The Role of ITS Technology for Homeland Security

Kentucky’s Experience
Overview of Presentation

- Recognizing and Cultivating the Relationship between ITS and Homeland Security
- Examples
  - Commercial Vehicle Monitoring and Inspection Technologies
  - Identifying, Monitoring, and Protecting Critical Infrastructure
  - Cargo Monitoring
- Concluding Observations
Transportation and Homeland Security

- When considering threats to security, the transportation system is a vital component:
  - May provide the weapon for a terrorist attack (aircraft, truck, barge)
  - May provide the target (aircraft, subway, bus, transit station, key transportation infrastructure)
  - May provide the means of delivering a weapon to a target
Transportation and Homeland Security (cont’d)

- For any catastrophic event, the ability to respond/recover will depend heavily on the transportation system:
  - Ability to evacuate people
  - Ability to bring in necessary resources (personnel, food, water, medicine, supplies, etc.)
The Importance of ITS in Homeland Security

- For years now, we have been equipping our surface transportation system with technologies for monitoring, information processing, communications, and information display.

- These technologies were deployed for the purpose of “improving” surface transportation, i.e., making it safer, more efficient, and more friendly to the environment.

- We have begun to recognize the potential for leveraging these technologies for other purposes, e.g., homeland security.
Commercial Vehicle Monitoring and Inspection Technologies
Commercial Vehicle Projects

- Electronic Vehicle Identification and Screening
  - Transponder-based (NORPASS, PrePass)
    - Kentucky has 14 weigh stations equipped with transponder-based screening.
  - OCR to read license plate or USDOT number
    - License Plate Reader just installed at northbound Laurel County weigh station on I-75.
    - Experimental system also installed to read DOT number.
  - ID technologies must be backed up by databases
    - All trucks in Kentucky screened against “Kentucky Clearinghouse.”
    - Will migrate to using SAFER and CVIEW when these databases are fully populated.
Transponder-Based Identification and Screening

Truckers with Transponders Follow In-Cab Signal

NORPASS

Map of North America

Truck on Highway

No Fee to Pass
CROSS/NORPASS/Green Light
Pay Fee to Pass/PorPass
Non-Transponder Identification & Screening
Commercial Vehicle Projects (cont’d)

- Enhanced Monitoring & Inspection Technologies
  - Radiation Monitoring – detects radioactive cargo
  - Chemical “sniffer” – detects illegal and hazardous chemicals
  - Infrared monitoring – checks for brake abnormalities
Enhanced Monitoring and Inspection Technologies
Commercial Vehicle Projects (cont’d)

- Spreading Enforcement Coverage
  - The Remote Monitoring System
    - On southbound US25 in northern Kentucky
  - The Virtual Weigh Station
    - On northbound US25 in southern Kentucky
Importance of the VWS Concept

An investment of approximately $4 million can deploy one fixed weigh station or 40 virtual weigh stations.
Identifying, Monitoring, and Protecting Critical Infrastructure
Infrastructure Protection Projects

- Route Disruption Analysis
  - Research project to identify the links in the system that are most critical to protect

- Security Monitoring and Protection of Critical Bridges
  - Vulnerability assessment performed on three bridges
  - First implementation for Clays Ferry Bridge on I-75
    - Includes cameras (above & below), additional lighting, and barriers to protect piers.
Infrastructure Protection (cont’d)

- Instrumentation of Bridge Piers to Detect Barge Impacts or Other Damaging Events
  - US 41 bridge over Ohio River in Henderson, KY
  - Installation scheduled for Spring 2006
Cargo Monitoring
Cargo Monitoring

- The following areas have been or are currently being explored:
  - Electronic identification of hazardous materials shipments approaching the Cumberland Gap Tunnel
  - Identification and reading of electronic cargo seals at weigh stations
  - Electronic tracking of hazardous materials shipments
Concluding Thoughts

- ITS technologies offer the promise of enhancing security without sacrificing efficiency.
  - In many cases, security and efficiency can both be improved.
- We have just begun to discover the potential of ITS technologies with regard to homeland security.
Thanks!

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