

ITS as a Data Source for TMS

The Kentucky Case Study

1998 NATMEC

May 14, 1998

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Kentucky's Traffic Monitoring System

- Kentucky's TMS collects volume data, vehicle classification data, and weigh-in-motion (WIM) data.
- Data Usages:
 - Planning Studies
 - Project Development
 - Highway Information System (HIS)
 - Long Term Pavement Performance (LTPP)
 - Cost Allocation, Research, Special Needs

Traditional KYTC Data Collection Sources

- Volume data:
 - Permanent Automatic Traffic Recorders (ATRs) - 66 stations statewide
 - Portable counts - about 4700 counts made annually
 - 10% or less made with loops
 - Remaining counts made with roadtube
- Vehicle classification data:
 - ATRs - 30 stations statewide

Traditional KYTC Data Collection Sources (cont.)

- Vehicle Classification (cont.)
 - 350 portable counts made annually
 - Manual counts - 50% or so.
 - Machine Counts
 - ATRs
 - Portable counts made with AVCs
 - WIM data
- WIM Data
 - 25 Permanent Stations
 - 30 Portable Stations

Kentucky's ITS Projects

- Kentucky has nine ITS projects that are either operational or are under development.
 - Three Commercial Vehicle Operation (CVO) projects.
 - Three Advanced Traffic Management System projects (ATMS).
 - Three Advanced Rural Transportation System (ARTS) projects.
- The Cabinet is considering a system that would span all of I-75.

TMS Data Availability from ITS Projects in Kentucky

- Data types
- Data Collection Process
- Project Details
 - Advantage I-75
 - I-65 Electronic Clearance
 - Lexington Traffic Management System
 - ARTIMIS
 - Other Projects

Types of TMS Data Available

- Volume Data - available at seven projects.
- Speed Data - available at six projects.
- Lane Occupancy Data - available at six projects.
- Vehicle Classification Data - available at three projects.
- Truck Weight Data - available at two projects.

Data Collection Process

- Different for each project. Don't have an integrated process yet. Hope to have that with new TMS software.
- Details of Data Collection/Processing
 - Equipment Used
 - Data Transmittal
 - Data Formats
 - Data Processing

Data Collection Process (cont.)

- Costs

- Savings on installation (cost absorbed by ITS rather than Planning).
- Additional expenses due to non-routine data processing.

- Problems

- Future plans

Advantage I-75

- Kentucky has four stations that have WIM equipment (IRD bending plates).
- Have collected data since 1995.
- WIM recorder is called via modem to collect data.
- Usually one week per quarter of year is collected.

Advantage I-75 (cont.)

- Problems

- Coordination of sensor maintenance.
- UNIX Operating System

- Future Improvements

- Maintenance contract.
- IRD is writing a new Windows Interface.

I-65 Electronic Clearance

- One site operating since 1991.
- IRD WIM system with piezo cable sensors.
- Data is collected via modem on seasonal basis.
- Problems:
 - lightning damage
 - sensor maintenance
- Future Improvements: will be expanded to three sites this year.

Lexington Traffic Management System

- 85 sites equipped with loop detectors.
- Data gathered by Lexington Traffic Div. & mailed on diskette.
- Data converted to card 3 format & merged with TMS.
- Problems: Labor intensive.
- Future direction: Need 170 controller reader.

Northern Kentucky Traffic Management System (ARTIMIS)

- Partially operational in 1997.
- Technologies include RTMS, loops, and video cameras.
- Available data:
 - Volume, lane occupancy, speed, vehicle classification data at 8 interstate sites.
 - Volume, lane occupancy, speed at 15 other interstate locations.

ARTIMIS (cont.)

- Problems:

- Huge system which requires long lead time to get going.
- Data conversion is not smooth yet.

- Future plans:

- Real-time data available on line.
- Data will be in FHWA formats.

Other ITS Projects

- TRIMARC in Louisville - (ATMS) expect to get volume data from 8 miles of interstate highway (I-65).
- Cumberland Gap Tunnel - (ARTS) will get volume data at one location.
- Road Weather Information System - (ARTS) will coordinate installation efforts to add ability to collect volume data.

Summary

- Data availability

- Kentucky is currently getting TMS data from four ITS projects.
- Three more ITS projects will soon have TMS data.

- Improvements

- Front end: Kentucky is working with ITS staff and contractors to get the optimal data format and to improve data transmission.

Summary (cont.)

- Back end: Kentucky is hoping to purchase a new TMS software system that will process ITS data more efficiently.
- ITS has many major benefits including safety enhancements and congestion relief. ITS also will have a significant impact on the TMS by eliminating the need for traditional data collection on many highway segments.