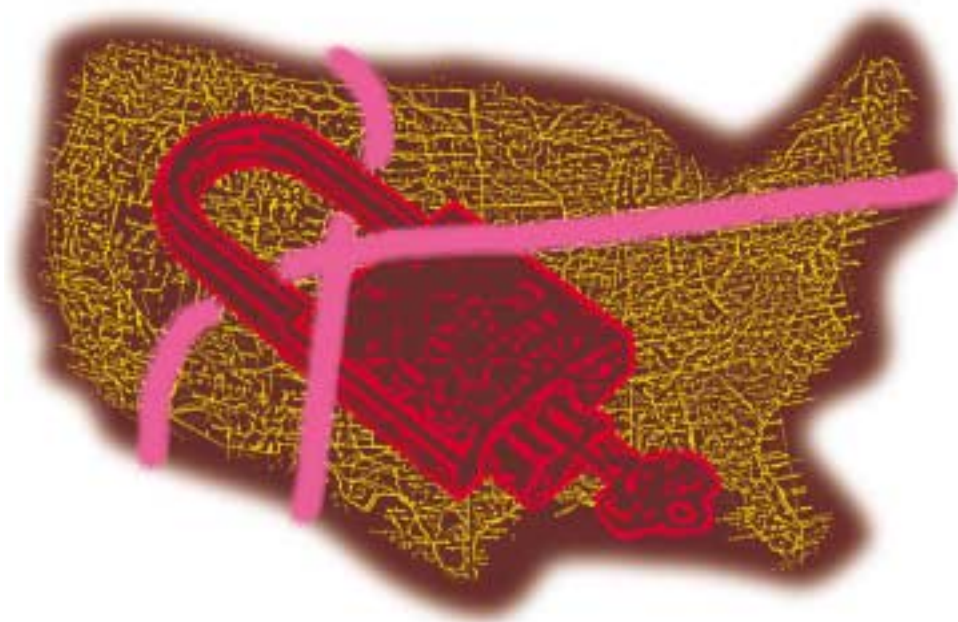


Securing the roads

US actions to enhance surface transportation security

by Vince Pearce

In the months following the terrorist acts of 11 September, intense effort has been focused on understanding the state of security of travel on the nation's roadways, and on improving the existing level of security. These efforts have taken place within and across modes and between agencies that had not previously had reasons to work together. The activity has encompassed agencies at federal, state, and local levels, as well as the private sector, academia, and many associations supporting these participants. Progress has been significant but not particularly visible. This article describes some of the effort, the findings, and the results.



Before 11 September, security of travel on the American roads received little attention. Some effort had been paid to security of transportation information systems (cyberterror), and a lot of useful experience had been gained in preparing for Y2K. Although the most visible impact of the events of 9/11 was on the nation's air travel, the surface transportation experiences in the New York and the Washington metropolitan areas were momentous. The US Department of Transportation (USDOT) was heavily involved on 9/11 and in the following days, through its metropolitan offices in New York City and its division offices in New York state and the District of Columbia. One focal point has been USDOT's Crisis Management Center in Washington, DC, which has been operating around-the-clock since the first news

of the terrorist attack arrived. The center has provided aid and assistance to those directly affected by the attack, and has not only kept the Administration informed on the state of transportation in the two metro areas, but also others around the country who responded to the potential threats on 9/11 and later.

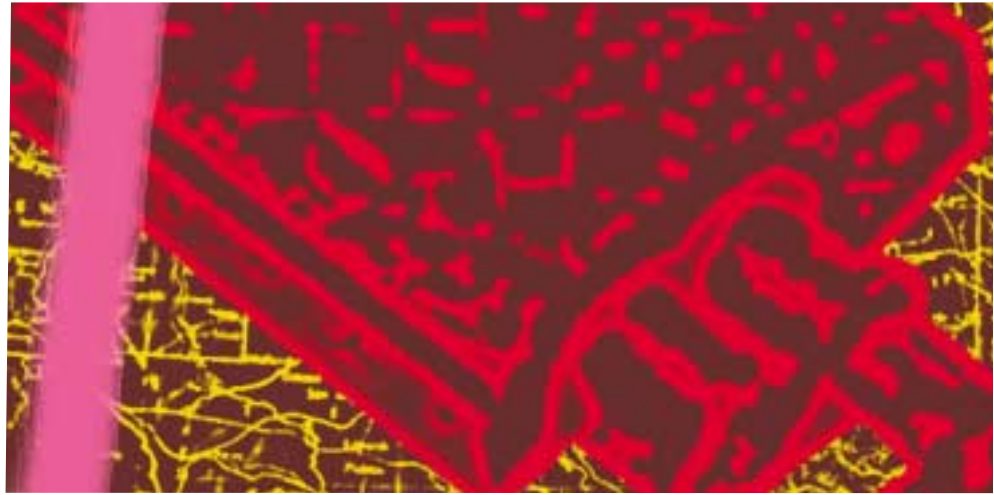
In the days following 9/11, the Federal Highway Administration (FHWA), recognizing that a great amount could be learned from what was transpiring, commissioned the Volpe National Transportation Systems Center in Boston to prepare detailed case studies of surface transportation activity and impact in the two metro areas. Input for these studies has included material gathered from the media, internal agency assessments from participating agencies, and interviews with key participants. In the New York City case study, a detailed chronology of events is being compiled to understand the flow and impact of actions during and following the attack. The case studies, still under development, will be made available through the FHWA Web site when completed.

