

APPENDIX D: RESPONSES FROM VENDORS

Question 1: What percentage of state highway agencies certify your profiling equipment before data collection by collecting data at test sections established by the State Highway Agency within the state where data collected by your profiler is compared with data collected by a reference device?

Vendor 1: 80 to 100%

Vendor 2: 60 to 80%

Vendor 2 Comment: While we perform regular controls, reference devices operated by the agencies is often very limited. Historic data and other inertial profilers are commonly used as a benchmark.

Question 2: What percentage of state highway agencies require your profiling equipment to be certified at a facility operated by a DOT or a university (e.g., NCAT, TTI) before data collection?

- Less than 20%.
- 20 to 40%.
- 40 to 60%.
- 60 to 80%.
- 80 to 100%.

Vendor 1: Less than 20%.

Vendor 2: Less than 20%.

Question 3: How many state highway agencies require your profiling equipment to collect data at control sections established in different parts of the state during network level data collection?

- Less than 20%.
- 20 to 40%.
- 40 to 60%.
- 60 to 80%.
- 80 to 100%.

Vendor 1: 80 to 100%.

Vendor 2: 80 to 100%.

Question 4: How many state highway agencies require your company to submit a data quality control plan before collecting data?

- Less than 20%.
- 20 to 40%.
- 40 to 60%.

- 60 to 80%.
- 80 to 100%.

Vendor 1: 80 to 100%.

Vendor 2: 80 to 100%.

Vendor 2 Comment: This is a standard part of our process and is completed regardless if it has been requested.

Question 5: How many state highway agencies specify the sensor spacing (distance between left and right sensors) in their contract documents for data collection?

- Less than 20%.
- 20 to 40%.
- 40 to 60%.
- 60 to 80%.
- 80 to 100%.

Vendor 1: 80 to 100%

Vendor 2: Less than 20%

Vendor 2: Most States specify the ASTM or AASHTO standard which allows a range.

If an agency does not specify a sensor spacing, what sensor spacing do you use?

Vendor 1: 69 inches.

Vendor 2: We always meet the acceptable ranges of the ASTM and AASHTO standards. We aim typically to match the wheels of the collection vehicle. International standards differ from the 69" that is imposed by Texas DOT and TTI.

Question 6: How many state highway agencies specify the profile data recording interval in their contract documents for data collection?

- Less than 20%.
- 20 to 40%.
- 40 to 60%.
- 60 to 80%.
- 80 to 100%.

Vendor 1: 80 to 100%

Vendor 2: 40 to 60%

Vendor 1: Many are indirectly specifying by requiring an industry standard

Vendor 2: Most States specify the ASTM or AASHTO standard which allows a range, but 1” or 25 mm (depending on metric versus imperial reporting requirements) meets faulting and roughness requirements and is easily obtained with all equipment.

If an agency does not specify a data recording interval, what is the data recording interval you use for computing IRI?

Vendor 1: 1.5 inches.

Vendor 2: We are capable of using and recording a large range of measurements from 20 mm-200 mm.

Question 7: How many state highway agencies specify the height sensor type (i.e., line laser – Gocator, wide-spot, single-point) in their contract documents for data collection?

- Less than 20%.
- 20 to 40%.
- 40 to 60%.
- 60 to 80%.
- 80 to 100%.

Vendor 1: 80 to 100%.

Vendor 2: 60 to 80%

Vendor 2 Comment: Many agencies specify line vs. point. But don’t specify a manufacturer, model, mounting height, processing method (bridge vs. detail), or sensor frequency.

Question 8: What percentage of your equipment that collect network level data are equipped with line lasers (i.e., Gocators)?

- Less than 20%.
- 20 to 40%.
- 40 to 60%.
- 60 to 80%.
- 80 to 100%.

Vendor 1: 80 to 100%

Vendor 2: 60 to 80%

Vendor 2 Comment: We believe the line lasers give more consistent results but maintain some equipment to meet specific client specifications.

Question 9: Please describe the procedures that you adopt when collecting network level IRI data to ensure that quality data are being collected.

Vendor 1 Comment:

1. Daily Bounce and block tests
2. Real-time data monitoring of laser data, accelerometer data and profile for each wheelpath—these are graphically displayed in real-time and all data is monitored automatically during collection.
3. Data is processed each day and any sections that have abnormal values are flagged for manual inspection. This report is generated and sent back to central office each night.
4. Weekly test sites are utilized in each state (verifications sites). Certification sites are either provided for the state or we make them as part of the contract.
5. Random recollection are sent to field crews to recollect previously collected routes to verify IRI/Rutting data.
6. Data is plotted year over year to verify IRI and rutting (same way we do weekly verifications within a project) but on a much larger scale for the entire state. Any discrepancies are verified manually (usually overlay or maintenance projects show “improved” roads).

A complete QA plan exists. This document represents decades of project experience and therefore is treated as an intellectual property internally.

Vendor 2 Comment:

As the equipment manufacturer, we complete in house testing to ensure proper build and calibration of the roughness system. This includes detailed control sites and review of IRI measurements, bounce and block tests, equipment settings sign-offs, real time roughness calculation and monitoring, collection of raw sensor data and processed results, and tight synchronization with speed measurements for use of low speed improvements and data flagging as necessary.

With the many other data sources available, quality measurement can be done to evaluate data spikes caused by slabs/faults, rutting, intersections, rail road crossing, bridge decks, construction, lane changes, changes in super-elevation, patches, street hardware, et This is done with the use of other imaging tools, geospatial data, asset inventories, and other data sources.