Commercial Remote Sensing (CRS) - Applications for Bridge Management

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Commercial Remote Sensing (CRS) - Applications for Bridge Management: Key Project Team Members

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Outreach efforts for CRS information dissemination

• Orientation
• Model Validation
• Information Dissemination
• Marketing CRS Technologies for Bridge Mgmt. & Preservation
LiDAR Applications

- Bridge Surface Defect Quantification
- Bridge Displacement Measurement / Joint Movement
- Blast Impact Monitoring
- Bridge Clearance Determination
- Static Load Tests / Deflection Measurements
Bridge Clearance Determination

<table>
<thead>
<tr>
<th>Bridge</th>
<th>670511 (meter)</th>
<th>670512 (meter)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inspection Report</td>
<td>4.750</td>
<td>5.588</td>
</tr>
<tr>
<td>Laser Data</td>
<td>5.005</td>
<td>5.611</td>
</tr>
</tbody>
</table>
Small Format Aerial Photography

- Bridge Image/ Inventory Documentation
- Bridge Deck Cracking Monitoring
- Bridge Deck Joint Movement Monitoring
- Bridge Environmental Study / “Furniture”
**Cracks and Joint Identification**

- Large Format (9 in. camera aperture)
- Small Format (35 mm camera)
Bridge Survey Equipment

- Cessna C210L
- Cannon 5D SLR camera
- Approx. 1000 ft altitude at approx. 100 MPH
- Orthogonal rectification not needed
Changing Terminology: FROM...

• Bridge Maintenance to Management >
• Mgmt. to Asset Mgmt. (wider scope) >
• Asset Management to Sustainability >
• Sustainability to Preservation.
Sub - Objectives

• Encourage implementation if adopted in partnering states, cities and counties

• Analysis of cost-effectiveness and life cycle costs
Outreach Objectives

• Information dissemination to all 50 State highway agencies – mail-out & Web
• Info. Dissemination to selected counties and cities
• Build nationwide CRS -bridge database
  – 100 (+) bridges w/sub-inch aerial photos
  -- 25 bridges w/ LiDAR scans
• Expand to 6 states, 10-12 counties/cities
Current Public Sector Partners

• NCDOT, City of Charlotte
• Iowa DOT
• New York State DOT
• Alabama & Shelby County
• Texas (under discussion stage)
• Florida (prelim. stage), Osceola Co.
• CALTRANS & Los Angeles County (CA)
• Michigan Tech University
Key Organizational Partners

- AASHTO
- FHWA
- NACE
- ARTBA
- Other university consortiums
- TSP-2 (Transp. Syst. Preservation - Technical Services Program)
- LTAP program
Marketing Team

• Charlotte Research Institute
• UNCC Tech Transfer Office
• Kelley Rehm
• Mike Walton
• Chuck Boyle
• Edd Hauser, project manager
Developing a Business Plan

- Literature and Data Review (recent AASHTO surveys)
- National survey to fill the gaps
- Track status and future of BRIDGEWARE
- Case studies in selected states
- Represent project at Regional Bridge Preservation Partnership meetings
Walton & Rehm

- Liaison to TRB, AASHTO Exec. Committee, ARTBA, other org’s.
- Help build partnerships
- Help develop Business Plan
- Identify interface w/ITS (Truck Wt. issue)
- Represent the project team at professional meetings
Transportation System Preservation Technical Services Program (TSP-2)

• AASHTO sponsored program
• Four Regional Partnerships – next meeting in Fall 2011
• Collaborating thru TSP-2 partnership with all 50 states, plus territories
TSP-2 Functions

- Information Clearinghouse on Infrastructure Preservation
- Technical Assistance Help Desk
- Idea Exchange – Best Practices
Accomplishments to date

• Workshop with PAPA (photographers) – March
• Participation in SE Regional Bridge Preservation Partnership (April)
• New York ASCE meeting in August
• Planning for October PAPA national conference in Charlotte
• NCRST presentation possibility
• AASHTO presentations
• Web site - building (www.ncrst.uncc.edu)
Strategic Plan going forward

- Continue developing partnerships thru Case Studies
- Planning National Conference (Spring 2013)
- Publications
- Business plan
Questions?

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