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DEGREES AND DATES:

Ph.D., Civil Engineering, Texas A&M University, December 1988
M.S., Civil Engineering, Texas A&M University, August 1985
B.S., Civil Engineering, Seoul National University (Korea), January 1980

EXPERIENCE:

7/00 - present:	Professor, North Carolina State University, Raleigh, NC
8/94 - 6/00:	Associate Professor, North Carolina State University, Raleigh, NC
6/89 - 8/94:	Assistant Professor, North Carolina State University, Raleigh, NC
1/89 - 5/89:	Engineering Research Associate, Texas Transportation Institute
9/83 - 12/88:	Research Assistant, Texas Transportation Institute
11/81 - 11/82:	Chief Engineer, Dong Ah Construction Industrial Co., Ltd.
12/79 - 10/81:	Engineer, Dong Ah Construction Industrial Co., Ltd.

SCHOLARLY AND PROFESSIONAL HONORS:

Walter J. Emmons Best Paper Award on the paper entitled "A Simple and Reliable Testing Method to Evaluate Fatigue Fracture and Damage Performance of Asphalt Mixtures" by the Association of Asphalt Paving Technologists (2006)
Special Contribution Award by the Korean Society of Pavement Engineers (2004)
Distinguished Research Fellowship by the Korean Science and Engineering Foundation (2003)
Runner-up for the Walter J. Emmons Best Paper Award on the paper entitled "Development of a Simplified Fatigue Test and Analysis Procedure Using a Viscoelastic, Continuum Damage Model" by the Association of Asphalt Paving Technologists (2002)
The Alcoa Foundation Engineering Research Achievement Award in recognition of Outstanding Research Accomplishments over Three Years by the College of Engineering, North Carolina State University (1998)
Walter J. Emmons Best Paper Award on the paper entitled "Fatigue Characterization of Asphalt Concrete Using Viscoelasticity and Continuum Damage Theory" by the Association of Asphalt Paving Technologists (1997)
Kimley-Horn Faculty Award, Civil Engineering, NCSU (1992)
Annual nomination of the paper entitled "One-Dimensional Constitutive Modeling of Asphalt Concrete" by the Properties of Materials Committee in ASCE Engineering Mechanics Division for a medal (1990)

Tau Beta Pi, The National Engineering Honor Society (1985)
Chi Epsilon, Civil Engineering Honor Society (1993)
Presidential Korean Honor Scholarship (1986)

ENGINEERING REGISTRATION:

Registered Professional Engineer, State of North Carolina

PROFESSIONAL SOCIETY ACTIVITIES:

Members of American Society of Civil Engineers, American Society for Testing and Materials, Association of Asphalt Paving Technologists, Transportation Research Board, RILEM, Korean Scientists and Engineers Association, and Korea-America Transport Association

National Expert Task Group Appointments:

2006 - present:	Member of the Asphalt Mixture and Construction Expert Task Group, Federal Highway Administration
2000 - 2005:	Member of the Superpave Mixture/Aggregate Expert Task Group, Transportation Research Board/National Research Council
2001 - 2005:	Member of the LTPP Materials Data Collection and Analysis Expert Task Group, Transportation Research Board/National Research Council
2001:	Member of the Working Group for the NCHRP 9-29 project “Simple Performance Tester for Superpave Mix Design”
1995 - 1998:	Member of the Superpave Models/Software Evaluation Expert Task Group, Federal Highway Administration

Editorial Board Appointments:

2008 - present:	Associate Editor of the International Journal of Pavement Engineering
2004 - 2007:	Member of the International Editorial Board of the International Journal of Pavement Engineering
2003 - present:	Member of the International Editorial Board of the International Journal of Transportation Studies
2006 - present:	Member of the International Editorial Board of the KSCE Journal of Civil Engineering
2007 - present:	Member of the International Journal of Concrete Structures and Materials

Committee Assignments:

2007 - present:	Secretary of Transportation Research Board AFD80 Committee
2003 - present:	Technical Committee on Constitutive Modeling of Asphaltic Materials, International Society of Asphalt Pavements

2003 - present:	Transportation Research Board AFK50(1) Subcommittee on Advanced Modeling of Asphalt Concrete
2002 - 2004:	President of Korea-America Transport Association
1997 - present:	Transportation Research Board AFD80 Committee
1992 - present:	ASCE Pavement Committee in Highway Division
1994 - present:	ASCE Bituminous Materials Committee in Materials Engineering Division
1991 - 2004:	Transportation Research Board A2D04 Committee
1992 - 2003:	TRB subcommittee A2D04(3) on Research Statements and Research Needs
1996 - 1999:	ASCE Shock and Vibratory Effects Committee in Structural Division
1997:	AAPT Nominating Committee
1994 - 1997:	AAPT Annual Award Committee
1991 - 1992:	Director of Professional Affairs in North Carolina Chapter of Korean Scientists and Engineers Association

