

Traffic Sheet 16 LTPP MONITORED TRAFFIC DATA SITE CALIBRATION SUMMARY	STATE CODE:	53
	SPS WIM ID:	530200
	DATE (mm/dd/yyyy)	4/14/2015

SITE CALIBRATION INFORMATION

1. DATE OF CALIBRATION {mm/dd/yy} 4/14/15
2. TYPE OF EQUIPMENT CALIBRATED: Both
3. REASON FOR CALIBRATION: LTPP Validation
4. SENSORS INSTALLED IN LTPP LANE AT THIS SITE (Select all that apply):
- a. Inductance Loops c.
- b. Quartz Piezo d.
5. EQUIPMENT MANUFACTURER: IRD 1060 Series

WIM SYSTEM CALIBRATION SPECIFICS

6. CALIBRATION TECHNIQUE USED: Test Trucks
- Number of Trucks Compared:
- Number of Test Trucks Used: 3
- Passes Per Truck: 14

	Type	Drive Suspension	Trailer Suspension
Truck 1:	<u>9</u>	<u>air</u>	<u>air</u>
Truck 2:	<u>9</u>	<u>air</u>	<u>torsion</u>
Truck 3:	<u>9</u>	<u>air</u>	<u>torsion</u>

7. SUMMARY CALIBRATION RESULTS (expressed as a %):

Mean Difference Between -

Dynamic and Static GVW:	<u>-2.3%</u>	Standard Deviation:	<u>2.2%</u>
Dynamic and Static Single Axle:	<u>-5.6%</u>	Standard Deviation:	<u>5.4%</u>
Dynamic and Static Double Axles:	<u>-1.8%</u>	Standard Deviation:	<u>3.4%</u>

8. NUMBER OF SPEEDS AT WHICH CALIBRATION WAS PERFORMED: 3**9. DEFINE SPEED RANGES IN MPH:**

		Low		High	Runs	
a.	<u>Low</u>	<u>45.0</u>	to	<u>49.7</u>	<u>11</u>	<u>47.85</u>
b.	<u>Medium</u>	<u>49.8</u>	to	<u>54.4</u>	<u>16</u>	<u>52.1</u>
c.	<u>High</u>	<u>54.5</u>	to	<u>59.0</u>	<u>15</u>	<u>56.75</u>
d.	<u></u>	<u></u>	to	<u></u>	<u></u>	<u></u>
e.	<u></u>	<u></u>	to	<u></u>	<u></u>	<u></u>

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10. CALIBRATION FACTOR (AT EXPECTED FREE FLOW SPEED)

6.539214 | 6.539214

11. IS AUTO- CALIBRATION USED AT THIS SITE?

No

If yes , define auto-calibration value(s):

--

CLASSIFIER TEST SPECIFICS12. METHOD FOR COLLECTING INDEPENDENT VOLUME MEASUREMENT BY VEHICLE
CLASS:Manual

13. METHOD TO DETERMINE LENGTH OF COUNT:

Number of Trucks

14. MEAN DIFFERENCE IN VOLUMES BY VEHICLES CLASSIFICATION:

FHWA Class 9:	<u>0.0</u>	FHWA Class	<u>5</u>	-	<u>-20.0</u>
FHWA Class 8:	<u>100.0</u>	FHWA Class	<u>10</u>	-	<u>0.0</u>
		FHWA Class		-	
		FHWA Class		-	

Percent of "Unclassified" Vehicles: 0.0%Validation Test Truck Run Set - Pre

Person Leading Calibration Effort:

Dean Wolf

Contact Information:

Phone: 717-975-3550E-mail: dwolf@ara.com

Traffic Sheet 17 LTPP MONITORED TRAFFIC DATA WIM SITE INVENTORY	STATE CODE:	53
	SPS WIM ID:	530200
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10. CABINET LOCATION

Same side of road as LTPP lane: Y
 Distance from edge of traveled lane: 83 ft
 distance from system: 90 ft
 type: M

Cabinet access controlled by: Agency
 Contact name: Hoang Nguyen Phone # 360-570-2389
 Alternate name: _____ Phone # _____

11. POWER

Distance to cabinet from drop: 160 ft
 Type: AC
 AC in cabinet? Y
 Service provider: _____ Phone # _____

12. TELEPHONE

Distance to cabinet from drop: 160 ft
 Type: landline
 Service provider: _____ Phone # _____

