



Cooperative Research Programs Security, Emergency Management, and Infrastructure Protection Research Status Report – May 2012

Alert to Security: A Message from TRB Executive Director Robert E. Skinner

Since September 11, 2001, government agencies and the American public have looked to the scientific and engineering communities to develop faster, more efficient ways to detect, thwart, and respond to terrorist attacks on the transportation system. TRB committees and research programs have responded to this challenge and have developed a bookshelf of security resources and guides for transportation professionals, decision makers, and members of the general public available on the web at www.TRB.org/SecurityPubs.

In addition, TRB maintains a wide-ranging transportation system security and emergencies website and disseminates monthly updates on [TRB](#) and [National Academies](#) security activities.

Visit [TRB's Security and Emergencies website](#) to find links to TRB security-related publications, resources, and highlights of selected transportation security research-related activities taking place in the United States and other countries.

TRB is part of the National Academies, which include the National Academy of Sciences, National Academy of Engineering, Institute of Medicine, and National Research Council.

Since September 11, 2001, 136 security-, emergency management-, and infrastructure protection-related planning and implementation projects have been initiated through programs managed by the Transportation Research Board (TRB). Ninety-nine of these projects have been completed; 23 projects are in progress; and 14 projects have contracts pending or are currently in development. This report, updated monthly, provides information on about \$20 million worth of completed and ongoing TRB security research.

The report includes information on research that is formally coordinated between the Transit Cooperative Research Program and National Cooperative Highway Research Program. The report also highlights security-related projects developed under TRB's Airport Cooperative Research Program, Hazardous Materials Cooperative Research Program, Transit Innovations Deserving Exploratory Analysis Program, National Cooperative Freight Research Program, Legal Research Program, and Commercial Truck and Bus Safety Synthesis Program.

Surface transportation agencies recognize that because of their broad policy responsibility, public accountability, large and distributed workforces, heavy equipment, and robust communications infrastructure, they are uniquely positioned among civilian government agencies to swiftly take direct action to protect lives and property. The institutional heft of such agencies also provides a stable base for campaigns to mitigate or systematically reduce risk exposure over time through all-hazards capital investments. Work under the Cooperative Research Programs is designed to assist transportation agencies in adopting the National Incident Management System (NIMS). In his September 8, 2004, letter to state governors, DHS Secretary Tom Ridge wrote that "NIMS provides a consistent nationwide approach for Federal, State, territorial, tribal, and local governments to work effectively and efficiently together to prepare for, prevent, respond to, and recover from domestic incidents, regardless of cause, size, or complexity."

The American Association of State Highway and Transportation Officials (AASHTO) Special Committee on Transportation Security and Emergency Management (SCOTSEM) and the American Public Transportation Association (APTA) Executive Committee Security Affairs Steering Committee provide steering direction to the coordinated CRP Security Research under NCHRP and TCRP, respectively. All hazards, all modes oversight and project selection guidance is provided by NCHRP Project Panel 20-59, Surface Transportation Security Research. They will meet at the Transportation Hazards & Security Summit and Peer Exchange in Irvine, CA, August 20-24, 2012 (<http://www.trb.org/Calendar/Blurbs/166997.aspx>). The 2011 program: <http://onlinepubs.trb.org/onlinepubs/Conferences/2011/SecuritySummit/SecuritySummitProgram.pdf>.

Project	Budget	Status	Description
ACRP (Airport Cooperative Research Program)			
3-18 Operational and Business Continuity Planning for Prolonged Airport Disruptions	\$350,000	Contractor's Final Report anticipated June 2012	A guidebook for airport operators to plan and prepare for catastrophic events that have the potential for prolonged airport closure causing adverse impacts to the airport, and to the local, regional, and national economy.
4-04 Exercising Command-Level Decision Making for Critical Incidents at Airports Phase 4	\$400,000 \$100,000	Complete December 2011	An affordable, NIMS-compliant training & exercise system for individuals and jurisdictions to use (a) in basic, remedial, & annual training, and (b) to help meet the requirements of CFR Part 139.
4-10 Airport-to-Airport Mutual Aid Programs	\$300,000	Complete March 2012	A guidebook to help public airport operators of all sizes and types to develop and implement national and/or regional airport-to-airport mutual aid programs (MAPs) to plan, assess, respond, and recover from an event that adversely affects operations of the airport
4-11 Integrating GIS in Emergency Management at Airports	\$275,000	Contractor's final report anticipated January 2013	A guidebook for airport operators that will (1) outline the capabilities of GIS with respect to emergency management; (2) examine the benefits, costs, and challenges associated with integrating GIS into emergency management for airports and their mutual aid partners; and (3) provide guidance on implementation and use of GIS to support emergency management.
4-12 Integrating Web-Based Emergency Management Collaboration Tools into Airport Operations	\$400,000	Contractor's Final Report anticipated November 2012	A guidebook to be used by airports and their disaster management response team to evaluate internet based communications and control, to prepare training tools, and to provide best management practices for integration and implementation into emergency response management.
4-13 Integrating Community Emergency Response Teams at Airports	\$325,000	Contractor's final report anticipated July 2013	A model CERT program for the airport community that includes (1) an awareness plan and description of benefits, (2) implementation guidance, (3) steps for integrating into airport emergency response planning, and (4) a pilot program.
4-15 A Tool for Developing Airport Terminal Incident Response Plans	\$325,000	In development Contract pending	Develop a scalable tool that airport operators can use to create and maintain integrated incident response plans that address hazards in and around airport terminals. These response plans should cover evacuation, shelter-in-place, relocation, and repopulation/recovery and be applicable to a variety of sizes and types of airports and airport terminals. Hazards should include natural and man-made incidents.
5-01 Guidance for Developing Regionally-Coordinated Airport Emergency Plans for CBRNE Events	\$250,000	Complete September 2008	Guidance for plans for events involving chemical, biological or radiological (CBR) agents, or detonation of nuclear or explosive devices. ACRP Report 12, <i>An Airport Guide for Regional Emergency Planning for CBRNE Events</i> .
6-01 Airport and Air Carrier Resource Manual: Employees Coping with Traumatic Events	\$300,000	Complete June 2009	A resource manual of human-impact considerations & practices for airport & air carrier managers related to human-made accidents, attacks, or natural disaster events. ACRP Report 22, <i>Helping Airport and Air Carrier Employees Cope with Traumatic Events</i>
10-10 Guidebook for Airport Irregular Operations (IROPS) Contingency Planning	\$600,000	Complete February 2012	A practical airport guidebook for commercial passenger service airports of all sizes to develop, continually evaluate, and/or update their contingency plans for procedures pertaining to IROPS that may cause significant disruptions to customers.
10-13 Integrating NIMS for Personnel and Resources at Airports	\$200,000	In development Contract pending	Guidance to all size airports in integrating NIMS in response to incidents/accidents and events regardless of the size, cause, or complexity of such events

