080200_trailing_loop_2_21_12.jpg</u>
Upstream from sensors on LTPP lane:	<u>080200_downstream_2_21_12.jpg</u>

Traffic Sheet 18 LTPP MONITORED TRAFFIC DATA WIM SITE COORDINATION	STATE CODE: 08 SPS WIM ID: 080200 DATE (mm/dd/yyyy) 2/21/2012
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1. DATA PROCESSING

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

2. EQUIPMENT

- a. Purchase LTPP
- b. Installation LTPP contract
- c. Maintenance 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: 08 SPS WIM ID: 080200 DATE (mm/dd/yyyy) 2/21/2012
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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 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:

- 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: 08 SPS WIM ID: 080200 DATE (mm/dd/yyyy) 2/21/2012
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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 # 306-653-6627
Agency IRD
- b. Maintenance (equipment)
Name Roy Czinku Phone # 306-653-6627
Agency IRD
- c. Data Processing and pre-visit data
Name Roy Czinku Phone # 306-653-6627
Agency IRD
- d. Construction schedule and verification
Name _____ Phone # _____
Agency _____
- e. Test Vehicles (trucks, loads, drivers)
Name Shawn Sweetman Phone # 303-289-2152
Agency Sweetman Enterprises
- f. Traffic control
Name _____ Phone # _____
Agency _____
- g. Enforcement coordination
Name _____ Phone # _____
Agency _____
- h. Nearest static scale
Name Love's Country Store Location: I-76, exit 31
Phone: _____

Traffic Sheet 19 LTPP MONITORED TRAFFIC DATA CALIBRATION TEST TRUCK # <u>1</u>	STATE CODE: 08 SPS WIM ID: 080200 DATE (mm/dd/yyyy) 2/21/2012
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CALIBRATION TEST TRUCK - Primary

6. SUSPENSION

	a. Tire size	b.Suspension description (leaf, air # of leaves, taper or flat leaf, etc.)	c. photo
A	11R24.5	steel spring	☒
B	11R24.5 14PR	air	☒
C	11R24.5 14PR	air	☒
D	11R24.5	air	☒
E	11R24.5	air	☒
F			☐

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

Steering Axle	Axle B	Axle C	Axle D	Axle E	Axle F
125.6	115.9	117.1	119.3	121.9	
124.3	108.6	116.3	120.2	121.2	

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 # <u>1</u>	STATE CODE: 08 SPS WIM ID: 080200 DATE (mm/dd/yyyy) 2/21/2012
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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: 08 SPS WIM ID: 080200 DATE (mm/dd/yyyy) 2/21/2012
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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	10040	16630	16630	15790	15790		74880
2	10000	16640	16640	15790	15790		74860
Avg.	10020	16635	16635	15790	15790		74870

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	9440	16520	16520	15770	15770		74020
2	9500	16510	16510	15790	15790		74100
Avg.	9470	16515	16515	15780	15780		74060

Validation Test Truck Run Set - Pre

Measured By: Kevin Trousdale

Verified By: Aditya Ramachandran

Traffic Sheet 19 LTPP MONITORED TRAFFIC DATA CALIBRATION TEST TRUCK # <u>2</u>	STATE CODE: 08 SPS WIM ID: 080200 DATE (mm/dd/yyyy) 2/21/2012
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CALIBRATION TEST TRUCK - Secondary

6. SUSPENSION

	a. Tire size	b.Suspension description (leaf, air # of leaves, taper or flat leaf, etc.)	c. photo
A	11R24.5	steel spring	☒
B	11R24.5 14PR	air	☒
C	11R24.5 14PR	air	☒
D	11R24.5	air	☒
E	11R24.5 14 PR	air	☒
F			☐

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

Steering Axle	Axle B	Axle C	Axle D	Axle E	Axle F
96.4	94.2	94.3	108.5	108.5	
96.8	95	91.8	93.6		

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: 08 SPS WIM ID: 080200 DATE (mm/dd/yyyy) 2/21/2012
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CALIBRATION TEST TRUCK - Secondary

