Multimedia Highway
Information System
(MMHIS)
A picture is worth a thousand words.

Fred R. Barnard
MMHIS Development

- Research problem statement was submitted by Dr. Kelvin Wang – University of Arkansas Civil Engineering Department
- Initial research project was initiated in 1996
- Development and implementation continued under three research projects - TRC-9606, TRC-9904, TRC-0202
MMHIS Development

- Implemented by AHTD at Central Offices in 2002
- Initial deployment to 12 workstations in Roadway Design, Bridge Design, and Planning and Research
- Focus was on utilization of the MMHIS for the Interstate Rehabilitation Project (IRP)
MMHIS Implementation

- Initially used MPEG-2 streaming video
- Utilized Sigma Designs MPEG-2 cards for video overlay
- Required administrative rights to install
- Too expensive for Department-wide implementation
MMHIS Implementation

- Converted to JPEG imagery
- Easier deployment – did not require administrative rights
- Standards-based (Intel jpeg library)
- Allowed widespread implementation
MMHIS Hurdles

- Integration of Departmental databases in a distributed environment
  - Linear referencing issues
  - Differing update cycles
  - Route changes
  - Data disagreements
<table>
<thead>
<tr>
<th>Struct #</th>
<th>Log Mile</th>
<th>Facility On Struct</th>
<th>Year Built</th>
</tr>
</thead>
<tbody>
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<td>CO RD 3</td>
<td>1963K</td>
</tr>
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</table>

- Confirm selection by clicking the "Locate" button or by double-clicking on list.
Roughness History - Route 30 E Section 22
### AHTD Roadway Inventory Query

**Database Year:** 2008

**Route Types to be Included:**
- 01-INTERSTATE
- 02-U. S. NUMBERED (EXCLUDING INTERS
- 03-STATE HIGHWAY

**Type of Records to be Included:**
- Mileage
- Description
- Bridge
- Job
- Railroad
- Exception
- Frontage Roads
- Ramps
- Summary

**Code and Meaning Display:**
- Show Code
- Show Meaning

**District**
- <Don't Care>
- 01
- 02
- 03
- 04
- 05
- 06
- 07
- 08
- 09
- 10

**County**
- 00-<Don't Care>
- 01-Arkansas
- 02-Ashley
- 03-Baxter
- 04-Benton
- 05-Boone
- 06-Bradley
- 07-Calhoun
- 08-Carroll
- 09-Chicot
- 10-Clark
- 11-Clay
- 12-Cleburne
- 13-Cleveland
- 14-Columbia
- 15-Conway

**Route:**
- STATE HIGHWAY 1
- STATE HIGHWAY 4
- STATE HIGHWAY 5
- STATE HIGHWAY 7
- STATE HIGHWAY 8
- STATE HIGHWAY 9
- STATE HIGHWAY 10
- STATE HIGHWAY 11
- STATE HIGHWAY 12
- STATE HIGHWAY 14
- STATE HIGHWAY 15
- STATE HIGHWAY 16
- STATE HIGHWAY 17
- STATE HIGHWAY 18
- STATE HIGHWAY 19

**Section:**
- 1
- 2
- 4
- 5
- 6
- 7
- 9
- 9B

**Saved Configurations:**
- MMHIS Default

**Time saver:** Save the field list settings to the above box so you can reload it later...

**Delete Selected Configuration...**

**Execute Query...**

---

You can save the list before closing the program to avoid having to check the fields again next time you run the program.
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<tr>
<th>Record Type</th>
<th>District</th>
<th>County</th>
<th>Route</th>
<th>Section</th>
<th>Beginning Logmile</th>
<th>Ending Logmile</th>
<th>Bridge Number (Bridge)</th>
<th>Length [Bridge]</th>
<th>Stream Name (Bridge)</th>
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</tbody>
</table>

Load Additional Data

Multimedia-based Highway Information System Data Available:

<table>
<thead>
<tr>
<th>Route &amp; Direction</th>
<th>Section</th>
<th>Time</th>
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<tbody>
<tr>
<td>530 North</td>
<td>1</td>
<td>2005-4</td>
</tr>
<tr>
<td>530 North</td>
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<td>2005-11</td>
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<tr>
<td>530 North</td>
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<td>2004-8</td>
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<td>530 North</td>
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<td>2004-1</td>
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<td>2003-4</td>
</tr>
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<td>2004-8</td>
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<tr>
<td>530 South</td>
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<td>2004-1</td>
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</tbody>
</table>

Launch MMHIS Using the Above Selected Row...

Load Additional Bridge Data and Images...

Click the above button(s) to continue.

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Initial MMHIS Usage

- Began logging queries in November, 2002
- January 2003 – March 2003
- 628 queries
- Limited distribution of MMHIS
- Primarily Design, Planning and Research, and a few District Offices
Current MMHIS Usage

- February 2008 – April 2008
- 4,084 queries
- Total from all Divisions and District Offices currently using MMHIS
- Not used in Human Resources, Fiscal Services, Surveys, or Environmental
Benefits - Assumptions

- 25% of queries represent field trips
- Average length of trip is 100 miles roundtrip
- Estimated average salary - $45,000
- Average rental rate – Cars/Light Trucks - $0.25 per mile
Benefits to the AHTD

- Daily “Savings” – 15 field trips
  - Vehicle cost savings - $375
  - Hours of travel/field work saved - 60
  - Salary - $2100

- Yearly “Savings”
  - Vehicle cost savings - $97,500
  - Hours of travel/field work saved – 15,600
  - Salary - $546,000
Where do we go from here?
Surveyor™

- Allows the collection of GPS location on all types of Roadway assets.
- Anticipate use by various Divisions
- Others will build upon the foundation created by the Pavement Management Section
- Will be utilized by Pavement Management to automate the authoring of the MMHIS
Surveyor™

Pavement Management

- Roadway Asset Inventory
  - Pavement Management - GPS Location of Assets
    - Begin and End of Sections
    - Begin and End of Bridges/Overpasses
    - Begin and End of Exceptions
    - Underpasses
    - Railroads
Surveyor™
Other Divisions

- Roadway Asset Inventory
  - Other Divisions
    - Bridge Rails and Guardrails
    - Crash Attenuators
    - Side Drains
    - Driveways
    - Intersections
    - Signs
    - Billboards
Questions/Comments?