

Applied Transportation Research

A Recap

LiDAR News
and
The Future of the Built Environment

July 29, 2015

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

www.lidarnews.com

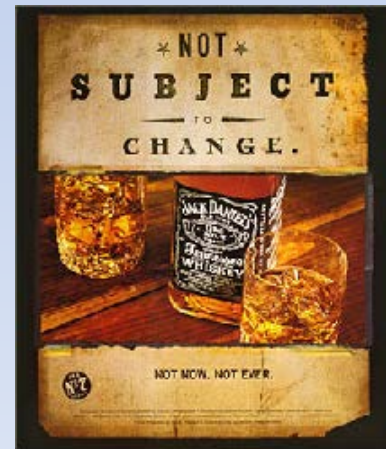
www.futbe.com

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



NCHRP

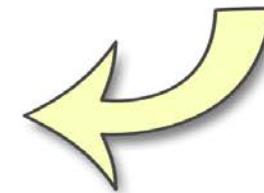
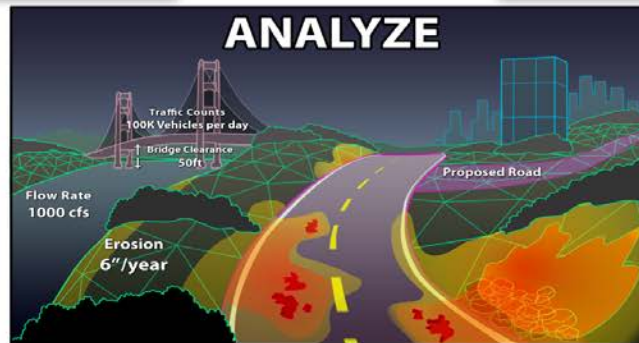
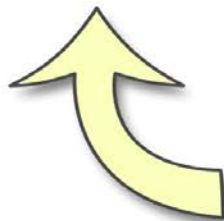
REPORT 748

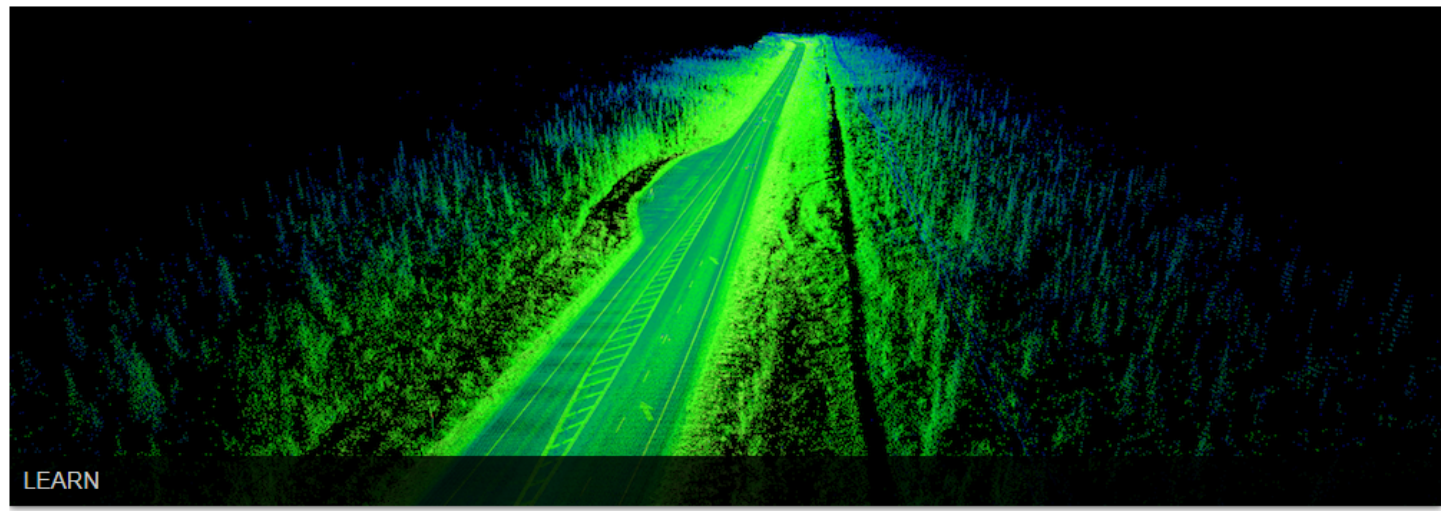
NATIONAL
COOPERATIVE
HIGHWAY
RESEARCH
PROGRAM

Guidelines for the Use of Mobile LIDAR in Transportation Applications

TRANSPORTATION RESEARCH BOARD
OF THE NATIONAL ACADEMIES

Transportation Asset Lifecycle





LEARN



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.

