

Research Digest

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Item 1

Commercial ground transportation at airports: best practices

TRANSPORTATION RESEARCH BOARD (TRB)

ACRP Report 146 • 2015

"This report is a guidebook that describes best management practices (best practices) that can be used by airport operators and other stakeholders to ensure the provision of safe, comfortable, easy-to-use, and efficient commercial ground transportation service at a variety of types and sizes of airports. Commercial ground transportation services include taxicabs, limousines, shared-ride services, transportation network companies, courtesy vehicles, buses, and vans. The guidebook reviews the ground transportation industry, potential solutions (best practices) to challenges airport operators frequently face, how to select a solution, and how to implement the selected best practice. Practices include all elements of operations, oversight, procurement, reporting, and regulatory structure. The guidebook addresses models that help deliver high quality customer service, generate airport revenues, are easy to implement, and provide good economic value to the providers. It provides examples of airports where the best practices have been implemented that vary by geographical region and airport size. It presents critical factors of success and limitations from airport, provider, and customer perspectives and includes methods of setting and collecting airport cost recovery and other fees. The guidebook also addresses standards for vehicles and drivers; types of provider business practices and their effects on the airport's ability to regulate ground transportation service; and types of regulations and methods used by airports to assure compliance and enforcement of all aspects of ground transportation. Available technologies that can benefit the airport, providers, and the customers; guidelines to ensure the flexibility to accommodate unforeseen changes in airport and commercial ground transportation operations and demands; external factors impacting different operating practices; metrics to assist airports and providers in assessing level of service; environmental initiatives; and common challenges encountered by providers are also addressed." -- TRID
(147 pages)

CONTENTS

- Foreword
- Chapter 1. Overview of the guidebook
- Chapter 2. Establishing goals and policies for the airport's ground transportation program
- Chapter 3. Expectations of customers, airport management, providers, and other stakeholders
- Chapter 4. Operations of commercial ground transportation in general
- Chapter 5. Operations of commercial ground transportation at airports
- Chapter 6. Regulation and enforcement of commercial ground transportation services on airports
- Chapter 7. Role of small and disadvantage business enterprises
- Chapter 8. Examples of best practices
- Chapter 9. Supporting technologies
- Chapter 10. Selling and implementing the solution
- Appendix A. Acronyms
- Appendix B. Glossary
- Appendices C through H

This report is available for free download (34.5 MB):

http://onlinepubs.trb.org/onlinepubs/acrp/acrp_rpt_146.pdf

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Item 2

Climate change adaptation planning: risk assessment for airports

TRANSPORTATION RESEARCH BOARD (TRB)

ACRP Report 147 / CRP-CD-175 • 2015

"TRB's Airport Cooperative Research Program (ACRP) Report 147: Climate Change Adaptation Planning: Risk Assessment for Airports provides guidance for practitioners to understand the specific impacts climate change may have on their airports. The guidebook may help practitioners develop adaptation actions and incorporate those actions into the airport's planning processes.

Accompanying the guidebook, an electronic assessment tool called Airport Climate Risk Operational Screening (ACROS) is enclosed as a CD-ROM. The tool uses a formula to compute an estimated level of risk for assets and operations at the airport. These airport-specific risks are then ranked to provide an enterprise-level estimate of the relative risk posed by each asset and operation." -- Publisher's website (79 pages)

- Accompanying CD-ROM contains: an electronic assessment tool called Airport Climate Risk Operational Screening (ACROS)

This report is available for free download (Website with report and CD-ROM download links):

<http://www.trb.org/Publications/Blurbs/173554.aspx>

Item 3

LED airfield lighting system operation and maintenance

TRANSPORTATION RESEARCH BOARD (TRB)

ACRP Report 148 • 2015

"This report provides guidance for operating and maintaining light-emitting diode (LED) airfield ground lighting systems, including taxi guidance signs, elevated light fixtures, and in-pavement light fixtures. The research team prepared its guidance based on a literature review, an extensive survey of nearly 50 airports, and case studies of 12 airports. The guidebook begins with an overview of regulatory requirements as they relate to LED airfield lighting and a summary of the survey and case studies. The report then provides guidance on maintenance, including acceptance testing and warranty, fixture obsolescence and spare part recommendations, preventive maintenance and refurbishment/repair, maintenance practices during pavement repair, and environmental factors (e.g., vibration and moisture). The guidebook also covers operational considerations, including circuit configuration, heaters, monitoring, photometric and chromaticity analysis, and return-on-investment. The guidebook is supplemented by sample system requirements and maintenance schedules. The guidebook will be of particular interest to airport operations and maintenance (O&M) practitioners seeking to maximize the potential O&M benefits that LED lighting offers as they integrate and/or replace older airfield lighting with this new technology." -- TRID (78 pages)

