AUTOMATING KANSAS PAVEMENT CONDITION DATA COLLECTION
Kansas DOT Pavement Condition History

- Pavement Management System since 1983
- Manual and Automated Methods
- Tried to Maintain Data Consistency for Performance Measure (and other) purposes
- Collect nominally 1 mile segments
- Collect every year (11,500 miles)
- Report Pavement Condition Data
- Use Data to program projects
“Old” Data

- Roughness (IRI) (all pavement types)
- Cracking (Transverse, Fatigue, Block) (Black surface)
- Rutting (3 point) (Black surface)
- Joint Distress ("D-Cracking") (White surface)
- Faulting (White surface)
- Location (GPS) Data (all pavement types)
“Old” Methods

- Automated (60 or more MPH)
  - 3 point profiler (roughness, rutting, faulting)
  - Nearly 100% sample of each segment
  - DGPS
- Manual (5-10 MPH in 100 foot sections)
  - “Windshield” (cracking, joint distress)
  - Three 100 foot samples per (nominally 1 mile) segment (~5% sample)
“Old” Uses

- Pavement Data used in
  - Reports (Annual NOS, HPMS)
  - KDOT Performance Measures (%)
- Project Selection
  - “Major Mod” Prioritization (Major Rehab/Recon)
  - “Substantial Maintenance” Optimization (Rehab/PM)
- Pavement Design, Research, other stuff
“Legacy” Continuity Requirements

- HPMS (might be consistent, will follow guide)
- Performance Measures (Chart – care or explain)
- Project Selection (Care or determine new)
- Pavement Design – Moving toward MEPDG
- Research – we will see if we can replace manual visual survey efforts and augment additional research
“New” Requirements To 2013 and Beyond....

- KDOT – adapt new data to fit old criteria and/or shift to new data
- AASHTO – Produce data “exactly” following the published standards (full disclosure of ETG)
- HPMS – Produce data following the standards (if the standards don’t make sense, get them changed!)
RFP and Purchase

- Stated what we need not how to do what we think needs doing
- Included warranties and maintenance requirements
- Included training
- Included processing hardware and software
- Included data storage
- Included options (2\textsuperscript{nd} Vehicle, LiDAR)
- Still purchased with Low Bid
Purchased System

- Summer 2012 Purchase
- December 2012 Delivery
- Mandli Communications
  - Vehicle (Ford 1 T Van)
  - Road Surface Profiler (Dynatest)
  - Forward and Downward Imaging (Allied Vision And Pavemetrics)
  - GPS
  - IMU (Applanix)
Kansas Pavement Condition Data Collection Vehicle
Kansas Vehicle Backside

- GPS
- Backup Camera
- LCMS
- Shore Power
- Mark IV
Current Status

- Collected more than 700 miles
- Processed
  - Profile – IRI (following AASHTO 43-07)
  - Cracking (Transverse, Longitudinal, Pattern following AASHTO PP 67-10 and PP 68-10)
  - Rutting (Following PP 69-10 and PP70-10)
  - Faulting (R36-04)
  - Joint Distress NOT YET
- Comparing to the past (but not calibrating to manual distress)
Sample Forward Image
Downward Range and Intensity
Closer look at range images
Looking Forward on Concrete
Concrete Range and Intensity
Comparisons (not Calibration)
Range and Intensity on U-56
2012 NOS vs 2013 RSP IRI

2012 NOS IRI vs 2013 RSP IRI Values
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International Roughness Index (in/mile)

Milepost
Comparing Transverse Cracks

2012 NOS TCR1+2+3 vs 2013 LCMS Transverse Crack Values
070U0005600SoEB

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2012 NOS Sealed Transverse vs LCMS Sealed Cracks

2012 NOS TCRo vs 2013 LCMS Sealed Crack Values

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Fatigue Cracking Comparison

2012 NOS Fatigue vs 2013 LCMS Zone2+4 Crack Values
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Wheelpath Feet of Fatigue Cracking per 100 linear feet

Milepost

FCR1
(LongZ2+Z4)/52.8*2
Lessons Learned?
Questions/Contact Info

- Questions?

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