Third International Conference on

Concrete Pavement
Design and
Rehabilitation

April 23-25, 1985

Purdue University
West Lafayette, Indiana 47907 USA
Eldon J. Yoder Outstanding Paper Award

Professor Eldon J. (Eldy) Yoder was born in Goshen, Indiana on December 11, 1918. Eldy received his BS degree in Civil Engineering from Purdue University in 1945, and his MSCE in 1946, majoring in Highway Engineering and minoring in Soil Mechanics and Structures. In 1946, he accepted employment with Ohio State University as an Assistant Professor in Civil Engineering. In 1949, he returned to Purdue as Assistant Professor of Highway Engineering. He was promoted to Associate Professor in 1954 and, in 1962, became Professor of Highway Engineering.

Professor Yoder's record of educational, technical and professional accomplishments in the field of highway engineering, especially pavement design, serves as an inspiration to us all. He was an outstanding teacher, an excellent researcher, and served as an engineering consultant on major highway projects worldwide. He was very active in professional societies, and especially enjoyed the Transportation Research Board. In 1983, he received TRB's Roy W. Crum Award "in recognition of outstanding achievement in the field of transportation research."

Professor Yoder was very active in the development of continuing education programs in the highway field. He was the organizer of TRB's First International Conference on Low-Volume Roads in 1975, and served as chairman of the Third Conference until his death. He also organized the First and Second International Conferences on Concrete Pavement Design, and was initiating plans for the Third International Conference at the time of his death in 1983. In memory of Eldon J. Yoder and his many contributions to the highway design profession, we dedicate this Third International Conference on Concrete Pavement Design and Rehabilitation to him and will present an award in his name for the outstanding paper for the conference during the conference closing.
Foreword

These are the proceedings for the Third International Conference on Concrete Pavement Design and Rehabilitation. This is the third in a planned series of such conferences to bring together experts in concrete pavements from all over the world to discuss state-of-the-art issues in this subject area. The conference will cover all aspects of the design, evaluation, performance, and structural rehabilitation of Portland Cement Concrete pavements, including new and innovative techniques. Papers on bases, joints and drainage will also be presented.

The First International Conference on Concrete Pavement Design was held at Purdue University on February 15-17, 1977. The Second International Conference on Concrete Pavement Design was held in Indianapolis, Indiana on April 14-16, 1981. Both of these conferences were quite successful, thanks to the tireless efforts of their chairman, Eldon J. Yoder, Professor of Civil Engineering at Purdue University. Eldy was very active in planning the Third International Conference until his untimely death in June, 1983. This conference is dedicated to his memory and to his many contributions to the engineering profession.

The papers presented in this proceedings were selected from the 110 synopses which were submitted in response to the initial call for papers in January of 1984. The papers selected for presentation at the conference resulted from a two stage review of the synopses and then the papers of the selected synopses. Due to the many fine papers submitted, the Program Committee decided to also publish some of the excellent papers which could not be included in the conference program. The papers published in this proceedings have been organized into the same format as that of the general program as follows:

Session 1 — Keynote Addresses
Session 2 — Pavement Rehabilitation Methods
Session 3 — Special Methods
Session 4A — Airport Pavements
Session 4B — Highway Pavement Design
Session 5A — Pavement Overlay Methods
Session 5B — Highway Pavement Evaluation
Session 6 — Bases, Drains, and Joints
Session 7 — Pavement Recycling

The format of the conference allows each presenter to make a formal presentation of his paper, followed by time for questions from the audience and responses by the authors. Interaction between authors and attendees will be encouraged throughout the conference.

The compilation of this proceedings and the conference program would not have been possible without the generous efforts of the members of the Program Committee in reviewing and selecting the final papers and presentations. The Program Committee members are identified on the next page along with the sponsoring and supporting agencies of the conference. Special thanks are expressed to the Federal Highway Administration for its financial assistance in publishing this preprint, and in setting up the final program. Finally, the efforts and cooperation of the authors of the papers in this proceedings are deeply appreciated. These efforts have enabled us to publish a quality document which will constitute an excellent reference tool for engineers engaged in highway design, construction and maintenance for many years to come.

