Improving the Quality of Pavement Profile Measurement

Reference Profiler Benchmarking

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Motivation

Distributed profiler certification is preferred.

- Each agency has unique needs.
- Each agency has a unique approach.
- National and regional facilities satisfy a different need.

Motivation

Provide incentive for improvement.

- Ease of use.
- Detail.
- Data quality.
- Data quality control.

Themes of the Work

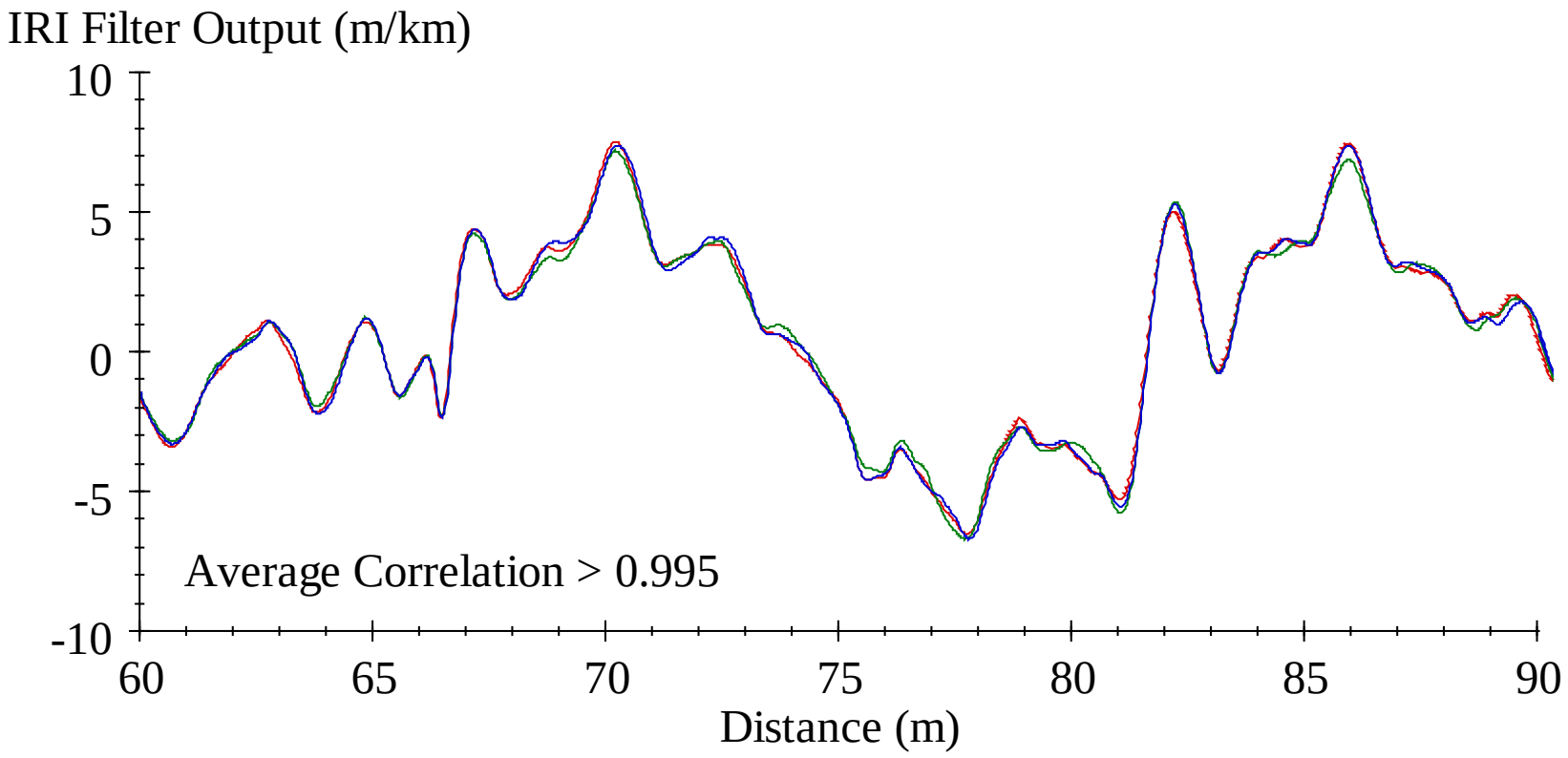
- Profile, not index.
- Performance, not method.
- Emphasis on construction quality control.
- Index values to within 1 %.