Getting Started



Review key overview references for Mobile LIDAR.

E-Learning Modules



Learn about mobile LIDAR technology and how to manage it.

Mobile LIDAR Forum



Join others in the discussion of mobile LIDAR.

News Feed

[International LiDAR Mapping Forum Launches 2014 Program - GISuser.com \(press release\)](#)

Mobile LIDAR User Forum

[Discussions](#) [Activity](#) [Sign In](#)

All Categories

General

 0 discussions 0 comments

Mobile LIDAR Technology

 0 discussions 0 comments

Mobile LIDAR Management

 0 discussions 0 comments

Projects

 0 discussions 0 comments

Learning Resources

 1 discussion 2 comments

Howdy, Stranger!

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

Powered by [Vanilla](#)

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
- **Limited Use** – Yellow color code and indicates dangerous conditions
- **Inspection** – Green color code and indicates no apparent hazard



No through traffic allowed in the area
*Create safety zone (close bridge)?
Repairable? Detailed Assessment?*



ER vehicles allowed in the area
*Create safety zone?
Remediation measures required?*



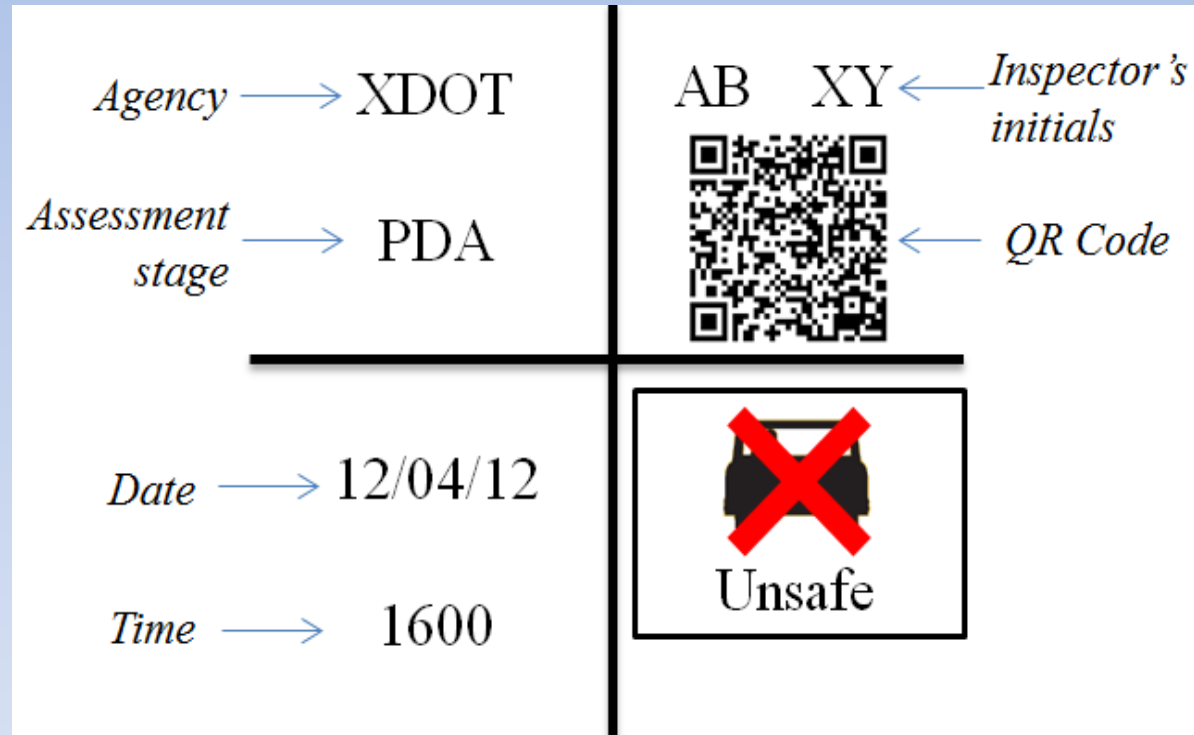
No heavy traffic allowed in the area
No specific safety zone required



