Complying with Motorcycle Reporting Requirements: PennDOT Perspective

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Carlisle, PA
Summer Bike Fest

- Performed 5 hour manual counts at 4 (2 WIM, 2 CAVC) permanent site locations around event
- During manual count, dialed into site from central office to watch traffic
- 2007: data from 3 of 4 sites (2 WIM, 1 CAVC). One CAVC did not collect data correctly
- 2008: data from 3 of 4 sites (2 WIM, 1 CAVC). One CAVC was not collecting data correctly

Locations from Carlisle Summer Bike Fest

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WIM Site 505
SR 22 Newport, PA

- Site Installed: March 2003
- System: PAT DAW WIM Electronics
- Remote Communication: CDMA Cellular Modem
- Sensor Type: Kistler Quartz (Drive Lane WB), MSI Polymer Piezo (Pass WB, both EB lanes)
- Piezos were replaced in EB lanes in April 2007
- Site Calibrated April 2008
- Piezo replaced in WB passing lane in May 2008

2007 WIM 505 EB Count Results

EB Driving Lane				EB Passing Lane	
Hour	Manual Observation	Site Count		Manual Observation	Site Count
0800-0900	2	2		2	0
0900-1000	1	1		1	0
1000-1100	4	4		2	0
1200-1300	1	1		2	1
1300-1400	2	1		1	0

- Observations: why did the EB Driving Lane classify and the EB Passing lane not classify motorcycles???
- Since piezos are staggered in roadway, are they missing axles???

2008 WIM 505 EB Count Results

EB Driving Lane				EB Passing Lane	
Hour	Manual Observation	Site Count		Manual Observation	Site Count
0800-0900	3	2		0	0
0900-1000	4	3		1	2
1000-1100	3	1		0	1
1200-1300	7	4		2	2
1300-1400	2	1		1	0

- Observations: why is the EB Driving Lane under counting the motorcycles? Is the staggered 6 foot piezo configuration missing axles?

WIM Site 600
I-81 Shippensburg, PA

- Site Installed: NB Lanes October 2002
  SB Lanes November 2005
- System: PAT DAW WIM Electronics
- Remote Communication: CDPD Cellular Modem
- Sensor Type: Kistler Quartz (Drive Lanes NB & SB)
  MSI Polymer (Pass Lanes NB & SB)
- SB passing piezo replaced March 2007
- Site Calibrated April 2008

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2007 WIM 600 NB Count Results

NB Driving Lane				NB Passing Lane	
Hour	Manual Observation	Site Count		Manual Observation	Site Count
0800-0900	14	2		6	3
0900-1000	21	1		6	2
1000-1100	19	0		4	7
1200-1300	20	0		6	5
1300-1400	9	3		11	3

- Observations: Observations: why did the NB Passing Lane classify better and the NB Driving lane not classify motorcycles???
- Since piezos are staggered in roadway, are they missing axles???

2008 WIM 600 NB Count Results

NB Driving Lane				NB Passing Lane	
Hour	Manual Observation	Site Count		Manual Observation	Site Count
0800-0900	24	0		19	7
0900-1000	33	0		10	7
1000-1100	36	1		9	6
1200-1300	20	0		8	7
1300-1400	5	0		2	3

- Observations: Why did the NB Passing Lane classify better and the NB Driving lane not classify motorcycles???
- Since piezos are staggered in roadway, are they missing axles???
- Were motorcycles traveling in groups and being classified in another class?
- Is there a problem with the piezo in the NB Driving Lane?

CAVC Site 801
I-81 Paxtonia, PA

- Site Installed: August 2005
- System: Phoenix Diamond Version 2.96a
- Communications: Hidex Modem
- Sensor Type: Class II BL Sensor
- Electrical Checks performed at site April 2008

2007 CAVC 801 SB Count Results

SB Driving Lane				SB Passing Lane	
Hour	**Manual Observation**	**Site Count**		**Manual Observation**	**Site Count**
0800-0900	11	17		9	2
0900-1000	17	NO DATA		10	NO DATA
1000-1100	23	NO DATA		23	NO DATA
1200-1300	25	125		29	106
1300-1400	25	7		18	4

- Observations: Piezos were counting erratic???