Phase I

UMTRI-2005-24 SEPTEMBER 2005

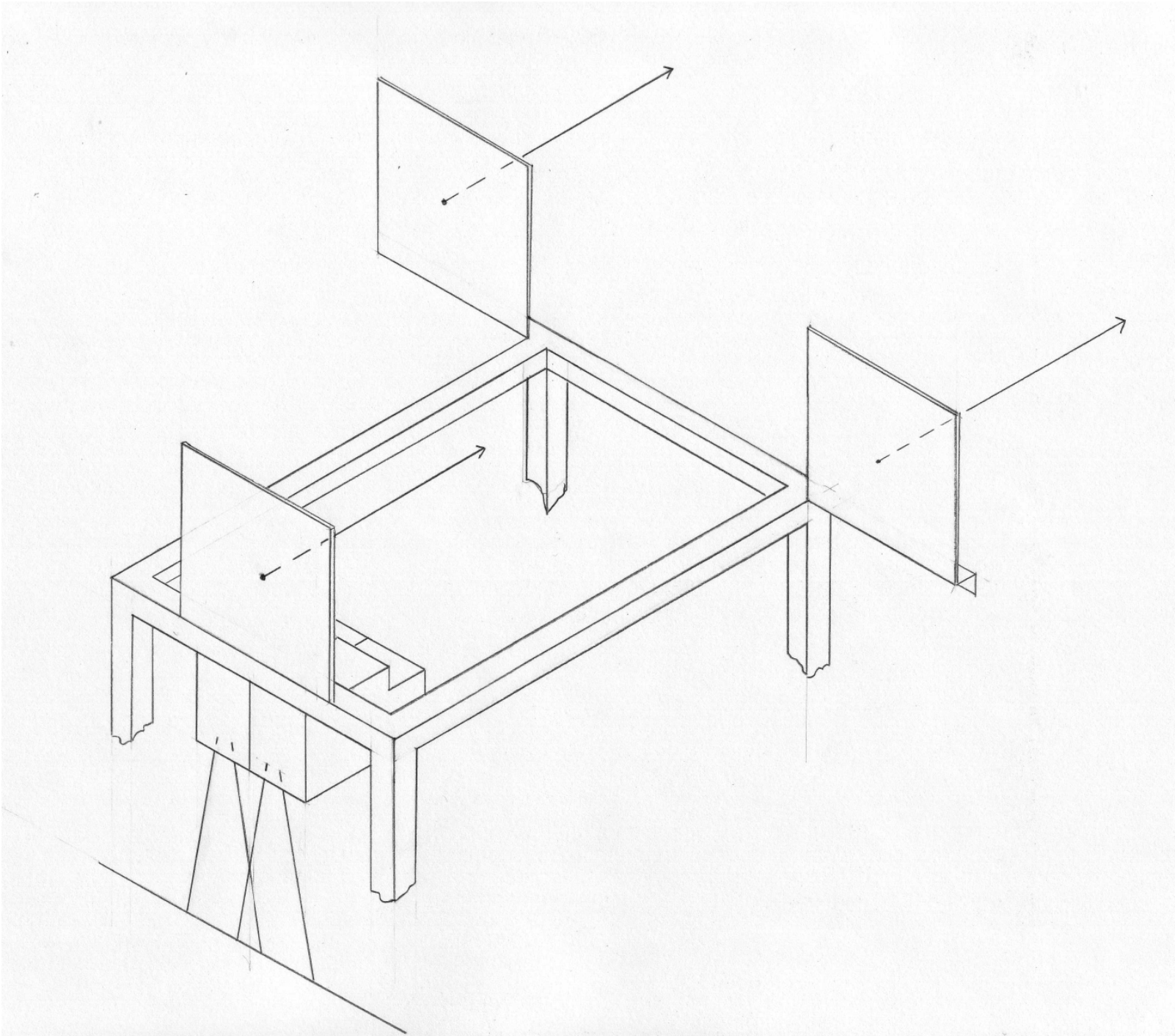
CRITICAL PROFILER ACCURACY REQUIREMENTS

Cross Correlation



Candidate Reference Device

- Correlation to the benchmark profile:
  - IRI filter output to 0.98
  - long waveband to 0.98
  - medium waveband to 0.98
  - short waveband to 0.94
- Repeatability must adhere to the same thresholds.