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



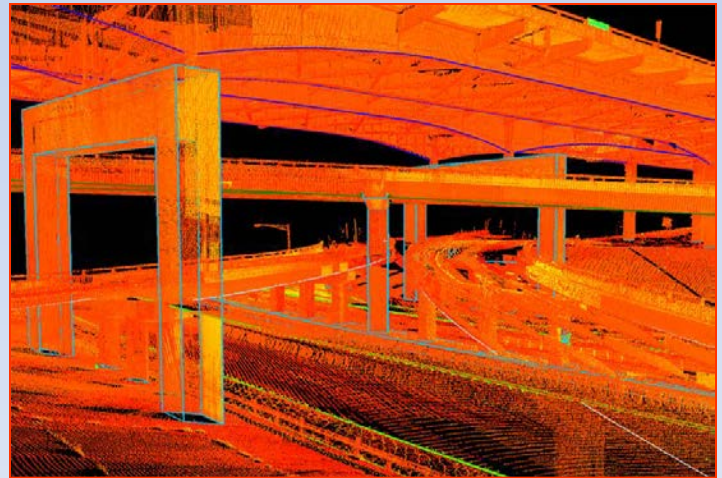
Website

- To Be Continued at TRB 2016

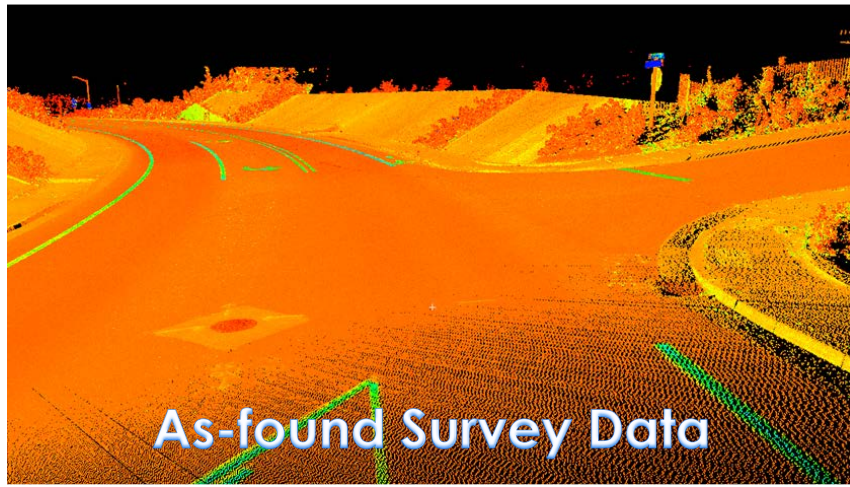
3D Engineered Models: Schedule, Cost and Post- Construction

