

Linda M. Pierce, Ph.D., P.E.
Principal Engineer

Dr. Linda M. Pierce is a Principal Engineer at NCE. Dr. Pierce with civil engineering experience in pavement evaluation, management, performance prediction and modeling, thickness design, preservation, and rehabilitation, pavement type selection, and life-cycle cost analysis. Her areas of special skills include mechanistic-empirical pavement analysis and design, AASHTOWare Pavement ME Design™, backcalculation analysis, pavement management, and life cycle cost analysis.

Dr. Pierce is currently a Principal Investigator or Project Engineer for several national, state highway, and local agency projects, including FHWA, *AASHTO Pavement ME National User Group Meeting* and *Pavement Maintenance Techniques: Best Practices*, NCHRP Synthesis Project 50-09, *Performance-Based Pavement Warranty Practice*, and NCHRP Project 1-61, *Evaluation of Bonded Concrete Overlays of Asphalt*, City of Wenatchee, WA, *Citywide Pavement Management System*, and City of Spokane Valley, WA, *Evaluation of Pavement Management Program*.

Dr. Pierce is an NHI certified trainer and has conducted training classes on pavement design, advanced pavement design, and NHI courses *Hot Mix Asphalt Pavement Evaluation and Rehabilitation (#131063)* and *Transportation Asset Management (#131106)*.

Dr. Pierce has been a member and Vice Chair of the AASHTO Joint Technical Committee on Pavements (2000-08); Chair of the AASHTO DARWin Task Force (2006-08); member or chair of multiple NCHRP project panels; and TRB committees including Pavement Management Systems (current chair), and Rigid Pavement Design (current member).



Education

Ph.D., Civil Engineering, 2009
University of Washington, Seattle
M.S., Civil Engineering, 1988
University of Washington, Seattle
B.S., Civil Engineering, 1986
University of Washington, Seattle

Registrations and Certifications

Professional Engineer – Civil, WA (#30768)

Affiliations

American Association of State Highway and Transportation Officials
National Cooperative Highway Research Program
Transportation Research Board

Joined NCE

2015

Total Years of Experience

30 years

Representative Projects

Pavement Evaluation and Design

Truck Stall Fee | *Project Engineer, Carson, CA*

Provide guidance and analysis review for assessing a truck parking space tax to supplement funding of street maintenance and rehabilitation activities due to the heavy truck traffic in the City of Carson, CA.

Lemon Street Rehabilitation | *Project Engineer, Vallejo, CA*

Provide guidance and analysis review for future maintenance and rehabilitation activities due to potential impacts of proposed cement production facility for Lemon Street in the City of Vallejo, CA.

Continuously Reinforced Concrete Pavement (CRCP) Evaluation | *Project Engineer, Sacramento, CA*

Lead the evaluation of CRCP performance using the AASHTOWare Pavement ME Design™ method, prepared chapter of the final report related to CRCP performance predication analysis, and provided review and comment of final report.

Project Neon | *Quality Control Engineer Las Vegas, NV*

Providing quality control review of pavement designs for Kiewit Corporation.

Longitudinal Joint Assessment | *Project Engineer, Pleasant Hill, CA*

Conducted a review and revision of the City's specification for hot mix asphalt.

Engineering Support Services for Pavements | *Project Engineer, San Francisco, CA*

Prepared document for the San Francisco International Airport that summarizes the FAA AIP requirements as they relate to pavement management, pavement design, and how the information can be used for planning and integrating with pavement construction.

Cold In-Place Recycling Pavement Design | *Project Engineer, San Gabriel, CA*

Conducted pavement designs that incorporated the use of cold in-place recycling using the AASHTO Guide for Design of Pavement Structures (1993).

District Wide Pavement Assessment Technical Support | *Project Engineer, Castro Valley, CA*

Conducted a review and rewrite of technical specifications related to slurry seal, chip seal, cape seals, microsurfacing, hot mix asphalt, milling, and aggregate base for the East Bay Regional Parks District. Prepared a technical guideline for preventive maintenance practices related to surface seals.