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ACRP (Airport Cooperative Research Program)			
10-14 Being Prepared for IROPS: A Business Planning and Decision-Making Approach	\$300,000	In development Contract pending	Develop a reference document that provides a decision-making process for airport management to use in justifying airport planning and funding decisions (capital and O&M) related to supporting IROPS contingency planning.
11-02 Task 5, Quarantine Facilities for Arriving Air Travelers: Identification of Planning Needs and Costs	\$ 50,000	Complete October 2007	Needs and associated costs to safely & effectively receive, quarantine, and care for up to 200 arriving air travelers. ACRP Report 5, <i>Quarantine Facilities for Arriving Air Travelers: Identification of Planning Needs and Costs</i>
11-02 Task 6, Interagency - Aviation Industry Collaboration on Planning for Pandemic Outbreaks	\$ 100,000	Complete September 2007	A workshop of airport and airline representatives with the various federal agencies involved in responding to a potential pandemic to clarify roles, discuss issues of mutual interest, and identify further coordination activities needed. <i>Conference Proceedings 41</i> http://www.trb.org/news/blurbs_detail.asp?id=9208
11-02 Task 11, How Proposed Firefighting Standards Would Impact Airports	\$ 60,000	Complete June 2009	Contractor's final report is available as ACRP Web-Only Document 7 . Executive summary published as ACRP Research Results Digest 7 .
11-02 Task 13, Symposium on the Transmission of Disease at Airports and on Aircraft	\$ 100,000	Complete April 2011	<i>TRB Conference Proceedings 47: Research on the Transmission of Disease in Airports and on Aircraft</i> http://www.trb.org/Main/Blurbs/163870.aspx
11-02 Task 17, Risk Assessment of Proposed ARFF Standards	\$ 100,000	Complete January 2011	Analyze the extent to which NFPA and ICAO ARFF standards beyond FAR Part 139 requirements may be expected to reduce fatalities and/or mitigate serious injuries associated with aircraft accidents on or directly adjacent to airport property. ACRP Web-Only Document 12: Risk Assessment of Proposed ARFF Standards .
11-03 Topic S04-01, General Aviation Safety Management and Security Practices	\$ 30,000	Complete May 2007	Reviews resources used in the development of safety & security programs, funding sources & issues that determine the amount of money spent on such programs, & current practices to keep GA facilities safe & secure. ACRP Synthesis 3, <i>General Aviation Safety and Security Practices</i>
CTBSSP (Commercial Truck & Bus Safety Synthesis Program)			
CTBSSP-1 Security Measures in the Commercial Trucking and Bus Industries	\$ 40,000	Complete April 2003	Review and summary of terrorist-related security status and needs of the trucking and commercial bus industries. <i>Commercial Truck and Bus Safety Synthesis 2: Security Measures in the Commercial Trucking and Bus Industries</i>
HMCRP (Hazardous Materials Cooperative Research Program)			
HM-03 A Guide for Assessing Emergency Response Needs and Capabilities for Hazardous Materials Releases	\$350,000	Complete November 2010	HMCRP Report 5: <i>A Guide for Assessing Community Emergency Response Needs and Capabilities for Hazardous Materials Releases</i>
HM-04 Emerging Technologies Applicable to Hazardous Materials Transportation Safety and Security	\$350,000	Complete November 2010	Develop a candidate list of near- and longer-term technologies for use in enhancing the safety & security of hazardous materials transportation; identify emerging technologies; and identify potential impediments to and opportunities for development, deployment & maintenance. Published as <i>HMCRP Report 4</i> .
HM-08 Consolidated Security Credential for Persons Who Transport Hazardous Materials	\$250,000	Complete February 2011	HMCRP Report 6: <i>Feasibility of a Consolidated Security Credential for Persons Who Transport Hazardous Materials</i>
HM-11 Improving Local Community Recovery from Disastrous Hazardous Materials Transportation Incidents	\$200,000	Contractor's Final Report ant. April 2012	Identify develop a compendium of best practices that can be used by local communities to help plan for recovery from disastrous hazardous materials transportation incidents.

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HMCRP (Hazardous Materials Cooperative Research Program)			
HM-12 Hazardous Materials Transportation Risk Assessment: State of the Practice	\$200,000	Contractor's Final Report ant. May 2012	Identify existing tools, methodologies, approaches, and key sources of data for assessing hazardous materials transportation risks in the public and private sectors; characterize the capabilities and limitations of each; and identify where there are significant gaps and needs in the available tools and approaches.
HM-15 A Guide for Communicating Emergency Response Information for Natural Gas and Hazardous Liquids Pipelines	\$250,000	Contractor's Final Report ant. July 2013	Develop a guide for natural gas and hazardous liquid pipeline operators and emergency responders that (1) includes the appropriate emergency response content that should be provided to emergency responders; (2) recommends effective means of disseminating this guidance by pipeline operators to recipient emergency response organizations and by those emergency response organizations to sub-units; and (3) recommends strategies for implementing and exercising the emergency response plan.
NCFRP (National Cooperative Freight Research Program)			
NCFRP 17(001) Marine Highway Transport of Toxic Inhalation Hazard (TIH) Materials	\$200,000	Complete March 2012	Examine the benefits of transporting a larger share of chlorine and anhydrous ammonia via the marine highway system than is currently transported. For purposes of this study, the marine highway marketplace will be limited to U.S. domestic shipments. This includes inland waterway shipments and coastwise shipments. Publication pending.
TCRP (Transit Cooperative Research Program)			
A-33 Communication with Vulnerable Populations: A Transportation and Emergency Management Toolkit	\$350,000	Complete March 2011	How to create a communication process to reach vulnerable populations regarding their transportation options in emergencies. This toolkit provides a guiding framework and tools for constructing a scalable, adaptable communication process built on a network of agencies from public, private, and nonprofit sectors. <i>TCRP Report 150, Communication with Vulnerable Populations: A Transportation and Emergency Management Toolkit</i>
A-33A Using Pictograms to Make Transit Easier to Navigate for Customers with Communication Barriers	\$100,000	Contractor's Final Report ant. September 2012	Focus on the potential practical value of directive pictograms to discover how they could help communicate important transportation messages to diverse audiences.
A-36 Command-Level Decision Making for Transit Emergency Managers	\$435,000	Contractor's Final Report ant. November 2012	An affordable, NIMS-compliant training & exercise system for individuals and jurisdictions to use (a) in basic, remedial, & annual training, and (b) in conformance with transit regulations and standards.
A-37 Paratransit Emergency Preparedness and Operations Handbook	\$350,000	Contractor's Final Report ant. June 2012	A Handbook that provides guidance to paratransit service providers, including public transportation agencies and other public and private paratransit service providers, about how to prepare for all types of emergencies, including (a) events with notification such as floods, hurricanes, blizzards, and pandemics, as well as (b) events with no notification, including those that may cause regional disruptions such as earthquakes, power blackouts, fires, and acts of terrorism.
C-18 Strategic Plan for Meeting Transit Industry Wireless Communications Needs	\$225,000 \$ 48,000 \$ 50,000	Contractor's Final Report ant. October 2012	Development of strategic plan and support for standing up the Joint Council on Transit Wireless Communications. Foundation documents and timely information can be found at www.transitwireless.org . See 20-59(40).

