Web-based Management Systems

HMAView and PMSView
Agenda

- Background
- Systems Overview
- Features and Capabilities
- Demo
- Future Developments
- Pavement Tools Consortium
- Questions
Background

- How is Superpave performing?
Background

- What specific factors led to the failure of this roadway section?
Background

- How do differing mix designs perform under similar usage conditions?
Need to integrate datasets

- Materials
- Construction quality
- Traffic
- Surface condition / performance
- Rehabilitation / maintenance
- Digital media
- Etc. etc. etc.
Systems Overview

- HMAView and PMSView provide framework to share all transportation related data in one interface.
- Web enabled data-centers accessible through standard Internet browser.
- Spatially enabled GIS back-end to provide map-based interfaces, queries and analysis.
- Fully customizable interface based on user and security roles.
System Architecture
How do we get data?

Datasets and Sources
- Digital Forms
- Existing Sources
- Legacy Systems

Processing
- Data Service
- Cleansing
- Indexing
- Referencing

Data Warehouse
- PMSView
Features & Capabilities

- Web-based interface provides data despite geographic location
- GIS integration for map-based queries, displays and reports
- Dynamically generated interfaces, graphics, plots, and analysis tools
- Export mechanisms
- Instant distribution and updates
Web Based
Visualizations
GIS Integration
Demo

- **HMAView**
  - As implemented for MDSHA
    - ~60 SMA projects
    - ~10 Superpave projects

- **PMSView**
  - As implemented for WSDOT
    - 27,000 discrete roadway segments
    - Instrumented collection van
    - 20+ years of data
Future developments

- Encourage the use of GPS and digital technology in field data collection
- Expand web capable reporting and analysis features including map engine
- Further integration with Digital Forms and Pavement Guide Interactive, Design Guide
- Incorporate maintenance and other data sets into system using digital forms
Implementation

- Pavement Tools Consortium
  - Used to further develop these electronic tools:
    - HMAView
    - PMSView
    - Pavement Guide Interactive
    - Online Media Library
    - Computational Tools
    - Digital Forms

- Partnership between Agencies and University of Washington
Pavement Guide Interactive

A computer-based multimedia pavement training tool for self-directed learning
Online Media Library

An online repository for sharing, archiving and searching digital media
Digital Forms

Maintenance Request

Location (1)

Attachments (3)

Description: Localized pavement surface areas with slightly lower elevations than the surrounding pavement. Depressions are very noticeable after a rain when they fill with water.

Problem: Roughness, depressions filled with substantial water can cause vehicle hydroplaning.

Possible Causes: Frost heave or subgrade settlement resulting from inadequate compaction during construction.

Repair: By definition, depressions are small localized areas. A pavement depression should be investigated to determine the root cause of failure (i.e., subgrade settlement or frost heave). Depressions should be repaired by removing the affected pavement then digging out and replacing the area of poor subgrade. Patch over the repaired subgrade.

Shrinkage cracking? Spalling

Cancel  Submit
Wrap Up

- With HMAView and PMSView we are capable of integrating datasets that fully describe our roadway networks.
- Provide “one-stop shop” for pavement and roadway related data and analysis tools.
- Web accessible and increased data access
  - More research and investigation opportunities
  - Increased scrutiny and accuracy
- Available
Questions?

Website
http://hotmix.ce.washington.edu/ptc

George White
gcw@u.washington.edu