

# Caltrans Maintenance Technical Advisory Guide

TRB's National Cooperative Highway Research Program (NCHRP) Report 672: Roundabouts: An Informational Guide - Second Edition explores the planning, design, construction, maintenance, and operation of roundabouts. The report also addresses issues that may be useful in helping to explain the trade-offs associated with roundabouts. This report updates the U.S. Federal Highway Administration's Roundabouts: An Informational Guide, based on experience gained in the United States since that guide was published in 2000.

Highway engineers are facing the challenge not only to design and construct sustainable and safe pavements properly and economically. This implies a thorough understanding of materials behaviour, their appropriate use in the continuously changing environment, and implementation of constantly improved technologies and methodologies. Bituminous Mixtures and Pavements VII contains more than 100 contributions that were presented at the 7th International Conference 'Bituminous Mixtures and Pavements' (7ICONFBMP, Thessaloniki, Greece 12-14 June 2019). The papers cover a wide range of topics: - Bituminous binders - Aggregates, unbound layers and subgrade - Bituminous mixtures (Hot, Warm and Cold) - Pavements (Design, Construction, Maintenance, Sustainability, Energy and environment consideration) - Pavement management - Pavement recycling - Geosynthetics - Pavement

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assessment, surface characteristics and safety - Posters Bituminous Mixtures and Pavements VII reflects recent advances in highway materials technology and pavement engineering, and will be of interest to academics and professionals interested or involved in these areas.

For one/two-semester, undergraduate/graduate courses in Pavement Design. This up-to-date text covers both theoretical and practical aspects of pavement analysis and design. It includes some of the latest developments in the field, and some very useful computer software-developed by the author-with detailed instructions. Bearing Capacity of Roads, Railways and Airfields includes the contributions to the 10th International Conference on the Bearing Capacity of Roads, Railways and Airfields (BCRRA 2017, 28-30 June 2017, Athens, Greece). The papers cover aspects related to materials, laboratory testing, design, construction, maintenance and management systems of transport infrastructure, and focus on roads, railways and airfields. Additional aspects that concern new materials and characterization, alternative rehabilitation techniques, technological advances as well as pavement and railway track substructure sustainability are included. The contributions discuss new concepts and innovative solutions, and are concentrated but not limited on the following topics: · Unbound aggregate materials and soil properties · Bound materials characteristics, mechanical properties and testing · Effect of traffic loading · In-situ measurements techniques and monitoring · Structural evaluation · Pavement serviceability condition ·

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Rehabilitation and maintenance issues · Geophysical assessment · Stabilization and reinforcement · Performance modeling · Environmental challenges · Life cycle assessment and sustainability Bearing Capacity of Roads, Railways and Airfields is essential reading for academics and professionals involved or interested in transport infrastructure systems, in particular roads, railways and airfields.

This book presents the detailed results of five task groups of the RILEM technical committee TC 237-SIB on Testing and Characterization of Sustainable Innovative Bituminous Materials and Systems. It concentrates on specific new topics in asphalt binder and mixture testing, dealing with new developments in asphalt testing, in particular also in view of new innovative bituminous materials, such as hot and cold recycled mixtures, grid reinforced pavements and recycled Reclaimed Asphalt Pavements (RAP), where test methods developed for traditional asphalt concrete are not a priori applicable.

The main objective is providing a basis for pre-standardization by comparing different test methods and showing ways for fundamental improvements. Thus, the book also points the way for a further advanced chemophysical understanding of materials and their role in pavement systems relying on fundamental material properties and suitable models for describing and predicting the intrinsic mechanisms that determine the material behavior.

TRB's National Cooperative Highway Research Program (NCHRP) Synthesis 411: Microsurfacing explores highway microsurfacing project selection, design, contracting,

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equipment, construction, and performance measurement processes used by transportation agencies in the United States and Canada. Microsurfacing is a polymer-modified cold-mix surface treatment that has the potential to address a broad range of problems on today's highways --

These standards have been prepared to promote uniformity in the appraisal of real property among the various agencies acquiring property on behalf of the U.S., by both direct purchase & condemnation. Contents: standards for approaching the solution to certain recurring appraisal problems (cost approach, income approach, highest & best use, etc.); data documentation & appraisal reporting standards (zoning & other land use regulations, contents of appraisal report, etc.); general standards of a miscellaneous nature (impartiality, witness composure, leasehold takings, etc.). Cases & statutes.