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

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

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

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

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

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

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

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

Traffic Sheet 19 LTPP MONITORED TRAFFIC DATA CALIBRATION TEST TRUCK # 2	STATE CODE: 08 SPS WIM ID: 080200 DATE (mm/dd/yyyy) 2/21/2012
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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	9880	14980	14980	13130	13130		66100
2	9900	14990	14990	13120	13120		66120
Avg.	9890	14985	14985	13125	13125		66110

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	9480	14770	14770	13110	13110		65240
2	9520	14760	14760	13090	13090		65220
Avg.	9500	14765	14765	13100	13100		65230

Validation Test Truck Run Set - Pre

Measured By: Kevin Trousdale
Verified By: Aditya Ramachandran

Traffic Sheet 21 (Wheel Load) LTPP MONITORED TRAFFIC DATA WIM SYSTEM TRUCK RECORDS										STATE CODE: 08 SPS WIM ID: 080200 DATE: (mm/dd/yyyy): 2/21/2012									
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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	D - E space	E - F space	Axle Length	Overall Length
31.3	65	2	1	8:16:47	41592	65.0	9.7	15.1	14.7	13.0	12.5		64.8	17.8	4.4	25.2	3.9		51.3	57.0
31.3	66	1	1	8:17:37	41594	65.0	10.0	16.6	16.1	15.9	15.3		74.1	18.4	4.4	27.5	4.0		54.3	59.0
30.4	71	1	2	8:45:11	41682	71.0	9.9	16.1	16.3	16.4	15.5		74.2	18.3	4.3	27.4	4.0		54.0	59.0
34.8	76	1	3	9:13:09	41777	76.0	9.9	16.5	16.1	15.3	15.4		73.2	18.4	4.3	27.4	3.9		54.0	59.0
34.8	73	2	3	9:15:56	41787	73.0	9.7	15.0	14.7	12.9	12.4		64.8	17.8	4.4	25.1	3.9		51.2	56.0
46.7	66	1	4	9:40:54	41866	66.0	10.1	16.3	16.0	16.1	15.5		73.9	18.3	4.3	27.4	3.9		53.9	59.0
46.7	64	2	4	9:44:03	41873	64.0	10.0	15.3	14.9	13.3	12.7		66.2	17.8	4.3	25.1	3.9		51.1	57.0
48.8	71	1	5	10:10:56	41946	70.0	9.9	15.9	15.9	16.4	15.8		73.9	18.3	4.3	27.5	3.9		54.0	59.0
48.8	68	2	5	10:11:32	41947	67.0	10.0	15.0	14.9	13.6	12.3		65.7	17.7	4.4	25.0	4.0		51.1	56.0
47.8	73	2	6	10:39:21	42045	73.0	10.0	14.9	14.9	12.9	12.8		65.4	17.8	4.4	25.1	3.9		51.2	56.0
51.0	65	1	6	11:05:59	42109	65.0	10.3	16.8	16.3	16.1	15.7		75.2	18.3	4.3	27.3	3.9		53.8	59.0
51.0	66	2	6	11:07:05	42115	64.0	9.9	15.0	14.8	13.3	12.6		65.6	17.8	4.4	25.0	3.9		51.1	57.0
54.1	71	1	7	11:33:16	42192	70.0	9.8	16.4	16.2	15.4	15.9		73.7	18.3	4.3	27.4	3.9		53.9	60.0
54.1	68	2	7	11:33:59	42194	68.0	10.1	15.2	15.3	13.8	13.0		67.5	17.8	4.3	25.0	3.9		51.0	57.0
57.3	76	1	8	12:21:46	42336	76.0	9.7	16.3	16.4	16.7	15.3		74.4	18.3	4.3	27.4	3.9		53.9	59.0
57.3	73	2	8	12:22:03	42337	73.0	9.9	15.2	15.0	12.8	13.4		66.5	17.8	4.3	25.1	3.9		51.1	56.0
57.3	67	1	9	12:49:04	42408	67.0	10.2	16.4	16.3	16.9	16.0		75.7	18.4	4.3	27.6	3.9		54.2	59.0
57.3	64	2	9	12:49:42	42409	64.0	10.2	15.3	15.3	13.6	12.0		66.5	17.8	4.3	25.1	4.0		51.2	57.0
55.5	71	1	10	13:16:28	42486	71.0	9.8	16.6	15.9	16.3	15.8		74.5	18.3	4.4	27.6	3.9		54.2	59.0
55.5	68	2	10	13:16:58	42487	68.0	9.5	15.2	15.0	13.3	13.1		66.1	17.8	4.4	25.1	3.9		51.2	57.0
56.8	76	1	11	13:44:11	42554	76.0	9.9	16.7	16.3	16.3	15.8		75.1	18.3	4.3	27.5	3.9		54.0	60.0
56.8	73	2	11	13:44:35	42555	72.0	9.6	14.7	14.7	12.7	12.8		64.7	17.8	4.4	25.1	3.9		51.2	57.0
59.1	65	1	12	14:12:15	42631	65.0	10.0	16.7	16.4	16.5	15.6		75.2	18.3	4.3	27.4	3.9		53.9	59.0
59.1	64	2	12	14:13:01	42632	64.0	10.3	15.2	15.2	13.6	12.7		67.0	17.8	4.4	25.1	4.0		51.3	56.0