This report is available for free download (8.8 MB):

http://onlinepubs.trb.org/onlinepubs/acrp/acrp_rpt_148.pdf

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Item 4

Synthesis of Information Related to Airport Practices

TRANSPORTATION RESEARCH BOARD (TRB)

ACRP RRD 23 • 2016

"There is information on nearly every subject of concern to the airport industry. Much of it derives from research or from the work of practitioners faced with problems in their day-to-day work. To provide a systematic means for assembling and evaluating such useful information and making it available to the entire airport community, the Airport Cooperative Research Program (ACRP) authorized the Transportation Research Board to undertake a continuing study. This study, ACRP Project A11-03, "Synthesis of Information Related to Airport Practices," searches out and synthesizes useful knowledge from all available sources and prepares concise, documented reports on specific topics. Reports from this endeavor constitute an ACRP report series, "Synthesis of Airport Practice." This staff digest reports on the progress and status of ACRP Project A11-03. It contains the following five tables: (1) ACRP Synthesis Studies—Active as of December 2015; (2) ACRP Synthesis Studies—2016 Projects; (3) Published ACRP Syntheses; (4) ACRP Project Panel A11-03; and (5) Index to Syntheses and Studies (2015)." -- TRID (9 pages)

This report is available for free download (543 KB):

http://onlinepubs.trb.org/onlinepubs/acrp/acrp_rrd_023.pdf

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Item 5

Overview of Airport Fueling System Operations: A Synthesis of Airport Practice

TRANSPORTATION RESEARCH BOARD (TRB)

ACRP Synthesis 63 • 2015

"Airport operators are responsible for the good working conditions of all airport facilities. In many cases, staff knows little about the complexity of the aircraft fueling infrastructure and processes because they may be managed by others. Aviation fuel is flammable, jet fuel is a combustible liquid, and avgas is a volatile flammable liquid. Safeguarding the entire fuel system from contaminants, flash point sparking, and leaks is important, and built-in safety features such as fuel level and leak monitoring systems, automatic fire suppression systems, and vehicle collision protections are typical features included as integral parts of the airport fueling system. In many aspects of fueling, the airport operator is identified as the primary responsible party. Airports receive and distribute fuel by various means. Many large airports are served by one or more dedicated pipelines, have underground hydrant fueling systems, and are a part of fuel consortiums with professional managers and trained staff operating their systems. Smaller airports may have less complex systems, but are still responsible. Because aircraft fueling infrastructure is necessary for airport operations and requires specialized storage, handling, and dispensing, it is useful to airport operators to have a single document that describes common operations and serves as a reference for many fueling issues and practices. Information used in this study was acquired primarily through the literature search and verified through select interviews with airport and fueling personnel. Chapters highlight regulatory and environmental requirements, organizational roles, delivery and distribution processes, resources and training tools, and fueling safety practices. Special issues such as risk management, insurance and alternative fuels are addressed in brief." -- TRID
(106 pages)

CONTENTS

- Acronyms
- Summary
- Chapter 1. Introduction
- Chapter 2. Regulatory and environmental requirements
- Chapter 3. Organizational roles
- Chapter 4. Delivery and distribution processes
- Chapter 5. Resources and training tools
- Chapter 6. Fueling safety practices
- Chapter 7. Special issues
- Chapter 8. Conclusions and further research
- Glossary and fuel system terminology
- References
- Bibliography
- Appendix A. List of regulations, organizational standards, recommended practices, and guidance material
- Appendix B. Regulations governing fueling operations at certificated Part 139 airports
- Appendix C. Mobile fueller preliminary hazard list
- Appendix D. Mobile fueller operating and support hazard analysis
- Appendix E. Mobile fueller failure mode and effect analysis
- Appendix F. Fuel hydrant system fault tree analysis
- Appendix G. Fuel tank truck fault tree analysis
- Appendix H. Fuel system maintenance fault tree analysis
- Appendix I. Fuel system safety failure fault tree analysis
- Appendix K. FAA flight standards fueling inspection procedures
- Appendix L. Sample filtration test record form

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- Appendix M. Sample filter vessel record form
- Appendix N. Sample product receipt record form
- Appendix O. Sample refueler daily inspection form
- Appendix P. Sample fixed equipment fuel storage daily inspection form
- Appendix Q. Sample refueler vehicle inspection form
- Appendix R. Sample fuel storage daily inspection form
- Appendix S. Sample product receipt record explanation of terms form

This report is available for free download (33.2 MB):

http://onlinepubs.trb.org/Onlinepubs/acrp/acrp_syn_063.pdf

Item 6

Enhancing Sleep Efficiency on Vessels in the Tug/ Towboat/ Barge Industry

TRANSPORTATION RESEARCH BOARD (TRB)

