ProVAL
Profile Viewing and Analysis Software

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Southeastern Pavement Management and Design Conference

June 2, 2008

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Outline

- *ProVAL* description.
- Evolution of *ProVAL.*
- *ProVAL* functionality.
- What is next?

PROVAL Pavement Profile Viewing & Analysis

What is ProVAL?

- *ProVAL* is an engineering software application that allows users to view and analyze pavement profiles in many different ways.
- *ProVAL* is a FHWA product with continuous improvements.

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PROVAL Pavement Profile Viewing & Analysis

What Does ProVAL Do?

- Create profile analysis projects
- Import profiles in various formats
- Display profiles graphically
- Allow adding information to profile data
- Perform various profile analyses

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PROVAL

SampleFile.pa1 * - ProVAL 1.0

File Edit View Tools Help

Profiles | Analysis | Report

Files:

Section Title	File Name
Track Run E1	150-5280.ppf

Profiles:

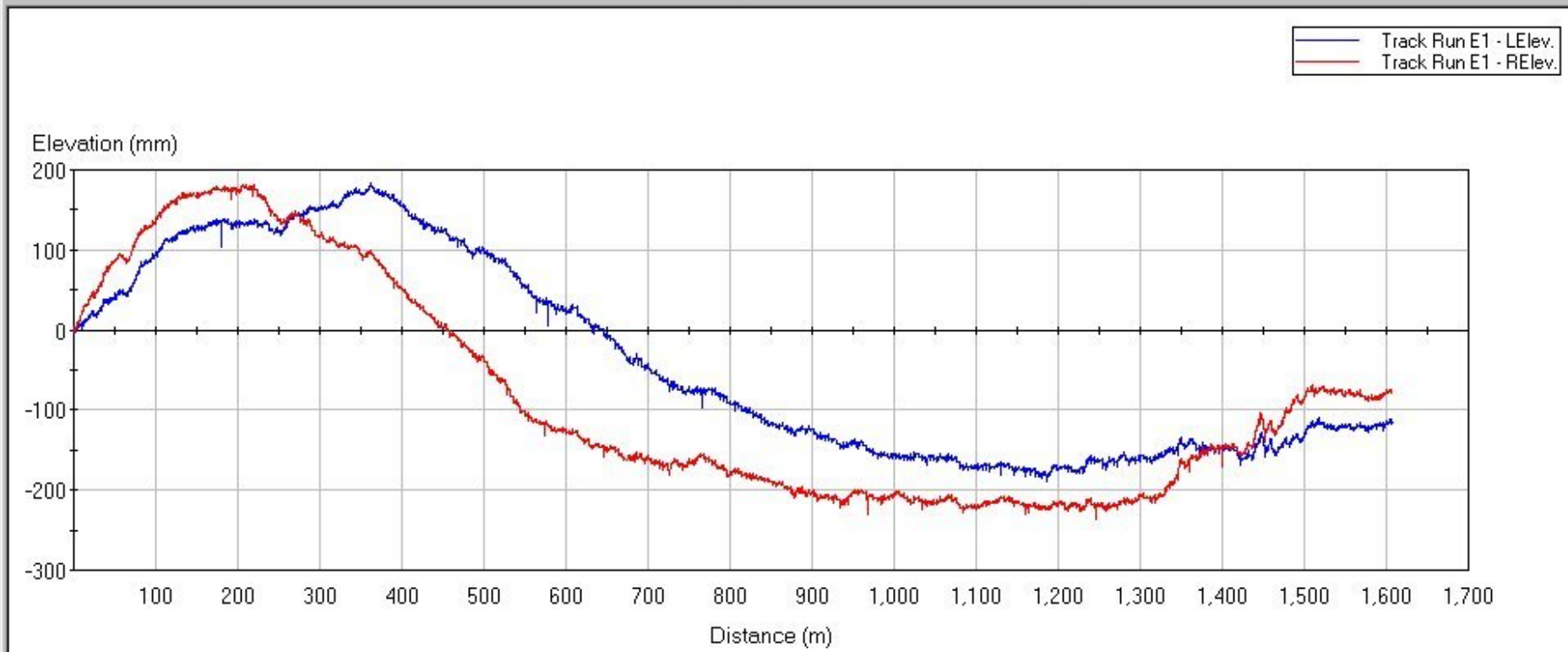
- [x] LElev.
- [x] RElev.

