

NATMEC 2002

Non-Traditional Sensors



Fiber Optic Sensor

- Why did MDOT look at these sensors
- Techniques used
- Example studies
- Results

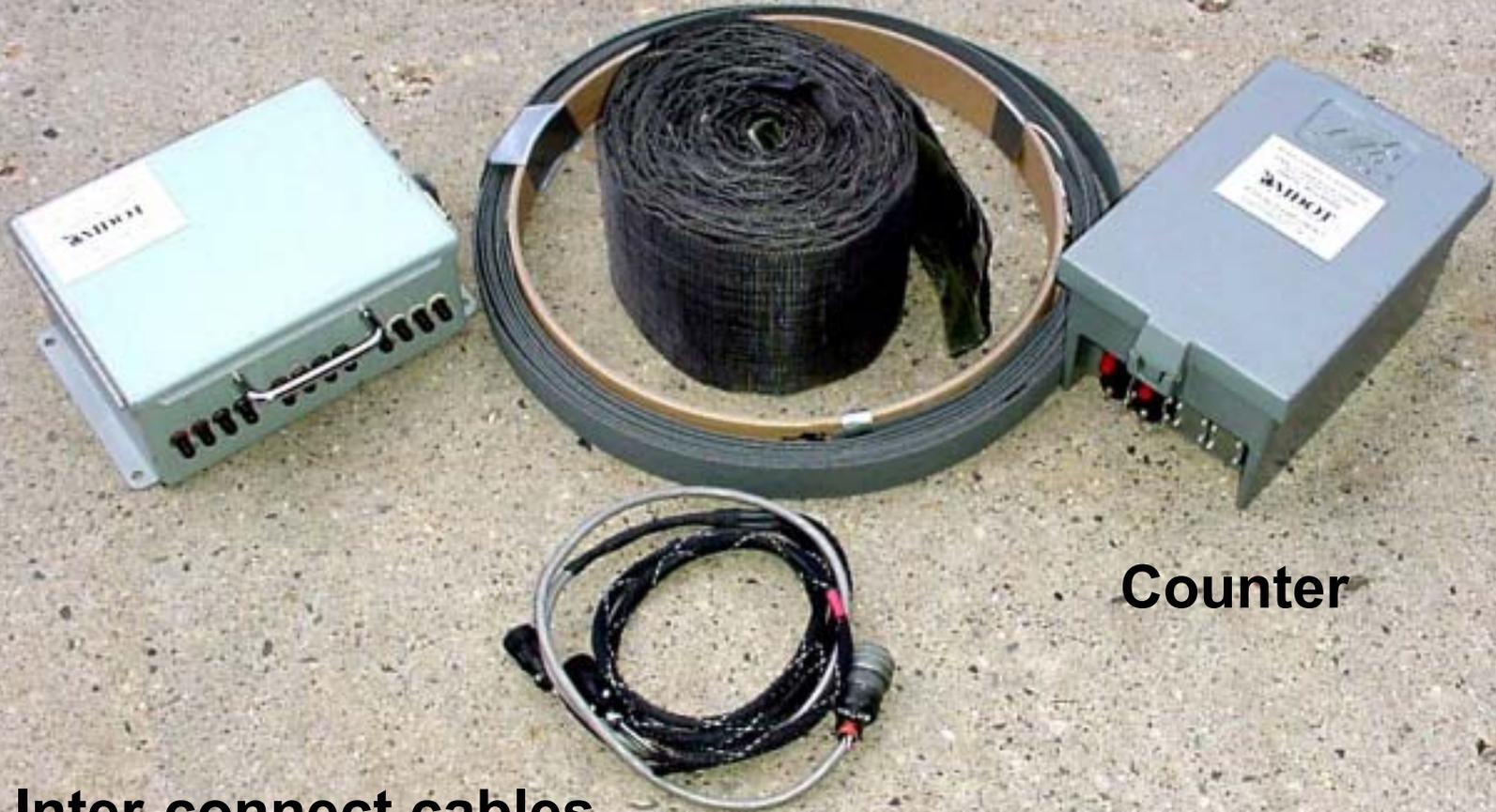
Fiber optic sensor

Interface box

Tar tape with a pocket

Counter

Inter-connect cables



Fiber Optic Sensors

What did we want

- To get multi-lane, lane specific vehicle classification data; another tool to use for data collection
- Easy installation
- Cost effective
- Quality data

Multi-lane vehicle classification



Ease of installation ?



Cost effective ?