Donn E. Hancher and Charles F. Scholer, Co-Chairmen
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Sponsors and Supporting Agencies

The Third International Conference on Concrete Pavement Design and Rehabilitation has been made possible by the cooperation of various organizations in the United States and other countries. The conference has been planned by a Program Committee representing the following agencies:

Sponsors:

Purdue School of Civil Engineering
Federal Highway Administration
Portland Cement Association
Transportation Research Board
Federal Aviation Administration
Indiana Department of Highways

Supporting Agencies:

American Concrete Institute
American Concrete Pavement Association
American Road and Transportation Builders Association
American Society of Civil Engineers
Cembureau (European Cement Association)
Concrete Reinforcing Steel Institute
U.S. Army Corps of Engineers, Waterways Experiment Station
U.S. Air Force Engineering and Services Center
U.S. Naval Facilities Engineering Command
Roads and Transportation Association of Canada
Permanent International Association of Road Congresses (PIARC),
Technical Committee on Concrete Roads
Wire Reinforcement Institute
International Road Federation
Table of Contents

Eldon J. Yoder Outstanding Paper Award .......................................................... i
Foreword ........................................................................................................... ii
Program Committee ........................................................................................ iii
Sponsors and Supporting Agencies .................................................................... iv

Session 1: Keynote Addresses

Concrete Pavements, Now and Tomorrow; R.L. Hutchinson, Consulting Engineer .......... 3
National Perspective on Concrete Pavements; R.C. Leathers, Federal Highway Administration ............................................................................................................. 11
Revised AASHTO Guidelines for Concrete Pavement Design; B.F. McCullough, University of Texas at Austin (presentation only)
An Overview of the European Practice with Concrete Pavements; C. Kraemer, Universidad Politecnica de Madrid, Spain .................................................. 15
The Economics of Pavement Type Selection; M.F. Mitchell, Department of Transport, Pretoria, South Africa, and R.N. Walker, Council for Scientific and Industrial Research, Pretoria, South Africa ........................................ 23

Session 2: Pavement Rehabilitation Methods

Repair of Joint Related Distress in PCC Pavements; M.I. Darter, E.J. Barenberg, J.F. Daleiden, University of Illinois at Urbana-Champaign, and W.A. Yrjanson, American Concrete Pavement Association ................................................................... 35
Experimental Project on Grout Subsealing in Illinois; J.C. Slifer, M.M. Peter, and W.E. Burns, Illinois Department of Transportation .................................................. 51
Use of Calcium Chloride Accelerated High Early Strength Concrete for Slab Repair and Replacement; J.W. Bugler, New York State Department of Transportation ................... 59
Restoration of Final Surface to Concrete Pavement by Diamond Saw Grinding; L.G. Mosher, MU, Inc. ......................................................................................... 69
Concrete Pavement Reconstruction on the Interstate System; E.J. Renier, Portland Cement Association .................................................................................. 75

Other Contributed Papers

Design and Rehabilitation of PCC Pavements in Norway; T. Borchgrevink and G. Trevland, Norwegian Public Roads Administration ........................................... 89
Improved Rehabilitation of Portland Cement Concrete Pavement through Prestressing; B.F. Friberg, Consulting Engineer, and T.G. Harmon, Washington University .......... 97
Session 3: Special Methods

Unique Aspects of Fiber-Reinforced Concrete Pavements; J. C. Potter, USAE Waterways Experiment Station ................................................................. 103

Roller-Compacted Concrete Pavements; D. W. Pittman, USAE Waterways Experiment Station, and T. D. White, Purdue University ........................................ 107

Evaluation, Design and Application of Concrete Block Pavements; B. Shackel, University of New South Wales, Australia ................................................. 113

The Structural Design and Performance of Concrete Block Roads; J. Knapton, Nigel Nixon & Partners, Great Britain ...................................................... 127

Design and Construction of Concrete Block Paving in the Netherlands; J. van der Heiden, Public Works, City of Rotterdam, and L. Houben, Delft University of Technology (presentation only—paper to be distributed at conference)