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TCRP (Transit Cooperative Research Program)			
D-15 Research Support for Transit Industrial Control Systems and Cyber Security Co-funded with NCHRP 20-59(48) to produce Security 102: Industrial Control Systems and Cyber Security for Transportation	\$200,000	In development Panel to meet June 2012 RFP ant. July 2012	Research support for the development of recommended practices and standards for transit industrial control systems and cyber security. Develop a primer and a briefing for transportation system owners and operators explaining the nature of the threats and a list of best practices compiled from research indicating how to best protect against the threats and mitigate damage should an attack occur.
F-18 Policing and Security Practices for Small- and Medium-Sized Public Transit Systems	\$150,000	Contractor's Final Report ant. January 2013	(1) identify current policing and security practices (including the methods used to decide whether—and which—security measures to use), (2) develop baseline options for security measures and methods (including a menu of proven security measures), and (3) identify potential enhancements to existing methods appropriate for small- and medium-sized transit systems
H-35 Supplemental funding for TRB Policy Study on The Role of Transit in Emergency Evacuation	\$ 65,000	Complete December 2008	Explores the roles that transit systems can play in accommodating the evacuation, egress, and ingress of people from and to critical locations in times of emergency. TRB Special Report 294: <i>The Role of Transit in Emergency Evacuation</i>
J-3 (Spring 2002) Safety and Security Issues at All-Bus Systems in Small- to Medium-Sized Cities in Western Europe: International Transit Studies Program	\$162,500	Complete June 2002	Brief report includes transportation information on the cities and facilities visited, lessons learned, and discussions of policies and practices that could be applied in the United States. TCRP Research Results Digest 58: <i>Safety and Security Issues at All-Bus Systems in Small- to Medium-Sized Cities in Western Europe</i>
J-3 (Spring 2007) Emergency Preparedness, Response, and Recovery in the Transit Industry	\$162,500	Complete June 2007	Brief report includes transportation information on the cities and facilities visited in China, Korea, and Japan; lessons learned; and discussions of policies and practices that could be applied in the United States. TCRP Research Results Digest 87: <i>Emergency Preparedness, Response, and Recovery in the Transit Industry</i>
J-4 Transit IDEA Project 35 Innovative Bioterrorism Detection Technology for Transit Security	\$ 82,000	Complete August 2005	Conduct tests of an innovative detection technology that has shown preliminary promise for real time detection of biological organisms
J-4 Transit IDEA Project 37 Bandwidth Expansion and Real-Time Surveillance for Security on Transit Buses	\$ 81,000	Complete May 2005	Develop & test enhanced real-time surveillance technology for security on transit buses, including remote viewing, monitoring, & alerting functions at a central control room
J-4 Transit IDEA Project 40 Counter Terrorism Chemical Detector for Rail Transit Systems	\$ 80,000	Complete December 2005	Develop and design a prototype technology to detect chemical agents in subway stations and rail cars.
J-4 Transit IDEA Project 42 Detection of Radioactivity in Transit Stations	\$ 81,000	Complete October 2006	Develop and test a prototype system to enable the use of “charge coupled device” (CCD) security cameras to detect and identify the nature of ambient radioactivity levels and nearby radioactive materials, particularly dirty bombs.
J-4 Transit IDEA Project 45 Chemical and Biological Decontamination System for Rail Transit Facilities	\$ 79,500	Complete January 2007	Develop and design a prototype system to deliver decontamination solutions in subway stations.
J-4 Transit IDEA Project 48 Biometric Notification Network for Transit Employees	\$ 80,000	Terminated April 2009	Develop & test a prototype biometric notification network for transit employees, contractors, & vendors. System to provide transit officials with real-time notification of biometric ID card use.
J-4 Transit IDEA Project 53 Ultraviolet Germicidal Irradiation for Transit Buses	\$ 72,000	Complete February 2009	Design, install, test, and evaluate UVGI for elimination of viruses, bacteria, mold, fungi, and airborne pathogens on transit buses. Evaluate impact on maintenance costs of bus air conditioning systems by use of UVGI.
J-4 Transit IDEA Project 54 Detection of Radioactivity in Transit Stations—Phase II	\$ 79,000	Complete October 2009	Develop & test a prototype system to enable the use of “charge coupled device” (CCD) security cameras to detect & identify the nature of ambient radioactivity levels & nearby radioactive materials, particularly dirty bombs.