13. SYSTEM

Software and version no. 1068
 Computer connection: RS-232

14. TEST TRUCK TURNAROUND TIME

Duration: 21 minutes Distance: 19.2 miles

15. PHOTOS

	Filename
Power source:	<u>530200_power_box_04_14_15.jpg</u>
Phone source:	<u>530200_collular_modem_04_14_15.jpg</u>
Cabinet exterior:	<u>530200_cabinet_exterior_04_14_15.jpg</u>
Cabinet interior:	<u>530200_cabinet_interior_04_14_15.jpg</u>
Weight sensors:	<u>530200_leading_WIM_sensor_04_14_15.jpg</u>
	<u>530200_trailing_WIM_sensor_04_14_15.jpg</u>
Other sensors:	<u>530200_leading_loop_04_14_15.jpg</u>
	<u>530200_trailing_loop_04_14_15.jpg</u>
Downstream from sensors on LTPP lane:	<u>530200_downstream_04_14_15.jpg</u>
Upstream from sensors on LTPP lane:	<u>530200_upstream_04_14_15.jpg</u>

Traffic Sheet 18 LTPP MONITORED TRAFFIC DATA WIM SITE COORDINATION	STATE CODE: 53 SPS WIM ID: 530200 DATE (mm/dd/yyyy) 4/14/2015
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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 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: 53
SPS WIM ID: 530200
DATE (mm/dd/yyyy) 4/14/2015

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:
MACTEC, ARA, 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: 53 SPS WIM ID: 530200 DATE (mm/dd/yyyy) 4/14/2015
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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 Torrey Lanning Phone # 509-765-9531
Agency Zip Trucking
- f. Traffic control
Name _____ Phone # _____
Agency _____
- g. Enforcement coordination
Name _____ Phone # _____
Agency _____
- h. Nearest static scale
Name Love's Country Store Location: Ritzville, WA
Phone: _____

Traffic Sheet 19 LTPP MONITORED TRAFFIC DATA CALIBRATION TEST TRUCK # 1	STATE CODE: 53 SPS WIM ID: 530200 DATE (mm/dd/yyyy) 4/14/2015
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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		12300	11930	Direct
B		17145	17095	Direct
C		17145	17095	Direct
D		16245	16235	Direct
E		16245	16235	Direct
F				Direct

4. GVW (same units as axles)

- a. Empty GVW: _____
- b. Average Pre-Test Loaded weight: 79080
- c. Post Test Loaded Weight: 78590
- d. Difference Post Test - Pre-Tests: -490

5. TRUCK DESCRIPTION

- a. Tractor Cab Style: _____ Sleeper Cab: _____
photo: ☒

- b. Make: _____
- c. Model: _____

d. Trailer Load Distribution Description:

photo: ☒

- e. Tractor Tare weight - _____ - _____
- f. Trailer Tare weight - _____ - _____
- g. Axle Spacing - _____

A to B 18.1 B to C 4.2 C to D 28.2 D to E 4.1 E to F _____

- h. Wheelbase - ☐ Measured _____ ☒ Computed 54.6
- i. Kingpin offset from Axle B (units) _____ photo: ☐
- j. Overall Length - ☒ Measured 61.0

Traffic Sheet 19 LTPP MONITORED TRAFFIC DATA CALIBRATION TEST TRUCK # <u>1</u>	STATE CODE: 53 SPS WIM ID: 530200 DATE (mm/dd/yyyy) 4/14/2015
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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	285/75R24.5	steel spring	<input checked="" type="checkbox"/>
B	285/75R24.5	air	<input checked="" type="checkbox"/>
C	285/75R24.5	air	<input checked="" type="checkbox"/>
D	285/75R24.5	air	<input checked="" type="checkbox"/>
E	285/75R24.5	air	<input checked="" type="checkbox"/>
F			<input type="checkbox"/>

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				

<p align="center">Traffic Sheet 19 LTPP MONITORED TRAFFIC DATA CALIBRATION TEST TRUCK # <u>1</u></p>	<p align="right">STATE CODE: 53 SPS WIM ID: 530200 DATE (mm/dd/yyyy) 4/14/2015</p>
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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

<p align="center">Traffic Sheet 19 LTPP MONITORED TRAFFIC DATA CALIBRATION TEST TRUCK # <u>1</u></p>	<p align="right">STATE CODE: 53 SPS WIM ID: 530200 DATE (mm/dd/yyyy) 4/14/2015</p>
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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	12380	17090	17090	16250	16250		79060
2	12220	17200	17200	16240	16240		79100
Avg.	12300	17145	17145	16245	16245		79080