Session 4A: Airport Pavements

Evaluation of the FAA Design Procedures for High Traffic Volume Rigid Pavements; S. D. Kohn, USAE Waterways Experiment Station ........................................ 139

Composite Subgrade Modulus for Rigid Airfield Pavement Design Base upon Multilayer Theory; J. Uzan, Israel Technical Institute, and M. W. Witczak, University of Maryland ........................................ 157

Development of a Probabilistic Rigid Pavement Design Methodology for Military Airfields; M. W. Witczak and M. Johnson, University of Maryland, and J. Uzan, Israel Technical Institute ................................................................. 167

A Comparison of Light versus Heavy Dynamic Load Testing of Rigid Pavements; W. R. Hudson, The University of Texas at Austin ........................................ 179

Nondestructive Airfield Rigid Pavement Evaluation; A. J. Bush III, D. R. Alexander, and J. W. Hall, Jr., USAE Waterways Experiment Station ............................ 191

Design and Construction of Concrete Aircraft Pavements in Tropical Climates with Particular Reference to Plastic Shrinkage Cracking; D. W. Farthing, Scott Wilson Kirkpatrick & Partners, Great Britain ......................................................... 201

Session 4B: Highway Pavement Design

New PCA Thickness Design Procedure for Concrete Highway and Street Pavements; R. G. Packard and S. D. Tayabji, Portland Cement Association ..................... 225

Recent Developments in French Concrete Pavement Construction and Behavioral Assessment; G. Bordonado, Scetauroute Agency, G. Colombier, Autun Regional Laboratory, D. Ponchon, Enterprise Beugnet, and F. Verhée, Service d’Etudes Techniques des Routes et Autoroutes, France ........................................................................ 237

Thickness Design of Plain Cement Concrete Pavements on Soils Sensitive to Differential Settlement; E. Vos, Road Engineering Division of the Rijkswaterstaat, The Netherlands ...................................................... 245

Concrete Pavement Design and Rehabilitation in California; W. H. Ames, California Department of Transportation ................................................................. 253
Verification of the Structural Benefits of Concrete Shoulders by Field Measurements; C.V. Slavis and C.G. Ball, Portland Cement Association ......................................................... 267

Evaluation of the Effect of Coarse Aggregate Type on CRCP Thickness; V. Torres-Verdin and B.F. McCullough, The University of Texas at Austin ........................................... 275

Other Contributed Papers

A Computer Package for Structural Analysis of Concrete Pavements; Y.H. Huang, University of Kentucky ........................................................................................................... 295

Finite Element Analysis of Slabs-on-Grade Using a Variety of Support Models; A.M. Ioannides, M.R. Thompson, and E.J. Barenberg, University of Illinois ........................................ 309


A Mechanical Model for the Rational Design of CRCP; T. Nishizawa, Kanazawa University, S. Matsuno, Sato Road Co., and T. Fukuda, Tohoku University, Japan .................. 341

Structural Design of Concrete Pavements in China; Z. Yao, Tongji University, Shanghai, China ................................................................................................. 351

Session 5A: Pavement Overlay Methods

Thickness Design of Concrete Resurfacing; S.D. Tayabji and P.A. Okamoto, Portland Cement Association ........................................................................................................ 367

Design of Prestressed PCC Overlays on Rigid Pavements; A. Mendoza and B.F. McCullough, University of Texas at Austin .......................................................... 381

Experimental Prestressed Concrete Overlay for Y-Tunnel Access-Road in the City of Amsterdam; G.H. Kellersman, Public Works Amsterdam, and F. Smits, Cobeton-Concrete Pavement Company, The Netherlands ........................................... 399

The Application and Validation of an Analytical Method in the Structural Rehabilitation of a Cracked Rigid Pavement; P.J. Strauss, Bruinette Kruger Stoffberg, J. Du Plessis and V. Francis, Directorate Road Transport, and A.W. Viljoen, National Institute of Transport and Road Research, South Africa .................................................. 413

Economic and Technical Assets of Concrete Overlays; M. Dermience, Ponts et Chaussées, Belgium ................................................................. 423

