

## Bridge Session Summary

David W. Johnston, PE, PhD  
 Edward I. Weisiger Distinguished Professor  
 North Carolina State University

National Workshop  
 Highway Asset Inventory and Data Collection  
 FHWA and North Carolina Department of Transportation  
 September 24-26, 2008

## Bridge Workshop Objective

- Workshop approach for bridges
- Detailed inventory exists
- Question is how to:
  - Improve the inventory and condition data
  - Assess critical elements better
  - Make inspection process safer for inspectors
- A vehicle passing over bridge cannot accomplish task for whole bridge.
- Bridges are too complex and vary too much.
- Hoped for:
  - Deck assessment technologies
  - Advanced tools for assessment
  - Survey of clearances



Wake County SR 1010 over US 1

## Bridge Session Presentations

- **Bridge Management: A National Perspective**  
 Keynote Speaker – Thomas D. Everett, PE  
 USDOT Federal Highway Administration, Washington, DC
- **Long Term Bridge Performance Program**  
 Andrew J. Foden, P.E., Ph.D., Deputy Program Manager  
 Parsons Brinckerhoff
- **Bridge Management System Developments for Israel**  
 Jim Edgerton, Project Manager  
 Agile Assets, Austin, TX

## Bridge Session Presentations

- **Bridge Health Monitoring**  
 Eugenia K. Roman, P.E., Vice President  
 Olson Engineering, Rutherford, NJ
- **Use of Advanced Technologies in Foundation Investigations:  
 Experiences of the LA DOTD**  
 Steven Sibley, PE, Bridge Inspection QA/QC Engineer  
 Louisiana Dept. of Transportation and Development, Baton Rouge
- **Fatigue Failure Detection and Assessment**  
 Tyler Smithson, P.E., Structural Engineer  
 MATECH Corp., Crestline CA
- **Bridge Height Clearances Using Terrestrial LiDAR in Motion**  
 Michael R. Frecks, PLS, Principal  
 Terramatrix, LLC, Omaha, Nebraska

## Bridge and Overhead Sign Vertical Clearance



13'- 6" legal limit

Over height permit routing

Unintended over height



Safety

Damage and detour costs modeled in BMS

Must know clearances accurately



## Data Collection Vehicles

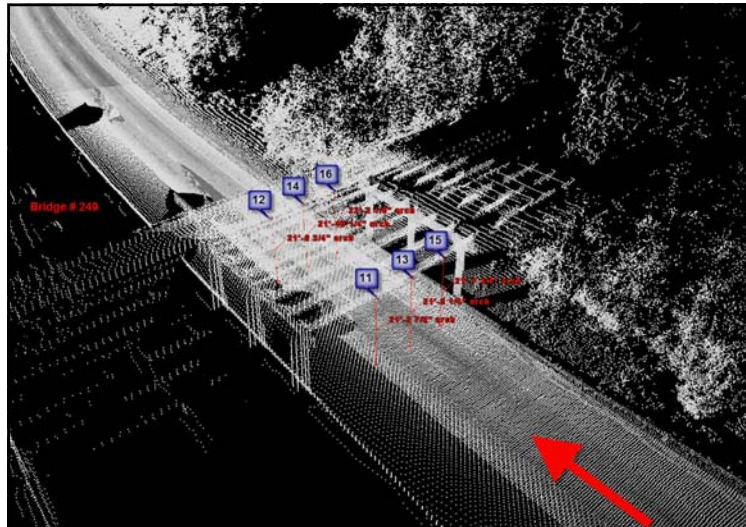
Vertical Clearance Survey Participants



Geo-3D



Terramatrix



Terramatrix

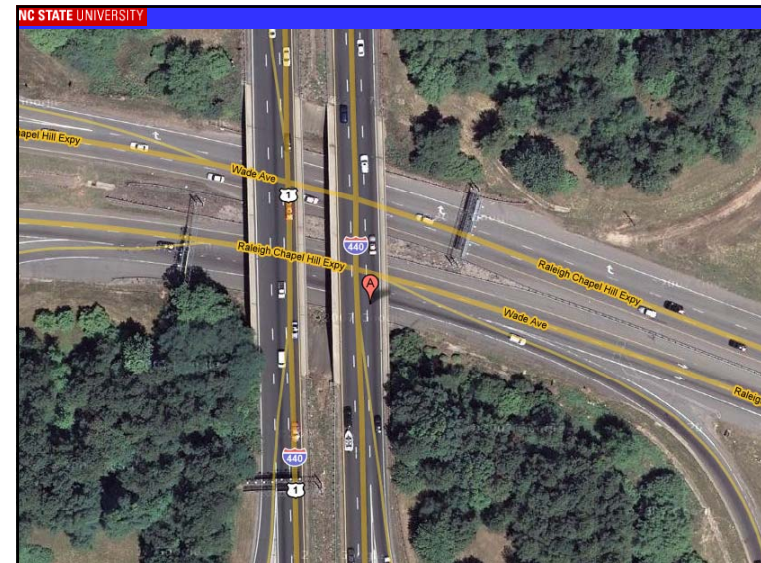
## Resurvey of Selected Bridge Clearances



NC STATE UNIVERSITY

Vertical Clearances (Ft)

Bridge/Sign	Inventory	DOT Survey	Data 1	Data 2
S-081	17.92 : 23.00	17.74 – 23.34	18.47	18.02 – 23.39
S-709	17.92 : 18.25		18.57	17.97 – 19.50
B-249	21.42 : 22.17	21.34 – 22.16	21.62 – 22.08	21.32 – 22.18
B-290	17.00 : 17.42	17.33 – 21.78	18.37 – 21.03	18.16 – 23.16
B-549	17.17 : 17.25		17.09 – 17.62	
B-580	19.83 : 21.5		21.13 – 21.82	
S-711	20.25 : 23.25		20.73	
S-712	18.5		18.57	
B-338/339	18.08 : 19.00		20.24 – 21.49	



- NC STATE UNIVERSITY
- ### Bridge Conclusions
- Significant activity is underway to better understand bridge performance and FHWA has expectation for this to occur.
  - Continuing developments in bridge management systems.
  - Additional tools available for assessment of critical details and monitoring bridge health.
  - States are benefiting from implementation of advanced assessment tools.
  - Visual inspection within arms length and knowledge of problematic details remains critical.
  - Advances in vehicle mounted survey scanners are improving options for determining vertical clearances.