Impact of Refuse Trucks on Residential Streets | *Project Engineer, Los Altos, CA*

Evaluated the impact of refuse vehicles on pavement deterioration and determined an associated cost of damage using the AASHTO Guide for Design of Pavement Structures (1993).

Colorado I-25, Johnstown to Fort Collins Design-Build Project FWD Analysis | *Principal-In-Charge, Fort Collins, CO*

Conduct deflection and backcalculation analysis on approximately 10 miles, both directions, on Colorado N I-25, Johnstown to Fort Collins for Atkins.

Pavement Analysis | *Project Manager, AmberGlen, OR*

Conducted an evaluation of the remaining service life of an existing concrete pavement using the AASHTO *Guide for Design of Pavement Structures (1993)* and the *Supplemental to the AASHTO Guide for Design of Pavement Structures (1998)* for AmberGlen Development LLC.

South Mountain Freeway Pavement Design Review | *Project Engineer, Phoenix, AZ*

Performed a review of Terracon's jointed plain concrete pavement (JPCP) design analysis for the mainline section of the South Mountain Freeway. Pavement design evaluation was conducted using the AASHTO *Guide for Design of Pavement Structures (1993)* and the AASHTOWare Pavement ME Design™ methods for Kiewit Infrastructure West, Co.

5400 South to 4100 South Design-Build Salt Lake County, Utah | *Project Engineer, Salt Lake City, UT*

Provided review and comment on pavement smoothness and concrete pavement transverse joint specifications for the concrete pavement section on mainline sections for the design-build project for Mountain View Corridor Constructors.

Oven Floor Slab Evaluation and Design | *Project Engineer, Tempe, AZ*

Provided finite element analysis of the Space X oven floor based on anticipated loading and temperature differentials applied to the oven slab. Analysis was contingent on minimizing the predicted deflections due to temperature-related curl and other environmental effects.

East Bend Generating Station West Landfill Haul Road Pavement Design | *Project Manager, Union, KY*

Developed asphalt and concrete pavement designs according to the AASHTO 1993 Pavement Design Guide and verified using mechanistic-empirical and finite element analysis procedures for S & ME, Inc.

Design Review for Abu Dhabi (United Arab Emirates) Port Roads | *Lead Engineer, Abu Dhabi, UAE*

Provided a peer review and opinions for pavement design plans for Abu Dhabi Port Roads for Engineering Consultants International, LTD.

Impact and Duration of Performance Improvement from Single Lift Overlays | *Project Manager, Raleigh, NC*

Oversaw all aspects of the project which included evaluating the performance of single lift asphalt overlays under a variety of conditions using North Carolina DOT pavement management data Voldert, Inc.

I-64 Daniel Boone Bridge Design-Build Project | *Project Engineer Jacobs Engineering Group, St. Louis, MO*

Provided pavement design and consulting services for a design-build bid project. The designs maximized performance while minimizing construction, maintenance, and rehabilitation costs and were prepared using the AASHTOWare Pavement ME Design™ software.

Colorado DOT US-36 Pavement and Materials Support | *Project Manager, Denver, CO*

Provided pavement and materials expertise, and mechanistic-empirical pavement design evaluation using the AASHTOWare Pavement ME Design™ software for Shannon& Wilson.

Pavement Design for Dry Fly Ash Conversion Facility | *Project Manager, Moundsville, WV*

Oversaw all aspects of the project, which involved the development of asphalt and concrete pavement designs for a heavy-haul facility at the American Electric Power (AEP) Mitchell Power Plant. Pavement designs were conducted in accordance with the West Virginia DOT practices and the AASHTO 1993 Guide for the Design of Pavement Structures, and verified using mechanistic-empirical pavement evaluation procedures for S & ME, Inc.

Field Validation of Procedures for Collecting Images of Pavement Surfaces for Distress Detection per AASHTO Provisional Standard 68-10 and for Transverse Profile Data Collection per AASHTO Provisional Standard 70-10 | Project Manager, Washington DC

Oversaw all aspects of the project, which involved the collection of ground truth testing and automated data collection for both pavement cracking and transverse profile, statistical comparison of the results, and recommendations and/or clarifications for modifications to AASHTO PP 68-10 and PP 70-10 for the Federal Highway Administration.