This book serves as a guide for local governments and private enterprises as they navigate the uncharted waters of investing in climate change adaptation and resilience. This book serves not only as a resource guide for identifying potential funding sources but also as a roadmap for asset management and public finance processes. It highlights practical synergies between funding mechanisms, as well as the conflicts that may arise between varying interests and strategies. While the main focus of this work is on the State of California, this book offers broader insights for how states, local governments and private enterprises can take those critical first steps in investing in society's collective adaptation to climate change.

This document serves as the Reference Manual for the 1 1/2 -day FHWA workshop on concrete pavement preservation. The purpose of the document is to provide the most up-to-date information available on the design, construction, and selection of cost-effective concrete pavement preservation

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strategies. It concentrates primarily on strategies and methods that are applicable at the project level, and not at the network level, where pavement management activities function and address such issues as prioritizing and budgeting. Detailed information is presented on seven specific concrete pavement preservation treatments: slab stabilization, partial-depth repairs, full-depth repairs, retrofitted edge drains, load transfer restoration, diamond grinding, and joint resealing. In addition, information is provided on pavement evaluation techniques and strategy selection procedures.

This report presents a suggested procedure for measuring the tire-pavement noise at the source. The procedure uses the on-board sound intensity (OBSI) method that was found to be the preferred approach for measuring tire-pavement noise at the source. Although the research presented in this report provided a basis for the recently introduced provisional Standard Test Method for the Measurement of Tire/Pavement Noise Using the On-Board Sound Intensity (OBSI) Method (AASHTO Designation TP076-08), the procedure includes some modifications to the provisional standard. The four appendices are not published in this report. Copies are available on the TRB website.

Provides a framework to help managers to define project objectives and delegate tasks to team members, providing in the second edition a standard application of the Work Breakdown Structure as a project management tool.

The purpose of this manual is to provide clear and helpful information for maintaining gravel roads. Very little technical help is available to small agencies that are responsible for managing these roads. Gravel road maintenance has traditionally been "more of an art than a science" and very few formal standards exist. This manual contains guidelines to help answer the questions that arise concerning gravel

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road maintenance such as: What is enough surface crown? What is too much? What causes corrugation? The information is as nontechnical as possible without sacrificing clear guidelines and instructions on how to do the job right. This book gathers the latest advances, innovations, and applications in the field of construction engineering, as presented by researchers and engineers at the International Conference Environmental and Construction Engineering: Reality and the Future, held in Belgorod, Russia, on May 18-19, 2021. It covers highly diverse topics, including industrial and civil construction, building materials; environmental engineering and sustainability; machines, aggregates and processes in construction. The contributions, which were selected by means of a rigorous international peer-review process, highlight numerous exciting ideas that will spur novel research directions and foster multidisciplinary collaborations.

This report contains guidelines and recommendations for managing and designing for friction on highway pavements. The contents of this report will be of interest to highway materials, construction, pavement management, safety, design, and research engineers, as well as others concerned with the friction and related surface characteristics of highway pavements.

The proliferation of technological capability, miniaturization, and demand for aerial intelligence is pushing unmanned aerial systems (UAS) into the realm of a multi-billion dollar industry. This book surveys the UAS landscape from history to future applications. It discusses commercial applications, integration into the national airspace system (NAS), System function, operational procedures, safety concerns, and a host of other relevant topics. The book is dynamic and well-illustrated with separate sections for terminology and web-based resources for further information.

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This manual provides direction for the preparation of noise and vibration sections of environmental documents for mass transportation projects. The manual has been developed in the interest of promoting quality and uniformity in assessments. It is expected to be used by people associated with or affected by the urban transit industry, including Federal Transit Administration (FTA) staff, grant applicants, consultants and the general public. Each of these groups has an interest in noise/vibration assessment, but not all have the need for all the details of the process. Consequently, this manual has been prepared to serve readers with varying levels of technical background and interests. It sets forth the basic concepts, methods and procedures for documenting the extent and severity of noise impacts from transit projects.

This report focuses on how sidewalks and trails can be made accessible and usable by the widest possible segment of the population. Sponsored by the Federal Highway Administration, a project to research existing conditions on sidewalks and trails for people with disabilities was designed in two parts. Part I, covers literature surveys, site surveys and interviews along with the history of accessibility legislation, travel characteristics of the disabled and engineering and construction design practices. Part II provides data on implementing the requirements of parts of two acts, Title II of the Americans with Disabilities Act of 1990 and section 504 of the Rehabilitation Act of 1973.