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TCRP (Transit Cooperative Research Program)			
J-4 Transit IDEA Project 56 Detection of Explosives and Weapons in Transit Systems	\$ 75,000	Contractor's Final Report ant. May 2012	Develop and test a small-size, low-cost, extremely low-power sensor-locator for detection of explosives and weapons in rail transit systems.
J-5 Topic 7-01 Transit Security Versus Civil Rights	\$ 25,000	Complete March 2005	Legal Research Digest 20, <i>Transit Passengers and Civil Rights</i>
J-5 Topic 9-01 Privacy Issues with the Use of Smart Cards	\$ 25,000	Complete May 2007	Legal Research Digest 25, <i>Privacy Issues with the Use of Smart Cards</i>
J-5 Topic 10-01 Sidewalks and Subways—Legal Distinctions between City Streets and Mass Transit Facilities as Public Fora	\$ 24,000	Complete March 2009	Legal Research Digest 29, <i>First Amendment Implications for Transit Facilities: Speech, Advertising, and Loitering</i>
J-5 Topic 10-03 Competitive Bid Requirements Intersection with the Need for Confidentiality of Specifications for Security Purposes	\$ 25,000	Complete April 2010	Legal Research Digest 32, <i>Reconciling Security, Disclosure, and Record Retention Requirements in Transit Procurements</i>
J-5 Topic 15-02 Legal Issues in Emergency Planning and Operation	\$ 37,500	In development Proposals received December 2011	A legal synthesis that will enable transit providers to understand the responsibilities that an agency has from a legal standpoint for preparing for operations in emergencies and evacuations, including training obligations and their relationship to managing potential liability.
J-6, Task 60 The Case for Searches in Public Transportation	\$ 30,000	Complete July 2005	Legal Research Digest 22, <i>The Case for Searches on Public Transportation</i>
J-6, Task 67 Strategic Assessment of Wireless Capabilities and Needs for the Public Transportation Industry	\$100,000	Complete December 2007	J-6/Task 67: develop a profile of current radio-frequency and wireless-data usage for the transit industry and assess future needs. Provided to APTA. See C-18 and 20-59(40).
J-6, Task 70 Security Standards and Guidelines Pertinent to Public Transportation	\$ 50,000	Complete March 2009	Identify and categorize security standards and guidelines pertinent to public transportation, and format them in a tool supportive of standards development activities. Delivered to APTA June 2009.
J-7 Topic SA-24 Video Surveillance Uses by Rail Transit Agencies	\$ 35,000	Complete April 2011	Implementation, use, and other issues associated with rail surveillance, including stations, park and ride lots, and infrastructure. Published as TCRP Synthesis 90.
J-7 Topic SF-13 Improving Transit Security Update	\$ 25,000	Complete August 2008	An update of TCRP Synthesis 21, <i>Improving Transit Security</i> (1997). Documents state of the practice to include anti-terrorism techniques. TCRP Synthesis 80, <i>Transit Security Update</i> (2009).
J-7 Topic SF-14 Practices to Protect Bus Operators from Passenger Assault	\$ 35,000	Complete December 2011	TCRP Synthesis 93 , <i>Practices to Protect Bus Operators from Passenger Assault</i> highlights practices and policies implemented by transit agencies to deter and mitigate assaults on bus operators
J-10(1) Transit Security Roundtables	\$330,000	Complete December 2002	Four roundtables on public transportation security held January-May 2002. Report delivered to APTA Dec. 2002.
J-10(2) Security White Papers	\$ 20,000	Complete August 2002	Briefs: 1) on decontamination procedures after chem/bio/rad events; 2) technology clearinghouse options. Contractor's final reports delivered to APTA August 2002.
J-10(3) A Guide to Public Transportation Security Resources	\$ 5,000	Complete April 2003	Published as TCRP Research Results Digest 59: <i>A Guide to Public Transportation Security Resources</i>
J-10(4) International Transportation Associations Transit Security Summit	\$ 20,000	Complete September 2002	More than 60 participants from Belgium, Canada, France, Mexico, Spain, United Kingdom, and United States
J-10A(1) Update of Federal Transit Admin. Transit System Security Program Planning Guide and Transit Security Handbook	\$150,000	Complete August 2002	Contractor's final report and companion CD delivered to FTA August 2002. On FTA web site as <i>The Public Transportation System Security and Emergency Preparedness Planning Guide</i> .
J-10A(2) Security-Related Training and Customer Communications	\$400,000	Complete December 2003	TCRP Report 86, <i>Public Transportation Security, Volume 5: Security-Related Customer Communications and Training for Public Transportation Providers</i>

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TCRP (Transit Cooperative Research Program)			
J-10A(3) Intrusion Detection for Public Transportation Facilities	\$250,000	Complete March 2003	Technologies and security practices for detecting and prosecuting intruders. TCRP Report 86, Public Transportation Security, Volume 4: <i>Intrusion Detection for Public Transportation Facilities Handbook</i>
J-10A(4) Scan for Tools for Evaluating and Prioritizing Anti-Terrorist Security Measures for Transit Applications	\$ 25,000	Complete June 2003	To determine whether the development of transit-specific tools for prioritizing security measures is necessary or appropriate for transit systems. Delivered to APTA.
J-10B(1) Emergency Response Mobilization Strategies and Guidelines for Transit	\$400,000	Complete April 2004	Public transportation's role in emergency evacuation and providing staging support for emergency responders. TCRP Report 86, Public Transportation Security, Volume 7: <i>Public Transportation Emergency Mobilization and Emergency Operations Guide</i>
J-10B(2) Use of Portable Explosive Detection Devices	\$200,000	Complete February 2004	TCRP Report 86, Public Transportation Security, Volume 6: <i>Applicability of Portable Explosive Detection Devices in Transit Environments</i>
J-10B(3) Robotic Devices	\$ 20,000	Complete December 2002	TCRP Report 86, Public Transportation Security, Volume 3: <i>Robotic Devices: A Guide for the Transit Environment</i>
J-10B(4) Communication of Threats	\$ 20,000	Complete June 2002	Guidelines for peer exchange of security threats among public transportation providers. TCRP Report 86, Public Transportation Security, Volume 1: <i>Communication of Threats: A Guide</i>
J-10B(5) Transit Use of Dogs	\$ 15,000	Complete June 2002	Primer on use for security patrols, explosives detection, and chem/bio detection. TCRP Report 86, Public Transportation Security, Volume 2: <i>K9 Units in Public Transportation: A Guide for Decision Makers</i>
J-10C Guidelines for Transportation Emergency Training Drills and Exercises Co-funded by NCHRP 20-59(18)	\$100,000	Complete October 2005	For use by transportation systems and emergency responders in the planning, design, development, implementation, and evaluation of drills and exercises. <i>NCHRP Report 525/TCRP Report 86, Vol. 9, Guidelines for Transportation Emergency Training Exercises</i>
J-10D Developing and Updating Security Plans: A Pilot Course for Rural and Community-based Public Transportation Systems	\$200,000	Complete August 2005	TCRP Report 86, Public Transportation Security, Volume 10: <i>Hazard and Security Plan Workshop Instructor Guide for Rural, Small Urban, and Community-Based Public Transportation System Operations.</i>
J-10E A Guide to Transportation and Hazards Resources Co-funded by NCHRP 20-59(24).	\$ 37,500	Complete December 2008	Security-related research and resources, and an introduction to interdisciplinary research and applications undertaken by the hazards research community. NCHRP Research Results Digest 333/TCRP Research Results Digest 90, <i>A Guide to Planning Resources on Transportation and Hazards</i>
J-10F Transportation Agency Continuity of Operations Plans Co-funded by NCHRP 20-59(21).	\$100,000	Complete May 2005	Guidance for efficiently resuming transportation agency operations following a terrorist attack or other natural or man-made disasters. NCHRP Report 525/TCRP Report 86, Vol. 8, <i>Continuity of Operations (COOP) Planning Guidelines for Transportation Agencies</i>
J-10G Making Transportation Tunnels Safe and Secure Co-funded by NCHRP 20-67.	\$200,000	Complete June 2006	Mitigation countermeasures are presented for (a) threats related to crime and terrorism and (b) hazards related to natural events. NCHRP Report 525/TCRP Report 86, Vol. 12, <i>Making Transportation Tunnels Safe and Secure</i>
J-10H Security Measures for Ferry Systems	\$150,000	Complete February 2006	Provide guidance on risk assessment approaches and on security measures. TCRP Report 86, Vol. 11, <i>Security Measures for Ferry Systems</i>
J-10J Public Transportation Passenger Security Inspections: A Guide for Decision Makers	\$100,000	Complete February 2007	Guidance that a public transportation agency may use when considering whether to introduce a passenger security inspection program into its operations. TCRP Report 86, Vol. 13, <i>Public Transportation Passenger Security Inspections: A Guide for Policy Decision Makers</i>