AEP John E. Amos Power Plant Haul Road and Bridge Design | Project Manager, Winfield, WV

Analyzed site and vehicle information to develop both flexible and rigid pavement designs using the AASHTO 1993 Pavement Design Guide and verified using mechanistic-empirical and finite element analysis procedures for S & ME, Inc.

Nevada DOT I-15 Design-Build Project Layered Elastic Analysis | Project Manager, Las Vegas, NV

Conducted a layered elastic analysis to determine if the proposed pavement structural thickness could be reduced while still meeting the identified traffic and climate needs of this interstate roadway for Converse Consultants.

Using Falling Weight Deflectometer Data with MEPDG and Analysis | Project Engineer, Washington DC

Developed guidelines for the use of FWD data with the mechanistic-empirical design and analysis procedures. Researched and summarized available testing data for the case study selection process for the Federal Highway Administration.

Structural Evaluation of the Sound Transit Light Rail System Intersections | Project Engineer, Seattle, Washington

Conducted the finite element analysis to evaluate the structural capacity of the existing concrete intersections, as well as prepared report and rebuttal response for Wiss, Janney, Elstner Associates, Inc.

Virginia DOT Interstate 81 Design-Build Review | Project Manager, Fairfield, VA

Provided pavement section designs for asphalt and concrete pavements on the Interstate 81 Design-Build Project using the AASHTO 1993 Pavement Design Guide and verified using mechanistic-empirical analysis procedures for CH2M Hill Constructors.

Pavement Management

Pavement Data Quality Management Plan | Technical Lead | Caltrans, Sacramento, CA

Developed a Pavement Condition Data Quality Management Plan as defined by the requirements in the Moving Ahead for Progress in the 21st Century Act and in accordance with the Caltrans automated pavement condition data collection manual and procedures.

New Mexico DOT Pavement Distress Data Quality Management Plan – Rater Certification | Principal Investigator, Santa Fe, NM

The objective of this project is to update the NMDOT Pavement Distress Data Collection Manual and develop a pavement rater certification program in support of the New Mexico DOT Pavement Distress Data Quality Management Plan. NCE will assist the Department by updating the NMDOT Pavement Distress Data Collection Manual (2012) to incorporate automated pavement condition data collection and a pavement rater certification program.

Oregon DOT Pavement Data Quality Management Plan | Principal Investigator, Salem, OR

Developed a Pavement Data Quality Management Plan as defined by the requirements in the Moving Ahead for Progress in the 21st Century Act and addresses data elements for HPMS reporting (roughness, cracking, rutting, faulting) on Interstate and non-Interstate NHS highway system.

New Mexico DOT Pavement Distress Data Quality Management Plan Update | Principal Investigator, Santa Fe, NM

Updated the New Mexico DOT Pavement Distress Data Quality Management Plan as defined by the requirements in the Moving Ahead for Progress in the 21st Century Act. The effort included reviewing existing DOT documents, updating the New Mexico DOT Pavement Distress Data Quality Management Plan, and revising the plan to achieve FHWA acceptance.

Pavement Program Strategic Management Plan | Technical Lead, Sacramento, CA

Through the California Department of Transportation, the Caltrans Pavement Program leadership is currently in the process of adapting the *Caltrans Strategic Management Plan 2015-2020* specific to the Pavement Program. The Caltrans Pavement Program leadership is seeking assistance in preparing this plan to meet a tight deadline. In addition, assistance is desired both in the development of the Maintenance Strategic Management Plan and in strategically harmonizing both Department and Division priorities within the Pavement Program. This Task Order is intended to support the Caltrans Pavement Program leadership in both the development and implementation process for the Pavement Program's Strategic Management Plan.

Communication and Outreach | Technical Lead, Sacramento, CA

Through the California Department of Transportation, the Caltrans Pavement Program leadership is working on several activities intended to improve the understanding of the Program itself, to assist staff in optimizing pavement-related decisions, and to track progress against Program, Division, and Department objectives as related to pavements. This Task Order is intended to support the communication and outreach for these activities.