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	11940	17090	17090	16250	16250		78620
2	11920	17100	17100	16220	16220		78560
Avg.	11930	17095	17095	16235	16235		78590

Validation Test Truck Run Set - Pre

Measured By: Dean J. Wolf

Verified By: Andrew Lewis

Traffic Sheet 19 LTPP MONITORED TRAFFIC DATA CALIBRATION TEST TRUCK # 2	STATE CODE: 53
	SPS WIM ID: 530200
	DATE (mm/dd/yyyy) 4/14/2015

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		12590	12340	Direct
B		16330	16285	Direct
C		16330	16285	Direct
D		11280	11280	Direct
E		11280	11280	Direct
F				Direct

4. GVW (same units as axles)

a. Empty GVW: _____
b. Average Pre-Test Loaded weight: 67810
c. Post Test Loaded Weight: 67470
d. Difference Post Test - Pre-Tests: -340

5. TRUCK DESCRIPTION

a. Tractor Cab Style: _____ Sleeper Cab: _____
photo: ☒

b. Make: _____
c. Model: _____

d. Trailer Load Distribution Description:

photo: ☒

e. Tractor Tare weight - _____ - _____
f. Trailer Tare weight - _____ - _____
g. Axle Spacing - _____

A to B 18.1 B to C 4.2 C to D 28.2 D to E 4.1 E to F _____

h. Wheelbase - ☐ Measured _____ ☒ Computed 54.6
i. Kingpin offset from Axle B (units) _____ photo: ☐
j. Overall Length - ☒ Measured 61.0

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CALIBRATION TEST TRUCK # 2	DATE (mm/dd/yyyy) 4/14/2015

CALIBRATION TEST TRUCK - Secondary

6. SUSPENSION

	a. Tire size	b.Suspension description (leaf, air # of leaves, taper or flat leaf, etc.)	c. photo
A	285/75R24.5	steel spring	<input checked="" type="checkbox"/>
B	275/80R24.5	air	<input checked="" type="checkbox"/>
C	275/80R24.5	air	<input checked="" type="checkbox"/>
D	11R22.5	torsion	<input checked="" type="checkbox"/>
E	11R22.5	torsion	<input checked="" type="checkbox"/>
F			<input type="checkbox"/>

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				

<p align="center">Traffic Sheet 19 LTPP MONITORED TRAFFIC DATA CALIBRATION TEST TRUCK # 2</p>	<p align="right">STATE CODE: 53 SPS WIM ID: 530200 DATE (mm/dd/yyyy) 4/14/2015</p>
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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

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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	12600	16340	16340	11280	11280		67840
2	12580	16320	16320	11280	11280		67780
Avg.	12590	16330	16330	11280	11280		67810

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	12280	16320	16320	11270	11270		67460
2	12400	16250	16250	11290	11290		67480
Avg.	12340	16285	16285	11280	11280		67470

Validation Test Truck Run Set - Pre

Measured By: Dean J. Wolf

Verified By: Andrew Lewis

Traffic Sheet 19 LTPP MONITORED TRAFFIC DATA CALIBRATION TEST TRUCK # 3	STATE CODE: 53
	SPS WIM ID: 530200
	DATE (mm/dd/yyyy) 4/14/2015

CALIBRATION TEST TRUCK - Third

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		11460	11120	Direct
B		13920	13865	Direct
C		13920	13865	Direct
D		11270	11265	Direct
E		11270	11265	Direct
F				Direct

4. GVW (same units as axles)

- a. Empty GVW: _____
- b. Average Pre-Test Loaded weight: 61840
- c. Post Test Loaded Weight: 61380
- d. Difference Post Test - Pre-Tests: -460

5. TRUCK DESCRIPTION

- a. Tractor Cab Style: _____ Sleeper Cab: _____
photo: ☒

- b. Make: _____
- c. Model: _____

d. Trailer Load Distribution Description:

photo: ☒

- e. Tractor Tare weight - _____ - _____
- f. Trailer Tare weight - _____ - _____
- g. Axle Spacing - _____

A to B 16.6 B to C 4.3 C to D 28.1 D to E 4.0 E to F _____

- h. Wheelbase - ☐ Measured _____ ☐ Computed 53.0
- i. Kingpin offset from Axle B (units) _____ photo: ☐
- j. Overall Length - ☒ Measured 58.0