2008 CAVC 801 SB Count Results

SB Driving Lane				SB Passing Lane	
Hour	Manual Observation	Sit		Manual Obser io	e C unt
0800-0900					
0900-1000					
1000-1100					
1200-1300					
1300-14					

Site Down

CAVC Site 205
I-83 North York, PA

- Site Converted from ATR : October 2006
- System: Phoenix Diamond Version 2.94a
- Communications: Cascade Low Power Data Modem
- Sensor Type: Class II BL Sensor
- Electrical Checks performed at site April 2008
- NB and SB piezos replaced June 2008 with 12 ft. piezos

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2007 CAVC 205 NB Count Results

SB Driving Lane				SB Passing Lane	
Hour	Manual Observation	Sit		Manual Obser io	e C unt
0800-0900					
0900-1000					
1000-1100					
1200-1300					
1300-14					

Site Down

2008 CAVC 205 NB Count Results

NB Driving Lane				NB Passing Lane	
Hour	Manual Observation	Site Count		Manual Observation	Site Count
0800-0900	14	6		8	4
0900-1000	12	9		9	7
1000-1100	5	4		7	7
1200-1300	7	5		3	3
1300-1400	7	5		12	4

- Observations: Miss classifying groups of motorcycles (causing lower count)???
- Miss hitting loops???
- Lane changes???
- Limited metal in motorcycle frame???

Information from IRD

- "Be warned: these sites (505 and 600) will always underreport motorcycles very badly. They will usually be classified as small cars. Your sites have a staggered sensor layout. Because of this, a motorcycle will usually only hit one of the sensor, but not both. The WIM system will record this as a vehicle with missing axle detection, and create a class 2 vehicle for default."

Annual Statewide Traffic Count Program

- 2008 count program consists of 7000 counts. Approximately 30% are scheduled as class counts
- Roadway Management System (RMS) currently accounts for 9 classes. Classes 1, 2, 3 are combined
- Starting 2007, we have been in the process of updating RMS to handle all 13 FHWA vehicle classes

PennDOT Roadway Management System

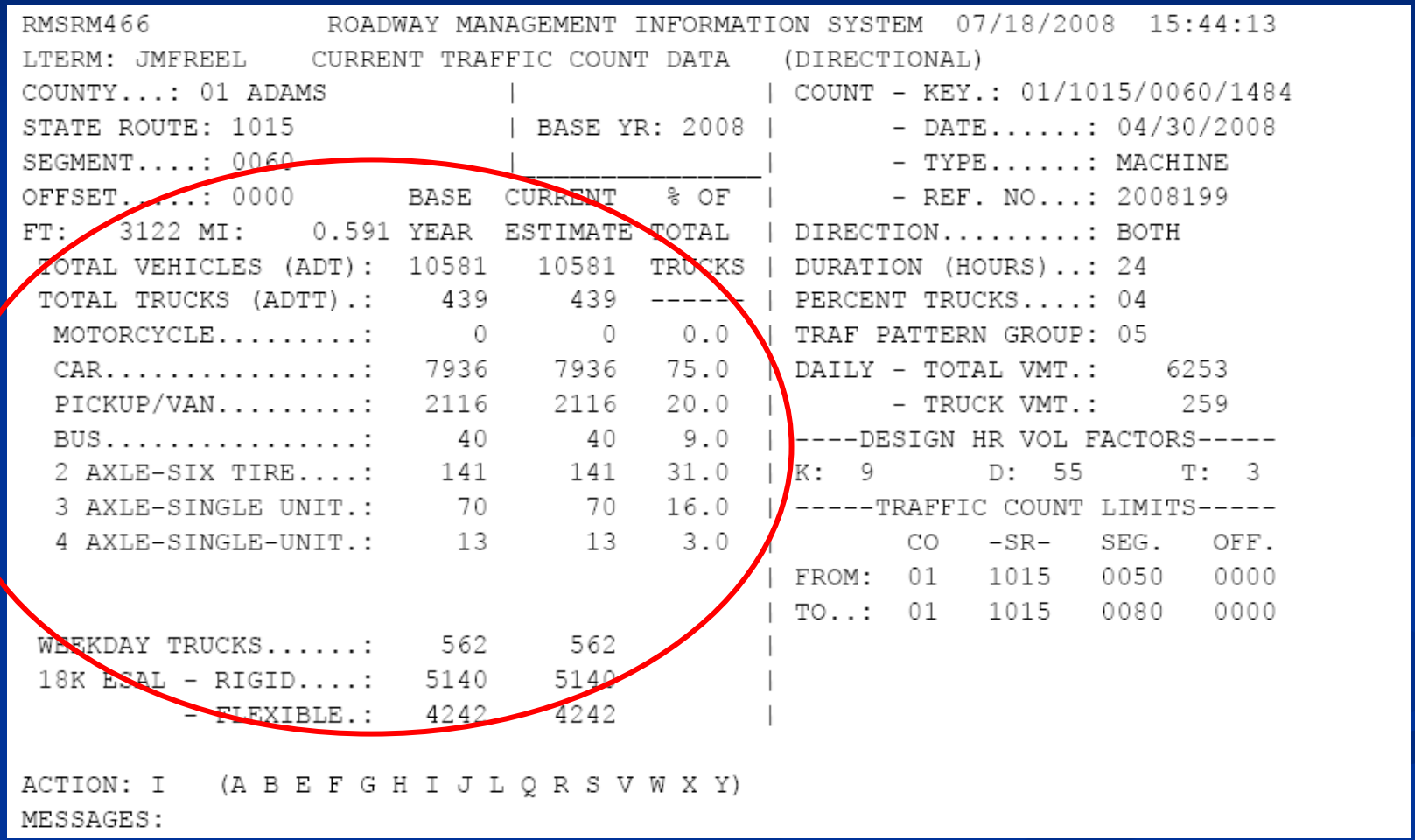
- Mainframe application designed in mid 1980's
- Stores all traffic information; current and history, raw data, traffic limit information, etc.
- RMS combines Classes 1, 2, and 3
- Other classes combined: Class 4 (bus) gets split depending on axles, 2 axle bus put with Class 5, 3 axle bus put with Class 6. Class 8 gets split between two other classes.
- In order to comply with FHWA motorcycle requirements, need to break all 13 classes out in RMS.

