ARAN
Automated Pavement Data Collection

November 15th, 2011

2011 Arizona Pavements / Materials Conference
Optimization of Maintenance Practices

- The **right strategy**, at the **right time**, on the **right road**
- Preventative maintenance and rehabilitation is more cost-effective than reconstruction
- Preventative maintenance provides a better driving experience
What Does Roadway Management Require?

1. Accurate and repeatable **data** amassed over time

2. A system to compile and analyze **data** in order to create **information**

3. Engineering expertise to turn **information** into **action**
Evolution of Automation
Why Automated Data Collection?

- Safety
- Efficiency/Economy
- Accuracy
- Repeatability
- Standardization
Automated Data Collection
The ARAN

Photolog
- Single view
- Panoramic view
- 1300 x 1030 pixel
- 1920 x 1080 (HDTV)
- Direct-to-digital
- Custom angles

Geometry & Spatial
- Inertial measurement unit
- HPMS curve type
- Long. Grade
- Cross slope
- Centerline mapping
- Spatial referencing for GIS integration

Pavement
- Pattern recognition software
- Strobe-lit pavement video
- Roughness
- Texture
- Rutting
- Surface Distress

Assets
- Inventory from imagery
- Location determined
- Offset measured
- Height and width measured
- Sign code recorded
- Condition assessment
Operators Console

- All controls are easily accessible within operators reach
- System main power and emergency shut down of LaserSDP (profile) and LaserXVP (Transverse) lasers

Secondary System Power and Emergency Shut off
Distance Measuring Instrument (DMI)

- DMI utilizes a precision optical shaft encoder that is mounted on the left rear driving wheel.
- The DMI records 2,000 pulses per revolution.
- Accuracy is ±0.02% of the linear distance traveled.
Pavement Images

- Rear downward facing cameras
- Continuous pavement images of full lane width
- Renders pavement distresses down to 2mm (0.08 inches) in width
- Laser Road Imaging System (LRIS)
Pavement Distress Marking
WiseCrax® Automated Distress Analysis
Laser Rut Measuring System (LRMS)

- Pair of rear mounted INO Lasers
- Measure full transverse profile of the road surface to over 4600 points
- Transverse profile is evaluated to determine the depths of ruts
International Roughness Index (IRI)

- Laser SDP System
- 16 kHz laser in each wheelpath
- Measures continuous longitudinal profile of the roadway
High Definition Right Of Way Images

- True High Definition Camera
- Wide angle High Definition images
- A single image every 4 millimiles / 21.12 feet (variable)
GPS Data

- Trimble System
- Applanix® POSLV (Position and Orientation System)
- Collected every station interval
- Two antennas to give vehicle heading
Auto-Start

- The Auto-start feature is used on control site collection to ensure each run is accurately matched.
- Uses an infrared sensor to coordinate data collection with the DMI sub-system.
Processing Software
Data Control System

- GPS post-processing is done with Applanix POSPAC software
- Importing is done in one easy step
Enhanced View of Data
Web Visualization

VisWeb Import

Select your directory of images: C:\
Select your data source Access Database file (*.mdb): C:\
Select your summary data table:
Select your section data table:
Select your data's unique identifying field:
Enter the original video server URL: http://
Enter the thumbnail video server URL: http://
Enter the year of data to import: 2005

Load these settings the next time?

Step 2 of 8

Back Next Close
Enhanced Data Presentation
Questions
Thank You