Display Units

Unit System: Metric

Distance Units: Meters

Elevation Units: Millimeters



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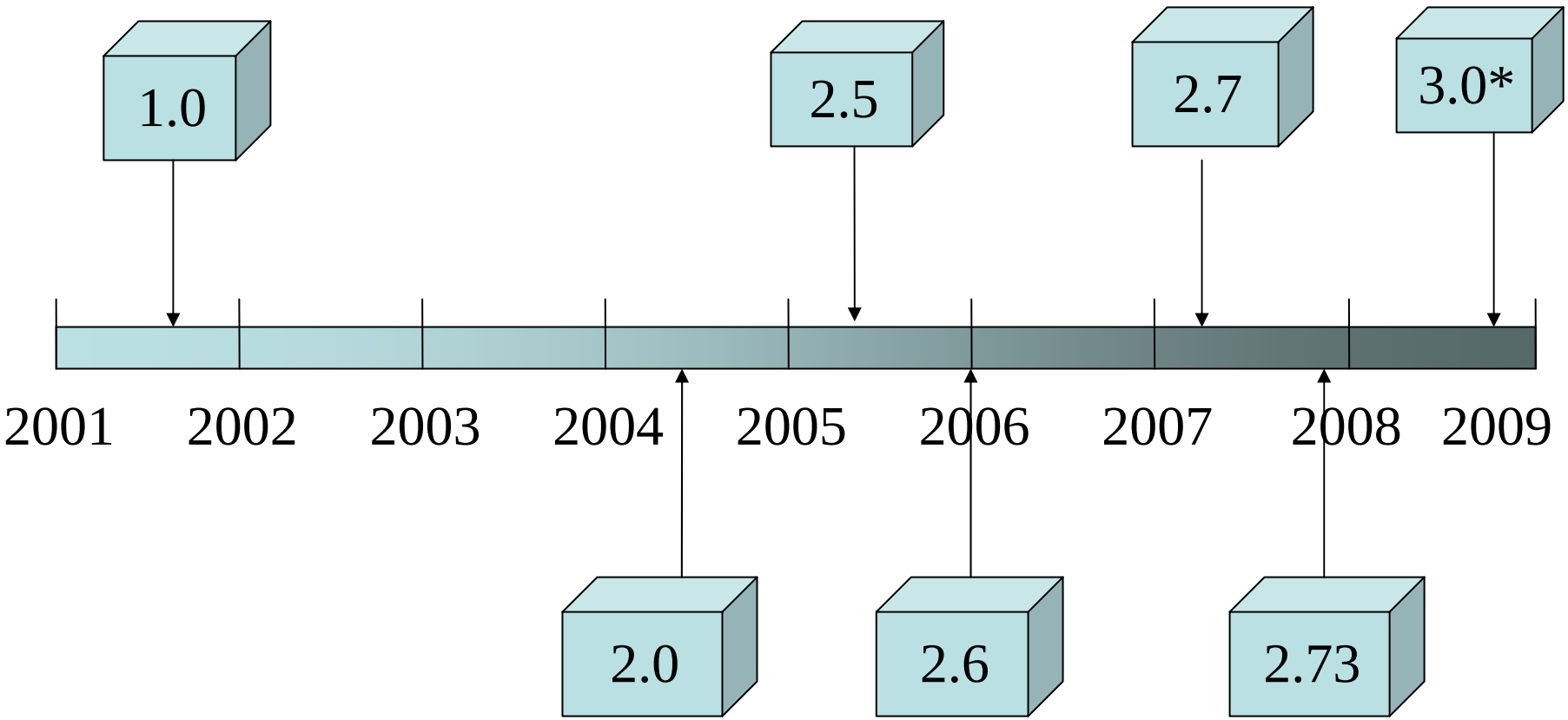
PROVAL Pavement Profile Viewing & Analysis

History of Releases



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PROVAL Pavement Profile Viewing & Analysis

ProVAL 1.0

- Ride Statistics (IRI, RN, HRI, and MRI)
- Power Spectral Density (PSD)
- Profilograph Index (PI)
- Rolling Straightedge
- Butterworth Filter
- Cross Correlation
- ASTM E950 Precision and Bias

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PROVAL Pavement Profile Viewing & Analysis

ProVAL 2.0

- Linear distance adjustments
- Start and end point reset
- Event markers
- Additional import file formats
- 4th order band-pass and
  3rd order high- / low-pass Butterworth filtering
- Continuous IRI and RN reporting
- TxDOT localized roughness identification

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ProVAL 2.5

- Smoothness Assurance Program (SAM)
  - A.K.A Bumpfinder and grinding simulation
  - Based on Steve Karamihas and Mike Swan's patent and algorithm
  - Produce ride quality reports
  - Optimize grinding strategies

ProVAL 2.6

- Enhancement of SAM
  - More filters
  - More ride quality report option
  - Grinding strategy manager
- Enhancement of PSD
  - More filter and octave band average output
- Enhancement of Profilograph Simulation
  - Handle multiple traces
  - Graphical outputs of scallops

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ProVAL 2.7

- Profile modifier and export facilities
- Simplified field interface
- User-defined setups
- Enhanced Butterworth filter set

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PROVAL Pavement Profile Viewing & Analysis

ProVAL 2.73

- Enhanced Cross-correlation
- Profiler Certification Module (PCM)