Benchmark Profiler

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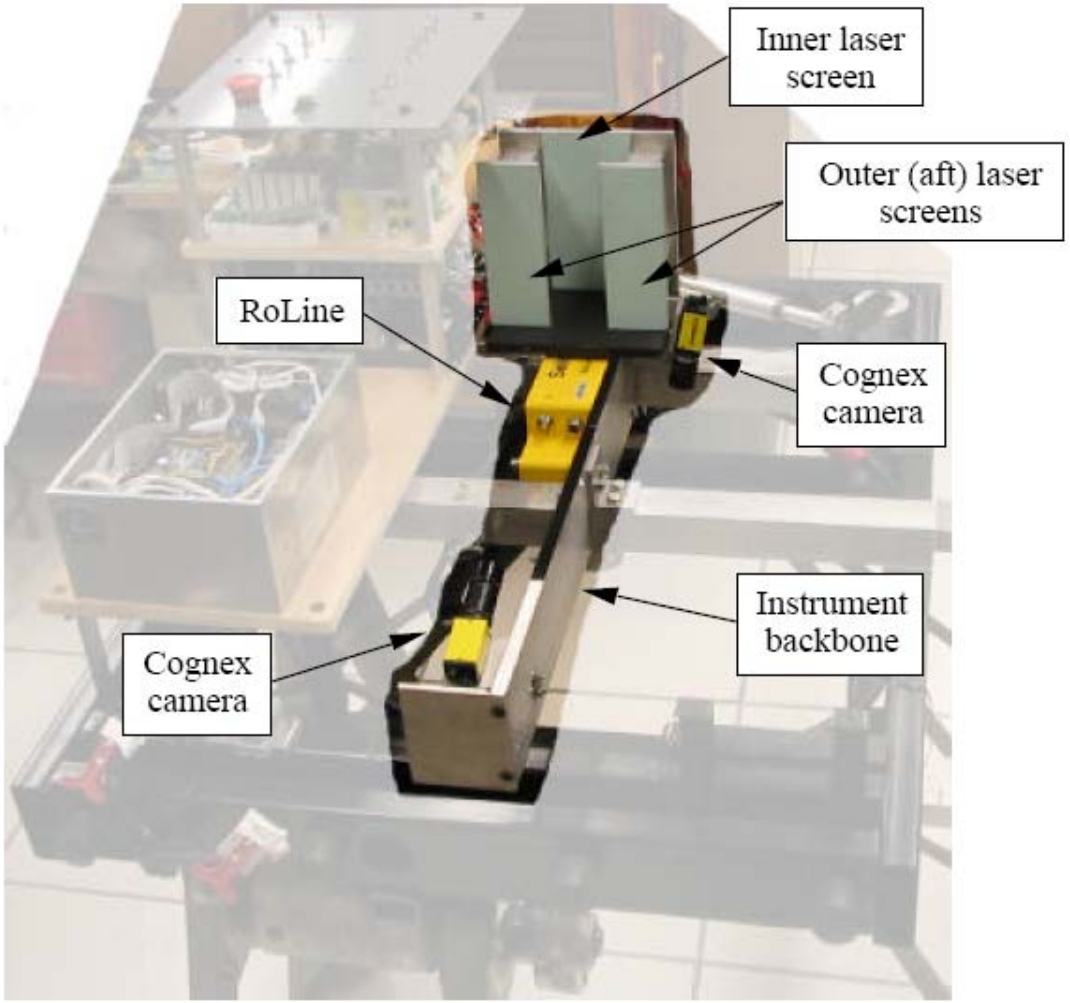
