Survey123 & Collector for ArcGIS, A Powerful Combination

Rebecca Barber
Overview

• Why, What, Who & How
• FDOT GIS Platform
• eMaintenance Vision
• Mobile Platform Implementation
• Challenges
• Questions
Why?

• On September 11, 2015, the Federal Highway Administration (FHWA) released the findings of the FHWA-AASHTO Joint Task Force in a report titled, “Report from Joint AASHTO-FHWA Task Force on Guardrail Terminal Crash Analysis.”

• One of the recommendations in the findings was to conduct in-service performance evaluations of guardrail approach terminals that have been installed on roads.
Why?

- Based on this recommendation, the Department decided to move forward with conducting in-service performance evaluations
What?

In-Service Performance Evaluation (ISPE)

It is the gathering and evaluation of data to assess the safety performance of crash cushions and guardrail approach terminals that have been installed along Florida roads.
What?

• Three Phases
  • Phase 1. Collection of Inventory Data
  • Phase 2. Collection of Incident Data
  • Phase 3. Evaluation of Data
Department Overview

- Decentralized
- Highway mileage
- 207 Billion Auto Vehicle Miles traveled in 2015
Department Overview

- Decentralized
- Highway mileage
- 207 Billion Auto Vehicle Miles traveled in 2015
- 3rd most populous state
Who?

- These evaluations will be performed by the joint efforts of the Offices of
  - Safety,
  - Design,
  - Traffic Operations,
  - Program Management
  - Maintenance, along with
  - District Operations
    - Internal
    - External
# Statewide Task Team

<table>
<thead>
<tr>
<th>District</th>
<th>In-Service Performance Evaluation</th>
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<tbody>
<tr>
<td>CO</td>
<td>Rudy Powell</td>
</tr>
<tr>
<td>CO</td>
<td>Kirk Hutchison</td>
</tr>
<tr>
<td>CO</td>
<td>Kristin McCrary</td>
</tr>
<tr>
<td>CO</td>
<td>Dale Cook/ Tim Allen</td>
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<tr>
<td>1</td>
<td>Paul Barnes</td>
</tr>
<tr>
<td>2</td>
<td>Paul Grochowski</td>
</tr>
<tr>
<td>3</td>
<td>Windle Tharp</td>
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<tr>
<td>4</td>
<td>Zachary Taylor</td>
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<tr>
<td>5</td>
<td>Barry Hallman</td>
</tr>
<tr>
<td>6</td>
<td>David Calhoun</td>
</tr>
<tr>
<td>7</td>
<td>Pedro Lopez</td>
</tr>
<tr>
<td>TP</td>
<td>Trevor Colley</td>
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</table>
Who?

The three phases of the In-Service Performance Evaluation

• Phase 1. Collection of Inventory Data
• Phase 2. Collection of Incident Data
• Phase 3. Evaluation of Data
Office of Maintenance

- Contract Management
  - 48 active maintenance contracts maintaining Florida's State Highway System
- Structures Operations
  - 12,262 bridges
- Motor Carrier Size & Weight
- NPDES Storm water (National Pollutant Discharge Elimination System)
- Performance Management
  - Including Roadway Characteristic (RCI) data collection and management
- Program Resources
  - Funding
- Roadway Operation
Office of Maintenance

- Inventory, Inspection, and Evaluation
  - Roadway Characteristics Inventory (RCI)
  - Rest Area Inspections
  - Maintenance Rating Program (MRP)
- Signs,
- Guardrail, and
- Crash cushion inspections
Phase 1

• Inventory data will be collected for:
  • Including type (manufacturer, make, model),
  • location, and
  • photos

• Approach terminals
  • Collected by in-house or contract maintenance forces as part of the guardrail inspection performed biennially

• Crash Cushions
  • Collected by in-house or contract maintenance forces as part of the crash cushion inspections performed every year
Phase 2

- Incident data is crash report information plus addition data
  - Type of incident
    - over/ under/ through
  - Location of impact
  - Photos
How has this Data been collected?