Statewide Highway Data Collection Services | Project Engineer, Anchorage, AK

Provided recommendations and analysis of pavement condition assessment and assisted with the selection of recommended pavement rehabilitation projects for the Alaska Department of Transportation and Public Facilities (Alaska DOT&PF), as a Subcontractor to Mandli Communications, Inc.

Development of Pavement Quality Index (PQI) and Determination of Remaining Life | Senior Engineer, Al Ain, UAE

Investigated PQI relationship, calculated PQI, conducted backcalculation, and developed a backcalculation training presentation for Al Ain Municipality (United Arab Emirates), as a subconsultant to Engineering Consultants International, LTD.

Development of a Pavement Management Roadmap | Lead Engineer, Washington DC

Assisted the Federal Highway Administration in developing a pavement management roadmap for identifying future research, development, technology transfer, and workforce development activities. Activities included conducting a literature review, participation in three regional workshops, developing research problem statements, and developing project documents.

Pavement Management Systems Implementation

Evaluation of Pavement Management Program | Principal Investigator, Spokane Valley, WA

The City of Spokane Valley pavement management system has been in place since 2013 and automated pavement condition surveys of the street network were conducted in 2013, 2015, and 2017. The City's pavement management system is used to analyze pavement condition data, identify and prioritize rehabilitation projects, and estimate budget needs. NCE was tasked with the evaluation and assessment of the City's pavement management process and provided recommended enhancements.

Citywide Pavement Management Services | Project Manager, Wenatchee, WA

Assisted the City of Wenatchee in the development of the maintenance and rehabilitation decision tree for use in the StreetSaver[®] software. Working with the City staff, developed cost estimates, and timing scenarios for a variety of treatment applications. Assist in the development, evaluation, and reporting of budget scenarios to meet the City's needs. Assist in the preparation and presentation of study findings to the City Council. Assist in pavement management system training.

PAVER™ Pavement Management Review | Project Manager, Vancouver, WA

Conducted independent technical review and analysis of the city's pavement management activities using the PAVER™ software for the City of Vancouver.

Pavement Management Review | Project Manager, Vancouver, WA

Summarized current pavement management practice, evaluated StreetSaver[®] and PAVER™ pavement management software based on the city's pavement management needs, conducted investment analysis and resulting network condition impacts, and presented findings to the City Council for the City of Vancouver as a subcontractor to Scanlon Consulting.

Pavement Management Implementation | Project Manager, Gila Bend, AZ

Provided project oversight in the development and implementation of a pavement management system for the Town of Gila Bend. Project included defining the roadway network, conducting pavement condition assessment, developing a pavement management database, developing pavement performance prediction models, determining a maintenance and rehabilitation program, and assisting with the implementation of PAVER™ and associated training for the Town staff.

Pavement Research

ACRP Project 09-18, Rapid Airfield Concrete Pavement Slab Replacement and Patching Guidance | Principal-In-Charge, Washington DC

The objective of this research is to develop a guidebook to assist with the selection and construction of rapid airfield concrete pavement slab replacement and patching strategies. Provide review and comment for all project deliverables.

NCHRP Project 20-05, Topic 50-09 Synthesis, Performance-Based Pavement Warranty Practices | Principal Investigator, Washington DC

The objective of this synthesis is to document the use and effectiveness of performance-based pavement warranties by highway agencies. The study will focus on both asphalt and concrete pavement projects for new or reconstruction, pavement preservation, and pavement rehabilitation with warranty periods of at least one year.

FHWA Pavement Maintenance Techniques: Best Practices | Principal Investigator, Washington DC

The objective of this project is to update existing guidance documents describing maintenance treatment types, project selection, design, and construction activities. This project will also develop TechBriefs and a webinar related to pavement maintenance activities for state highway and local agency maintenance personnel. Pavement maintenance techniques will include (1) repair of potholes in asphalt pavements; (2) crack filling/sealing of asphalt pavements; (3) patching of asphalt pavement (4) rapid repair of partial-depth spalls in concrete pavements; (5) repair of joints seals in concrete pavements; and (6) full-depth repair in concrete pavements.