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NCHRP (National Cooperative Highway Research Program)			
3-63 Assessment of Sharing Information Between Public Safety and Transportation Agencies for Traffic-Incident Management	\$200,000	Complete April 2004	Presents lessons learned from around the country. NCHRP Report 520, <i>Sharing Information between Public Safety and Transportation Agencies for Traffic Incident Management</i> .
8-36 (34) Incorporating Security into the Transportation Planning Process: Research for the AASHTO Standing Committee on Planning	\$ 50,000	Complete June 2004	Documents strategies, processes, and practices. NCHRP Report 525 Vol. 3, <i>Incorporating Security into the Transportation Planning Process</i>
8-36 Task 69 (03) / 20-59(27) Peer Review of Disaster Response Issues in Transportation Planning	\$ 50,000	Complete October 2007	State and MPO planning directors discussed priority issues in security, disaster response, and planning. Published on the AASHTO Standing Committee on Planning website at http://www.transportation.org/sites/planning/docs/NCHRP%208-36(69-3)_Disaster_Peer_Exchange_FINAL.pdf
12-72 Blast-Resistant Highway Bridges: Design and Detailing Guidelines	\$950,000	Complete November 2008	The objective of this project is to develop design guidance for improving the structural performance and resistance to explosive effects of new and existing bridges. NCHRP Report 645, <i>Blast-Resistant Highway Bridges: Design and Detailing Guidelines</i>
20-5 Topic 39-5 Transportation's Role in Emergency Evacuation and Reentry	\$ 30,000	Complete December 2008	NCHRP Project 20-5, "Synthesis of Information Related to Highway Problems." A comprehensive and systematic review of current practice for evacuation and repopulation, considering the use of modes for low-mobility individuals. NCHRP Synthesis 392, <i>Transportation's Role in Emergency Evacuation and Reentry</i> (2009).
20-5 Topic 43-15 Models for Effective Emergency Responses within the 'Golden Hour' in Rural Areas	\$ 40,000	Contractor's Final Report anticipated June 2012	NCHRP Project 20-5, "Synthesis of Information Related to Highway Problems." A comprehensive and systematic review of current practice, obtaining information on successful rural emergency responses that are able to provide emergency services within one hour on rural roads.
20-6 Topic 13-2 Contracting Procedures During War or a Disaster	\$ 25,000	Complete June 2007	NCHRP Project 20-6, "Legal Problems Arising Out of Highway Programs" provides authoritatively researched, specific, limited-scope studies of legal issues & problems having national significance & application. NCHRP Legal Research Digest 49: <i>Emergency Contracting: Flexibilities in Contracting Procedures During An Emergency</i>
20-6 Topic 17-3 / 20-59(41) Legal Definition of "First Responder"	\$100,000	Contractor's Final Report anticipated October 2012	(1) Identify the legislation, regulations, and executive orders in which the term "first responder" is defined; (2) briefly summarize the legislation / regulation / order to understand their scope and purpose; (3) provide the definition existing in the source documents; and (4) highlight any commonalities or inconsistencies between the definitions.
20-7 Task 151A A Guide to Updating Highway Emergency Response Plans for Terrorist Attacks	\$100,000	Complete May 2002	Planning guidance for state departments of transportation incorporates the Incident Command System. Contractor's final report is available on the AASHTO web site at http://security.transportation.org/sites/security/docs/guide-ResponsePlans.pdf
20-7 Task 151B A Guide to Highway Vulnerability Assessment	\$100,000	Complete May 2002	Guidance for state departments of transportation to identify vulnerable facilities and appropriate countermeasures. The contractor's final report, <i>A Guide to Highway Vulnerability Assessment for Critical Asset Identification and Protection</i> , is available on the AASHTO web site at http://security.transportation.org/sites/security/docs/guide-VA_FinalReport.pdf
20-7 Task 151C Transportation Security: Sharing Information & Task Force Support	\$ 50,000	Complete Continuing as 20-59(14A)	Support for the AASHTO Task Force on Transportation Security