Current RMS 466 Traffic Screen

```
RMSRM466            ROADWAY MANAGEMENT INFORMATION SYSTEM  07/22/2008  08:01:13
LTERM: ABAHORI    CURRENT TRAFFIC COUNT DATA    (DIRECTIONAL)
COUNTY...: 01 ADAMS            |                | COUNT - KEY.: 01/0015/0020/0031
STATE ROUTE: 0015              | BASE YR: 2007  |       - DATE......: 10/30/2007
SEGMENT....: 0010              |________________|       - TYPE......: MACHINE
OFFSET.....: 0000        BASE  CURRENT   % OF   |       - REF. NO...: 2007314
FT.     500 MI:    0.095 YEAR  ESTIMATE TOTAL   | DIRECTION.........: NORTH
 TOTAL VEHICLES (ADT):   8349    8349  TRUCKS | DURATION (HOURS)..: 24
 TOTAL TRUCKS (ADTT).:   1489    1489  ------ | PERCENT TRUCKS....: 18
  2 AXLE TRUCK OR BUS:    551     551     36   | TRAF PATTERN GROUP: 04
  3 AXLE SINGLE UNIT.:    104     104      7   | DAILY - TOTAL VMT.:     793
  3 AXLE SEMI-TRAILER:     30      30      2   |       - TRUCK VMT.:     141
  4 AXLE SINGLE UNIT.:      0       0      0   | ----DESIGN HR VOL FACTORS-----
  4 AXLE SEMI-TRAILER:     89      89      6   | K:  9       D:  60       T: 16
  5 AXLE SEMI-TRAILER:    670     670     45   | -----TRAFFIC COUNT LIMITS-----
  5 AXLE TWIN-TRAILER:     30      30      2   |        CO   -SR-   SEG.   OFF.
  6 OR MORE AXLE ALL.:     15      15      1   | FROM:  01   0015   0010   0000
                               |                | TO..:  01   0015   0030   1926
 WEEKDAY TRUCKS......:   1906    1906          | --------PARALLEL LIMITS-------
 18K ESAL - RIGID....:   1503    1503          | FROM:  01   0015   0011   0000
          - FLEXIBLE.:   1057    1057          | TO..:  01   0015   0031   2300

ACTION: I    (A B E F G H I J L Q R S V W X Y)
MESSAGES:
```