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CALIBRATION TEST TRUCK - Third

6. SUSPENSION

	a. Tire size	b.Suspension description (leaf, air # of leaves, taper or flat leaf, etc.)	c. photo
A	285/75R24.5	steel spring	<input checked="" type="checkbox"/>
B	285/75R24.5	air	<input checked="" type="checkbox"/>
C	285/75R24.5	air	<input checked="" type="checkbox"/>
D	11R22.5	torsion	<input checked="" type="checkbox"/>
E	11R22.5	torsion	<input checked="" type="checkbox"/>
F			<input type="checkbox"/>

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

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				

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CALIBRATION TEST TRUCK - Third

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

<p align="center">Traffic Sheet 19 LTPP MONITORED TRAFFIC DATA CALIBRATION TEST TRUCK # 3</p>	<p align="right">STATE CODE: 53 SPS WIM ID: 530200 DATE (mm/dd/yyyy) 4/14/2015</p>
--	--

CALIBRATION TEST TRUCK - Third

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

Pass	Axle A	Axle B	Axle C	Axle D	Axle E	Axle F	GVW
1	11460	13930	13930	11270	11270		61860
2	11460	13910	13910	11270	11270		61820
Avg.	11460	13920	13920	11270	11270		61840

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	11120	13870	13870	11260	11260		61380
2	11120	13860	13860	11270	11270		61380
Avg.	11120	13865	13865	11265	11265		61380

Validation Test Truck Run Set - Pre

Measured By: Dean J. Wolf

Verified By: Andrew Lewis

Traffic Sheet 20 LTPP MONITORED TRAFFIC DATA SPEED AND CLASSIFICATION STUDIES					STATE CODE: 53 SPS WIM ID: 530200 DATE (mm/dd/yyyy) 4/14/2015				
--	--	--	--	--	---	--	--	--	--

Count - 100 Time = 1:53:46 Trucks (4-15) - 100 Class 3s - 0

WIM speed	WIM class	WIM Record	Obs. Speed	Obs. Class	WIM speed	WIM class	WIM Record	Obs. Speed	Obs. Class
62	5	1822	62	5	58	9	2005	58	9
65	10	1823	65	10	62	10	2013	62	10
62	10	1851	61	10	63	8	2014	63	8
62	10	1852	63	10	57	13	2023	56	13
62	11	1856	62	11	55	5	2031	54	5
59	13	1859	60	13	57	9	2033	55	9
63	10	1864	63	10	61	9	2034	61	9
61	10	1865	63	10	64	6	2039	62	6
60	9	1866	60	9	60	9	2041	60	9
64	10	1874	60	10	65	9	2056	64	9
62	9	1880	61	9	59	10	2057	59	10
61	9	1882	61	9	54	9	2063	54	9
62	9	1890	62	9	61	9	2067	61	9
70	10	1891	69	10	62	13	2070	62	13
69	10	1893	68	10	59	9	2076	59	9
61	10	1894	60	10	63	9	2080	62	9
67	9	1897	66	9	62	10	2084	62	10
63	9	1899	62	9	60	10	2091	60	10
62	6	1901	62	6	61	10	2095	61	10
62	9	1908	61	9	62	9	2107	61	9
59	9	1911	58	9	62	11	2111	61	11
64	4	1915	62	4	60	9	2121	60	9
64	10	1920	63	10	60	10	2170	60	10
63	5	1924	63	5	60	10	2174	60	10
63	9	1998	62	9	61	9	2180	60	9

Sheet 1 - 1 to 50 Start: 9:53:45 Stop: 10:39:28
Recorded By: DJW Verified By: ABL