NCHRP Project 20-05, Topic 49-15 Synthesis, Automated Pavement Condition Data Collection | *Principal Investigator, Washington DC*

This synthesis documented agency practices, challenges, and successes in conducting automated pavement condition surveys. The synthesis showcases successful practices, integration of automated data into pavement management systems, and efforts needed for reporting pavement condition according to the FAST Act. Project tasks included conducting a literature review, agency survey, follow-up questions, and document preparation.

NCHRP Project 01-61, Evaluation of Bonded Concrete Overlays of Asphalt | *Principal Investigator, Washington, DC*

The project objectives include investigating factors that may impact bonded concrete overlay of asphalt (BCOA) performance, documenting in-service BCOA performance through a literature review and survey, conducting field surveys of selected BCOA projects, developing representative performance prediction curves suitable for use in BCOA design selection based on the documented performance of a range of BCOA projects, and comparing actual versus predicted BCOA performance using current design procedures. This report has been published as NCHRP Synthesis 531, *Automated Pavement Condition Surveys*.

Evercalc and AASHTOWare Backcalculation Tool Training | *Project Manager, Denver, CO*

Develop and delivered a 1-day training course on the principles of backcalculation, function of the Evercalc[®] software, function of the AASHTOWare Backcalculation tool, and use of deflection data and results in the AASHTOWare Pavement ME Design™ software.

NCHRP 01-57A, Developing Standard Definitions for Comparable Pavement Cracking Data | *Project Manager, Washington, DC*

Provide support with agency and industry interviews, and provide technical review of literature search, cracking data needs for MEPDG local calibration, interim report, and AASHTO Standard revisions as a subcontractor to Oklahoma State University.

Arizona's LTPP SPS-6: Forensic Investigation | *Project Engineer, Phoenix, AZ*

Conducted a forensic investigation on a select number of Long Term Pavement Performance Program, Specific Pavement Studies (SPS-6) sections on I-40 westbound east of Flagstaff, AZ. This included the evaluation of performance data, maintenance and rehabilitation treatments, and field testing. Field testing included condition a pavement condition survey, coring and dynamic cone penetrometer testing, FWD testing and analysis, backcalculation of layer moduli, and petrographic analysis.

Study of Historic Concrete Pavements in California | *Project Manager, Yorba Linda, CA*

Document the performance of ten historic concrete pavements located throughout the State of California, describing their construction and maintenance history (to the degree possible), their role in the community, their current condition, and what the future for each may hold for the California Nevada Cement Association.

Updates to the Integrated Materials and Construction Practices for Concrete Pavement: A State-of-the-Practice Manual | *Project Engineer Ames, IA*

Prepared revisions and updates to the chapter on "Basics of Concrete Pavement Design" as a subcontractor to Snyder & Associates.

AASHTO Pavement ME National User Group Meetings | *Project Manager, Washington, DC*

Assist with planning of FHWA user group meetings, provide assistance with developing meeting notifications and materials, facilitate each meeting, and assist in preparation of the draft and final technical meeting reports.

Clearing-House of MEPDG-Related Research and Implementation Efforts | *Project Manager, Washington, DC*

Assisted with literature search, review, and comment on reporting format, and assist with maintenance of the MEPDG clearing-house for the FHWA as a subcontractor to Applied Pavement Technology, Inc.

NCHRP 14-20A, Consequences of Delayed Maintenance of Highway Assets | *Project Manager, Washington, DC*

Assisted with review, editing, and revision to the final report as a subcontractor to University of Texas at El Paso.

Evaluation of MSCR Testing for Adoption in ADOT Asphalt Binder Specifications | *Project Manager, Tempe, AZ*

Provided work plan revisions, develop a framework for specification implementation, facilitate panel meeting with industry representatives, assess the specification impacts on Arizona asphalt binder suppliers, and prepare and provide final presentation on research implementation recommendations to the Arizona DOT as a subcontractor to Arizona State University.

Development of Performance Models to Support Statewide Pavement Management | *Project Engineer, Anchorage, AK*

Conducting the pavement management data review and needs assessment, developing and recommending pavement performance models and pavement rehabilitation decision tree for the Alaska DOT&PF.