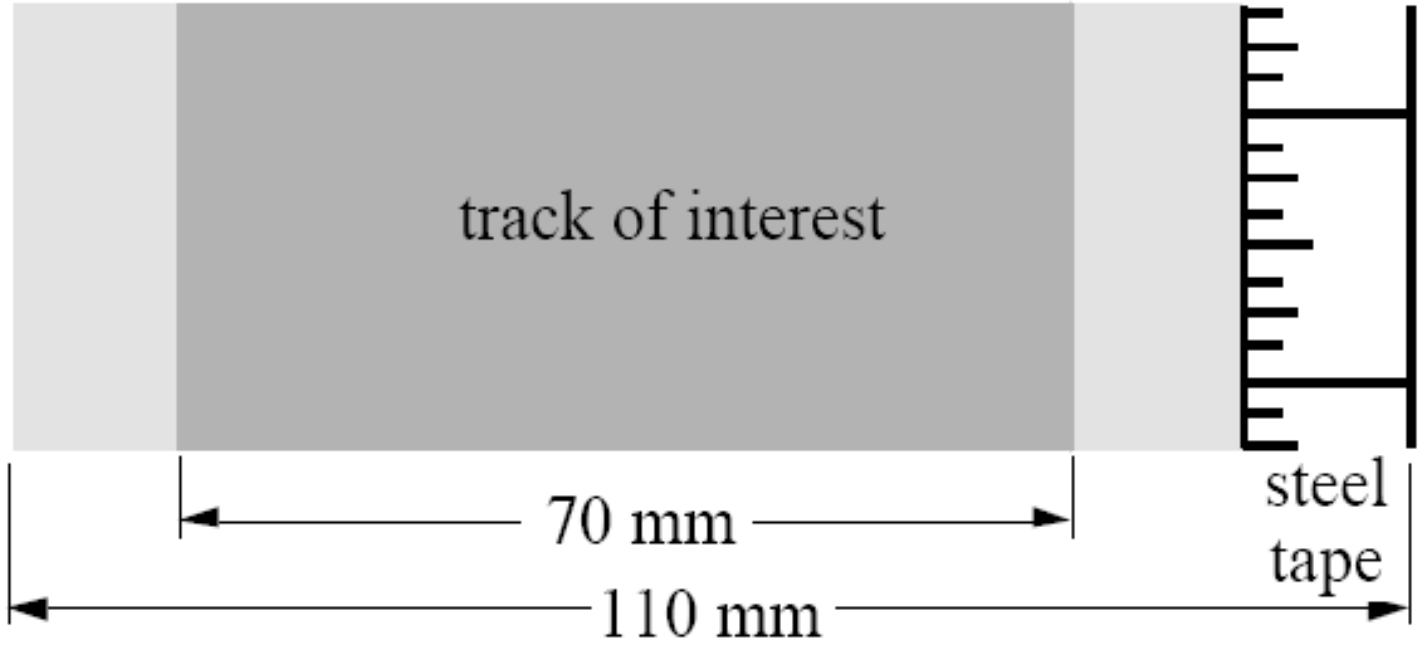
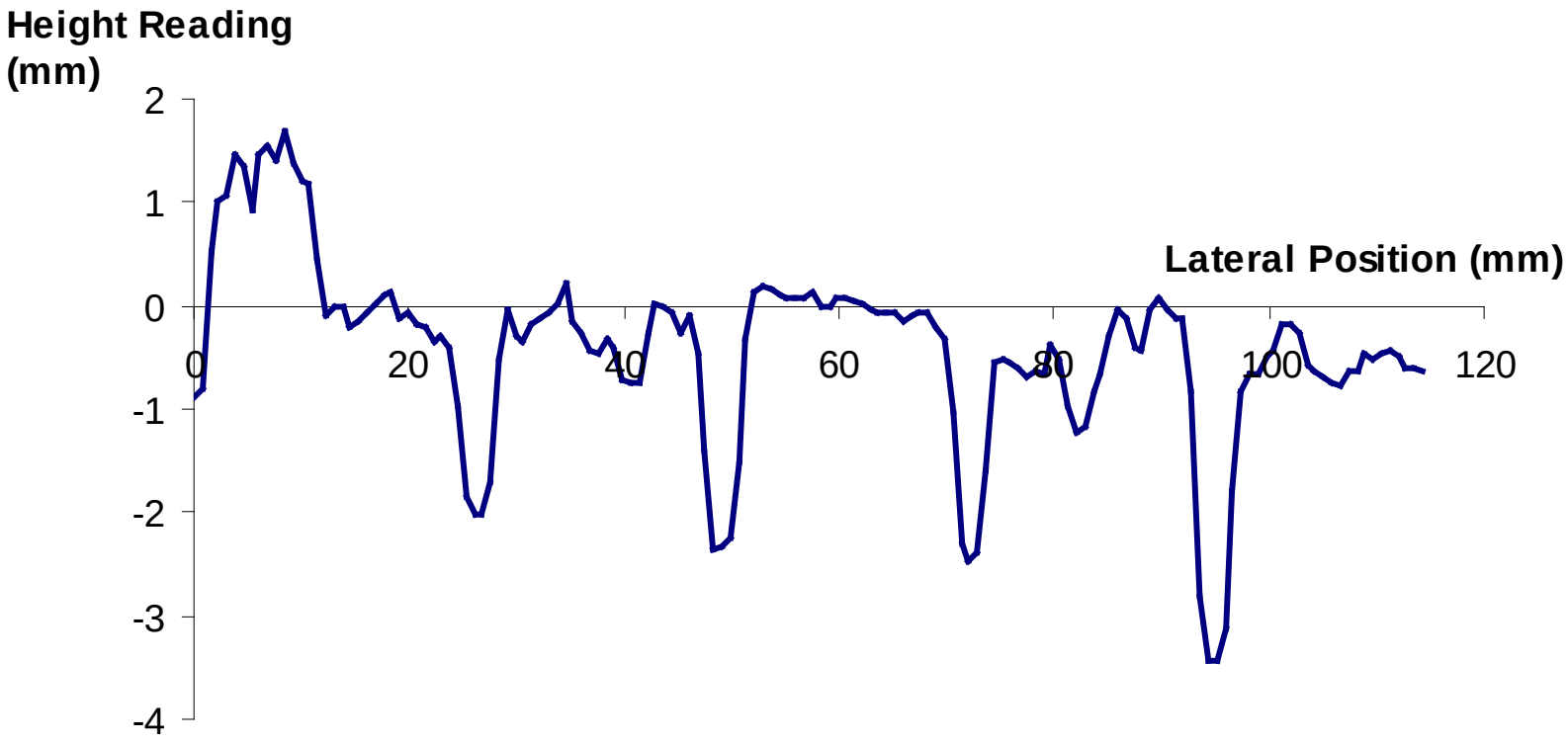


