



# Research Digest

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## ***Item 1***

### **Safety Management Systems for Airports**

*TRANSPORTATION RESEARCH BOARD*

*ACRP Report 1 • 2007*

This document introduces the application of Safety Management Systems (SMS) to airport operations. It is a resource intended for U.S. airport executives, managers, and safety officials and is a companion document to the Guidebook for Airport Safety Management Systems, which will be developed under ACRP Project 4-05. The guidebook will be published as ACRP Report 1, Volume 2.

This overview of SMS describes how a systems approach to safety management will benefit both the safety and business aspects of airport operations. It describes the essential components of SMS and also introduces the International Civil Aviation Organization (ICAO) mandate and anticipated Federal Aviation Administration (FAA) policy for airport SMS. Furthermore, it includes valuable lessons learned from case studies in SMS implementation efforts at various airports and in other industries.

It should be noted that at the time this overview goes to press, the FAA has not finalized all of its policies and plans for the implementation of SMS for airports. The Guidebook and future FAA guidance material are expected to provide further details to be the most successful in resolving specific problems.

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## ***Item 2***

### **General Aviation Safety and Security Practices**

*TRANSPORTATION RESEARCH BOARD*

*ACRP Synthesis 3 • 2007*

This synthesis study identifies current practices in safety and security at general aviation airports. It reviews resources used by the general aviation community in the development of safety and security programs, funding sources and issues that determine the amount of money spent on such programs, and describes current practices that general aviation airports use to keep their facilities safe and secure. Information was collected from survey questionnaires distributed to individual airports and fixed base operators (FBOs), a literature search, and documents provided by selected airports, FBOs, and industry trade associations. Follow-up interviews, personal experience, and industry contacts were also incorporated where appropriate.

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## ***Item 3***

### **Counting Aircraft Operations at Non-Towered Airports**

*TRANSPORTATION RESEARCH BOARD*

*ACRP Synthesis 4 • 2007*

Annual aircraft operations estimates are used in aviation system planning, airport master planning, environmental studies, aviation forecasts, and to determine funding and design criteria for the nation's airports. At airports with air traffic control towers, aircraft operations are tracked and recorded by the air traffic controller. Most airports in the United States, however, do not have air traffic control towers. These airports are generally known as non-towered airports, and they make up the vast majority of the airports open to the public for business. Accordingly, unlike with larger towered airports, these non-towered airports do not have readily available records on aircraft activity. Consequently, many state aviation agencies and some airports and metropolitan planning organizations (MPOs) have developed aircraft traffic counting programs to track airport activity at their airports. However, many have not. For airports without air traffic control towers and/or with part-time towers, the number and type of operations may be based on the best guess of the airport manager or on prior-year counts, factored for assumed growth. It would be desirable to know and use the most accurate means of counting and estimating actual operations at these smaller airports. The corresponding operations data collected could then be included on FAA Airport Master Record Form 5010, because this form is often used as a source for these data in the system planning, master planning, forecasting, and funding operations.

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## ***Item 4***

### **The Role of Safety Culture in Preventing Commercial Motor Vehicle Crashes**

*TRANSPORTATION RESEARCH BOARD*

*CTBSSP Synthesis 14 • 2007*

This synthesis will be useful to federal and state agencies, commercial truck and bus operators, and others interested in improving commercial vehicle safety. The synthesis provides information on practices that offer the greatest influence on developing and enhancing a culture of safety among commercial motor vehicle drivers. The synthesis is based on a comprehensive review of (a) literature and research pertaining to safety culture as it relates to motor carrier industries, (b) surveys and interviews of motor carrier safety managers and commercial motor vehicle drivers, and (c) case study data collected from motor carriers.

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## *Item 5*

### **Health and Wellness Programs for Commercial Drivers**

*TRANSPORTATION RESEARCH BOARD*

*CTBSSP Synthesis 15 • 2007*

This paper describes the development, analysis and results of a Transportation Research Board (TRB) Commercial Truck and Bus Safety Synthesis Program (CTBSSP) project on Health and Wellness Programs for Commercial Vehicle Drivers. The Synthesis met four principal objectives. It provides: 1) a technical review of the literature, highlighting the chief health risks facing commercial drivers; 2) an analytical review of literature associating crash causation with functional impairments affecting abilities to drive safely; 3) a description of identifiable elements of some industry employee health and wellness programs, including several aimed at commercial drivers; and 4) outlines findings from three case studies of successful employee health and wellness programs in the truck carrier and the commercial bus and motorcoach communities. The Synthesis provides information to assist the commercial transportation safety community and the Federal Motor Carrier Safety Administration (FMCSA) in assessing the effectiveness and value of implementing employee health and wellness programs in the trucking and intercity bus and motorcoach industries..

