

# 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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