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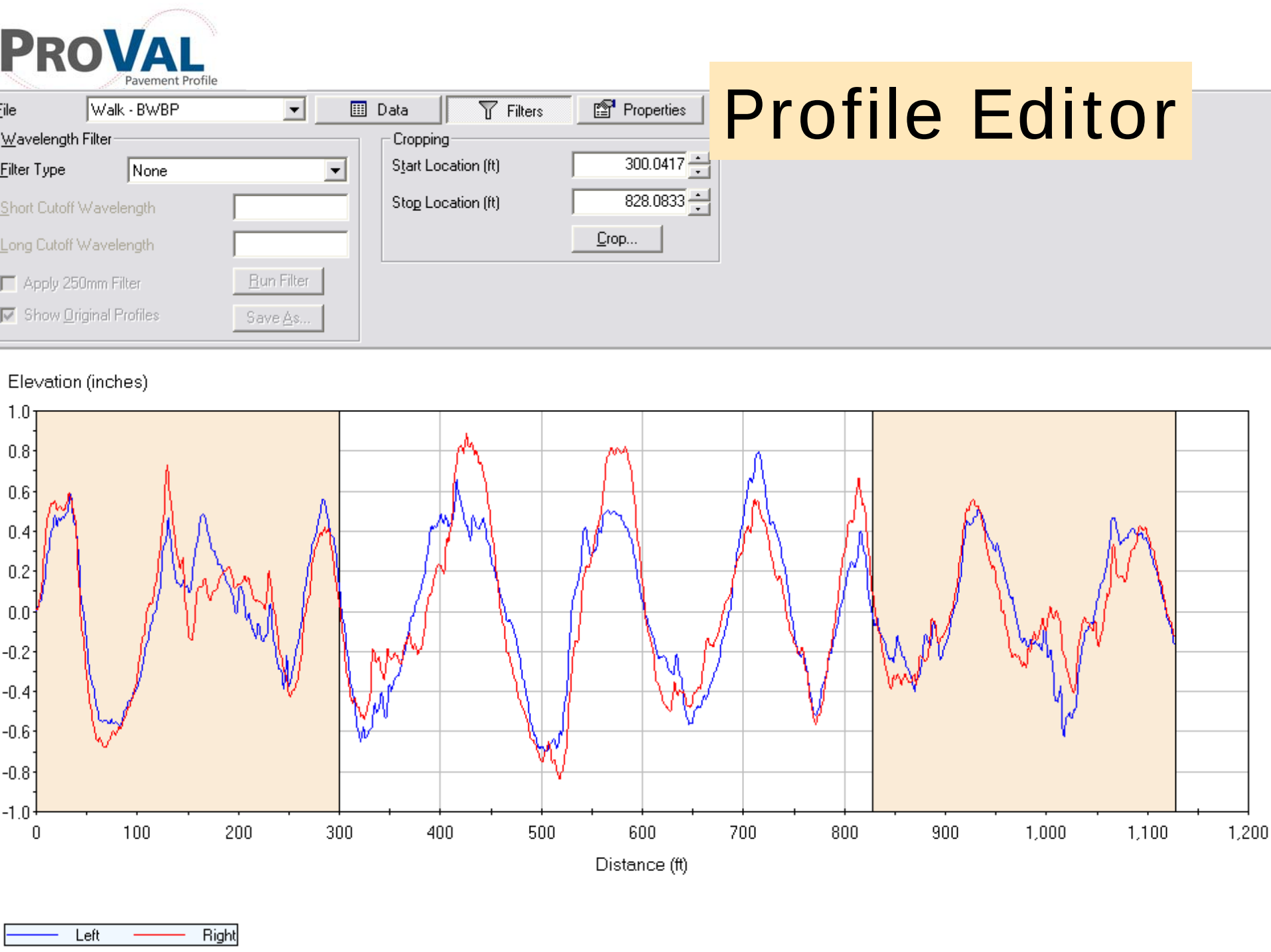
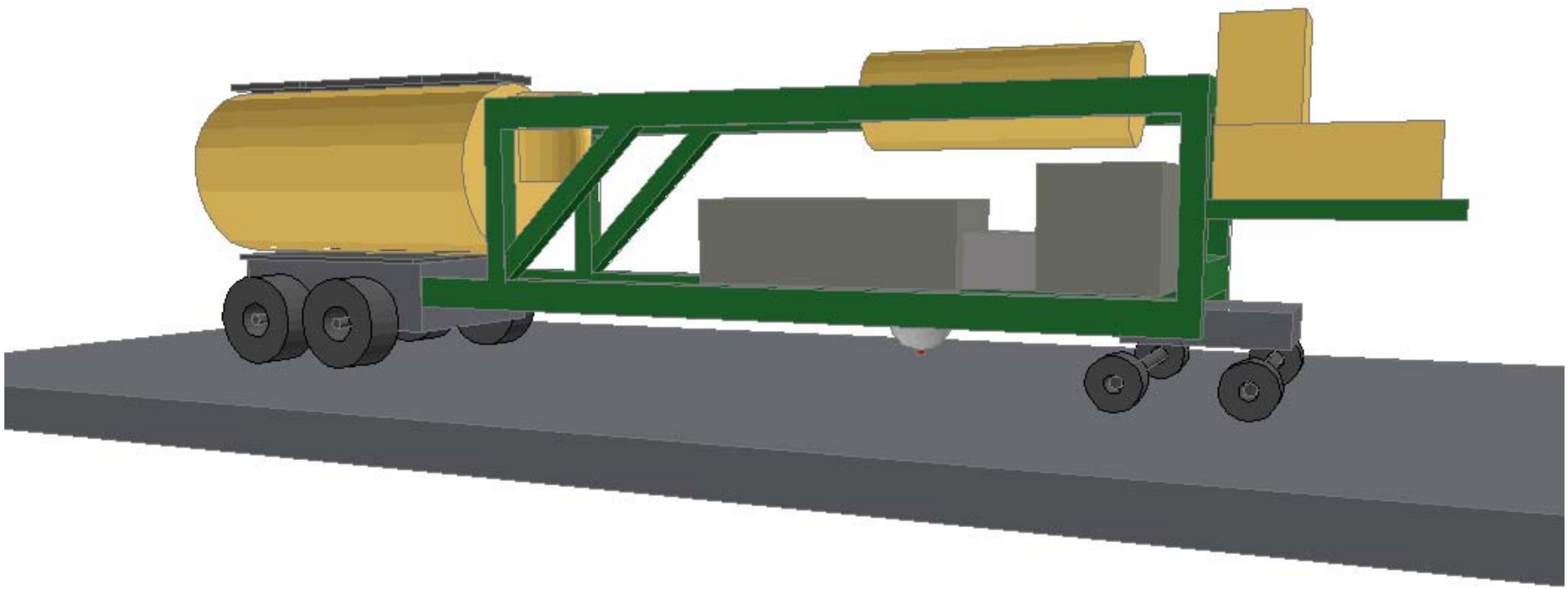

PROVAL
Pavement Profile
Profile Editor
File
Walk - BWBP
Data
Filters
Properties
Wavelength Filter
Filter Type
None
Short Cutoff Wavelength
Long Cutoff Wavelength
Apply 250mm Filter
Run Filter
Show Original Profiles
Save As...
Cropping
Start Location (ft)
300.0417
Stop Location (ft)
828.0833
Crop...
Elevation (inches)
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
-0.4
-0.6
-0.8
-1.0
0
100
200
300
400
500
600
700
800
900
1,000
1,100
1,200
Distance (ft)
Left
Right