Validation Test Truck Run Set - Pre

Traffic Sheet 20 LTPP MONITORED TRAFFIC DATA SPEED AND CLASSIFICATION STUDIES					STATE CODE: 53 SPS WIM ID: 530200 DATE (mm/dd/yyyy) 4/14/2015				
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WIM speed	WIM class	WIM Record	Obs. Speed	Obs. Class	WIM speed	WIM class	WIM Record	Obs. Speed	Obs. Class
57	10	2193	56	10	64	5	2476	63	5
63	9	2194	61	9	60	8	2508	60	8
60	9	2222	59	9	62	9	2515	62	9
62	11	2255	61	11	55	9	2524	55	9
63	9	2269	63	9	62	9	2538	61	9
72	8	2279	70	5	59	9	2543	58	9
59	9	2291	58	9	51	8	2545	50	5
59	9	2292	59	9	61	10	2548	61	10
60	9	2295	60	9	59	9	2574	58	9
59	9	2308	59	9	61	10	2578	60	10
63	10	2363	63	10	63	9	2587	63	9
58	11	2365	60	11	58	5	2596	55	5
60	9	2384	60	9	59	6	2597	58	6
60	5	2404	59	4	60	9	2603	58	9
61	9	2420	60	9	61	4	2617	61	5
62	10	2427	61	10	59	9	2625	58	9
56	9	2434	55	9	59	10	2639	60	10
55	9	2435	54	9	63	10	2642	62	10
55	10	2436	55	10	60	10	2645	60	10
60	9	2437	60	9	60	10	2652	60	10
59	9	2443	58	9	61	10	2691	60	10
60	10	2444	61	10	63	10	2692	62	10
64	12	2450	63	12	67	5	2699	66	5
60	5	2461	60	5	58	9	2715	56	9
59	9	2462	57	9	60	9	2717	60	9

Sheet 2 - 51 to 100

Recorded By: DJW

Start: 10:41:18

Stop: 11:47:31
ABL

Traffic Sheet 21 (Wheel Load) LTPP MONITORED TRAFFIC DATA WIM SYSTEM TRUCK RECORDS										STATE CODE: 53 SPS WIM ID: 530200 DATE: (mm/dd/yyyy): 4/14/2015									
---	--	--	--	--	--	--	--	--	--	---	--	--	--	--	--	--	--	--	--

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
48.5	45	1	1	9:02:11	1459	45.0	11.4	17.8	16.9	15.1	15.6		76.8	18.0	4.2	28.9	4.1		55.2	61.0
48.5	49	2	1	9:02:26	1462	49.0	12.2	15.7	16.2	10.8	11.0		65.9	18.1	4.2	28.2	4.1		54.6	60.0
48.5	49	3	1	9:02:36	1463	49.0	11.2	14.8	14.0	11.1	11.1		62.2	16.6	4.3	28.1	4.0		53.0	58.0
50.0	50	1	2	9:25:12	1612	50.0	11.9	17.3	17.1	15.3	15.3		76.9	18.1	4.3	29.0	4.0		55.4	61.0
50.0	55	2	2	9:25:19	1613	54.0	11.5	16.4	16.5	11.8	11.3		67.6	18.2	4.2	28.1	4.1		54.6	61.0
50.0	52	3	2	9:25:26	1615	52.0	11.9	14.2	14.3	11.1	10.9		62.3	16.5	4.2	28.0	4.0		52.7	58.0
54.0	55	1	3	9:46:16	1773	56.0	10.6	17.2	16.8	16.4	17.3		78.3	18.1	4.3	28.9	4.0		55.3	62.0
54.0	58	2	3	9:46:22	1774	58.0	12.4	16.9	16.7	10.8	11.4		68.1	18.4	4.2	28.2	4.1		54.9	61.0
54.0	58	3	3	9:46:28	1778	57.0	11.7	14.4	14.0	11.5	10.8		62.4	16.5	4.2	28.1	4.0		52.8	58.0
54.8	48	1	4	10:07:16	1931	47.0	10.8	17.4	16.5	16.1	15.6		76.5	18.1	4.3	29.0	4.0		55.4	61.0
54.8	50	2	4	10:07:20	1932	50.0	12.0	15.8	15.7	10.9	10.8		65.2	18.3	4.3	28.3	4.0		54.9	60.0
54.8	50	3	4	10:07:30	1934	47.0	11.3	14.5	14.1	11.0	10.3		61.3	16.5	4.2	28.1	4.0		52.8	58.0
59.9	52	1	5	10:32:28	2129	52.0	10.8	16.9	16.6	15.6	16.4		76.2	18.0	4.3	28.9	4.1		55.3	61.0
59.9	55	2	5	10:32:32	2130	55.0	12.0	16.2	16.6	11.2	10.8		66.8	18.1	4.2	28.1	4.1		54.5	60.0
59.9	53	3	5	10:32:39	2133	52.0	10.7	14.7	14.2	11.6	10.9		62.2	16.5	4.2	28.1	4.0		52.8	58.0
67.8	55	1	6	10:54:53	2310	55.0	10.6	17.5	16.9	15.9	16.0		77.0	18.1	4.2	29.0	4.0		55.3	61.0
67.8	59	2	6	10:55:02	2311	59.0	11.2	16.7	16.1	9.6	11.1		64.7	18.3	4.2	28.2	4.0		54.7	60.0
67.8	56	3	6	10:55:06	2313	56.0	11.3	13.4	13.5	10.5	10.3		59.1	16.5	4.2	27.9	3.9		52.5	57.0
71.8	46	1	7	11:17:17	2482	45.0	11.2	16.7	16.2	15.3	15.8		75.1	18.1	4.3	28.9	4.0		55.3	61.0
71.8	50	2	7	11:17:23	2484	50.0	10.7	16.5	17.0	10.9	10.7		65.7	18.2	4.2	28.2	4.1		54.7	61.0
71.8	50	3	7	11:17:30	2488	48.0	11.8	14.1	13.6	10.8	10.4		60.7	16.6	4.2	28.0	4.0		52.8	58.0
73.1	50	1	8	11:39:55	2654	50.0	10.8	16.7	16.1	15.1	15.6		74.3	18.0	4.2	28.9	4.0		55.1	61.0
73.1	54	2	8	11:40:02	2656	54.0	12.1	15.0	14.9	11.1	10.5		63.7	18.3	4.3	28.2	4.1		54.9	61.0
73.1	53	3	8	11:40:07	2657	52.0	10.7	14.3	14.1	10.8	11.0		60.8	16.5	4.2	28.0	4.0		52.7	58.0
Recorded By: <u>DJW</u> Verified By: <u>ABL</u> Run Set <u>Pre</u>																				

