Chip Seal Performance Review Washington County Oregon

This report presents an improvement in the rolling protocol for chip seals based on an evaluation of aggregate retention performance and aggregate embedment depth. The flip-over test (FOT), Vialit test, modified sand circle test, digital image processing technique, and the third-scale Model Mobile Loading Simulator (MMLS3) are employed to evaluate the effects of the various rolling parameters and to measure chip seal performance. The samples used to evaluate the chip seal rolling protocol were obtained directly from field construction. In order to determine the optimal rolling protocol, the effects of roller type, number of coverages, coverage distribution on the sublayers of a multiple chip seal (i.e., the split seal and triple seal), and rolling pattern are evaluated using the results of aggregate retention performance tests, the modified sand circle method, and the digital image process. It is found that two types of roller, the pneumatic tire roller and the combination roller, are recommended as the optimal rollers for the chip seal. In addition, it is found that the optimal number of coverages for the chip seal is three coverages. Moreover, the performance of the triple seal without coverage at the bottom layer does not affect the aggregate retention performance, although the split seal does require coverage at the bottom layer. Finally, it is found from the MMLS3 results that the delayed rolling time between the spreading of the aggregate and the initial rolling significantly affects the aggregate loss, and that the delayed rolling time is related to the aggregate moisture condition and the ambient temperature. Effects of different rolling patterns are investigated based on the delayed rolling time and roller speeds, and recommendations are developed for two- and three-roller scenarios.

Issues in Teaching and Education Policy, Research, and Special Topics: 2013 Edition is a ScholarlyEditions[] book that delivers timely, authoritative, and comprehensive information about Education Testing and Evaluation. The editors have built Issues in Teaching and Education Policy, Research, and Special Topics: 2013 Edition on the vast information databases of ScholarlyNews.[] You can expect the information about Education Testing and Evaluation in this book to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Issues in Teaching and Education Policy, Research, and Special Topics: 2013 Edition has been produced by the world's leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions[] and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at http://www.ScholarlyEditions.com/.

Pavement Engineering will cover the entire range of pavement construction, from soil preparation to structural design and life-cycle costing and analysis. It will link the concepts of mix and structural design, while also placing emphasis on pavement evaluation and rehabilitation techniques. State-of-the-art content will introduce the latest concepts and techniques, including ground-penetrating radar and seismic testing. This new edition will be fully updated, and add a new chapter on systems approaches to pavement engineering, with an emphasis on sustainability, as well as all new downloadable models and simulations.

A Basic Asphalt Emulsion Manual: Mix design methods

Investigation of the Frictional Resistance of Seal Coat Pavement Surfaces

Uses of Recycled Rubber Tires in Highways

Evaluation of Pavement Surface Friction Treatments

Manual for Emulsion-based Chip Seals for Pavement Preservation

Introductory textbook for graduate and undergraduate civil engineering students studying street and highway engineering. Here is what is covered: 1. INTRODUCTION 2. PRINCIPLES OF PAVEMENT DRAINAGE 3. FLEXIBLE ASPHALT CONCRETE PAVEMENTS 4. ASPHALT CONCRETE SEAL COATS 5. THIN ASPHALT OVERLAYS 6. SURFACE REHABILITATION OF ASPHALT CONCRETE PAVEMENT 7. ASPHALT CONCRETE PAVEMENT RECYCLING 8. RIGID PAVEMENT DESIGN 9. REINFORCEMENT OF PORTLAND CEMENT CONCRETE PAVEMENT 10. MATERIALS, PRODUCTION AND MIXING FOR SOIL STABILIZATION FOR PAVEMENTS

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 innovative solutions, and are concentrated but not limited on the following topics: · Unbound aggregate materials and soil properties · Bound materials characteritics, mechanical properties and testing · Effect of traffic loading · In-situ measurements techniques and monitoring · Structural evaluation · Pavement serviceability condition · 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 professi infrastructure systems, in particular roads, railways and airfields.

Asphalt is a complex but popular civil engineering material. Design engineers must understand these complexities in order to optimize its use. Whether or not it is used to pave a busy highway, waterproof a rooftop or smooth out an airport runway, Asphalt Materials Science and Technology acquaints engineers with the issues and technologies surrounding the proper selection and uses of asphalts. With this book in hand, researchers and engineering will find a valuable guide to the production, use and environmental aspect of asphalt. Covers the Nomenclature and Terminology for Asphalt including: Performance Graded (PG (A-R) Binder, Asphalt Emulsion and Cutback Asphalt Includes Material Selection Considerations, Testing, and applications Biodegradation of Asphalt and environmental aspects of asphalt use

Final Report

Guide for Pavement Friction

Chip Seal Performance Measures--best Practices

Proceedings of the 10th International Conference on the Bearing Capacity of Roads, Railways and Airfields (BCRRA 2017), June 28-30, 2017, Athens, Greece

Manual for Condition Rating of Flexible Pavements

NCHRP Report 523

"TRB's Transportation Research Record: Journal of the Transportation Research Board, No. 2360 contains 10 papers that study holistic approaches to maintenance and preservation of transportation infrastructure; guidelines for thermographic inspection of concrete bridge components in shaded conditions; bridge preservation by action type; fatigue testing and structural health monitoring of retrofitted web stiffeners on steel highway bridges; and, vulnerability of bridges exposed to scour.