NCHRP Project 1-54, Guidelines for Limiting Damage to Flexible Composite Pavements Due to the Presence of Water | *Project Manager, Washington DC*

Conducted for the Transportation Research Board, literature review and agency survey for the development of comprehensive guidelines, training course material, and technical tools of practices for minimizing damage in asphalt and composite pavements due to the presence of water.

Implementation Support for the Strategic Highway Research Program (SHRP) 2 Project R21, New Composite Pavement Systems | *Project Manager, Washington DC*

Assisted the Federal Highway Administration in the development of training materials for new composite pavements based on the results of the SHRP2 R21 research project.

MEPDG Regional Peer Exchange Meetings | *Project Manager, Washington DC*

Planned, coordinated, facilitated, and documented four State Highway Agency peer exchange meetings to support the implementation of AASHTOWare's Pavement ME Design™ software for the Federal Highway Administration.

Digital Handbook for Pavement Design, Construction, and Management | *Project Manager, Washington DC*

Provided technical and editorial changes in support of AASHTO publications for the American Association of State Highway and Transportation Officials.

Quality Management Procedures for Network Level Pavement Condition Data Regional Workshops | *Project Manager, Washington DC*

Developed for the Federal Highway Administration, lesson plans, and workshop materials for developing quality management plans for network-level pavement condition data collection. Presented lesson plans at seven regional workshops.

Developing Performance Measures for Chip Seal Pavements | *Project Manager, Olympia, WA*

Conducted for the Washington State DOT, a literature search and agency survey in the development of a chip seal performance measures—best practices document and prepared a work plan for the future evaluation of chip seal performance measures for Washington State conditions.

Concrete Pavement Preservation Manual Update | *Project Engineer, Cedar Rapids, IA*

Updated various chapters of the Federal Highway Administration preservation guide (concrete pavement evaluation, slab stabilization and slab jacking, dowel bar retrofit, and diamond and grooving) and associated training course materials.

NCHRP Project 20-05, Task 44-06 Synthesis, Implementation of AASHTO MEPDG and AASHTOWare Pavement ME Design™ | *Principal Investigator, Washington DC*

Conducted and summarized for the Transportation Research Board, a literature review, survey of highway agencies, and follow-up interviews with agencies that have successfully implemented DARWin-ME. Developed a synthesis report to assist highway agencies in implementing the MEPDG and AASHTOWare Pavement ME Design™.

Updated Performance Curves for SDDOT's Pavement Management System | *Project Manager, Pierre, SD*

Updated the methodology for evaluating and defining the family of curves for pavement performance prediction, identified and selected the most accurate performance models possible, and oversaw the development of a new, stand-alone pavement performance modeling tool to implement the new methodology. Developed a user manual, conducted software training, and prepared the final report for the South Dakota DOT.

Washington State Association of Counties Transportation Performance Metrics Road Sub-Surface Condition Pilot Project | *Project Manager, Bainbridge Island, WA*

Developed roadway sampling matrix and evaluated deflection data and indices for use in characterizing sub-surface conditions.

NCHRP Project 20-24, Task 37J study, Measuring Performance among State DOTs: Sharing Good Practices – Pavement Structural Health | *Project Manager, Fairfax, VA*

Oversaw all aspects of the project for ICF Incorporated, LLC, which included conducting a literature search to identify exemplary practices, recruitment of agencies for further participation in more detailed analysis of pavement structural assessment, compilation of agency data and calculation of the pavement structural health measure, identification of exemplary practices, and development of activities for national implementation.

Quality Management Procedures for Network Level Pavement Condition Data | *Project Manager, Washington DC*

Oversaw the development of a Practical Guide for Quality Management (QM) of network level pavement condition data using proven procedures, practical examples, and case studies from various transportation agencies for the Federal Highway Administration.

NCHRP Project 1-48 Project Incorporating Pavement Preservation into the MEPDG | *Project Engineer, Washington DC*

Collected and reviewed research information, co-authored the interim report, project work plan, guidelines, and final report for the Transportation Research Board. Developed pavement design case studies using the AASHTOWare Pavement ME Design™ software.