Regional Summit

Fall 2014



Summary of EDC-3 Technologies



Enabling Technology: LiDAR



Image Source: NCHRP 15-44

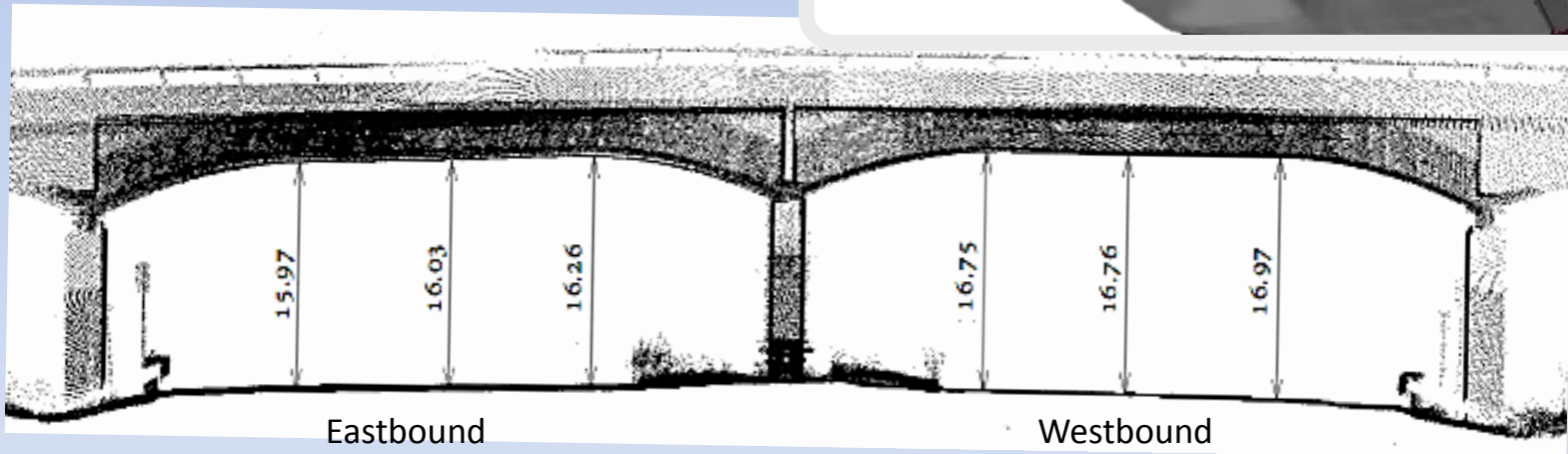
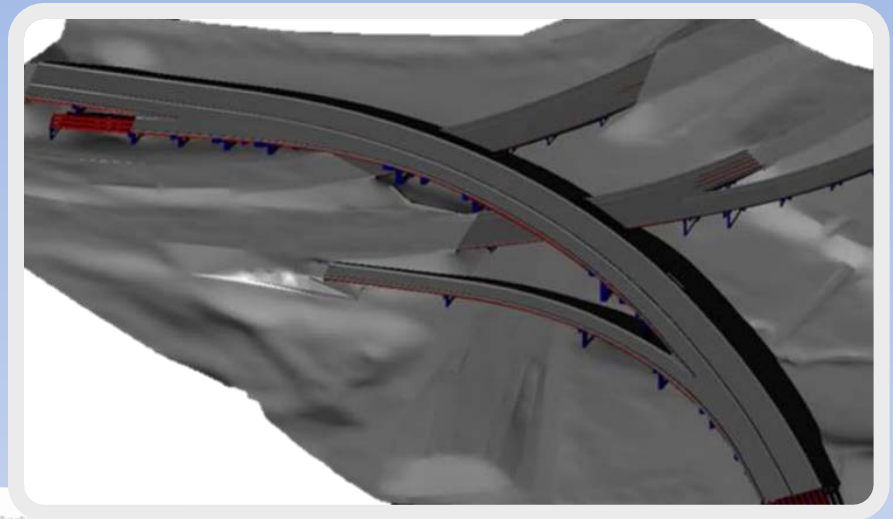
Creating Digital As-Built Records