- \$100 Fiber optic, per lane
- \$1,000 Interface box
- \$1,000 Traffic recorder (Existing)
- \$5,000 Repair kit
- \$20 Tar tape – 2, 2 lane studies

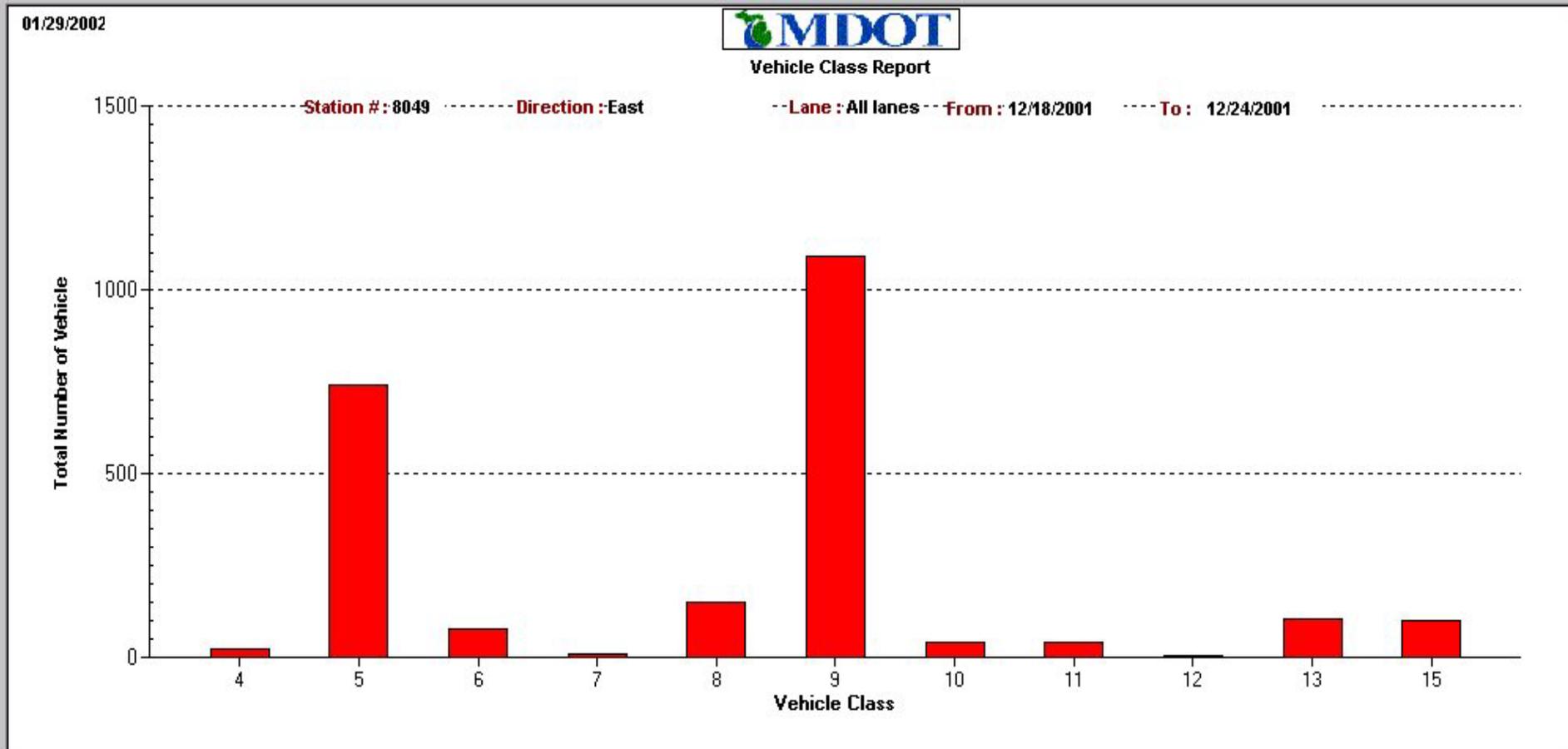
Quality Data

Please Select a Report

County Station # Direction Lane

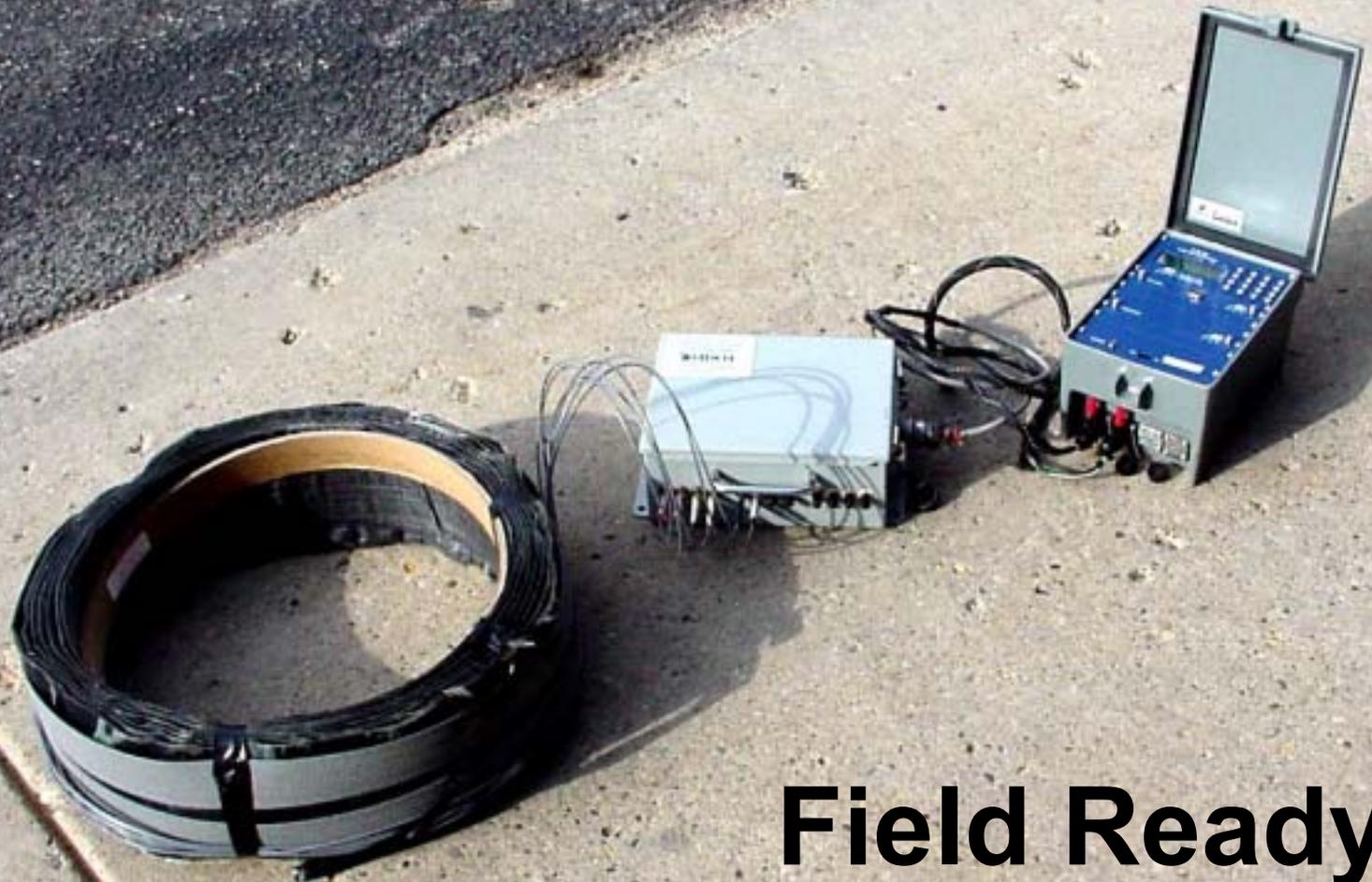
All Lanes

Select From Available Date
From To



Installation





Field Ready







Other Installation Techniques

- Used MDOT vehicle to slow traffic
- Lower volume roads, used a two person crew
- Higher volume roads, used a three + person crew

Examples

All sites were set to classify

- I-75 Flint – Urban, May 1999
 - 55,000 AADT, 5,000 CAADT
- I-96 Fowlerville – Rural, Summer 2000
 - 46,000 AADT, 7,000 CAADT
- I-94 Berrien – Rural, Fall 2000
 - 41,000 AADT, 13,000 CAADT
- 22 studies conducted during 2001

I-75, Flint

Intermittent failure due to problems with the connector. The manufacture changed the epoxy.

I-96 Fowlerville

- Initially set to classify
- Set at a permanent vehicle classification site
- Positive results when compared to AVC
- Left down until last sensor failed at over 1million hits

I-94 Berrien

- Used at 2, 3 lane sites set directionally
- High commercial volume
- Recorded 600,000 hits on each sensor
- Reasonable results

2001 Settings

- Conducted 22 studies
- Variety; CAADT's ranging from 500 to 18,000
- Two studies complete failure, four studies only one direction useable
 - Sensor failure, sensor sheared, interface box failure
- Results reasonable

Observations

- Allows for multi lane classification
- Accuracy level is better than hoses – adheres to the road
- Must have steady traffic flow (similar to hoses)
- Must purchase interface
- Must use tar tape
 - Prepare prior to installation
 - Install in 5 minutes
 - Weather dependent – Pavement must be dry and temperature above 50 degrees, prefer to install in sun
- Can calibrate using a radar gun, visual
- All installations require field technician work
- Independent lane results
- Should purchase repair kit

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