NCHRP Project 1-46 Handbook for Pavement Design, Construction, and Management | *Principal Investigator, Washington DC*

Researched and developed an interactive, electronic handbook that addresses the various aspects of pavement design, construction, and management for the Transportation Research Board.

Highway Materials—Concrete Airfield Pavement | *Project Engineer, Washington DC*

Provided to the Innovative Pavement Research Foundation, expertise on identifying and establishing criteria for categorizing highway materials that meet Federal Aviation Administration standards, conducted review of project documents, contributed to database development, and report writing and review.

NCHRP Project 10-76 Project Methodologies for Evaluating Pavement Strategies & Barriers for Noise Mitigation | *Project Manager, Petaluma, CA*

Researched and developed for Illingworth and Rodkin, methodologies for evaluating the feasibility, reasonableness, effectiveness, and longevity of acoustic and economic features of pavement strategies and barriers used for noise mitigation. Included conducting life-cycle cost analysis on a case studies using data obtained from three State DOTs.

Local Calibration of the MEPDG Using Pavement Management Systems | *Project Manager, Washington DC*

Assisted the Federal Highway Administration with the development of a framework for integrating pavement management data for use in calibrating the MEPDG.

NCHRP Project 20-07, Task 251 Development of a Chapter on Pavement Preservation for the Mechanistic-Empirical Pavement Design Guide | *Project Engineer, Washington DC*

Prepared for the Transportation Research Board, a chapter on incorporating pavement preservation techniques into the Mechanistic-Empirical Pavement Design Guide.

Pavement Training

AASHTO Pavement Design | *Principal Investigator, Spokane, WA*

Developed and delivered an in-person 8-hour pavement design training course based on the American Association of State Highway and Transportation Officials *Design of Pavement Structures* (1993). Deliverable included training course agenda, participant workbook, presentation slides, and classroom exercises.

Evercalc® and AASHTOWare Backcalculation Tool Training | *Principal Investigator, Denver, CO*

Developed and delivered an in-person 8-hour training course on the principles of backcalculation, function of Evercalc® software, and use of deflection data and results in the AASHTOWare Pavement ME Design™ software. Project deliverables included training course agenda, participant workbook, presentation slides, and classroom exercises.

Publishing and Presentations

Refereed Conferences

- J. Van Dam, T., N. Dufalla, and L. M. Pierce. 2018. "A Tale of Two Pavements: Forensic Investigation of an Unbonded Concrete Overlay and a Concrete Pavement Reconstruction on I-40 near Flagstaff, Arizona." *Transportation Research Record* (online). Transportation Research Board, Washington, DC.
- Kebede, N., and L. M. Pierce. 2015. "StreetSaver™ and Paver™ Budget and Condition Analysis: A Case Study." *Proceedings, Ninth International Conference on Managing Pavement Assets*, Alexandria, VA.
- Pierce, L. M., and K. A. Zimmerman. 2015. "Quality Management for Pavement Condition Data Collection." *Proceedings, Ninth International Conference on Managing Pavement Assets*, Alexandria, VA.
- Zimmerman, K. A., and L. M. Pierce. 2012. "A 10-Year Prioritized Roadmap for Pavement Management." *Proceedings, European Pavement Management Conference*, Malmö, Sweden.
- Pierce, L. M., K. A. Zimmerman, N. Saadatmand, and E. Perry. 2011. "Pavement Management Roadmap." *Proceedings International Conference on Managing Pavement Assets*, Santiago, Chile.
- Pierce, L. M., K. A. Zimmerman, and N. Saadatmand. 2011. "Use of Pavement Management Data for Calibration of the Mechanistic-Empirical Pavement Design Guide." *Proceedings International Conference on Managing Pavement Assets*, Santiago, Chile.
- Pierce, L. M., J. P. Mahoney, S. T. Muench, J. S. Uhlmeyer, J. Li, K. Willoughby, and D. Luhr. 2010. "Utilization of Chip Seals for Maintaining Hot Mix Asphalt Pavements due to Restricted Budgetary Constraints in Washington State," *Proceedings First International Conference on Pavement Preservation*, Newport Beach, CA.
- Pierce, L. M., J. P. Mahoney, and S. T. Muench. 2010. *Long-Term Performance of Dowel Bar Retrofit*. Transportation Research Board Annual Meeting, Paper No. 10-2604. Transportation Research Board, Washington, DC.
- Pierce, L. M., J. S. Uhlmeyer, J. Weston, and K. W. Anderson. 2009. Forensic Evaluation of Cracking in Panels Adjacent to Panel Replacements on Interstate 5 in Washington State, , *Proceedings, International Society on Concrete Pavements, National Conference on Preservation, Repair, and Rehabilitation of Concrete Pavements*, St. Louis, MO.