Benchmark Profiler



Benchmark Profiler



Benchmark Experiment

- MinnRoad (5 test sections)
- US-10 near Junction City, WI (longitudinal tining)

Benchmark Experiment

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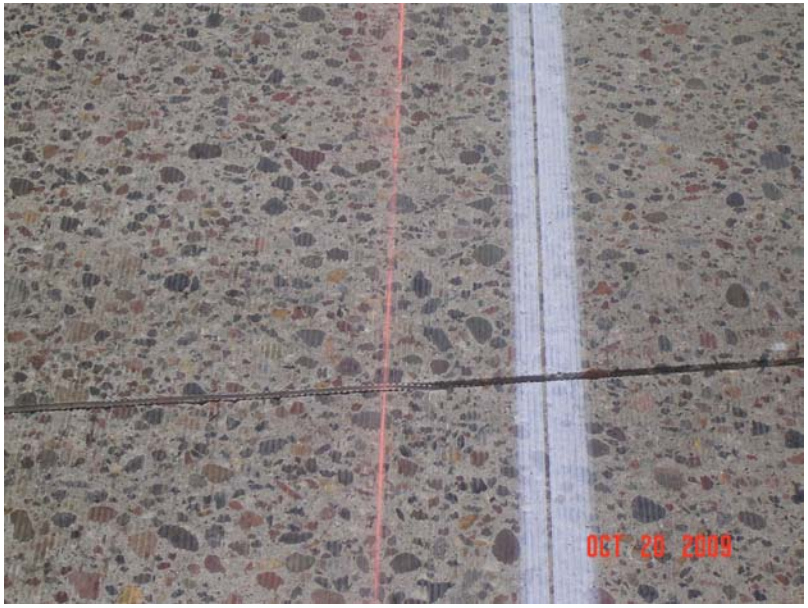
Benchmark Experiment



Profilers

Reporting

Benchmark Test Evaluation Report

Test Section: Nasty chip seal with lose rocks

Date: 01-Jan-2008

Device: Precision Rod and Level

Operator(s): ACME Surveying

Recording Interval: 3 mm

Use Moving Average: Yes

Up-Sampling: Not needed.

Results for Profile:

	Repeatability		Accuracy	
Waveband	Score	Result	Score	Result
IRI	0.99	Pass	0.99	Pass
Long	0.99	Pass	0.98	Pass
Medium	0.99	Pass	0.97	Fail
Short	0.97	Pass	0.89	Fail

Result for Longitudinal Distance: Pass

Stay Tuned….