PROVAL
Pavement Profile
Viewing & Analysis

Grinding Simulation



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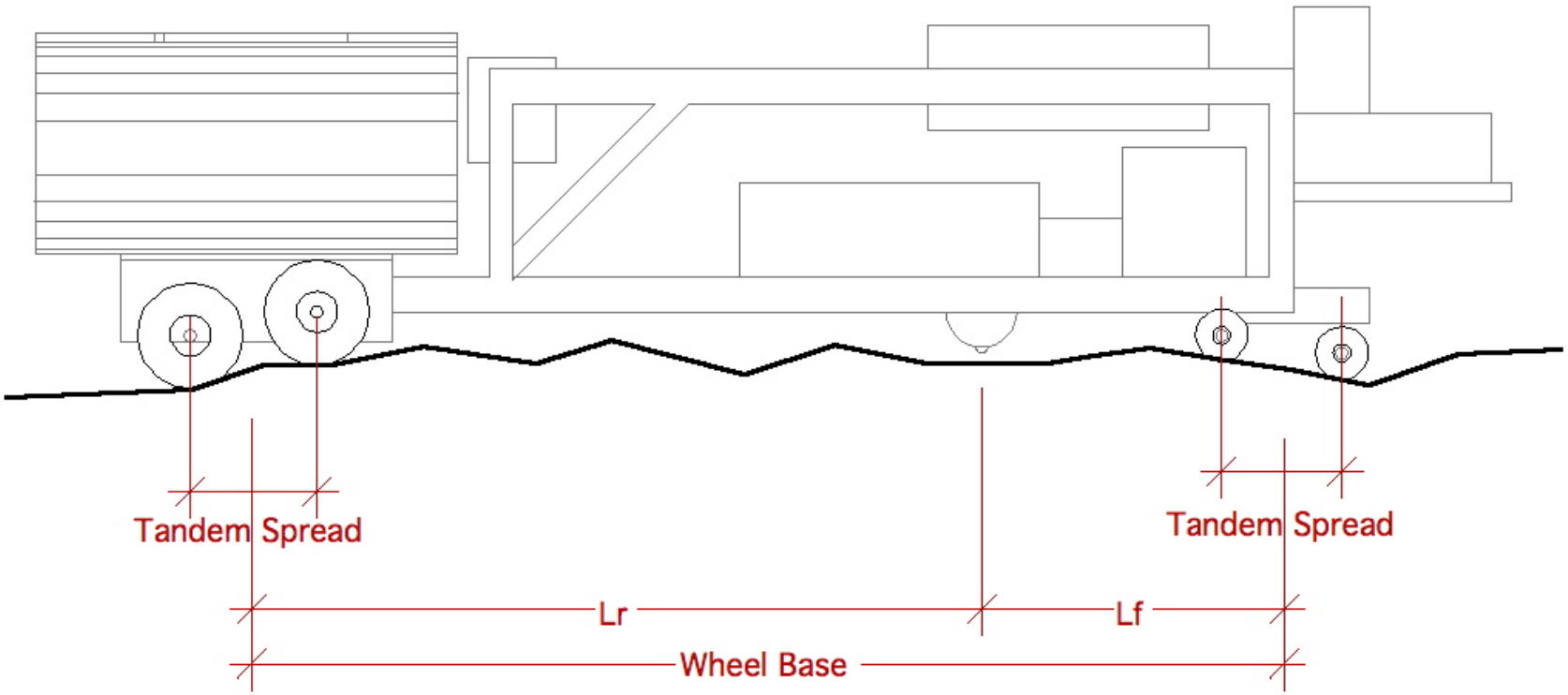
Grinder Setup

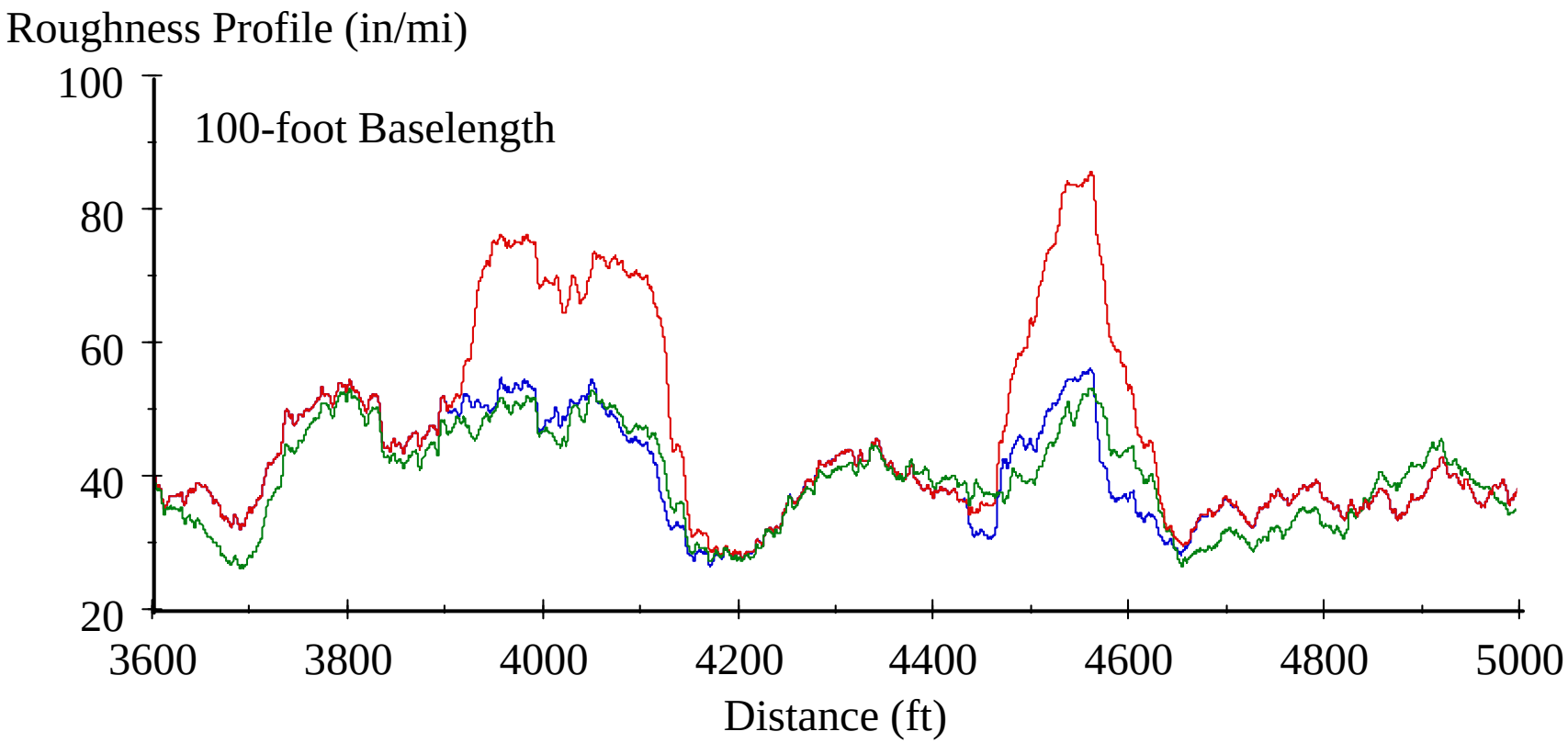


Head Position = Lf / Wheel Base

PROVAL Pavement Profile Viewing & Analysis

Validation Report

Validation Report



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Smoothness Assurance Module (SAM)