• Clipboards
• Paper Forms
• Pens & Pencils
• Camera
• Enter data manually into
  • A database
  • A spreadsheet
### FDOT Guardrail Approach Terminal and Crash Cushion Inventory
#### and Incident Documentation

#### Location Identification

<table>
<thead>
<tr>
<th>District:</th>
<th>Maintenance Unit/Cost Center:</th>
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<tbody>
<tr>
<td>State Route:</td>
<td>County:</td>
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<tr>
<td>Roadway Section #:</td>
<td>Roadway Subsection #:</td>
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<tr>
<td>Mile Post:</td>
<td>Latitude (Y):</td>
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<tr>
<td></td>
<td>Longitude (X):</td>
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<tr>
<td>Posted Speed Limit (mph):</td>
<td>Offset:</td>
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<tr>
<td>35 or less</td>
<td>Right</td>
</tr>
<tr>
<td>40</td>
<td>45</td>
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<tr>
<td>50</td>
<td>Left</td>
</tr>
<tr>
<td>55</td>
<td>60</td>
</tr>
<tr>
<td>65</td>
<td>Median</td>
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| Nearest Intersecting Route: | Distance from [miles]: |

#### Inventory (always document with photographs):

27° Guardrail Approach Terminal

<table>
<thead>
<tr>
<th>Best</th>
<th>Forrnet FX Flared</th>
<th>SRT - SP</th>
<th>TRAC 05</th>
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<td>CAT 350</td>
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<td>ET = 2000</td>
<td>Heart</td>
<td>Trend 350</td>
<td>Trend 350 Taper 1.9</td>
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<td>ET = 2000 LET</td>
<td>MELT</td>
<td>SRT 350</td>
<td>WideTrac</td>
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<td>ET = Plus</td>
<td>Regent</td>
<td>SRT 350 Eight Post</td>
<td>X-UITE Flared</td>
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<td>FLET = MT</td>
<td>Regent - C</td>
<td>SRT HBA 6 post</td>
<td>X-UITE Parallel</td>
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<tr>
<td>FLET = SP</td>
<td>SRT - 350</td>
<td>SRT Mesh Flared</td>
<td>X-TENSION</td>
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<td>FLET 350</td>
<td>SRT - Lite</td>
<td>TRAC</td>
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31° Guardrail Approach Terminal

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<thead>
<tr>
<th>ET Plus 32 ET</th>
<th>Softstop Flat FT</th>
<th>SRT - 350 Flared ET</th>
<th>X-UITE TL-3 Flared</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLET - MT - MGS</td>
<td>SRT - 31 Flared ET (Steel Posts)</td>
<td>Trend 350 Flared ET</td>
<td>X-UITE TL-3 Parallel</td>
</tr>
<tr>
<td>FLET - SP = MGS</td>
<td>SRT - 31 Flared ET (Wood Posts)</td>
<td>Trend 350 Median ET</td>
<td>X-TENSION Flared</td>
</tr>
<tr>
<td>SKT - SP = MGS</td>
<td></td>
<td>Trend 350 Taper ET</td>
<td>X-TENSION Parallel</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Other</td>
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Paper Forms
Paper Forms
Future of Data Collection

• Use of mobile devices coupled with software applications
• Emergence of tools to perform work in a more efficient, streamlined manner
• Paperless, cloud environment
• Statewide data reporting capabilities

eMaintenance!
eMaintenance

• Mobile Devices
  • Tablets
  • Smartphones

• Front End Mobile Application
  • Software development and support of
  • Electronic forms as mobile apps to allow electronic forms
  • Allowing data to be populated and uploaded in real time to a database
eMaintenance

- Back End Database where data is
  - Searchable,
  - Retrievable, &
  - Reportable
Other Offices Involved

- GIS Support
  - FDOT GIS Coordinator
  - GIS Mapping Project Manager
  - Esri

- Information Technology
  - Desktop Support
  - Tablet Support
  - Multimedia
    - How to's
    - Logos
FDOT GIS Platform

- Arc GIS On Line (AGOL)
  - Maps
  - Apps
  - SURVEY123
  - Collector
  - Dashboard

- Desktop
  - SURVEY123 Connect
  - ArcGIS for Desktop
eMaintenance Vision

- What will eMaintenance change
- Where are we going
- Tools
- What has come of eMaintenance to date
- Visualizing the data via GIS
- The importance of eMaintenance
What will eMaintenance change?

- Reduce physical storage space required
- Protection from catastrophic events
  - Fire
  - Water
  - Building damage
  - Theft
What will eMaintenance change?

