ABC’s of Traffic Sensors

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Choosing a Sensor – 4 Factors

1. Sensor Technology
2. Data needed
3. Site limitation
4. Cost consideration
1 - Sensor Technology (most common)

- Road tubes
- Video detection
- Radar/microwave
- Magnetometers/loops
- Piezos:
  - Polymer
  - Coax (channelized)
  - Quartz
- Bending plates
- Load cells

(TMG pages 1-10 to 1-15):
2 - Data to Be Collected: Volume, Speed or Class

- Array needed (number and spacing of sensors)
  - Volume: one sensor (axle hits)
  - Speed: 2 sensors
  - Length Class: 2 sensors
  - Axle Class: 2 to 4 sensors

- Desired accuracy and detail:
  - 2 loops or magnetometers
  - 2 axle sensors (full lane or partial lane)
  - 2 axle sensors and one loop (presence only)
  - 4 axle sensors (done by wheel path)

- Per vehicle storage or binned data
2 – Data to Be Collected: Weight

- Polymer Piezo (class 1)
- Coaxial Piezo
- In-line strain gauge
- Quartz Piezo
- Bending plate
- Load cell

Array to use:
- Double threshold (best WIM array to use see TMG page 3-73)
- Full width or partial
- 16’ spacing best to reduce influence of vehicle dynamics
- 400’ approach, array and exit distance
3 - Site Limitations

- Pavement type and condition
- Sensor array
- Roadway right of way
- Communications, power and grounding
- Others
4 – Cost Consideration

- Road tubes - $100 or less
- Loops $500 - $1,000
- Radar/Microwave
- Magnetometers
- Polymer piezo (11’ class 2) - $1,000
- Linear quartz or in-line strain gauge
- Bending plate or load cell
Questions and Comments

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