What we're trying to accomplish

FHWA's activities in surface transportation security are aimed at ensuring that surface transportation operating agencies throughout the nation have the necessary tools, techniques, information, and understanding to be able to prevent, prepare for, respond to, and recover from natural and man-made disasters. The goal is to have operational policies, protocols, procedures, practices, and improvements in place within each region that will enable people and goods to move safely and effectively during threatening situations while still enabling emergency access to the scene(s), and to facilitate re-establishment of transportation after an emergency.

In general, FHWA efforts seek to enhance, through awareness, guidance, and technical assistance, the roadway (highway, arterials, etc) transportation component of new and existing state and local emergency management planning and response efforts. More specifically, they are working to:

- More fully engage transportation operators with emergency managers and public safety in regional collaboration, information sharing, and strategic planning, for the



management of transportation during emergencies.

- Ensure development of a communications capability, with agreed-to protocols, standards, and messages, to enable transportation system operators to communicate with law enforcement, fire and rescue, EMS, and other emergency management officials.
- Ensure that transportation operation is an integral part of emergency management planning.
- Ensure that communications to the public, through media and advanced traveler information services, regarding the demands and conditions of the highways are an essential component of emergency management planning.
- Facilitate full information sharing and data exchange capabilities of the transportation system, including ITS, to support emergency management planning and operations.
- Ensure that planning for emergency management addresses issues surrounding the movement of freight, including the flow of supplies and materials to the emergency area(s) or site(s), and the restoration of the routine flow of goods and supplies to the general public.

At the USDOT policy level, DOT Secretary Mineta convened a National Infrastructure Security Committee (NISC) to execute pre-emptive, protective, and recovery efforts for the critical elements of the national transportation system, other than airports and aircraft. The NISC's role was to focus on non-aviation intermodal transportation security in coordination with DOT's goals of safety, mobility, economic growth, and environ-

mental stewardship. The NISC was the Department's mechanism for developing transportation security issues and policy proposals. The NISC requested that each Operating Administration (transportation mode) work with stakeholders, partners, and service providers to identify high-value/high-consequence transportation facilities that may be targets for security fortification. FHWA has appointed a program manager for security, who serves as the focal point for all FHWA security activity. The program manager chairs FHWA's security integrated product team which contains representatives of each of the units within FHWA that has security-related activity.

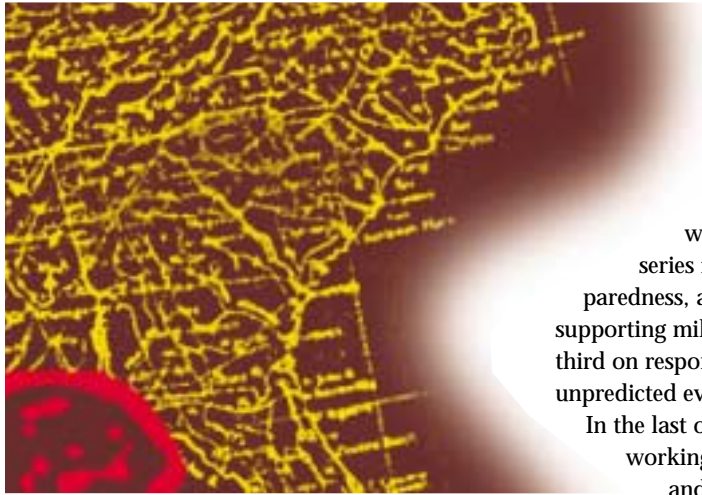
Working in stages

FHWA and related activity is best understood in stages, based on the structure in use by the Office of Homeland Security (OHS). This structure divides an emergency into six stages, chronologically: Detection; Preparedness; Prevention; Protection; Response; Recovery.

Detection

Detection most commonly involves collection and distribution of intelligence information. USDOT has been active in this area, particularly in assuring that intelligence moves between federal agencies and state/local ones, as well as 'bridging the gap' between transportation agencies and those in law enforcement and emergency management.