BG PV25.pv2 * - ProVAL 2.5

File Edit View Profiles Analysis Report Help

New

Inputs

Continuous Report Defective Segments

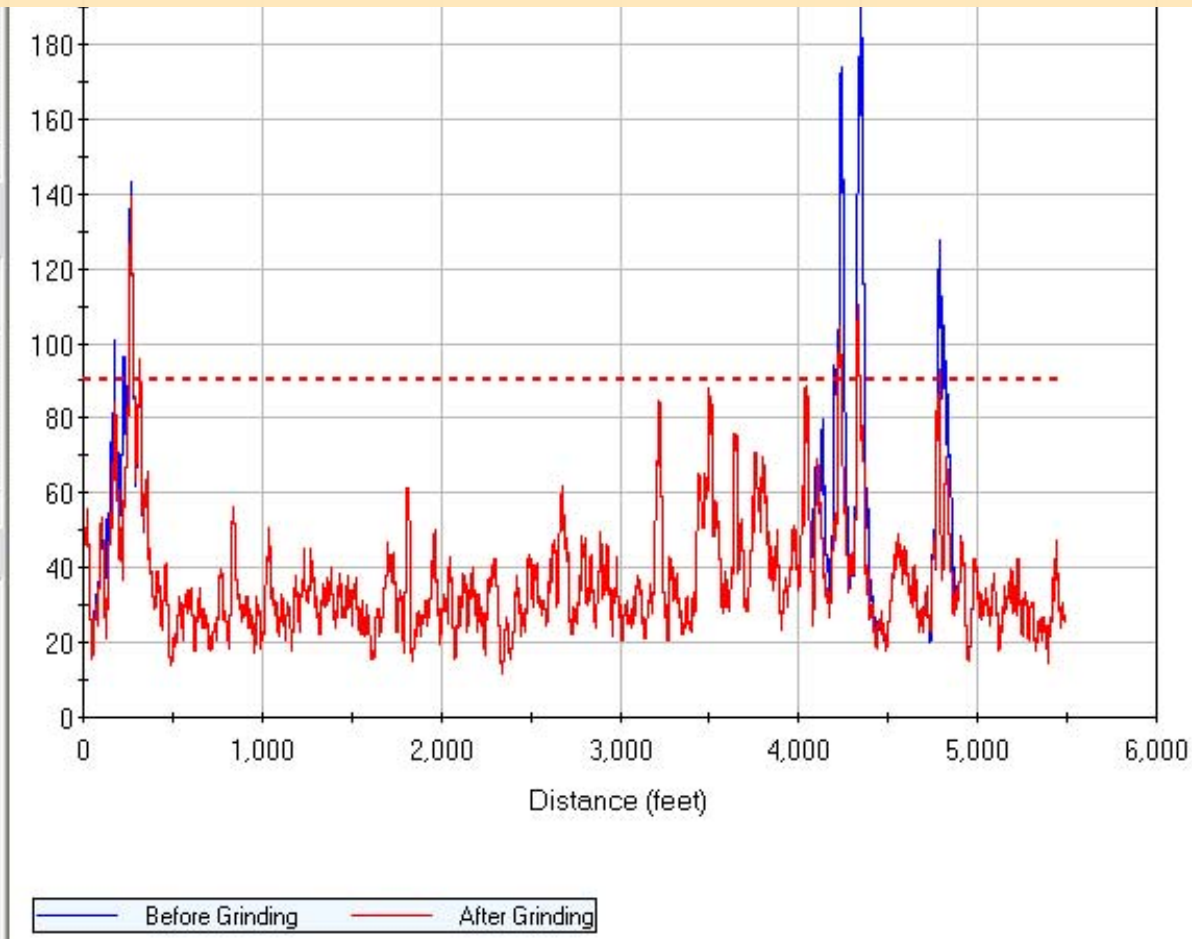
Location (feet)	MaxIRI (inches/mile)
253 to 283	139.1
312 to 320	95.9
4196 to 4205	52.3
4209 to 4210	54.8
4215 to 4257	104.5