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NCHRP (National Cooperative Highway Research Program)			
20-7 Task 181 Multi-State Transportation Operations Program: Status and Critical Issues	\$ 50,000	Complete October 2004	June 2004 workshop provides a critical review in the development of a briefing document and presentation; shared with appropriate TRB, AASHTO, and ITE executives and committees
20-7 Task 230 Safety and Security in Roadway Tunnels	\$ 45,000	Complete April 2008	Workshop, November 2007, identified the scope of the issues, outlined needed research, & identified potential funding for underground transportation system initiatives & practices. Workshop report to AASHTO, April 2008.
20-7 Task 239 Identification and Delineation of Incident Management and Multi-Agency Emergency Response Functions	\$ 25,000	Complete September 2009	Define, compare, and contrast the functions associated with (a) day-to-day incident management activities and (b) multi-agency emergency response activities in order to define and target state DOT job functions, research, training, and committee related activities. Published as NCHRP Report 525, Vol. 16, Appendix L-- White Paper on Emergency Response Functions and Spreadsheet Tool for Emergency Response Functions
20-59(1) AASHTO Security Research Workshops and Forums	\$100,000	Complete April 2003	Identification & prioritization of a research agenda for state DOTs, US DOT, and NCHRP. Phase 1 report (April 2002) on AASHTO web site. Phase 2 workshop support complete April 2003.
20-59(2) Bridge/Tunnel/Highway Infrastructure Vulnerability Workshops	\$277,000	Complete June 2004	Regional, interactive workshops: NY, TX, CA. NCHRP Report 525 Vol. 4, <i>A Self-Study Course on Terrorism-Related Risk Management of Highway Infrastructure</i>
20-59(3) Blue Ribbon Panel on Bridge and Tunnel Security	\$128,200	Complete September 2003	Expert group meeting & establishing guidelines (includes \$63,200 from FHWA). <i>Recommendations for Bridge and Tunnel Security</i> (2003) is on the FHWA web site at http://www.fhwa.dot.gov/bridge/security/brp.pdf
20-59(4) White Paper on Highway Security Issues for Reauthorization	\$ 25,000	Complete April 2002	Transportation reauthorization recommendation changes due to new security needs. Contractor's final report delivered to AASHTO April 2002
20-59(5) National Needs Assessment for Ensuring Transportation Infrastructure Security	\$150,000	Complete December 2002 See 20-59(26).	Transportation facilities needs assessment, with recommendations to meet new security needs. Contractor's final report is on AASHTO web site.
20-59(6) State DOT Field Personnel Security Manual	\$ 50,000	Complete October 2003	Guidance for DOT field personnel as stand-alone document. NCHRP Report 525 Vol. 1, <i>Responding to Threats: A Field Personnel Manual</i>
20-59(6A) State DOT Field Personnel Security Training CD	\$ 40,000	Complete December 2005	Stand-alone CD-ROM based training program for self-instruction. NCHRP Report 525 Vol. 7, <i>System Security Awareness for Transportation Employees</i>
20-59(6B) Enhanced DOT Participation in NTI Train-the-Trainer Workshops for Security Awareness	\$100,000	Complete September 2009	National Transit Institute training for several modes is available by direct delivery and in train-the-trainer versions.
20-59(7) Transportation Security Information Clearinghouse 20-59(7A) Support to Panel in Developing ISAC Recommendations	\$125,000 \$ 25,000	Complete February 2006	Development and one year of operation of a web-based clearinghouse for transportation security information. 20-59(7/Task 1) TSIC Outreach & Support cancelled.
20-59(8) Emergency Transportation Operations Preparedness and Response Workshop: Adaptations for Rural and International Border Crossing Situations	\$195,000	Complete January 2004	Regional, interactive workshops held in Washington, New Mexico, Minnesota, and Idaho Contractor's final report delivered to AASHTO February 2004
20-59(9) Methods for Determining Transportation and Economic Consequences of Terrorist Attacks	\$250,000	Complete October 2005	NCHRP Report 525 Vol. 11, <i>Disruption Impact Estimating Tool—Transportation (DIETT): A Tool for Prioritizing High-Value Transportation Choke Points</i>
20-59(10) Secure Communication Infrastructure	\$378,600	Complete April 2004	NCHRP Report 525 Vol. 2, <i>Information Sharing and Analysis Centers: Overview and Supporting Software Features</i>
20-59(11) Emergency Traffic Operations (ETO) Management	\$350,000	Complete February 2005	Guidance for state DOTs to coordinate activities with law enforcement, fire service, and emergency management. NCHRP Report 525 Vol. 6, <i>Guide for Emergency Transportation Operations</i>