This issue also examines performance measures for bridge preservation; risk modeling of advanced deterioration in bridge management systems; modeling hurricane hazards and damage on Florida bridges; developing bridge management components that facilitate decision making; and, a method to assess bonding characteristics of membrane layers in wearing course on orthotropic steel bridge decks."--Pub. online blurb.

Inspired from the legacy of the previous four 3DFEM conferences held in Delft and Athens as well as the successful 2018 AM3P conference held in Doha, the 2020 AM3P conference continues the pavement mechanics theme including pavement models, experimental methods to estimate model parameters, and their implementation in predicting pavement performance. The AM3P conference is organized by the Standing International Advisory Committee (SIAC), at the time of this publication chaired by Professors Tom Scarpas, Eyad Masad, and Amit Bhasin. Advances in Materials and Pavement Performance Prediction II includes over 111 papers presented at the 2020 AM3P Conference. The technical topics covered include: - rigid pavements - pavement geotechnics - statistical and data tools in pavement engineering - pavement structures - asphalt mixtures - asphalt binders The book will be invaluable to academics and engineers involved or interested in pavement engineering, pavement models, experimental methods to estimate model parameters, and their implementation in predicting pavement performance.

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

Contributions to the 2nd International Conference on Advances in Materials and Pavement Performance Prediction (AM3P 2020), 27-29 May, 2020, San Antonio, TX, USA

A Path Forward

Gravel Roads

Advances in Materials and Pavement Performance Prediction II

Experience in the Pacific Northwest with Open Graded Emulsified Asphalt Pavements

A Report of the Transportation Task Force of the Urban Consortium for Technology Initiatives

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 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 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.

TRB's National Cooperative Highway Research Program (NCHRP) Report 680: Manual for Emulsion-Based Chip Seals for Pavement Preservation examines factors affecting chip performance, highlights design and construction considerations, and explores procedures for selecting the appropriate chip seal materials. The report also contains suggested test methods for use in the design and quality control of chip seals. Appendices A to J of NCHRP Report 680 provide further elaboration on the work performed in this project--

Microsurfacing

Focus

8th RILEM International Symposium on Testing and Characterization of Sustainable and Innovative Bituminous Materials

Asphalt Materials Science and Technology

Data Resources for National Transportation Decision Making 1990

Strengthening Forensic Science in the United States

This work presents the results of RILEM TC 237-SIB (Testing and characterization of sustainable innovative bituminous materials and systems). The papers have been selected for publication after a rigorous peer review process and will be an invaluable source to outline and clarify the main directions of present and future research and standardization for bituminous materials and pavements. The following topics are covered: - Characterization of binder-aggregate interaction - Innovative testing of bituminous binders, additives and modifiers - Durability and aging of asphalt pavements - Mixture design and compaction analysis - Environmentally sustainable materials and technologies - Advances in laboratory characterization of bituminous materials - Modeling of road materials and pavement performance prediction - Field measurement and in-situ characterization - Innovative materials for reinforcement and interlayer systems - Cracking and damage characterization of asphalt pavements - Recycling and re-use in road pavements This is the proceedings of the RILEM SIB2015 Symposium (Ancona, Italy, October 7-9, 2015).

This manual categorizes distress manifestations and provides illustrations of each category to lend uniformity to reporting and interpretation. Descriptions of the density of occurrence and the severity of each type of distress manifestation are made to conform to standard words which precisely express the relative density or severity on a scale of 1-5. Probable causes of each distress manifestation are presented, together with comments on progressive deterioration or other behaviour which might affect remedial treatment. Possible remedial measures are included under each distress manifestation.

Introductory technical guidance for civil engineers, highway engineers and construction managers interested in surface rehabilitation of asphalt concrete pavements for streets and highways. Here is what is discussed: 1. INTRODUCTION, 2. OBJECTIVES & SCOPE, 3. TYPES OF SURFACE REHABILITATION TECHNIQUES, 4. SUMMARY.

Testing and Characterization of Sustainable Innovative Bituminous Materials and Systems