A comprehensive, state-of-the-art guide to pavement design and materials With innovations ranging from the

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advent of Superpave™, the data generated by the Long Term Pavement Performance (LTPP) project, to the recent release of the Mechanistic-Empirical pavement design guide developed under NCHRP Study 1-37A, the field of pavement engineering is experiencing significant development. Pavement Design and Materials is a practical reference for both students and practicing engineers that explores all the aspects of pavement engineering, including materials, analysis, design, evaluation, and economic analysis. Historically, numerous techniques have been applied by a multitude of jurisdictions dealing with roadway pavements. This book focuses on the best-established, currently applicable techniques available. Pavement Design and Materials offers complete coverage of: The characterization of traffic input The characterization of pavement bases/subgrades and aggregates Asphalt binder and asphalt concrete characterization Portland cement and concrete characterization Analysis of flexible and rigid pavements Pavement evaluation Environmental effects on pavements The design of flexible and rigid pavements Pavement rehabilitation Economic analysis of alternative pavement designs The coverage is accompanied by suggestions for software for implementing various analytical techniques described in these chapters. These tools are easily accessible through the book's companion Web site, which is constantly updated to ensure that the reader finds the most up-to-date software available.

"Provides guidelines for the planning, design, and implementation of BOS operations along urban freeways

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and major arterials ... The report should be useful as a decision-making guide to assist transit operators, state DOTs, MPOs, and other stakeholders in assessing the feasibility of the BOS concept, developing safe and effective BOS plans, implementing initial BOS operations, and maintaining or expanding ongoing BOS operations."--Foreword.

This manual comprises a holistic view of urban runoff quality management. For the beginner, who has little previous exposure to urban runoff quality management, the manual covers the entire subject area from sources and effects of pollutants in urban runoff through the development of management plans and the design of controls. For the municipal stormwater management agency, guidance is given for developing a water quality management plan that takes into account receiving water use objectives, local climatology, regulation, financing and cost, and procedures for comparing various types of controls for suitability and cost effectiveness in a particular area. This guidance will also assist owners of large-scale urban development projects in cost-effectively and aesthetically integrating water quality control to the drainage plan. The manual is also directed to designers who desire a self-contained unit that discusses the design of specific quality controls for urban runoff.

TRB's second Strategic Highway Research Program (SHRP 2) Report S2-R26-RR-1: Preservation Approaches for High-Traffic-Volume Roadways documents the state of the practice of preservation treatment on asphalt and concrete pavements on high- and low-volume roadways. The report also includes

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general guidelines on the application of preservation treatments on high-volume roadways. The same project that produced SHRP 2 Report S2-R26-RR-1 also produced SHRP 2 Report S2-R26-RR-2: Guidelines for the Preservation of High-Traffic-Volume Roadways, which explores the state of the practice for preservation treatments on high- and low-volume asphalt and concrete roadways. The report also includes suggested guidelines on the application of preservation treatments on high-volume roadways. This synthesis will be of interest to geotechnical, bridge construction, and maintenance engineers and others interested in design, construction, and maintenance of embankment approaches to bridge abutments. Information is provided on available techniques to minimize problems associated with the bump at the end of the bridge. The transition from a roadway to a bridge structure entails design, construction, and maintenance problems. This report of the Transportation Research Board describes those problems as well as the many solutions that are applicable to specific situations.

TRB's second Strategic Highway Research Program (SHRP 2) Report S2-R26-RR-2: Guidelines for the Preservation of High-Traffic-Volume Roadways explores the state of the practice for preservation treatments on high- and low-volume asphalt and concrete roadways. The report also includes suggested guidelines on the application of preservation treatments on high-volume roadways.

The use of engineering consultants by state transportation agencies continues to be important in providing the appropriate solutions to transportation needs. This publication replaces the Guide for Contracting, Selecting and Managing Consultants in Preconstruction Engineering, published by AASHTO in 1996. In order to assess current practices, questionnaires were developed for both state and consultant

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practitioners. The responses showed significant growth in the volume of work done by consultants and in the range of services provided by consultants. The results of these surveys, along with the collective experience and expertise of the technical committee membership, were used to restructure much of the guide and to update and expand the discussion of current practices for the effective use of consultants.

This synthesis report will be of special interest to pavement engineers and pavement construction and maintenance personnel responsible for portland cement concrete (PCC) pavement joints. Still pertinent information from NCHRP Synthesis 19 (1973), as well as new or updated information in the areas of joint design, construction, and maintenance are included. This report of the Transportation Research Board records the state of the practice with respect to the design, construction, and maintenance of PCC pavement joints. In addition, information on joint materials and sealing, the control of water on and in pavements, and the evaluation of pavement joint performance is provided.

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