Traffic Sheet 21 (Wheel Load) LTPP MONITORED TRAFFIC DATA WIM SYSTEM TRUCK RECORDS										STATE CODE: 53 SPS WIM ID: 530200 DATE: (mm/dd/yyyy): 4/14/2015									
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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
67.6	55	1	9	12:02:50	2831	55.0	11.1	17.6	16.7	15.8	16.4		77.6	18.1	4.3	29.1	4.1		55.6	62.0
67.6	59	2	9	12:02:52	2832	59.0	11.5	16.6	17.3	11.6	11.1		68.1	18.2	4.2	28.2	4.1		54.7	61.0
67.6	56	3	9	12:03:06	2835	56.0	10.8	14.4	14.4	10.9	11.3		61.6	16.5	4.2	28.0	4.0		52.7	58.0
64.8	48	1	10	12:25:23	2997	47.0	11.3	16.7	16.3	15.2	15.0		74.6	17.9	4.2	28.9	4.1		55.1	61.0
64.8	50	2	10	12:25:26	2998	50.0	11.1	16.1	15.8	11.5	10.5		65.1	18.1	4.3	28.1	4.1		54.6	60.0
64.8	49	3	10	12:25:33	3001	47.0	11.2	14.2	13.6	10.6	10.5		60.0	16.5	4.2	28.1	4.0		52.8	58.0
65.8	54	1	11	12:48:15	3169	55.0	10.7	17.1	16.4	16.3	15.8		76.3	18.1	4.3	28.9	4.1		55.4	61.0
65.8	54	2	11	12:48:22	3170	55.0	11.0	15.5	15.8	10.9	10.4		63.6	18.2	4.2	28.1	4.1		54.6	60.0
65.8	54	3	11	12:48:33	3171	53.0	11.1	14.1	13.7	10.5	10.3		59.7	16.5	4.2	28.1	4.0		52.8	58.0
73.1	58	1	12	13:16:03	3381	58.0	10.5	17.2	17.2	16.0	16.4		77.3	18.0	4.2	28.9	4.0		55.1	62.0
73.1	59	2	12	13:16:06	3382	59.0	12.9	14.6	14.5	10.8	10.2		63.0	18.3	4.2	28.2	4.1		54.8	60.0
73.1	58	3	12	13:16:10	3383	57.0	10.8	14.5	14.5	11.3	11.1		62.2	16.5	4.2	27.9	4.0		52.6	58.0
83.5	48	1	13	13:38:52	3555	47.0	11.3	16.6	16.3	15.1	15.5		74.9	18.1	4.3	29.0	4.0		55.4	61.0
83.5	50	2	13	13:38:56	3556	50.0	11.7	15.8	15.8	12.0	11.4		66.7	18.2	4.2	28.2	4.0		54.6	60.0
83.5	47	3	13	13:39:03	3557	47.0	11.6	13.6	12.9	11.1	10.5		59.6	16.6	4.2	28.0	4.0		52.8	58.0
60.9	51	1	14	14:02:34	3759	52.0	10.7	17.1	16.8	15.8	16.1		76.4	18.1	4.3	28.8	4.0		55.2	61.0
60.9	53	2	14	14:02:42	3762	54.0	11.5	16.3	16.2	11.7	10.9		66.7	18.2	4.2	28.0	4.1		54.5	60.0
60.9	51	3	14	14:02:50	3766	51.0	10.1	14.1	14.0	11.2	11.1		60.5	16.5	4.3	28.1	4.0		52.9	58.0

