Statewide FWD Data Collection

Project Overview and Status 2009

David Rettner, PE
American Engineering Testing, Inc
April 27, 2010
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Project Overview

- Funded and Managed by State Aid
- Project Advisors: MCEA 10-ton Committee
- Consultant:
  - Braun Intertec
  - American Engineering Testing
  - SRF Consulting Group
Project Overview

- **Key Staff**
  - Braun
    - Neal Lund
    - Matt Oman
  - AET
    - Chunhua Han
    - Joe Clem
    - Dan Kriesel
  - SRF
    - Mike Marti
Project Overview

- Provide FWD (pavement strength) data
  - One-third of asphalt paved CSAH roadways (approximately 9,000 miles)…over 2 years
- Data collection only
- Separate contract developing an analysis tool
  - Tool will be given to every county along with data
  - Tool will provide on very basic analysis
10-Ton Committee

- D1 - Alan Goodman, Lake County, Chair
- D2 - Rich Sanders, Polk County
- D3 - Robert Kozel, Benton County
- D4 - David Overbo, Clay County
- D6 - Mike Hanson, Mower County
- D7 - Stephen Schnieder, Nobles County
- D8 - Ronald Mortensen, Meeker County
- Metro - Mark Krebsbach, Dakota County
Increasing Demand of System

- Law Changes
- Spring Load Restriction Change Proposals
- Increase in Truck Traffic
Proposed 10-ton Route
NEEDS Report (Rules)
A report of the estimated construction cost required to improve a state aid system to standards adequate for future traffic on a uniform basis.

NEEDS Study (Statute)
An amount equal to 50 percent of the apportionment sum shall be apportioned among the several counties so that each county shall receive of such amount the percentage that its money needs bears to the sum of the money needs of all of the individual counties.
Needs Database - Current

- Year Graded
- Year Surfaced
- Type of Surfacing
- Design Strength
- Functional Class
- Proposed section
- Relative Cost to Improve
## Pavement Data

<table>
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<tr>
<th>Thickness</th>
<th>Surface Thickness</th>
<th>Yr Placed</th>
<th>Base Material</th>
<th>Yr Placed</th>
<th>Thickness</th>
<th>Subbase Material</th>
<th>Yr Placed</th>
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Improvements to Database

- Actual in-place structure \((planned \ vs. \ constructed)\)
- Who is using our roads \((impact \ of \ increased \ traffic)\)
- How are the roads performing?
- Improved Database
  “A good statewide pavement database would help in the making of good statewide policy decisions”
- Data has a wide variety of potential uses:
  - Pavement maintenance/rehab
  - Network pavement management
  - Long range planning/budgeting
  - Asset management
  - Huge research potential!
Tools within the Pavement Management Toolbox
Falling Weight Deflectometer (FWD)
Load and Sensors
Deflection Basin
Project Status  (as of December 1, 2009)

- 86 Counties have submitted Section Data;
  8700 miles
  - Traverse deferred until 2010
- 86 Counties have submitted Pavement Data
  - Very important for summary analysis
Project Status  (as of December 1, 2009)

- 43 Counties, testing completed
  - Approximately 4169 miles
- Remaining Counties will be tested in 2010
  - Several Counties have added additional miles for testing (3 counties will be testing all of their roads)
Analysis Tool

- Being designed under a separate contract Dr. Jim Wilde, Minnesota State University, Mankato
- Microsoft Excel platform
- Will allow the flexibility to analyze FWD data
  - Re-analyze if input variables change (e.g. change in traffic)
  - Run “what-if” scenarios
Analysis Tool

- Tool is only as good as the data that goes into the analysis
- Most Counties don’t have accurate pavement structural data
  - Tool is a good starting point
  - Analysis can be rerun as more information is gathered
Summary Analysis (beta version)

<table>
<thead>
<tr>
<th>SECTION</th>
<th>FROM</th>
<th>TD</th>
<th>LENGTH (miles)</th>
<th>DAILY ESALs</th>
<th>EFFECTIVE P VALUE</th>
<th>EFFECTIVE G.E. (inches)</th>
<th>AXLE LOAD FOR DESIGN DEFORMATION (tons)</th>
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<td>TH-7 X-ING (MP 0.000)</td>
<td>MNTN-28 X-ING, T-302 AHD (MP 5.100)</td>
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Questions

- Contact Information:
  - David Rettner, drettner@amengtest.com, 651.755.5795