Recorded By: _____ ar _____	Verified By: _____ djw _____	Run Set _____ Pre _____
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Traffic Sheet 21 (Wheel Load) LTTP MONITORED TRAFFIC DATA WIM SYSTEM TRUCK RECORDS										STATE CODE: 08 SPS WIM ID: 080200 DATE: (mm/dd/yyyy): 2/21/2012									
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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	D - E space	E - F space	Axle Length	Overall Length
53.3	71	1	13	14:41:47	42709	71.0	9.9	16.8	16.6	17.1	16.0		76.5	18.3	4.4	27.5	4.0		54.2	59.0
53.3	69	2	13	14:42:39	42710	68.0	9.5	15.0	14.8	12.9	12.4		64.5	17.8	4.4	25.0	3.9		51.1	57.0
55.8	76	1	14	15:09:13	42788	77.0	9.4	16.6	16.4	15.0	15.5		73.0	18.4	4.3	27.4	3.9		54.0	60.0
55.8	73	2	14	15:09:38	42790	73.0	9.7	15.1	15.3	14.0	12.7		66.8	17.8	4.3	25.0	3.9		51.0	57.0
51.8	62	1	15	15:28:43	42848	63.0	9.7	16.5	16.1	16.0	15.6		73.9	18.3	4.3	27.4	3.9		53.9	60.0
51.8	65	2	15	15:29:02	42850	64.0	10.1	15.1	14.9	13.0	12.6		65.6	17.8	4.4	25.1	4.0		51.3	57.0
47.3	64	1	16	15:47:50	42920	64.0	10.1	17.1	16.4	16.6	16.2		76.5	18.3	4.3	27.5	3.9		54.0	59.0
47.3	68	2	16	15:48:13	42921	69.0	9.3	15.6	15.0	13.6	13.4		66.8	17.8	4.3	25.1	3.9		51.1	57.0
47.3	74	1	17	16:15:12	43019	77.0	9.5	16.5	15.9	17.0	16.0		75.0	18.4	4.3	27.5	4.0		54.2	60.0
47.3	72	2	17	16:15:24	43022	72.0	9.7	15.4	15.4	13.9	12.9		67.3	17.8	4.3	25.0	3.9		51.0	57.0
46.9	64	1	18	16:34:24	43089	65.0	9.5	16.7	16.2	16.5	16.0		74.9	18.3	4.3	27.4	3.9		53.9	59.0
46.9	65	2	18	16:34:50	43090	65.0	10.1	15.5	15.2	14.0	13.3		68.2	17.8	4.4	25.1	4.0		51.3	57.0
39.0	71	1	19	17:02:06	43186	70.0	9.7	16.9	16.6	16.4	15.6		75.3	18.3	4.3	27.5	3.9		54.0	59.0
39.0	69	2	19	17:02:21	43188	68.0	9.7	15.4	15.2	12.9	12.5		65.7	17.8	4.4	25.1	3.9		51.2	57.0
37.9	76	1	20	17:29:25	43275	76.0	9.5	16.5	16.0	16.4	15.9		74.2	18.4	4.4	27.5	3.9		54.2	60.0
37.9	74	2	20	17:29:40	43276	73.0	9.7	14.9	15.0	13.2	12.8		65.5	17.7	4.3	25.0	3.9		50.9	57.0