Other Contributed Papers

Concrete Overlay Designs for Airfield Pavements; Y.T. Chou, USAE Waterways Experiment Station ........................................................................................................ 429

A Ten Year Performance Summary of PC Concrete & Concrete Overlay Research in Green County, Iowa; M.J. Knutson, Iowa Concrete Paving Association .......... 441

Session 5B: Highway Pavement Evaluation

Concrete Pavement Evaluation System (COPES)—Nationwide Prediction Model Demonstration; M.I. Darter, J.M. Becker, and M.B. Snyder, Transportation Research Program, University of Illinois at Urbana-Champaign ........................................... 453
Evaluation of a Concrete Test Pavement Using the FWD and WESLIQUID: J.M. Lybas, M. Tia, and D.A. Twiddy, University of Florida ............................................................. 469

Nondestructive Evaluation of Rigid Pavements Using Road Rater Deflections; G.W. Sharpe, M. Anderson, R.C. Deen, and H.F. Southgate, University of Kentucky ........ 483


Other Contributed Papers

Condition Survey of Concrete Pavements and Its Evaluation; T. Fukuda, M. Koyanagawa, and S. Mural, Tohoku University. ................................................................. 519

Valid Ride Quality Evaluation of Rigid Pavements—Construction and Performance; W.R. Hudson, The University of Texas at Austin, J.P. Zaniewski and D.S. Halbach, ARE, Inc. ........................................................................ 525

Computer Model for Analysis of Rigid Pavements with Fatigue; J. Larralde and W.F. Chen, Purdue University. ................................................................. 537

Use of the Falling Weight Deflectometer for the Non-Destructive Deflection Testing of Jointed Concrete Airfield Pavements; M.Y. Shahin, USAE Construction Engineering Research Laboratory ................................................................. 549

NDT Guidelines for Materials Characterization of In-Service Rigid Pavements; V. Torres-Verdin, W. Uddin, and B.F. McCullough, The University of Texas at Austin........ 557

Structural Evaluation of Highway and Airfield PCC Pavements Using the Falling Weight Deflectometer; P. Ullidtz, The Technical University of Denmark, and R.N. Stubstad, Dynatest Consulting, Inc. ................................................................. 567

Session 6: Bases, Drains & Joints

Computer Simulation and Field Evaluation of Transverse Joints in Rigid Pavements; M.A. Ozbeki, W.P. Kilareski, and D.A. Anderson, Pennsylvania State University. .............. 577

Laboratory and Field Tests Can Predict Long-Term Field Performance of Joint Sealants; S. Spells and J.M. Klosowski, Dow Corning Corporation. ........................................ 587

Optimized Performance at Concrete Pavement Joints; S.D. Tayabji, Portland Cement Association .................................................................................................................. 595

Drainage and Erodability: International Seminar Synthesis and New Research Results Related to Field Performance; M. Ray, Service d'Etudes Techniques des Routes et Autoroutes, J.P. Chirstory, Laboratoire Régional de l'Ouest Parisien, and J.P. Poi lane, Autun Regional Laboratory, France ........................................................................ 609

Other Contributed Papers

The Namur Test Road: Behavior of Various Types of Contraction Joints after Five Years of Traffic; L. Hubrecht, Centre de Recherches Routières, Belgium ........................................ 625

Erosion of Subbase Materials under Rigid Pavements; A.J. van Wijk and C.W. Lovell, Purdue University ................................................................. 633
Session 7: Pavement Recycling

Michigan Department of Transportation Recycles Concrete Freeways; G. J. McCarthy, Michigan Concrete Paving Association, and W. J. MacCreery, Michigan Department of Transportation ................................................................. 643

Rehabilitation of a Portion of Interstate 35 with Pavement Inlay Using Recycled Concrete for Subbase; G. W. Chase, Iowa State University, and J. Lane, Iowa Department of Transportation ..................................................................... 649

Designing for Quality: Concrete Pavement Rehabilitation and Recycling on Wisconsin’s Interstate Highways; D. L. Strand, Wisconsin Department of Transportation ................ 657