Project	Budget	Status	Description
NCHRP (National Cooperative Highway Research Program)			
20-59(11A) ETO Guide Implementation Planning	\$100,000 \$ 5,000	Complete January 2007	A workshop was held in March 2006. Contractor's final report and brochure delivered to AASHTO February 2007.
20-59(12) Follow-up Security and Emergency Response Survey of State Transportation Agencies	\$ 500	Complete August 2004	2003 follow-up to the TRB/AASHTO November 2001 Security and Emergency Response Survey of State Transportation Agencies.
20-59(13A) Follow-up on A Guide to Updating Emergency Response Plans for Terrorist Incidents	\$ 6,000	Complete November 2003	Comments on 20-7/151A A Guide to Updating Highway Emergency Response Plans for Terrorist Attacks
20-59(13B) Follow-up on A Guide to Highway Vulnerability Assessment for Critical Asset Identification & Protection	\$ 35,000	Complete June 2004	User comments on Project 20-7/151B, including those stimulated by a presentation and a half-day workshop conducted under this project.
20-59(14) Support for the AASHTO Special Committee on Transportation Security	\$223,000	Complete December 2007	(continuation of 20-7/151C). NCHRP Report 525 Vol. 5, <i>Guidance for Transportation Agencies on Managing Sensitive Information</i> .
20-59(14A) Research Support for AASHTO's Special Committee on Transportation Security and Emergency Management (SCOTSEM)	\$ 99,000	Ongoing	Research support for the SCOTSEM strategic plan; support for SCOTSEM information dissemination practices; research support for SCOTSEM meetings; development, administration, and analysis of the SCOTSEM Security Survey; and general research support for the SCOTSEM committee, subcommittees, and task forces.
20-59(15) AASHTO Modifications of Consultant Reports	\$ 0	Cancelled December 2010	Editorial support for converting consultant reports to AASHTO publications. Anticipated need did not develop.
20-59(16) Preparation of Educational Materials: Outreach	\$ 50,000	Complete January 2005	Materials for communicating specifically to federal agencies outside the FHWA. To AASHTO, January 2005.
20-59(16A) Preparation of Educational Materials: Funding Guide	\$ 50,000	Complete October 2004	Materials for communicating funding opportunities to state transportation agencies. Final report on AASHTO website.
20-59(16B) Security Framework: Fundamentals of Transportation Security for DOTs	\$ 100,000	Complete December 2007	Compelling, understandable materials to effectively communicate to state DOT leadership (a) goals for transportation security and (b) fundamental actions that state transportation agencies can take and have taken. To AASHTO, February 2008.
20-59(17) Guide to Risk Management of Multi-modal Transportation Infrastructure	\$400,000 \$245,000	Complete September 2008 TRB Webinar held 4 November 2009	CAPTA provides users with a <i>capital planning and budgeting tool, used as a strategic point of departure for resource allocation decisions</i> . CAPTA enables an executive to base allocation decisions on objective data about assets. NCHRP Report 525, Vol. 15, <i>Costing Asset Protection, An All Hazards Guide for Transportation Agencies (CAPTA)</i>
20-59(18) Guidelines for Transportation Emergency Training Drills and Exercises Co-funded by TCRP J-10C	\$100,000	Complete October 2005	For planning, design, development, implementation, and evaluation of drills and exercises. NCHRP Report 525/TCRP Report 86, Vol. 9, <i>Guidelines for Transportation Emergency Training Exercises</i>
20-59(19) Transportation Response Options: Scenarios of Infectious Disease, Biological Agents, Chemical, Radiological or Nuclear Exposure: Transportation's Role in Public Health Emergencies	\$251,000	Complete October 2005	Technical information on chemical, biological, and radiological threats; vulnerabilities of the transportation system to these agents; consequence-minimization actions that may be taken. Includes a software tool, user's guide, and executive briefing slides. NCHRP Report 525, Vol. 10, <i>A Guide to Transportation's Role in Public Health Disasters</i>
20-59(20) Enhanced Communications Interoperability: Assessment of Emerging Voice/Data Integration Tools	\$ 0	Cancelled December 2003 due to overlap with FHWA.	Develop a framework/guide/service for use by the transportation community and others to prepare for the purchase or management of interoperable communications /data transmission systems and networks. Cancelled.
20-59(21) Transportation Agency Continuity of Operations Plans Co-funded by TCRP J-10F.	\$100,000	Complete May 2005	Develop guidance for efficiently resuming transportation agency operations following a terrorist attack or other natural or man-made disasters. NCHRP Report 525/TCRP Report 86, Vol. 8, <i>Continuity of Operations (COOP) Planning Guidelines for Transportation Agencies</i>

Project	Budget	Status	Description
NCHRP (National Cooperative Highway Research Program)			
20-59(22) Guidelines for Emergency Quarantine and Isolation Controls of Roads in Rural Areas	\$200,000	Complete May 2008	Establish recommended practices and procedures for emergency quarantine and isolation controls for local and state roads with minimal resources typical for a rural region. NCHRP Report 525, Vol. 13, <i>A Guide to Traffic Control of Rural Roads in an Agricultural Emergency</i>
20-59(23) A Guide to Emergency Response Planning at State Transportation Agencies	\$300,000	Complete September 2009	Develop a recommended Guide for use by state transportation agencies in planning and developing their organizational functions, roles, and responsibilities for emergency response within the all-hazards NIMS context. NCHRP Report 525, Vol. 16, <i>A Guide to Emergency Response Planning at State Transportation Agencies</i>
20-59(24) A Guide to Transportation and Hazards Resources Co-funded by TCRP J-10E.	\$ 37,500	Complete December 2008	Security-related research and resources, and an introduction to interdisciplinary research and applications undertaken by the hazards research community. NCHRP Research Results Digest 333/TCRP Research Results Digest 90, <i>A Guide to Planning Resources on Transportation and Hazards</i>
20-59(25) Security Research Plan	\$ 75,000	Complete October 2007	Develop a recommended 3-year security research plan for consideration by the AASHTO Special Committee on Transportation Security. Delivered to AASHTO.
20-59(26) National Needs Assessment for Transportation Security	\$ 99,000	Complete September 2008	Update of the 2002 transportation facilities needs assessment, with recommendations to meet new security needs. Delivered to AASHTO.
20-59(27) / 8-36 Task 69 (03) Peer Exchange Series on State and Metropolitan Transportation Planning Issues: Disaster Response Issues in Transportation Planning	\$ 50,000	Complete October 2007	A peer review session bringing together several state and MPO planning directors to discuss priority issues in security, disaster response, and planning. Available at http://144.171.11.40/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=1283
20-59(28) Security 101: Physical Security Standards and Guidelines for Transportation	\$ 50,000	Complete August 2008	Identify concepts of operations and reference design considerations. NCHRP Report 525, Vol. 14, <i>Security 101: A Physical Security Primer for Transportation Agencies</i>
20-59(29) Transportation Security Research Implementation Plan	\$ 90,000	Complete November 2010	Recommendations for institutionalizing security elements into transportation (e.g., training, workshops, peer exchanges). Delivered to AASHTO.
20-59(30) Role of Transportation in the Incident Command System Structure & the National Incident Management System Structure	\$100,000	In development	Identify recommended changes in the ICS and NIMS structures to accommodate the breadth of transportation capabilities not currently reflected in guidance; the intended audience is state Emergency Management Agencies.
20-59(31) Co-Location of Emergency Operations Centers and Intelligent Transportation Centers	\$ 0	Cancelled May 2009 due to overlap with FHWA	Consider the roles of the Emergency Operations Center (EOC) and the Intelligent Transportation Center (ITC) during emergencies, disasters and catastrophes. Review the types of technology used; conduct case studies; consider the design for day to day uses and disaster response, cost benefit of co-location, case studies of real events where ITC assets have served a disaster response role in the US and abroad, seek out lessons learned from real events in the US and abroad. Cancelled.