Histogram (Continuous)
1.5% of Pavement Out Of Spec

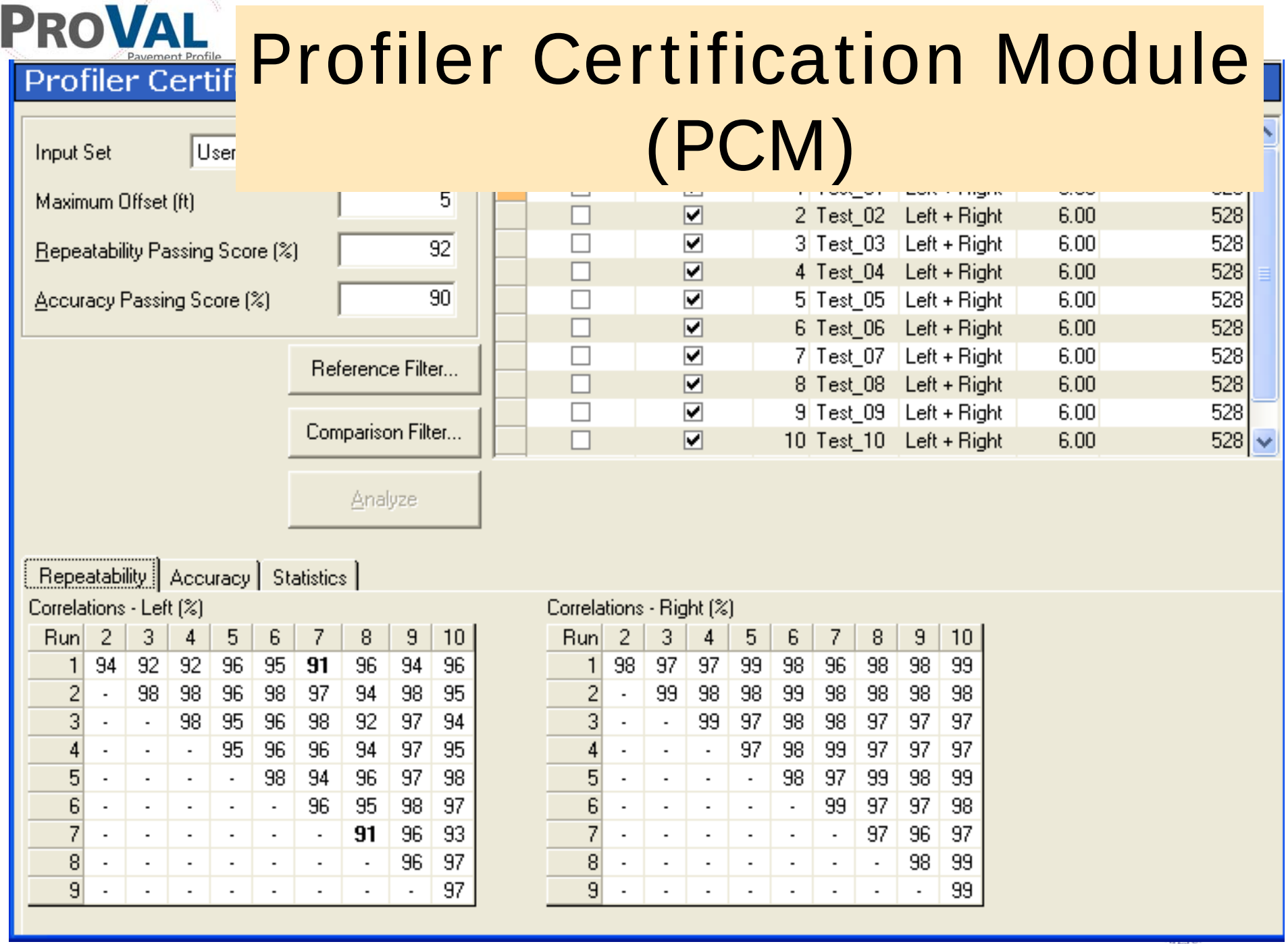
Range (inches/mile)	Pavement (%)
Above 100.0	2.3
100.0 to 90.0	0.7
90.0 to 80.0	1.5
80.0 to 70.0	1.8
70.0 to 60.0	4.2
60.0 to 50.0	5.9
50.0 to 40.0	13.2

Fixed Report

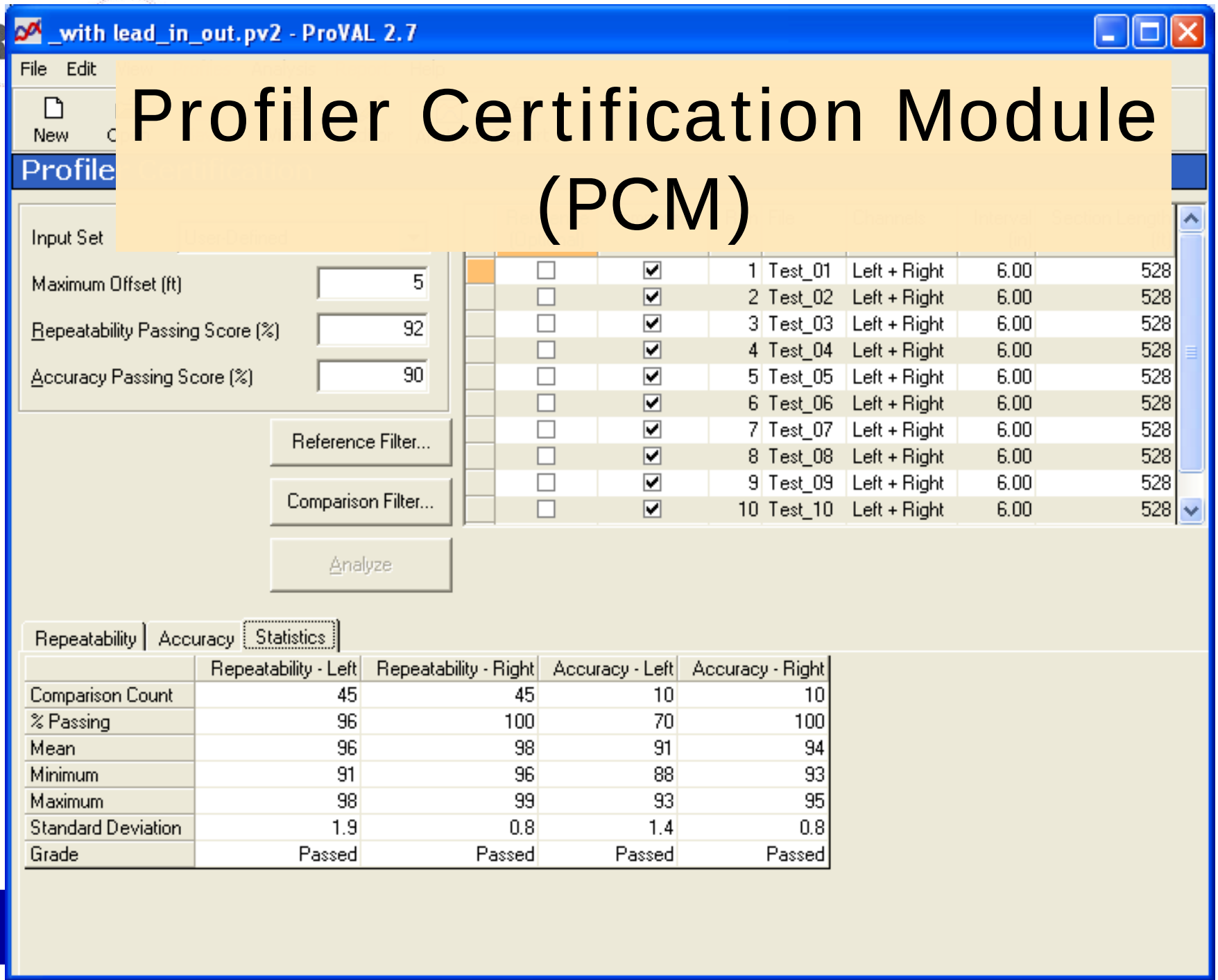
Location (feet)	IRI (inches/mile)
0 to 528	48.2
528 to 1056	29.2
1056 to 1584	30.1
1584 to 2112	30.0
2112 to 2640	30.7
2640 to 3168	33.7
3168 to 3696	44.6
3696 to 4224	46.5
4224 to 4752	41.6
4752 to 5280	36.3
5280 to 5500	26.5