Recorded By: DJW

Verified By: ABL

Run Set Pre

<p align="center">Traffic Sheet 22 LTPP MONITORED TRAFFIC DATA SITE EQUIPMENT ASSESSMENT LTPP LANE ONLY</p>	<p>STATE CODE: 53 SPS WIM ID: 530200 STATE ASSIGNED ID P7C DATE (mm/dd/yyyy) 4/14/2015</p>
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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. Downstream Kistler sensor appears to have a crack in the grout, however the in-road sensors do not show additional 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: 53 SPS WIM ID: 530200 STATE ASSIGNED ID P7C DATE (mm/dd/yyyy) 4/14/2015
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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:	53
	SPS WIM ID:	530200
	STATE ASSIGNED ID	P7C
	DATE (mm/dd/yyyy)	4/14/2015

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>60.4</u> mph	Average WIM Speed	<u>60.9</u> mph
Mean Difference	<u>0.6</u> mph	SD of mean	<u>0.9</u>

Posted Speed Limit	<u>60</u> mph	
Speed Range	15th percentile - <u>59</u> mph	85th percentile- <u>64</u> mph

Spacing and Weight - Complete Sheet 21 and attach.

Average distance between axles of drive tandem	<u>4.23</u> feet
% error from 4.25 ft (industry average)	OR <u>4.23</u> ft (WIM system average)
= <u>-0.4</u> %	

Average front axle weight for Class 9 vehicles	<u>11.3</u> lbs
% error from 10.3 kips (industry average) OR	<u>11.3</u> lbs (known site value)
= <u>9.5</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:	53
	SPS WIM ID:	530200
	STATE ASSIGNED ID	P7C
	DATE (mm/dd/yyyy)	4/14/2015

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 Wolf

Traffic Sheet 22 Addendum - Kistler Quartz LTPP MONITORED TRAFFIC DATA SITE EQUIPMENT ASSESSMENT LTPP LANE ONLY	STATE CODE: 53 SPS WIM ID: 530200 STATE ASSIGNED ID P7C DATE (mm/dd/yyyy) 4/14/2015
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STATIC EQUIPMENT VALUES (SYSTEM OFF)

1. POWER

a. Solar Panel	_____	WATTS	_____	VDC
b. Equipment Power	<u>121.1</u>	VAC	_____	VDC
c. Battery 1	_____	VDC		
d. Battery 2	_____	VDC		
e. Regulated	_____	VDC		
f. Power Supply	<u>121.1</u>	VAC	_____	VDC
g. System Input	<u>121.1</u>	VAC	_____	VDC
h. Modem Power	_____	VAC	_____	VDC
i. Telephone	_____	VDC		

2. LOOP SENSORS

	Resistance		Inductance		Shield	
a. Leading	<u>0.9</u>	Ω	<u>145.0</u>	μh	<u>inf</u>	M Ω
b. Trailing	<u>1.1</u>	Ω	<u>144.9</u>	μh	<u>inf</u>	M Ω

3. KISTLER SENSORS

	Resistance		Capacitance	
a. K1 (lead/left)	<u>10^9</u>	Ω	<u>15</u>	ηf
b. K2 (lead/middle)	<u>10^9</u>	Ω	<u>16</u>	ηf
c. K3 (lead mid/right)	_____	Ω	_____	ηf
d. K4 (lead/right)	_____	Ω	_____	ηf
e. K5 (trail/left)	_____	Ω	_____	ηf
f. K6 (trail/mid left)	_____	Ω	_____	ηf
g. K7 (trail/mid right)	<u>$<10^9$</u>	Ω	<u>8</u>	ηf
h. K8 (trail/right)	<u>10^{11}</u>	Ω	<u>15</u>	ηf

DYNAMIC EQUIPMENT VALUES (SYSTEM ON)

4. LOOP SENSORS

	Frequency	
a. Leading	<u>13.01</u>	KHz
b. Trailing	<u>13.68</u>	KHz

5. KISTLER SENSORS

Dynamic testing for the Kistler Quartz sensor is not recommended.