Recorded By: _____ ar _____	Verified By: _____ djw _____	Run Set _____ Pre _____
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Traffic Sheet 22 LTPP MONITORED TRAFFIC DATA SITE EQUIPMENT ASSESSMENT LTPP LANE ONLY	STATE CODE: 08 SPS WIM ID: 080200 STATE ASSIGNED ID 0 DATE (mm/dd/yyyy) 2/21/2012
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SITE EQUIPMENT INFORMATION

1. TYPE OF EQUIPMENT BOTH

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

4. VENDOR IRD MODEL iSINC SERIAL# 51202224

5. WEIGHING SENSOR TYPE bending plate

6. SYSTEM SOFTWARE VERSIONS:

CPU	<u>WCU-II</u>
LOOP	<u>DIOM</u>
PIEZO	<u> </u>
WEIGHTPAD/ LOADCELL	<u>PAT Bending Plate</u>
COMMUNICATIONS	<u> </u>

7. CLASSIFICATION VIDEO:

TIME FROM: <u>8:33:34</u>	TO: <u>10:29:31</u>
TIME FROM: <u> </u>	TO: <u> </u>

SITE CONDITIONS

8. PAVEMENT:

Indicate any deficiencies that may affect the performance of the WIM system. 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: 08 SPS WIM ID: 080200 STATE ASSIGNED ID 0 DATE (mm/dd/yyyy) 2/21/2012
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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: 08 SPS WIM ID: 080200 STATE ASSIGNED ID 0 DATE (mm/dd/yyyy) 2/21/2012
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11. CLASSIFICATION VERIFICATION VIDEO:

TAPE 1- NAME: _____

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

TAPE 2- NAME: _____

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

TAPE 3- NAME: _____

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

Traffic Sheet 22 LTPP MONITORED TRAFFIC DATA SITE EQUIPMENT ASSESSMENT LTPP LANE ONLY	STATE CODE: 08 SPS WIM ID: 080200 STATE ASSIGNED ID 0 DATE (mm/dd/yyyy) 2/21/2012
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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>68.9</u> mph	Average WIM Speed	<u>68.3</u> mph
Mean Difference	<u>-0.7</u> mph	SD of mean	<u>1.8</u>

Posted Speed Limit	<u>75</u> mph		
Speed Range	15th percentile - <u>65</u> mph	85th percentile-	<u>76</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>4.34</u>	ft (WIM system average)
= <u>2.1</u> %			

Average front axle weight for Class 9 vehicles		<u> </u> lbs	
% error from 10.3 kips (industry average) OR	OR	<u>9.8</u>	lbs (known site value)
= <u>-4.5</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: 08 SPS WIM ID: 080200 STATE ASSIGNED ID 0 DATE (mm/dd/yyyy) 2/21/2012
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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 Kevin Trousdale

Traffic Sheet 22 Addendum - Weighpad LTPP MONITORED TRAFFIC DATA SITE EQUIPMENT ASSESSMENT LTPP LANE ONLY	STATE CODE: 08 SPS WIM ID: 080200 STATE ASSIGNED ID 0 DATE (mm/dd/yyyy) 2/21/2012
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STATIC EQUIPMENT VALUES (SYSTEM OFF)

1. POWER

a. Solar Panel	<u>N/A</u>	WATTS	<u>N/A</u>	VDC
b. Equipment Power	<u>122.7</u>	VAC	<u>N/A</u>	VDC
c. Battery 1	<u>13.45</u>	VDC		
d. Battery 2	<u>N/A</u>	VDC		
e. Regulated	<u>13.45</u>	VDC		
f. Power Supply	<u>13.53</u>	VDC	<u>N/A</u>	VDC
g. System Input	<u>123.4</u>	VAC	<u>11.77</u>	VDC
h. Modem Power	<u>N/A</u>	VAC	<u>N/A</u>	VDC
i. Telephone	<u>49.2</u>	VDC		