• Reduction in processing steps and time
• Fewer data errors
  • QC process in place for both
    • Users
    • Administrators
What will eMaintenance change?

• The merger of all data for the Maintenance department
• Starting point
  • In-Service Performance Evaluations (ISPE) of guardrail approach terminals that have been installed on roads
CIM, R.O.A.D.S. & GIS

GIS, ROADS & CIM Powerful Combination

Civil Integrated Management
Process goals
- Sharing of data across the Organization through the lifecycle of the asset
- 3D Modeling
- Assess our Organization

Geographic Information Systems
System for visualizing, questioning, analyzing and interpreting data for understanding relationships, patterns, and trends.

https://hott.sharepoint.com/sites/FDOT-36/Projects/externalprojects/ITSP/ROADS/SitePages/Home.aspx

ROADS Initiative’s goal
- Improve data reliability
- Simplify data sharing across FDOT

Reliable Organized Accurate Data Sharing
Survey123

Damage Assessment
- Form by david.july@dot.state.fl.us_fdot
- Last Modified: February 7, 2017
  (0 ratings, 0 comments, 1 view)

Damage Assessment
- Feature Layer by William.Isaacs@dot.state.fl.us_fdot
- Last Modified: May 18, 2017
  (0 ratings, 0 comments, 87 views)

Damage Assessment WebMap
- This is a BETA webmap for the development and testing of FDOT EM Damage Assessment Survey123 Application.
- Web Map by William.Isaacs@dot.state.fl.us_fdot
- Last Modified: April 19, 2017
  (0 ratings, 0 comments, 7 views)

Damage Assessment Application
- This is a BETA Web Map Application for the Damage Assessment Program at FDOT's Office of Emergency Management.
- Web Mapping Application by William.Isaacs@dot.state.fl.us_fdot
- Last Modified: April 19, 2017
  (0 ratings, 0 comments, 6 views)
Tools
Initial Steps

• Document Needs
  • Existing forms

• Getting everyone in room the together
  • Prevents scope creep and spinning your wheels
SURVEY123 & Collector for ArcGIS

• SURVEY123 did not support our needs for adding incidents to existing features
• Collector did not support our needs for creating the initial inventory
• Alone neither were a solution
SURVEY123 & Collector for ArcGIS

• Related Geodatabase Tables
  • 2 forms per feature
  • Accomplished using ArcGIS for Desktop
  • Uploaded related tables into AGOL for data collections

• SURVEY123 for Inventorying
  • Built in logic, more time spent preparing the form makes it more user friendly for field crews

• Collector for ArcGIS used for incidents on existing inventory
Smart Forms

- Document needs
- Survey123 makes it easy
Smart Forms

You can choose between Advanced and Basic Templates.

There are also prebuilt samples included “out of the box”
Smart Forms
Web Maps
Web Maps
Web Apps
Information Centers
Information Centers
Resources for ISPE

• eMaintenance In Service Performance Evaluation (ISPE Website)
  • Memorandums
  • Application documentation
  • SURVEY123 and Collector Videos

Survey123 and Collector Application Video Guides

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<thead>
<tr>
<th>File Title</th>
<th>File Type</th>
<th>Posted Date</th>
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<tr>
<td>How to Sign In to Survey 123</td>
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<td>How to Download Smart Forms</td>
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</tr>
<tr>
<td>How to Sign In to Collector</td>
<td>Video</td>
<td>01/03/2017</td>
</tr>
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</table>

Helpful Info

http://www.fdot.gov/maintenance/E-Maint/Default.shtm
Challenges

• SURVEY123 gaps
• Disconnect between mobile capabilities
• Tablet troubles
  • Department Security
  • Costs
  • Data plans vs. no data plans
• Versioning of the data
• Platform Versions
• Learning Curve for users
Summary

E-Maintenance

- Mobile devices, front end apps, back end reportable statewide database
- Phase 1. Inventory, inspection, and evaluation
- Phase 2. Contract administration
- Statewide maintenance task team
Summary

In-Service Performance Evaluations

- Gathering and evaluation of data to assess the safety performance
- Phase 1. Collection of Inventory Data
- Phase 2. Collection of Incident Data
- Phase 3. Evaluation of Data
- Joint effort between Traffic Operations, Design, Safety, Program Management, and Maintenance Offices
- Statewide maintenance task team
Questions
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