Profiler Certification Module (PCM)

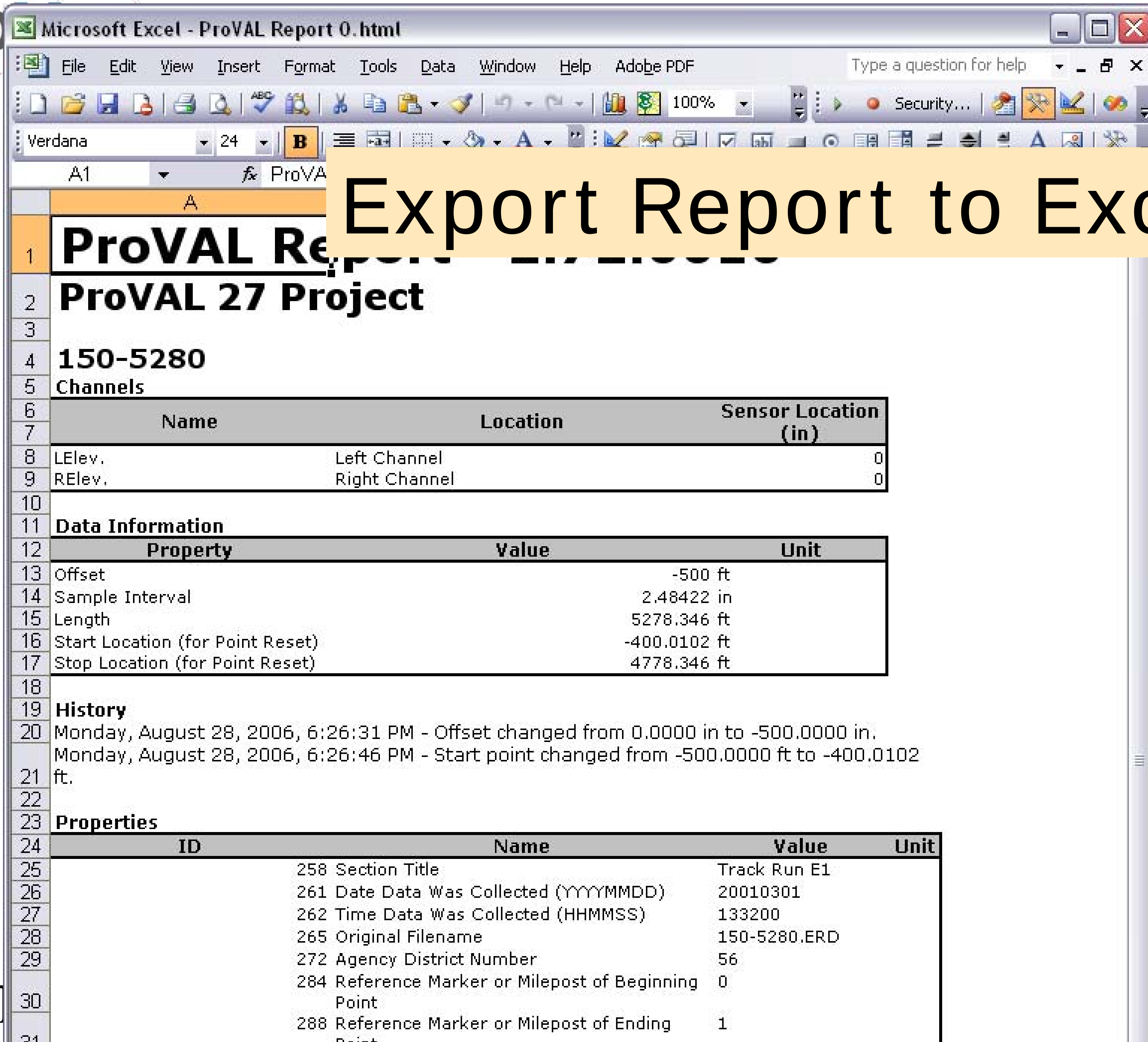


Profiler Certification Module (PCM)



	Repeatability - Left	Repeatability - Right	Accuracy - Left	Accuracy - Right
Comparison Count	45	45	10	10
% Passing	96	100	70	100
Mean	96	98	91	94
Minimum	91	96	88	93
Maximum	98	99	93	95
Standard Deviation	1.9	0.8	1.4	0.8
Grade	Passed	Passed	Passed	Passed

Export Report to Excel



ProVAL Re

ProVAL 27 Project

150-5280

Channels

Name	Location	Sensor Location (in)
LElev.	Left Channel	0
RElev.	Right Channel	0

Data Information

Property	Value	Unit
Offset	-500	ft
Sample Interval	2.48422	in
Length	5278.346	ft
Start Location (for Point Reset)	-400.0102	ft
Stop Location (for Point Reset)	4778.346	ft