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## *Item 6*

### **Guidelines for Concrete Mixtures Containing Supplementary Cementitious Materials to Enhance Durability of Bridge Decks**

*TRANSPORTATION RESEARCH BOARD*

*NCHRP Report 566 • 2007*

This report presents guidelines to facilitate highway agencies' use of supplementary cementitious materials to enhance durability of concrete used in highway construction, especially bridge decks. Encompassed in these guidelines is a methodology for selecting optimum concrete mixture proportions. The methodology focuses on durability aspects of concrete and the performance requirements for specific environmental conditions and is presented in a text format and as a computational tool, in the form of a Visual Basic-driven Microsoft® Excel spreadsheet. Background information, a user's guide, and a hypothetical case study are also available. These guidelines should be of interest to state engineers and others involved in the design and construction of concrete bridge decks and other structures incorporating supplementary cementitious materials.

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## ***Item 7***

### **Application of LRFD Bridge Design Specifications to High-Strength Structural Concrete: Shear Provisions**

*TRANSPORTATION RESEARCH BOARD*

*NCHRP Report 579 • 2007*

This report contains the findings of research performed to extend the applicability of shear design provisions for reinforced and prestressed concrete structures in the "AASHTO LRFD Bridge Design Specifications" to concrete compressive strengths greater than 10 ksi. The report details the research performed and includes recommended revisions to the specifications. The material in this report will be of immediate interest to bridge designers.

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## ***Item 8***

### **Best Practices to Enhance the Transportation - Land Use Connection in the Rural United States**

*TRANSPORTATION RESEARCH BOARD*

*NCHRP Report 582 • 2007*

This report presents guidance on how best to integrate land use and transportation in rural communities. The study highlights programs and investment strategies that support community development and livability while providing adequate transportation capacity.

Rural communities throughout the United States are facing a wide and complex range of challenges that both affect and are affected by the transportation system. These include economic shifts away from traditional employment in local farming and manufacturing toward industries such as agribusiness and tourism; changing demographics such as rising percentages of elderly residents or new levels of racial and ethnic diversity; rapid growth in some rural areas and population decline in others; and a lack of adequate capacity and/or commitment to engage the public in transportation and land use planning. These trends are further complicated by funding challenges associated with operating, maintaining, and building transportation infrastructure.

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## ***Item 9***

### **Countermeasures to Protect Bridge Abutments from Scour**

*TRANSPORTATION RESEARCH BOARD*

*NCHRP Report 587 • 2007*

TRB's National Cooperative Highway Research Program (NCHRP) Report 587: Countermeasures to Protect Bridge Abutments from Scour examines selection criteria and guidelines for the design and construction of countermeasures to protect bridge abutments and approach embankments from scour damage. The report explores two common forms of bridge abutments--wing-wall (vertical face with angled walls into the bank) and spill-through (angled face).

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## ***Item 10***

### **Buy America Issues Associated with State DOT Procurement of Paratransit Vehicles Using FTA Funds**

*TRANSPORTATION RESEARCH BOARD*

*NCHRP Research Results Digest 319 • 2007*

State departments of transportation (DOTs) and their funding subrecipients are subject to federal Buy America requirements. These requirements mandate that recipients of federal mass transportation funds conducting procurements totaling \$100,000 or more certify that grant-funded vehicles contain more than 60% domestic parts content and that final vehicle assembly occurs within the United States. Alternatively, grant recipients can obtain a waiver from the Federal Transit Administration (FTA). The guidelines apply equally to all motor vehicles purchased with federal funds, including station wagons, minivans, full-size vans, and small and large buses. This research (1) examined the Buy America requirements applicable to state DOTs and their subrecipients in purchases of paratransit vehicles and (2) considered opportunities for change. The primary focus of this study was on vehicles procured by state DOTs or their grant recipients with grants from the federal Section 5310 (49 U.S.C.) Elderly and Persons with Disabilities program and the Section 5311 (49 U.S.C.) Rural and Small Urban Area program. Researchers conducted a literature review and surveyed procurement officials at state DOTs, transit agencies, Section 5310 and Section 5311 grant recipient agencies, vehicle vendors, and in-plant vehicle inspectors. This digest summarizes the results of this investigation.

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## ***Item 11***

### **Current State Issues with Implementing Federal Transit Administration (FTA) Section 5310 and Section 5311 Programs**

*TRANSPORTATION RESEARCH BOARD*

*NCHRP Research Results Digest 320 • 2007*

The public transit sections of the 50 state departments of transportation (DOTs) manage the Federal Section 5310 and Section 5311 programs on behalf of the Federal Transit Administration (FTA). This delegated authority has created many challenges for state DOTs--challenges that are likely to increase during the implementation phase of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). The objectives of this research project were to identify and prioritize current issues facing state DOTs in the management and administration of their Section 5310 and Section 5311 programs and explore options for addressing these issues. These objectives were accomplished by surveying the state DOTs to identify issues faced in managing these programs, prioritizing the issues to identify those most important to address, and developing options for addressing each of the key issues. It is intended that the research results reported in this digest will contribute to ongoing discussions with FTA staff on how to improve the ongoing and expanding administration of the programs.