Project	Budget	Status	Description
NCHRP (National Cooperative Highway Research Program)			
20-59(32) A Transportation Guide for All Hazards Emergency Evacuation	\$300,000	Contractor's Final Report anticipated May 2012	Develop specific all hazards transportation guidance consistent with lessons learned as a result of major incidents. Identify problems and benefits in the use of contra flows; identify critical coordination measures. Address integration of State-wide and Regional Transportation Plans; specify general and specialized transportation resources which may be needed to effectively move and relocate vulnerable populations and transportation disadvantaged citizens. Identify and describe in practical terms the role of transit systems. Address the utility of specialized maps, transportation visual aids, criteria for selecting primary and secondary evacuation routes, and recommendations for facilitating movement.
20-59(33) Pre-Event Planning to Support Transportation Infrastructure Recovery	\$150,000	Complete March 2012	Develop a guide that provides pre-event recovery planning principles, processes, tools, and appended resource materials for use by planners and decision makers in pre-event planning to support transportation infrastructure recovery.
20-59(34) Methodologies to Estimate the Economic Impacts of Disruptions to the Goods Movement System	\$300,000	Contractor's Final Report anticipated May 2012	Develop and apply one or more conceptual methodologies for identifying and estimating economic impacts, both short and long term, due to disruptions to the goods movement system.
20-59(35) Securing Transportation Structures, Systems, and Facilities— Long Term R&D Plan	\$ 15,000	In development	Identify and define problems in the area of transportation security that need to be solved through R&D. Reach out to owners, practitioners, experts and others in each different area of transportation modes and determine critical problems that exist for securing the facilities. This list of essential needs will be used by others to develop long term, long range R&D plans.
20-59(36) Managing Catastrophic Transportation Emergencies: A Guide for Transportation Executives	\$100,000	In development Contract pending	Develop a Guide for preparing transportation agency executives and senior leaders for their roles and decision points in response to and recovery from catastrophic emergencies, including those in which transportation systems are affected.
20-59(37) Debris Management Handbook for Local and State DOTs	\$150,000	Contractor's Final Report anticipated July 2013	Handbook with recommended practices and procedures for debris management for local, tribal, and state transportation and public works agencies.
20-59(38) Voice and Data Interoperability for Transportation	\$ 75,000	In development	Develop a guide that will assist transportation and transit agencies in making key decisions with respect to the identification and selection of interoperability hardware and related choices.
20-59(39) Synthesis of Airport Closings and Emergency Evacuation Problems	\$ 0	Cancelled November 2011 due to overlap with ACRP Project 4-15	Capture data on the specific problems that recent airport closings or evacuations have caused and present recommendations and solutions on how such disruptions can be handled so as to reduce the adverse impact on travelers and air industry personnel alike, protect the health and safety of these individuals, and be prepared to address the substantial problems that travelers, the general public, and employees will face.
20-59(40) Transit Wireless Communications Joint Council Establishment	\$ 50,000	Contractor's Final Report anticipated October 2012	Provide initial support for the establishment of a Joint Council to implement the strategic plan per recommendations of TCRP Project C-18, Strategic Plan for Meeting Transit Industry Wireless Communications Needs.

Project	Budget	Status	Description
NCHRP (National Cooperative Highway Research Program)			
20-59(41) / 20-6 Topic 17-3, Legal Definition of "First Responder"	\$100,000	Contractor's Final Report anticipated October 2012	1) identify the legislation, regulations, and executive orders in which the term "first responder" is defined; 2) briefly summarize the legislation / regulation / order to understand their scope and purpose; 3) provide the definition existing in the source documents; and 4) highlight any commonalities or inconsistencies between the definitions.
20-59(42) A Guide to Regional Transportation Planning for Disasters, Emergencies, and Significant Events	\$250,000	Contractor's Final Report anticipated May 2013	A Guide with principles and resources for facilitating regional transportation planning, coordination, and operations across all modes for disasters, emergencies, and significant events
20-59(43) Incorporating Transportation Security Awareness into Routine State DOT Operations and Training	\$100,000	In development Panel met Jan. 2012 to select a contractor	Develop a guide for incorporating transportation security awareness into routine state DOT operations and training.
20-59(44) A Guide for Public Transportation Pandemic Planning and Response	\$200,000	In development Contract pending	Pandemic planning guide for use by all transit agencies with emphasis on (a) small urban and rural transit agencies; (b) human service transportation providers; and (c) the state DOTs that provide oversight for grant recipients in both categories. The Guide should include a synthesis of current practices, identifying gaps and opportunities for improved practices; simple step-by-step guidelines; planning and operations resources; checklists; and those steps necessary to facilitate coordination across the response spectrum
20-59(47) Developing Improvements for Evacuating Tunnels During Emergencies	\$150,000	In development RFP ant. July 2012	(a) Provide a synthesis of effective signing for evacuation of roadway tunnels and (b) Identify a program of research (including human factors testing) to develop sign alternatives suitable for appropriate testing and development that will facilitate inclusion into the MUTCD through the rule-making process
20-59(48) Protection of Transportation Infrastructure from Cyber Attacks Co-funded with TCRP D-15 to produce Security 102: Industrial Control Systems and Cyber Security for Transportation	\$150,000	In development Panel to meet June 2012 RFP ant. July 2012	Develop a primer and a briefing for transportation system owners and operators explaining the nature of the threats and a list of best practices compiled from research indicating how to best protect against the threats and mitigate damage should an attack occur.
20-59(49) Security and Emergency Management Peer Exchange for State DOTs: Facilitation and Coaching Support for the 50 States Exercise	\$ 94,000 \$252,400	In development Register for August 20-23 Peer Exchange: http://www.trb.org/Calendar/Blurbs/166997.aspx	Exercise support for the security and emergency management peer exchange for State DOTs on <i>A Guide to Emergency Response Planning at State Transportation Agencies and Security 101: A Physical Security Primer for Transportation Agencies</i>. Contractor support for the Peer Exchange proper will be competitively procured as part of 20-59(14B) in April 2012.
20-65(13) State Public Transportation Division Involvement in State Emergency Planning, Response, and Recovery	\$100,000	Complete January 2008	Identify best internal/external state planning, response, and recovery policies & practices pertaining to weather-related emergencies, emphasizing state public transportation and state passenger rail division involvement. NCHRP Research Results Digest 326: <i>State Public Transportation Division Involvement in State Emergency Planning, Response, and Recovery</i>
20-67 Making Transportation Tunnels Safe and Secure Co-funded by TCRP J-10G.	\$200,000	Complete June 2006	Mitigation countermeasures are presented for (a) threats related to crime and terrorism and (b) hazards related to natural events. NCHRP Report 525/TCRP Report 86, Vol. 12, <i>Making Transportation Tunnels Safe and Secure</i>

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