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

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

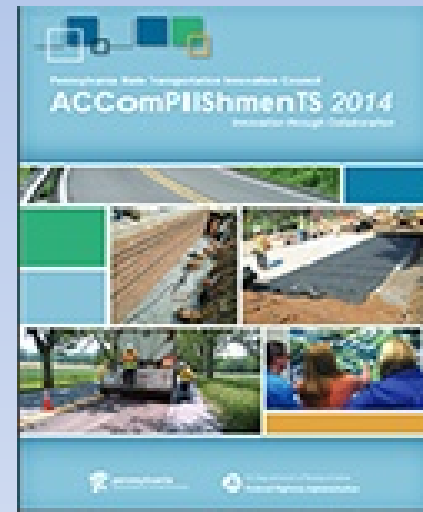
Material Design: Concrete Continuous

Scan date: 6/19/2013

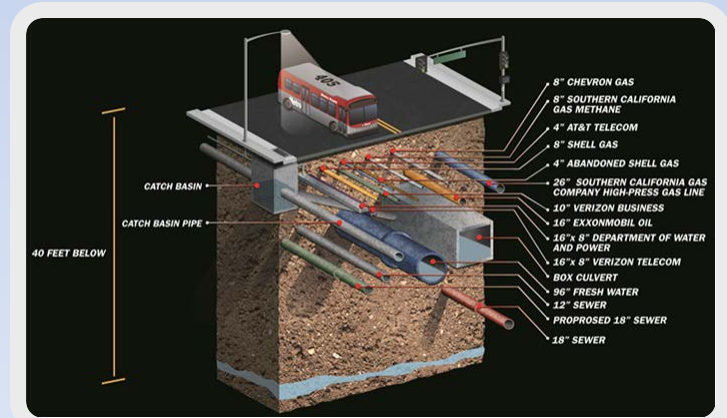
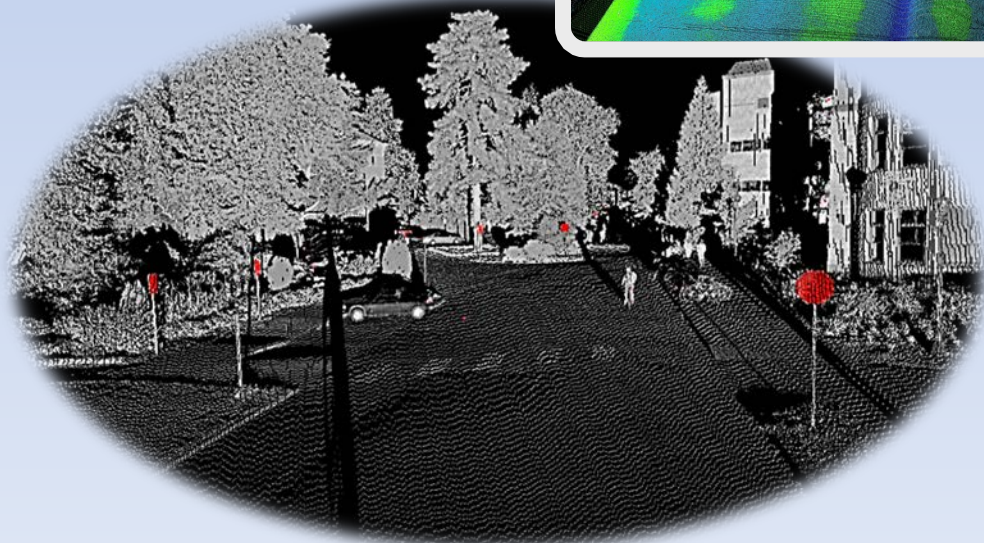
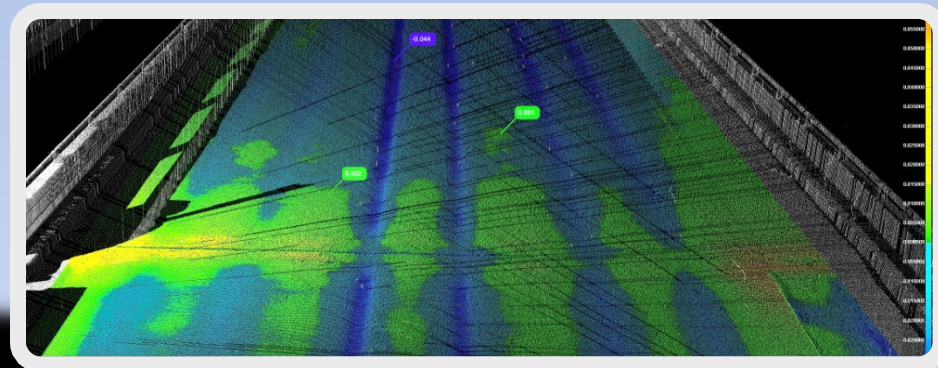
Image Sources: Woolpert, Kentucky Transportation Cabinet

State Transportation Innovation Councils - STICs

- <http://www.fhwa.dot.gov/stic/>
- \$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