- Pierce, L. M. 2009. Load Transfer Restoration – A Survey of Current Practice and Experience, *Proceedings, International Society on Concrete Pavements, National Conference on Preservation, Repair, and Rehabilitation of Concrete Pavements*, St. Louis, MO.
- Pierce, L. M., J. P. Mahoney, S. T. Muench, H. J. Munden, M. Waters, and J. S. Uhlmeier. 2009. *Quieter HMA Pavements in Washington State*. Transportation Research Board Annual Meeting, Paper No. 09-2205. Transportation Research Board, Washington, DC.
- Li, J., L. M. Pierce, and J. S. Uhlmeier. 2009. Calibration of the Flexible Pavement Portion of the Mechanistic-Empirical Pavement Design Guide for the Washington State Department of Transportation. Transportation Research Board Annual Meeting, Paper No. 09-2132. Transportation Research Board, Washington, DC.
- Li, J., L. M. Pierce, M. E. Hallenbeck, and J. S. Uhlmeier. 2009. Sensitivity of Axle Load Spectra in the Mechanistic-Empirical Pavement Design Guide for the Washington State Department of Transportation. Transportation Research Board Annual Meeting, Paper No. 09-2172. Transportation Research Board, Washington, DC.
- Li, J., J. P. Mahoney, S. T. Muench, and L. M. Pierce. 2008. Bituminous Surface Treatment Protocol for the Washington State Department of Transportation. Transportation Research Board Annual Meeting, Paper No. 08-0568. Transportation Research Board, Washington, DC.
- Munden, H., L. M. Pierce, J. P. Mahoney, S. T. Muench, M. Waters, and J. S. Uhlmeier. 2008. Low-Noise Pavement Evaluation in Washington State. Transportation Research Board Annual Meeting, Paper No. 08-2799. Transportation Research Board, Washington, DC.
- Uhlmeier, J. S., L. M. Pierce, C. T. Kinne, K. W. Anderson, S. T. Muench, J. P. Mahoney, and C. Valentine. 2008. Cold In-Place Recycling in Washington State, *Proceedings, International Society on Asphalt Pavements, International Symposium on Asphalt Pavements and Environment*, Zurich, Switzerland.
- Mahoney, J. P., C. L. Monismith, J. Coplantz, J. Harvey, V. Kannekanti, L. M. Pierce, J. S. Uhlmeier, N. Sivanesarwan, and T. Hoover. 2007. "Pavement Lessons from the 50-year-Old Interstate Highway System: California, Oregon, and Washington." *Transportation Research Board E-Circular E-C118*. Transportation Research Board, Washington, DC.
- Muench, S. T., B. Ozolin, J. S. Uhlmeier, L. M. Pierce, and K. W. Anderson. 2007. Rapid Concrete Panel Replacement in Washington State: Lessons Learned, *Proceedings, International Conference on Optimizing Concrete Mixtures and Accelerated Concrete Pavement Construction and Rehabilitation*, Atlanta, GA.
- Ozolin, B., S. T. Muench, J. S. Uhlmeier, and L. M. Pierce. 2007. CA4PRS Use in Washington State. *Proceedings, International Conference on Optimizing Paving Concrete Mixtures and Accelerated Concrete Pavement Construction and Rehabilitation*, Atlanta, GA.
- Muench, S. T., L. M. Pierce, J. S. Uhlmeier, and K. W. Anderson. 2006. The Evolution of Long-Life Concrete Pavements in Washington State. *Proceedings, First International Conference on Long-Life Concrete*, Chicago, Illinois.
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