NCFRP Report 36 • 2016

"Human error related to operator fatigue is a major concern in all freight operations. The general consensus is that 7 to 8 hours of sleep per 24-hour day is required to maintain acceptable levels of alertness, minimize fatigue, and permit optimum performance. A long-standing and preferred practice of crews in the U.S. tug/towboat/barge inland waterway industry is to work/rest in alternating 6-hour shifts, commonly referred to as a square watch system. Each crew member has a total of 12 hours on duty with 12 hours off duty per 24 hours, and it has been customary for crew members to obtain sleep during both of their 6-hour off-duty periods. While there are no hours-of-service regulations beyond the 15-hours-on-duty limit, increasing uninterrupted sleep duration to a threshold of at least 7 consecutive hours in one of the two available off periods is being considered. Strict adherence to such a pattern would conflict with the most common work schedule in the tug/ towboat/ barge industry. Recent laboratory data suggest, however, that sleep can be obtained in more than one sleep period, referred to as anchor-sleep/nap-sleep, and that as long as the total duration is 7 to 8 hours, performance is comparable between a single sleep period and two separate sleep periods. In this project, the contractor (1) identified and described the metrics that could be used to evaluate current operational interventions for their effectiveness in improving sleep efficiency on tugs/towboats/barges; (2) evaluated the use of anchor-sleep/nap-sleep strategies on sleep behavior among personnel in the inland waterway industry; (3) identified barriers that inhibit waterway personnel from adopting good sleep management practices and propose ways to overcome the barriers; (4) developed a list of best practices that could be implemented by the waterway industry, companies, crews, or individuals to enhance sleep efficiency; and (5) developed a compendium of best practices for enhancing sleep efficiency in the U.S. inland waterway industry." -- TRID
(180 pages)

This report is available for free download (12.2 MB):

http://onlinepubs.trb.org/onlinepubs/ncfrp/ncfrp_rpt_036.pdf

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Item 7

Continuing Project to Synthesize Information on Highway Practices

TRANSPORTATION RESEARCH BOARD (TRB)

NCHRP RRD 398 • 2016

"There is information on nearly every subject of concern to highway administrators and engineers. Much of it derives from research or from the work of practitioners faced with problems in their day-to-day work. To provide a systematic means for assembling and evaluating such useful information and making it available to the entire highway community, the American Association of State Highway and Transportation Officials—through the mechanism of the National Cooperative Highway Research Program—authorized the Transportation Research Board to undertake a continuing study. This study, NCHRP Project 20-05, "Synthesis of Information Related to Highway Practices," searches out and synthesizes useful knowledge from all available sources and prepares concise, documented reports on specific topics. Reports from this endeavor constitute an NCHRP report series, Synthesis of Highway Practice. This staff digest reports on the progress and status of NCHRP Project 20-05. Table 1 presents a list of the topics being studied. Table 2 contains synthesis topics selected for the FY 2015 program. NCHRP Synthesis Oversight Panel SP20-05 members are listed in Table 3. Table 4 lists completed syntheses. Table 5 contains an index to the 2015 syntheses and studies." -- TRID
(24 pages)

This report is available for free download (602 KB):

http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rrd_398.pdf

Item 8

Work Zone Speed Management: A Synthesis of Highway Practice

TRANSPORTATION RESEARCH BOARD (TRB)

NCHRP Synthesis 482 • 2015

"This synthesis documents information regarding the current state of practice for work zone speed management. The report compiles data, procedures, techniques, and technical issues related to observing and comparing work zone speeds. The speed management measures have been organized into four categories: engineering, operational, enforcement, and public education and outreach. Information included in this study was acquired through a review of the literature, two surveys of state department of transportation representatives in all states, a compilation of state agency public information campaigns, and follow-up interviews with select survey respondents from several U.S. states and one Canadian province." -- TRID
(149 pages)

This report is available for free download (51.3 MB):

http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_syn_482.pdf

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Item 9

Training and Certification of Highway Maintenance Workers: A Synthesis of Highway Practice

TRANSPORTATION RESEARCH BOARD (TRB)

NCHRP Synthesis 483 • 2015

"This synthesis documents front-line maintenance worker training and certification practices for highway transportation agencies in the United States and Canada. The information presented includes the types of topics being addressed by training and certification programs, the delivery methods used to provide the training, the sources of instruction, and whether material-sharing relationships are being utilized to access training. In addition, the synthesis captures how training is related to performance and the incentives being used by state and provincial agencies to encourage front-line maintenance workers to complete training. Information used in this study was gathered through a literature review and a survey of state departments of transportation and Canadian provincial transportation agencies. Follow-up interviews with selected agencies provided additional information." -- TRID
(124 pages)