Updated RMS 466 Traffic Screen



```
RMSRM466            ROADWAY MANAGEMENT INFORMATION SYSTEM  07/18/2008  15:44:13
LTERM: JMFREEL    CURRENT TRAFFIC COUNT DATA    (DIRECTIONAL)
COUNTY...: 01 ADAMS           |                | COUNT - KEY.: 01/1015/0060/1484
STATE ROUTE: 1015             | BASE YR: 2008  |       - DATE.....: 04/30/2008
SEGMENT....: 0060             |________________|       - TYPE.....: MACHINE
OFFSET.....: 0000       BASE  CURRENT   % OF   |       - REF. NO...: 2008199
FT:   3122 MI:    0.591 YEAR  ESTIMATE TOTAL   | DIRECTION.........: BOTH
 TOTAL VEHICLES (ADT):  10581   10581  TRUCKS  | DURATION (HOURS)..: 24
 TOTAL TRUCKS (ADTT).:    439     439  ------  | PERCENT TRUCKS....: 04
  MOTORCYCLE.........:      0       0    0.0   | TRAF PATTERN GROUP: 05
  CAR................:   7936    7936   75.0   | DAILY - TOTAL VMT.:    6253
  PICKUP/VAN.........:   2116    2116   20.0   |       - TRUCK VMT.:     259
  BUS................:     40      40    9.0   | ----DESIGN HR VOL FACTORS-----
  2 AXLE-SIX TIRE....:    141     141   31.0   | K:  9       D:  55      T:  3
  3 AXLE-SINGLE UNIT.:     70      70   16.0   | -----TRAFFIC COUNT LIMITS-----
  4 AXLE-SINGLE-UNIT.:     13      13    3.0   |        CO   -SR-   SEG.   OFF.
                                               | FROM:  01   1015   0050   0000
                                               | TO..:  01   1015   0080   0000
 WEEKDAY TRUCKS......:    562     562          |
 18K ESAL - RIGID....:   5140    5140          |
          - FLEXIBLE.:   4242    4242          |

ACTION: I    (A B E F G H I J L Q R S V W X Y)
MESSAGES:
```

Updated RMS 466 Traffic Screen

```
RMSRM466            ROADWAY MANAGEMENT INFORMATION SYSTEM  07/18/2008  15:45:01
LTERM: JMFREEL    CURRENT TRAFFIC COUNT DATA    (DIRECTIONAL)
COUNTY...: 01 ADAMS            |                | COUNT - KEY.: 01/1015/0060/1484
STATE ROUTE: 1015              | BASE YR: 2008  |       - DATE.....: 04/30/2008
SEGMENT...: 0060               |________________|       - TYPE.....: MACHINE
OFFSET.....: 0000        BASE  CURRENT    % OF  |       - REF. NO...: 2008199
FT:   3122 MI:    0.591 YEAR  ESTIMATE TOTAL   | DIRECTION.........: BOTH
 TOTAL VEHICLES (ADT):  10581   10581  TRUCKS  | DURATION (HOURS)..: 24
 TOTAL TRUCKS (ADTT).:    439     439  ------  | PERCENT TRUCKS....: 04
  3 AXLE W/TRL.......:     70      70   16.0   | TRAF PATTERN GROUP: 05
  3 AXLE-MULTI AXLTRL:     92      92   21.0   | DAILY - TOTAL VMT.:    6253
  6 AXLE-SINGLE TRL..:      0       0    0.0   |       - TRUCK VMT.:     259
  5 AXLE-MULTI TRL...:      9       9    0.2   | ----DESIGN HR VOL FACTORS-----
  6 AXLE-MULTI TRL...:      4       4    0.1   | K:  9       D:  55       T:  3
  7 AXLE-MULTI TRL...:      0       0    0.0   | -----TRAFFIC COUNT LIMITS-----
                                               |       CO   -SR-   SEG.   OFF.
                                               | FROM:  01   1015   0050   0000
                                               | TO..:  01   1015   0080   0000
 WEEKDAY TRUCKS......:    562     562          |
 18K ESAL - RIGID....:   5140    5140          |
          - FLEXIBLE.:   4242    4242          |

ACTION: I    (A B E F G H I J L Q R S V W X Y)
MESSAGES:
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Additional Items

- In house testing of portable machine classification counters
- ATR/CAVC Conversions
- Replacing bad 6ft. Piezos with 12ft. Piezos
- More portable classification counts in annual statewide count program

Questions……

Please contact….

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Or

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