



## Roadside Elements Report Out

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## Roadside Elements Presentations

**Roadside Elements Ground Truthing**  
*Jennifer Brandenburg, Joe Hummer, Brian Mayhew*

**When is Enough Data Enough?**  
*Robert Schmitt*

**Performance Based Contract Methodologies**  
*Robert Prezioso*

**Survey Methods for Highway Pavement: Analysis, Design, and Construction**  
*Charlie Brown*

**Pavement Marking Data Collection Techniques**  
*Omar Smadi*

**FHWA Retroreflectivity Van Demonstration**  
*Kunik Lee, Nicolas Gagarin*



## Roadside Elements Analysis

- Vendors
  - Many invited, 11 drove the course, 6 provided data (Geo-3D, NAVTEQ, Pathway, Precision Scan, Roadware, Yotta)
  - May through July
  - Given “Catalog” describing variables and manual methods (Chapter 12)



## Roadside Elements Analysis

- When viewing results remember..
  - Sample sizes vary widely
    - Causing percentages to change quickly
  - Manual data could be inaccurate
  - Raw data available on line
  - Percentages calculated as percent of possible or percent of items matched
    - Example: Vendor A found 6 of 8 items recorded by manual collectors =  $6/8 = 75\%$
    - 5 of 6 items found by Vendor A correctly scored for functionality =  $5/6 = 83\%$
    - No double jeopardy



## Roadside Elements Analysis - Centerline Geometry

Factor	Level	Vendor Observed/Classified						
		Manual	Navteq		Pathway		Roadware	
		# Observed	#/ Azimuth/ Grade	%	#/ Azimuth/ Grade	%	#/ Azimuth/ Grade	%
# of Centerline Data Points	Total	347	347	100%	347	100%	347	100%
Average Azimuth Difference, degree	Average	n/a	0.6	0.4%	0.7	0.4%	0.5	0.3%
Average Grade Difference, %	Average	n/a	0.2	34%	0.5	60%	0.3	41%



## Roadside Elements Analysis Summary

- We now have data to serve as baseline
  - Accuracy you should expect
- Mobile data looks viable for most variables
- Data generally better closer to or on roadway
- Write good specs and definitions
- Have vendor submit test section data first
- Be careful of variables that change quickly in time



## When is Enough Data, Enough?

- Sample size
  - What can you afford?
  - What precision do you desire?
  - What amount of error is allowable?



## Performance Based Contract Methodologies

- QA/QC is important
  - Accomplished through training, baseline of inventory and conditions, sampling, and clarity of judgment criteria
  - Objective QA methodology along with financial consequences
  - Sample size is a consideration



### Survey Methods for Highway Pavements

- Data management is critical
- Information overload can happen
- New survey methods can supplement QA, construction, and condition management of assets
- New technologies offer safety to staff and allow lanes to remain open



### Pavement Marking Data Collection Techniques

- Focus on goals
  - Cost, life extension of assets, and safety impacts are important considerations
- Technology can assist with evaluation of equipment and materials
- Agency coordination and scheduling should be planned appropriately



### Digital Highway Measurement System

- Organizational plan:
  - New technology with broad applications
  - Van research continues
- Operational plan:
  - Performance based prototype development
  - Older technology is still functioning well