Monthly Catalog of United States Government Publications

An Introduction to Civil Engineering for Street and Highway Pavements

Preservation Approaches for High-Traffic-Volume Roadways

Transportation Needs and Programs Summary

Distress Manifestations

The implementation of a pavement preservation program involves a learning curve with not only a determination to succeed, but also the courage to fail. Also, successful implementation of pavement preservation program requires knowledge of the performance of preservation surface treatments over time, which is critical to the select of candidate projects and the development of performance models for pavement management analysis. In addition, preservation surface treatments, such as chip seal, fog seal, microsurfacing, 4.75 mm thin or ultra-thin overlay, can not only repair certain pavement surface defects, but also change the surface characteristics of pavement and therefore affect pavement surface friction performance. Nevertheless, such information is currently not available but is essential for the Indiana Department of Transportation (INDOT) to evaluate the effectiveness of pavement preservation surface treatments. As a concentrated effort, this study focused on the long-term friction performance of preservation surface treatments, particularly those have been widely used and those have seen increasing use by INDOT. Based on the selected field pavement test sections, this study aimed to evaluate the surface characteristics, particularly the long-term friction performance for those surface treatments that have been widely used and have seen increasing use by INDOT, including chip seal, fog-chip, fog seal, rejuvenating seal, microsurfacing, ultrathin bonded wearing course (UBWC), 4.75-mm hot mix asphalt (HMA) thin overlay, and profile milling (or diamond grinding). The test sections for each type of surface treatment covered a wide range of traffic volume from light to high. The service life for the selected test sections varied from 6 months to 60 months. Friction testing was mainly conducted using ASTM E 274 locked wheel trailer. Surface texture testing was conducted using either the ASTM E 2157 circular track meter (CTM) or a laser scanner. Pavement roughness and noise tests were also conducted to address the smoothness and noise issues, particularly on microsurfacing. Detailed analysis was provided to evaluate the friction performance of 4.75-mm HMA overlays. It is believed that the test results and findings drawn from this study not only provides timely information for INDOT to improve its pavement preservation program, but also provides the original information for the potential readers to better utilize preservation surface treatments.

The objectives of this research project are to evaluate different performance indicators for chip seal treatments and to develop trigger values for these indicators that will indicate the end of service life and the appropriate index values for resurfacing. Under Phase I of this study, a formal literature review and detailed survey of transportation agency practices were conducted to identify which pavement distress or combination of distresses best characterize the optimal timing for chip seal application. This report summarizes the findings of the literature review, agency survey, WSDOT pavement management and performance modeling practices, and a recommendation of potential performance models for further evaluation as additional data become available.

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 chemo-physical 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.

Maintenance and Design Manual

Maintenance and Preservation 2013

An Introduction to Surface Rehabilitation of Asphalt Concrete Pavement for ProfessionalEngineers

Bearing Capacity of Roads, Railways and Airfields

Synthesis of Highway Practice

Quantifying the Benefits of Improved Rolling of Chip Seals

Scores of talented and dedicated people serve the forensic science community, performing vitally important work. However, they are often constrained by lack of adequate resources, sound policies, and national support. It is clear that change and advancements, both systematic and scientific, are needed in a number of forensic science disciplines to ensure the reliability of work, establish enforceable standards, and promote best practices with consistent application. Strengthening Forensic Science in the United States: A Path Forward provides a detailed plan for addressing these needs and suggests the creation of a new government entity, the National Institute of Forensic Science, to establish and enforce standards within the forensic science community. The benefits of improving and regulating the forensic science disciplines are clear: assisting law enforcement officials, enhancing homeland security, and reducing the risk of wrongful conviction and exoneration. Strengthening Forensic Science in the United States gives a full account of what is needed to advance the forensic science disciplines, including upgrading of systems and organizational structures, better training, widespread adoption of uniform and enforceable best practices, and mandatory certification and accreditation programs. While this book provides an essential call-to-action for congress and policy makers, it also serves as a vital tool for law enforcement agencies, criminal prosecutors and attorneys, and forensic science educators.

This synthesis on the use of recycled rubber tires in highways will be of interest to administrators and policy-makers; pavement, materials, geotechnical, environmental, and traffic operations engineers; and research engineers involved with highway design and construction issues. Information is provided on the uses of rubber tires in asphalt paving materials as well as other uses, such as on fills and embankments, for erosion control and on railroad grade crossings. Specifically, information is included which identifies the agencies using or implementing applications for recycled rubber tires and defines the design parameters, technical and construction limitations, performance, costs, benefits, environmental limitations, specifications, and availability. This synthesis of information defines the use of recycled rubber tires in highways and is based on a review of nearly 500 references and on information recorded from state highway agency responses to a 1991 survey of practice. Updates are included for as much of the state practice information possible through 1993. The use of scrap tires for highway applications is dynamic with regard to policy and technical issues. Therefore, the reader should keep in mind that the information presented reflects the best available data at a particular time. The synthesis also identifies current research in the topic area, critical research needs, and legislative issues that affect application and use of recycled rubber tires.

TRB's National Cooperative Highway Research Program (NCHRP) Report 699: Guidelines for the Use of Pavement Warranties on Highway Construction Projects is designed to help guide state departments of transportation (DOTs) in establishing pavement warranty programs.

National Experimental Projects Tabulation

Chip Sealing in New Zealand

Chip Seal Best Practices

Pavement Rehabilitation

State-of-the-Art Report of the RILEM Technical Committee 237-SIB

Transportation

Chip Seal Performance Measures--best Practices

Current Literature

An Evaluation of Aggregate and Chip Seal Surfaced Roads at Mn/Road

HRIS Abstracts

Principles and Practice, Third Edition

Guidelines for the Use of Pavement Warranties on Highway Construction Projects

The Effects of Emulsion Variability on Seal Coats