History

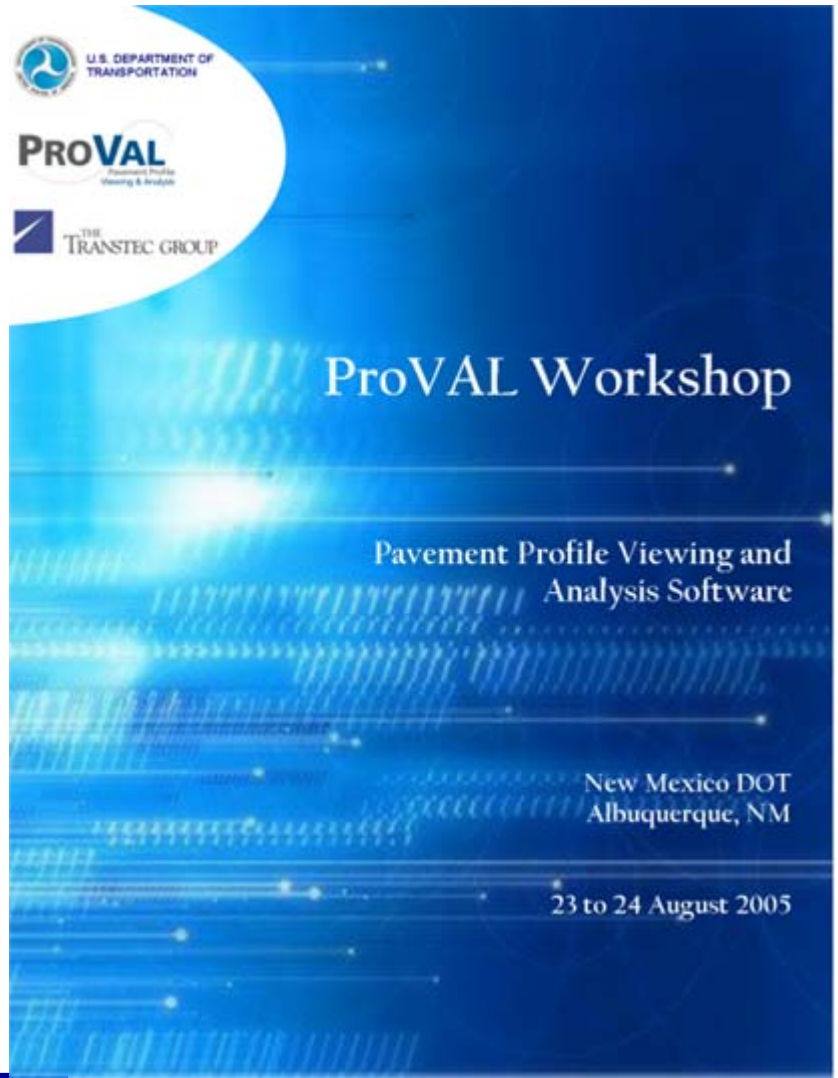
Monday, August 28, 2006, 6:26:31 PM - Offset changed from 0.0000 in to -500.0000 in.

Monday, August 28, 2006, 6:26:46 PM - Start point changed from -500.0000 ft to -400.0102 ft.

Properties

ID	Name	Value	Unit
258	Section Title	Track Run E1	
261	Date Data Was Collected (YYYYMMDD)	20010301	
262	Time Data Was Collected (HHMMSS)	133200	
265	Original Filename	150-5280.ERD	
272	Agency District Number	56	
284	Reference Marker or Milepost of Beginning Point	0	
288	Reference Marker or Milepost of Ending	1	

ProVAL Workshops



To schedule a workshop in your state

contact

Mr. Bob Orthmeyer, FHWA at (708) 283-3533 or by email at robert.orthmeyer@dot.gov .

Top 10 Reasons to Adopt ProVAL in Smoothness Spec

1. Reliability
2. Cost Savings
3. No More “Smoke and Mirrors”
4. Objectivity
5. Security

Top 10 Reasons to Adopt ProVAL in Smoothness Spec

6. Stability
7. Consistency
8. Timely Technical Support
9. Addressing Your Needs
10. ProVAL is Free

Agencies Adopt ProVAL

- **AASHTO PP 50-07** Standard Practice for Operating Inertial Profilers and Evaluating Pavement Profiles
- **AASHTO MP 17-07** Standard Practice for Pavement Ride Quality When Measured Using Inertial Profiling Systems
- **Western Federal Lands** HMA Smoothness Specification 401

ProVAL Website

ProVAL Pavement Profile Viewing & Analysis

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- Request new password

Your Resource for Smoothness

ProVAL

ProVAL (**Pro**file **V**iewing and **A**na**L**ysis) is an engineering software application that allows users to view and analyze pavement profiles in many different ways. It is easy to use and yet powerful to perform many kinds of profile analyses. ProVAL is a product developed by the Transtec Group through a contract with the US Federal Highway Administration (FHWA) and the Long Term Pavement Performance Program (LTPP).

IT is coming!

ProVAL 3.0 is in the work. ETA - October, 2008! Stay tuned!

ProVAL 2.73 Makes Profiler Certification a Breeze

Ever feel frustrated doing hundreds of cross correlations to produce reports for profiler repeatability tests and accuracy tests (as in the AASHTO PP49 Standard Practice for Certification of Inertial Profiling Systems)? The pain is no more ... when you have ProVAL 2.73! A new feature, Profiler Certification Module, will make this process a joy with simply a few mouse clicks! Also, the classic Cross Correlation module is now revamped and added with powerful features! Have a quick look at what's new in ProVAL 2.73!

With ProVAL 2.73, you can now easily evaluate whether a profiler can produce repeatable and accurate results. Download a copy of ProVAL 2.73 and start the fun now!

Get ProVAL

Download ProVAL 2.73.0030
Installation Guide

Testimony

I find ProVAL to be extremely nifty and we'll be making heavy use of it either way. I am confident that it is going to totally change the way we specify, measure, and report pavement rideability.
— Andy Johnson, South Carolina DOT

Upcoming events

- ProVAL Workshop at Montana DOT (6 days) (Event)
- ProVAL Workshop at SEPMD Conference (52 days) (Event)
- ProVAL Workshop at Canadian Airfield Conferene (154 days) (Event)

more

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ProVAL 3.0

- **Rewrite software to Microsoft .Net format**
- **Released October 2008**
- **More user friendly**
  - **Based on feedback and recommendations from agencies and industry**
- ProVAL 4.0? – internet based software – you decide!!

ProVAL
Pavement Profile
Viewing & Analysis

Implementation Tools

- **NHI 131100 – Pavement Smoothness**
- TPF 5(063) Pooled Fund Study
- **AASHTO Provisional Standards**
  - MP11: Equipment Specification
  - MP17: Sample Specification
  - PP49: Inertial Profiler Verification
  - PP50: Operating Inertial Profilers
- **FHWA support for implementing AASHTO standard**

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www.RoadProfile.com

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