2. LOOP SENSORS

	Resistance		Inductance		Shield	
a. Leading	<u>0.4</u>	Ω	<u>144.2</u>	μ h	<u>inf</u>	M Ω
b. Trailing	<u>0.5</u>	Ω	<u>144.1</u>	μ h	<u>inf</u>	M Ω

3. WEIGHPAD SENSORS

	Input		Output		Shield	
a. Leading	<u>0.979</u>	Ω	<u>0.846</u>	Ω	<u>inf</u>	Ω
b. Trailing	<u>0.979</u>	Ω	<u>0.846</u>	Ω	<u>inf</u>	Ω

DYNAMIC EQUIPMENT VALUES (SYSTEM ON)

4. LOOP SENSORS

	Frequency	
a. Leading	<u>20.5</u>	KHz
b. Trailing	<u>20.6</u>	KHz

5. WEIGHPAD SENSORS

	Zero Point	
a. Leading	<u>2.39</u>	mV
b. Trailing	<u>2.39</u>	mV

Assessor Kevin Trousdale

Traffic Sheet 24A LTPP MONITORED TRAFFIC DATA SITE PHOTO LOG - Equipment	STATE CODE: 08 SPS WIM ID: 080200 DATE (mm/dd/yyyy) 2/21/2012
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Item	Description	Filename
1	Power Source	080200_solar_panel_2_21_12.jpg
2	Telephone Source	080200_cellular_modem_2_21_12.jpg
3	Cabinet Exterior	080200_cabinet_exterior_2_21_12.jpg
4	Cabinet Interior - Front	080200_cabinet_interior_front_2_21_12.jpg
5	Cabinet Interior - Rear	080200_cabinet_interior_rear_2_21_12.jpg
6	Leading weight sensor	080200_leading_WIM_sensor_2_21_12.jpg
7	Trailing weight sensor	080200_trailing_WIM_sensor_2_21_12.jpg
8	Leading classification sensor	
9	Trailing classification sensor	
10	Leading loop sensor	080200_leading_loop_2_21_12.jpg
11	Trailing loop sensor	080200_trailing_loop_2_21_12.jpg
12	Downstream from site	080200_downstream_2_21_12.jpg
13	Upstream from site	080200_upstream_2_21_12.jpg
14		
15		
16		
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RECORDED BY: _____ Kevin Trousdale

Traffic Sheet 24B LTPP MONITORED TRAFFIC DATA SITE PHOTO LOG - Test Trucks	STATE CODE: 08 SPS WIM ID: 080200 DATE (mm/dd/yyyy) 2/21/2012
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Item	Description	Filename
1	Tractor, Truck #1	080200_Truck_1_Tractor_2_21_12.jpg
2	Trailer/Load, Truck #1	080200_Truck_1_Trailer_2_21_12.jpg
3	Kingpin Offset, Truck #1	
4	Suspension A, Truck #1	080200_Truck_1_Suspension_1_2_21_12.jpg
5	Suspension B, Truck #1	080200_Truck_1_Suspension_2_2_21_12.jpg
6	Suspension C, Truck #1	080200_Truck_1_Suspension_3_2_21_12.jpg
7	Suspension D, Truck #1	080200_Truck_1_Suspension_4_2_21_12.jpg
8	Suspension E, Truck #1	080200_Truck_1_Suspension_5_2_21_12.jpg
9	Suspension F, Truck #1	
10	Tractor, Truck #2	080200_Truck_2_Tractor_2_21_12.jpg
11	Trailer/Load, Truck #2	080200_Truck_2_Trailer_2_21_12.jpg
12	Kingpin Offset, Truck #2	
13	Suspension A, Truck #2	080200_Truck_2_Suspension_1_2_21_12.jpg
14	Suspension B, Truck #2	080200_Truck_2_Suspension_2_2_21_12.jpg
15	Suspension C, Truck #2	080200_Truck_2_Suspension_3_2_21_12.jpg
16	Suspension D, Truck #2	080200_Truck_2_Suspension_4_2_21_12.jpg
17	Suspension E, Truck #2	080200_Truck_2_Suspension_5_2_21_12.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		

RECORDED BY: _____ Kevin Trousdale