This report is available for free download (5.8 MB):

http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_syn_483.pdf

Item 10

Influence of Geotechnical Investigation and Subsurface Conditions on Claims, Change Orders, and Overruns : A Synthesis of Highway Practice

TRANSPORTATION RESEARCH BOARD (TRB)

NCHRP Synthesis 484 • 2015

"TRB's National Cooperative Highway Research Program (NCHRP) Synthesis 484: Influence of Geotechnical Investigation and Subsurface Conditions on Claims, Change Orders, and Overruns documents the extent and type of claims, change orders, and cost overruns from subsurface conditions for state departments of transportation (DOTs). The report also identifies practices used by agencies to reduce such claims, change orders, and cost overruns." --Publisher's description
(38 pages)

This report is available for free download (1.9 MB):

http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_syn_484.pdf

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Item 11

Converting Paved Roads to Unpaved: A Synthesis of Highway Practice

TRANSPORTATION RESEARCH BOARD (TRB)

NCHRP Synthesis 485 • 2016

"The practice of converting paved roads to unpaved is relatively widespread; this study identified recent road conversion projects in 27 states. These are primarily rural, low-volume roads that were paved when asphalt and construction prices were low. Those asphalt roads have now aged well beyond their design service life, are rapidly deteriorating, and are both difficult and expensive to maintain. Instead, many local road agencies are converting these deteriorated paved roads to unpaved as a more sustainable solution. Key findings from this study include: Local road agencies have experienced positive outcomes by converting roads. Many local road agencies reported cost savings after converting, compared with the costs of continuing maintenance of the deteriorating paved road, or repaving. One key to successful conversion is early involvement of the public in the planning process. Other techniques that can be used to improve the overall results of a project include treating or stabilizing granular surfaces to control dust, limiting the rate of aggregate loss, and reducing motor grader/blade maintenance frequency. Stabilization procedures can also improve safety, increase public acceptance, and reduce life-cycle costs and environmental impacts after a conversion has taken place." -- TRID

(88 pages)

This report is available for free download (34.3 MB):

http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_syn_485.pdf

Item 12

State Practices for Local Road Safety: A Synthesis of Highway Practice

TRANSPORTATION RESEARCH BOARD (TRB)

NCHRP Synthesis 486 • 2016

"This study documents state transportation agency programs and practices that address local agency road safety. Findings of the study include information on state program size, funding sources, and administrative procedures; changes in local road safety programs since the legislation of Moving Ahead for Progress in the 21st Century (MAP-21); noteworthy local/state program partnerships and initiatives to improve safety; and the use of 4E (Engineering, Enforcement, Education, and Emergency Services) approaches to local road safety." -- TRID

(300 pages)

This report is available for free download (70.7 MB):

http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_syn_486.pdf

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Item 13

Public Perception of Mileage-Based User Fees: A Synthesis of Highway Practice

TRANSPORTATION RESEARCH BOARD (TRB)

NCHRP Synthesis 487 • 2016

"This study concerns proposals to replace the current motor fuel tax with a road usage charge assessed on vehicle-miles traveled, often called a mileage-base user fee (MBUF). The study identifies and assesses various measures of public opinion on the MBUF concept. Three sources of public opinion were studied: qualitative research studies, such as focus groups; quantitative public opinion surveys; and media stories. Key findings from this study include: the majority of the public does not yet support MBUFs; many believe there is no compelling reason to replace the current fuel tax and would favor raising the fuel tax before implementing a MBUF program; and there is some evidence that support for MBUFs may be rising over time. Privacy issues and fairness are two concerns that emerged in public opinion about MBUFs. Another concern is distrust of the technology and government capacity to administer a MBUF program." --TRID (139 pages)

This report is available for free download (1.5 MB):

http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_syn_487.pdf

Item 14

Uses of mobile information technology devices in the field for design, construction, and asset management: A Synthesis of Highway Practice

TRANSPORTATION RESEARCH BOARD (TRB)

NCHRP Synthesis 491 • 2016

"TRB's National Cooperative Highway Research Program (NCHRP) Synthesis 491: Uses of Mobile Information Technology Devices in the Field for Design, Construction, and Asset Management documents the state-of-the-practice and state-of-the-art applications of state transportation agencies related to their use of mobile information technology (IT) devices. Specifically, the report reviews applications pertaining to the areas of design, construction, and asset management. Mobile IT devices such as laptop computers, mini-laptop computers, handheld multifunctional data collectors, tablets, and smartphones also play a role in bringing the transportation industry into digital platforms." --Publisher's description

(101 pages)

This report is available for free download (6.1 MB):

http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_syn_491.pdf