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## ***Item 12***

### **Technologies for Improving Safety Data**

*TRANSPORTATION RESEARCH BOARD*

*NCHRP Synthesis 367 • 2007*

TRB's National Cooperative Highway Research Program (NCHRP) Syntheses 367: Technologies for Improving Safety Data explores new technologies for the acquisition, processing, and overall management of crash, roadway inventory, and traffic operations data. The report examines the current state-of-the-practice and state-of-the-art use of technologies for efficient and effective collection and maintenance of data for highway safety analysis.

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## ***Item 13***

### **State DOT Crash Reconstruction Practices**

*TRANSPORTATION RESEARCH BOARD*

*NCHRP Synthesis 369 • 2007*

This synthesis will be of interest to state department of transportation (DOT) personnel, as well as to others who work with them in the area of crash reconstruction activities. The report documents the extent of crash reconstruction undertaken by state DOTs and the level of expertise available to perform the tasks. Additionally, the scope of work includes to what extent crash reconstructions are used by state DOTs to improve highway safety. The scope was limited, specifically, by the topic panel to focus on crash reconstruction conducted by DOTs (and not by law enforcement personnel, which is much more common), feedback provided, and mitigation actions taken as a result. This synthesis contains information gathered from 43 states, supplemented by material collected as part of a literature review process. Although a substantial amount of literature addresses the general area of crash reconstruction and tort liability, and the management of risk related to transportation systems and facilities, little appears to address the uses and benefits of crash reconstruction by state DOTs. The level of involvement in crash reconstruction of state DOTs, as noted in the 43 responses to the synthesis survey, was determined to be relatively minor.

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## ***Item 14***

### **The Americans with Disabilities Act: The Federal Transit Administration's Letters of Findings and Compliance Assessments**

*TRANSPORTATION RESEARCH BOARD*

*TCRP Legal Research Digest 23 • 2007*

This report includes Federal Transit Administration (FTA) interpretations of Part III of the Americans with Disabilities Act (ADA), which pertains to public accommodations and transportation. FTA interpretations can be in letter findings, decisions on complaints, and compliance assessments. FTA's interpretations are available for download as an ISO image.

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## ***Item 15***

### **Wheel/Rail Noise Control Manual**

*TRANSPORTATION RESEARCH BOARD*

*TCRP Report 23 • 1997*

TRB's Transit Cooperative Research Program (TCRP) Report 23: Wheel/Rail Noise Control Manual provides practical step-by-step procedures for identifying wheel/rail noise control technologies with demonstrated effectiveness. Procedures are included for identifying wheel/rail noise sources, developing mitigation designs, and estimating probable costs and effectiveness.

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## ***Item 16***

### **Public Transportation Passenger Security Inspection: A Guide for Policy Decision Makers**

*TRANSPORTATION RESEARCH BOARD*

*TCRP Report 86 • 2007*

TRB's Transit Cooperative Research Program (TCRP) Report 86, Public Transportation Security Public Transportation Security Volume 13: Public Transportation Passenger Security Inspections: A Guide for Policy Decision Makers suggests guidance that a public transportation agency may use when considering whether, where, when, and how to introduce a passenger security inspection program into its operations. The report identifies promising types of screening technologies and methods currently in use or being tested, and the operational considerations for the deployment of these technologies in land-based systems. The report also examines the legal precedent that either applies or that should be contemplated in connection with passenger screening activities, and includes a passenger security inspection policy decision-making model. Detailed appendixes to TCRP Report 86 Vol. 13 were published as TCRP Web-Only Document 38.

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## ***Item 17***

### **Transit Oriented Development: Traveler Response to Transportation System Changes**

*TRANSPORTATION RESEARCH BOARD*

*TCRP Report 95 (Ch.17) • 2007*

This chapter focuses on the transit oriented development (TOD) land use strategy and its transportation impacts, organized along three dimensions that significantly characterize TODs: regional context, land use mix, and primary transit mode. New as well as synthesized research is presented, including suggested "TOD Index" indicators to describe development project "TOD-ness." This chapter is complementary with Chapter 15, "Land Use and Site Design," and Chapter 16, "Pedestrian and Bicycle Facilities." This chapter will be of interest to transit, transportation, and land use planning practitioners; educators and researchers; and professionals across a broad spectrum of transportation and planning agencies, metropolitan planning organizations, and local, state, and federal government agencies. Several case studies are presented.

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