Assessor _____ Dean Wolf

<p align="center">Traffic Sheet 24A LTPP MONITORED TRAFFIC DATA SITE PHOTO LOG - Equipment</p>	<p align="right">STATE CODE: 53 SPS WIM ID: 530200 DATE (mm/dd/yyyy) 4/14/2015</p>
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Item	Description	Filename
1	Power Source	530200_power_box_04_14_15.jpg
2	Telephone Source	530200_collular_modem_04_14_15.jpg
3	Cabinet Exterior	530200_cabinet_exterior_04_14_15.jpg
4	Cabinet Interior - Front	530200_cabinet_interior_04_14_15.jpg
5	Cabinet Interior - Rear	
6	Leading weight sensor	530200_leading_WIM_sensor_04_14_15.jpg
7	Trailing weight sensor	530200_trailing_WIM_sensor_04_14_15.jpg
8	Leading classification sensor	
9	Trailing classification sensor	
10	Leading loop sensor	530200_leading_loop_04_14_15.jpg
11	Trailing loop sensor	530200_trailing_loop_04_14_15.jpg
12	Downstream from site	530200_downstream_04_14_15.jpg
13	Upstream from site	530200_upstream_04_14_15.jpg
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		

<p align="center">Traffic Sheet 24B</p> <p align="center">LTPP MONITORED TRAFFIC DATA</p> <p align="center">SITE PHOTO LOG - Test Trucks</p>	<p>STATE CODE: 53</p> <p>SPS WIM ID: 530200</p> <p>DATE (mm/dd/yyyy) 4/14/2015</p>
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Item	Description	Filename
1	Tractor, Truck #1	530200_Truck_1_Tractor_04_14_15.jpg
2	Trailer/Load, Truck #1	530200_Truck_1_Trailer_04_14_15.jpg
3	Kingpin Offset, Truck #1	
4	Suspension A, Truck #1	530200_Truck_1_Suspension_1_04_14_15.jpg
5	Suspension B, Truck #1	530200_Truck_1_Suspension_2_04_14_15.jpg
6	Suspension C, Truck #1	530200_Truck_1_Suspension_3_04_14_15.jpg
7	Suspension D, Truck #1	530200_Truck_1_Suspension_4_04_14_15.jpg
8	Suspension E, Truck #1	530200_Truck_1_Suspension_5_04_14_15.jpg
9	Suspension F, Truck #1	
10	Tractor, Truck #2	530200_Truck_2_Tractor_04_14_15.jpg
11	Trailer/Load, Truck #2	530200_Truck_2_Trailer_04_14_15.jpg
12	Kingpin Offset, Truck #2	
13	Suspension A, Truck #2	530200_Truck_2_Suspension_1_04_14_15.jpg
14	Suspension B, Truck #2	530200_Truck_2_Suspension_2_04_14_15.jpg
15	Suspension C, Truck #2	530200_Truck_2_Suspension_3_04_14_15.jpg
16	Suspension D, Truck #2	530200_Truck_2_Suspension_4_04_14_15.jpg
17	Suspension E, Truck #2	530200_Truck_2_Suspension_5_04_14_15.jpg
18	Suspension F, Truck #2	
19	Tractor, Truck #3	530200_Truck_3_Tractor_04_14_15.jpg
20	Trailer/Load, Truck #3	530200_Truck_3_Trailer_04_14_15.jpg
21	Kingpin Offset, Truck #3	
22	Suspension A, Truck #3	530200_Truck_3_Suspension_1_04_14_15.jpg
23	Suspension B, Truck #3	530200_Truck_3_Suspension_2_04_14_15.jpg
24	Suspension C, Truck #3	530200_Truck_3_Suspension_3_04_14_15.jpg
25	Suspension D, Truck #3	530200_Truck_3_Suspension_4_04_14_15.jpg
26	Suspension E, Truck #3	530200_Truck_3_Suspension_5_04_14_15.jpg
27	Suspension F, Truck #3	
28	Scale	
29		
30		