Transportation agencies themselves have a role in detection. FHWA is engaged in discussions, for example, with the American Association of State Highway and Transportation Officials (AASHTO), regarding what kind of materials would be helpful to highway



maintenance workers, whose alert observations can provide critical and timely detection of possible wrongdoing. Similarly, the other modes at USDOT have been working with their state and local partners to identify how each employee involved in transportation can be an effective observer, and how to work with other state and local agencies (such as Highway Patrols) whose personnel are in a position to constantly observe the transportation infrastructure.

FHWA, working with ITS America, also has been keenly aware of the potential value of the existing and planned 'information infrastructure', or 'infostructure' created through ITS deployment, and the role it can play in monitoring activity on and around critical transportation infrastructure. FHWA has been working on defining desirable infostructure levels, based on various fundamental transportation characteristics.

Preparedness

Preparedness begins with effective and thorough planning, but it does not end there. Unless the plans are understood by participants, and practiced regularly, and unless the resources those participants need are available when and where they are needed, full preparedness cannot be achieved. To accomplish this, FHWA is working with AASHTO to survey the state of emergency management plans and to develop technical guidance on 'state-of-the-art' emergency planning for the new and emerging threat scenarios. There is a solid foundation on which this is being built, including the expertise at federal and state emergency management agencies, as well as the experience that transportation agencies have had in planning for emergencies such as hurricanes

and earthquakes, and huge special events like Olympic Games.

FHWA, in support of regional emergency planning, is conducting three series of workshops in 2002. One series focuses on hurricane preparedness, a second on transportation supporting military mobilization, and a third on response to and recovery from unpredicted events such as acts of terror.

In the last of the series, FHWA will be working with up to 10 metro areas and regions to bring together the many organizations involved in (or dependent upon) transportation at the time of an emergency, and working through two 'tabletop exercises' to identify areas in which preparedness can be strengthened. The Federal Transit Administration (FTA) is carrying out a comparable transit-oriented program in 15 additional locations around the country.

Prevention

Efforts in preventing further acts of terrorism are most strongly visible in areas such as freight movement and border crossings. FHWA's Office of Freight Management and Operations, in cooperation with the Federal Motor Carrier Administration, USDOT's ITS Joint Program Office, and the Departments of Justice and Treasury, is working on three high-impact projects: Air Cargo Electronic Supply Chain Manifest, Electronic Seal System for Container Movement, and Asset Cargo Tracking. All three projects were originally designed to improve various aspects of freight mobility and efficiency. However, all three have as part of their design the ability to pinpoint location of freight assets and cargo based upon the latest reporting point.

The air cargo project, led by the American Trucking Associations Foundation, is designed to handle the chain of custody of cargo from its origination at a manufacturer/shipper to its end destination at the receiving air cargo facility or at the end destination customer. En route, the originator, carrier and receiver of the goods use a smart card to hand off the freight between custodians. The smart card contains the biometric identifier of a

thumb-print, the electronic manifest, and an image of the driver's commercial driver license. All data is stored in a central server and is accessible through the Internet. The electronic seal project is designed to track containers in-bond from the point of inspection to the destination of the container, through seaports and across land border crossings. The e-seal is a radio frequency device that emits a signal as it passes reader devices, and will display information as to whether or not the container has been tampered with.

The asset cargo tracking project, led by the American President Lines in partnership with Union Pacific Railroad, PAR Government Systems and Transcentric, is designed primarily to track the chassis that containers ride on, anywhere in the United States. It also is designed for the chassis to know when a container is on it, and when it is tethered to a truck tractor. The information on location of chassis can be sent to a central data processing point by way of radio frequency identification (transponder), cellular signal or global positioning system signal (satellite).

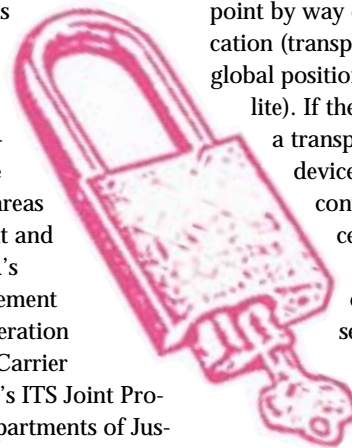
If the container is equipped with a transponder, the chassis-tracking device will read the tag and can convey cargo information to a central data processing point.

To assess benefits associated with employing these security elements, USDOT is using Border Wizard Pro as a tool. Border Wizard Pro was developed as a simulation tool for assessing border crossing improvements. The long-term objective is to link it to traffic management tools, like TRANSIMS, and assess the benefits of improvements along the highway that connect to marine ports as well as to land border crossings.

