Applied Transportation Research
A Recap

LiDAR News
and
The Future of the Built Environment

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Gene V. Roe, Ph.D., P.E., PLS

www.lidarnews.com
www.futbe.com
Surveying in the Good Old Days

“Jeremiah and me wuz surveyin...
He never said a word for 3 months -
Now that’s what I call good company.”
Today’s Innovation Topics

• Mobile LiDAR Guidelines
• Assessing Coding and Marking of Highway Structures During Emergency Events
• FHWA EDC 3 Regional Summits
• FHWA EDC 3 Webinars and Workshops – 3D Models, As-Built Surveys and As-Found
• The Future of the Built Environment
Guidelines for the Use of Mobile LIDAR in Transportation Applications
Transportation Asset Lifecycle

1. Acquire
2. Apply
3. Model
4. Analyze

Steps in the lifecycle of transportation assets: Acquire, Apply, Model, Analyze.
GUIDELINES FOR THE USE OF MOBILE LIDAR IN TRANSPORTATION

Welcome to the online resource for the NCHRP 15-44 Guidelines for the use of Mobile LIDAR in Transportation Applications. Mobile LIDAR is one of several new 3D technologies that offer the promise of transforming the way in which transportation agencies plan, design, construct and maintain their highway networks. This website is designed to facilitate the interactive learning of the guidelines document and serve as a central hub for discussion and transmission of knowledge amongst the Mobile LIDAR community.
Mobile LIDAR User Forum

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Howdy, Stranger!

It looks like you're new here. If you want to get involved, click one of these buttons!

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New Ideas

• Research in progress
• Expand State specifications
• Case studies
• Requests for information and proposals - RFI/RFP
• Other creative, value creating ideas
NCHRP 14-29 Assessing, Coding, and Marking of Highway Structures in Emergency Situations

Under Review

MPN Components
Pre-Incident Planning

- **Recommendation 2** → Identify vulnerable and essential highway structures prior to an event and periodically evaluate.

- **Recommendation 3** → Develop priority inspection routes.

- **Recommendation 4** → Develop a digital structural inventory database and digital maintenance databases that tie structures to geospatial location, traffic levels, and other pertinent information that can quickly be accessed during emergency response.
Coding

- **Unsafe** – Red color code and indicates extreme hazards
  - No through traffic allowed in the area
  - *Create safety zone (close bridge)? Repairable? Detailed Assessment?*

- **Limited Use** – Yellow color code and indicates dangerous conditions
  - ER vehicles allowed in the area
  - *Create safety zone? Remediation measures required?*

- **Inspection** – Green color code and indicates no apparent hazard
  - No heavy traffic allowed in the area
  - *No specific safety zone required*
  - No damage observed
Marking

- Placards affixed with a color decal
- Available at all offices and in inspection vehicles
- Could be placed on the right hand side of an approach to a bridge
- Attach with ties (e.g., guardrail) or high strength adhesive
Website

• To Be Continued at TRB 2016
3D Engineered Models: Schedule, Cost and Post-Construction

Regional Summit

Fall 2014
Summary of EDC-3 Technologies

As-found Survey Data

Post-construction Survey Data

Schedule (4D) and Cost (5D) Modeling

Image Sources: Walsh, Caltrans, FHWA
Enabling Technology: LiDAR

Image Source: NCHRP 15-44
Creating Digital As-Built Records

Construction is the most cost-effective time to capture position information.

Image Source: FHWA
As-Found Data for Bridge Inventories

- Design
- Clearances
- Condition assessments

Route: KY-222
Structure ID: 047XXXXX
Design Construction: Tie-beam
Length: 62.8 m

Milepoint: 129
Year Built: 1962
Material Design: Concrete Continuous
Scan date: 6/19/2013

Image Sources: Woolpert, Kentucky Transportation Cabinet
State Transportation Innovation Councils - STICs

- $100k grants per year
- PA in the lead
Support for Every Day Counts Three (EDC-3) Initiative
Webinars and Workshops for 3D Engineered Models:
Schedule, Cost and Post-Construction
EDC-3 Webinars

• Build on format from EDC-2
• Widely publicized – anyone can join
• EDC-2 audience primarily DOT/Consultant
• Discussions can be very technical
• Focus on lessons learned
• Polls capture national perspective

http://www.fhwa.dot.gov/construction/3d/webinars.cfm
Workshops

• Main deployment product – 1.5 days on site
• Agency leadership and technical professionals
• Focus on supporting implementation
• Provide foundational technical information
• 2 SMEs per workshop – depends on track
• Support a 3D implementation plan
The Future of the Built Environment

www.futbe.com
gene.roe@futbe.com