Protection

Protection activities have several different components. One area has been protecting the information systems upon which transportation agencies depend to carry out their duties.

A second area has been protection during special events. USDOT has been an active partner and provider of expertise, most visibly in preparation for the 2002 Olympic Games in Salt Lake City. Although details have not been released regarding the specific measures implemented, transportation security was at



heightened levels, and accomplished in ways designed to minimize impact on transportation effectiveness and assure that those affected had ample warning so that they could make appropriate travel provisions.

USDOT has developed and distributed to state DOTs a process that will enable state and local agencies to assess the threats to their critical infrastructure, and to take preventive measures. FHWA is working with AASHTO to develop a comprehensive survey of techniques to identify, assess threats, and to develop protection plans for critical transportation infrastructure. FTA has developed a technique specialized for transit agencies, and is funding its use at 33 of the largest transit agencies around the United States. FHWA also is working with AASHTO in discussions of fielding teams of experts to assist states in answering specific questions about critical infrastructure, with a particular focus on major structures such as bridges, tunnels, and interchanges.

Response

Response is typically defined as what is done starting at the moment of the emergency, for the remainder of that day, or for the following 24-hour period. Effective response is the core of the learning and exercises on the first of the two days of the FHWA response and recovery workshops mentioned earlier. Also, FHWA is working with AASHTO to develop technical materials to help state and local agencies better prepare for response, starting with a guidebook.

FHWA has been working with organizations involved in developing and deploying '511' telephone traveler information systems to understand how 511 (and other traveler information tools) support getting information to citizens at the time of an emergency, and how these systems are 'stressed' by the extremely high demands for information under those circumstances.

One particularly critical element in response is the ability of agencies to communicate with one another. FHWA's Incident Management workshop, implemented through the National Highway Institute, is being offered around the country to assist in bringing transportation and public safety (police, fire, and emergency medical) responders together to discuss and work on how to address incidents that occur on or that affect the

transportation network. This emphasis was carried forward at the March 2002 Incident and Emergency Management National Conference in Irvine, CA.

USDOT's ITS Public Safety Program is sponsoring two national demonstrations of the integration of voice, data, and video communications between transportation agencies, fire and rescue agencies, law enforcement agencies, 9-1-1 call takers and dispatchers, emergency medical service providers and the towing and recovery industry.

Recovery

Recovery starts on the day following an emergency but can extend days and months afterward. During recovery, agencies work to re-establish safe, reliable, and secure transportation on the region's roads despite whatever damage may have occurred. Recovery is the focus of the second day of the FHWA response and recovery workshops.

FHWA has taken an active recovery role in support of those areas affected by the events of 9/11. One example was FHWA's actions to facilitate special size/weight permitting of the large equipment needed for recovery efforts in New York, as that equipment often traveled across several states to reach its destination. FHWA Divisions play a key part in processing state requests for emergency relief funds, a special category of federal-aid highway funding that can be available following a catastrophic failure of highway infrastructure due to an external cause. FHWA also is active in improving how transportation is carried out when areas, such as those contaminated by hazardous materials, must be avoided for an extended period.

A real example

Actions taken by the Virginia Department of Transportation's (VDOT) Smart Traffic Center (STC) in Arlington, VA, on 11 September demonstrate the importance of transportation operations and ITS during a national security event. VDOT's actions improved traffic flow, protected strategic locations, and supported delivery of emergency services.

High Occupancy Vehicle (HOV) lanes were reversed and opened to all

traffic heading south away from Washington on I-395 and I-95. The area's state-of-the-art traffic signal system was quickly moved into its '4 July' mode to allow for maximum traffic flow out of the DC and Pentagon areas for those heading south and west to safety. VDOT's Northern Virginia District mobilized maintenance forces and implemented required lane closure plans. Contractors' crews were directed to stop work on roads in the region.

Variable message signs from other VDOT districts were brought in to assist traffic flow with emergency signage and detour information. Area police were assisted by VDOT in inspecting all commercial truck traffic going through area tunnels.

Throughout the day and night, VDOT's Transportation Emergency Operation Center (TEOC) in Richmond continued to assimilate and distribute information to VDOT offices and other government units and to answer telephone calls from citizens inquiring about road closings and conditions. VDOT supplied continuous reports to the news media, and to Internet users via constant updates to its Web page.

Conclusion

Although a great amount has been learned and shared, and many actions have been or are being taken in response to what has been learned, we have much more to do. The surface transportation network is unique in the degree of its exposure and in its criticality to the nation's economy and the quality of life of its citizens. Fortunately, it is also highly redundant and resilient. The agencies responsible for the operation of this network are working together at an unprecedented pace, sometimes with very new partners, to ensure that all Americans can continue to rely on the transportation infrastructure. ■

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