CONSULTING ACTIVITIES:

Institute for Transportation Research and Education
Carolina Power and Light Company
Tough Patch, USA
Benchmark Carolina Aggregates
Yukong, Ltd.
Advanced Materials and Systems Technologies
Fugro-BRE (as a team member of the NCHRP 9-19 project "Superpave Support and Performance Models Management")
Chemical Lime Company
Saint-Gobain Technical Fabrics
H. B. Rowe & Co., Inc.
Kumho Petrochemical Co.

INVITED PRESENTATIONS:

1. "Alternative Approaches to Hot Mix Asphalt E* Determination," Presented at the FHWA Asphalt Mixture/Construction ETG and Fundamental Models ETG meetings, Tampa, Florida, Feb. 25 and 28, 2008.
2. "Application of Artificial Neural Networks to Asphalt Materials and Pavement Analysis," Presented at the Workshop on Advanced Pavement Analysis Methods for Backcalculation and Mechanics-Based Design, TRB 87th Annual Meeting, Washington, D.C., January 13, 2008.
3. "Stiffness in MEPDG Computations," Presented at the Fundamental Models Expert Task Group Meeting, Phoenix, AZ, Feb. 7, 2007.
4. "Sensitivity Analysis and Implementation Plan for the NCHRP 1-37A Mechanistic-Empirical Pavement Design Guide," Presented at the International Workshop for Mechanistic-Empirical Pavement Design Guide, Korea Pavement Research Program, Seoul, Korea, Feb. 27, 2007.

5. "Performance Prediction of Asphalt Pavements in the FHWA ALF and KHC Test Road Projects," Presented at the Workshop Entitled Advanced Models for Asphalt Mixtures and Pavement: What Are They Good for? The TRB 86th Annual Meeting, Washington, D.C., January 21, 2007.
6. "Performance Based Mix Design of Lime-Modified Asphalt Mixtures for City of Charlotte," Presented at the 2006 Annual Meeting of Southeastern Asphalt User/Producer Group, Wilmington, NC, November 14, 2006.
7. "Evaluation of Modified Hot Mix Asphalt Mixtures Using the Viscoelastoplastic Continuum Damage Model," Presented to Kumho Petrochemical R&BD Center, Daejeon, Korea, June 23, 2006.
8. "Asphalt Pavement Research at North Carolina State University," Presented to the Korea Institute of Construction Technology, Ilsan, Korea, June 27, 2006.
9. "Status of the NCHRP 1-37A Mechanistic-Empirical Pavement Design Guide Implementation Effort," Presented to the Korean Society of Pavement Engineers, Dongtan, Korea, June 29, 2006.
10. "State-of-the-art Modeling Research for Asphalt Concrete and Asphalt Pavements," Presented to the Highway & Transportation Technology Institute of Korea Highway Corporation, Dongtan, Korea, June 30, 2006.
11. "Viscoelastoplastic Continuum Damage Finite Element Program for Pavement Evaluation," Presented at the Fundamental Properties and Advanced Modeling Expert Task Group Sponsored by the Federal Highway Administration, Denver, CO, May 9, 2006.
12. "Multiscale Micromechanical Lattice Modeling of Cracking in Hot Mix Asphalt," Presented at the Fundamental Properties and Advanced Modeling Expert Task Group Sponsored by the Federal Highway Administration, Denver, CO, May 10, 2006.
13. "Expanding the Horizon of Asphalt Mixture and Pavement Evaluation," Presented to the FHWA and Pooled Fund States (NY, OH, TX), FHWA Turner-Fairbank Highway Research Center, McLean, VA, March 16, 2006.
14. "Asphalt Pavement Response Models: Current and Future," Presented at the Workshop Titled Validation of Pavement Response Models: Are Predicted Stresses and Strains Reasonably Correct? 85th Annual Meeting of the Transportation Research Board, Washington, D.C., January 22, 2006.
15. "State-of-the-Art Research in Asphalt Pavement Modeling," Presented at the Michigan State University in the Civil Infrastructure Seminar series, 2005.
16. "Superpave Mix Design and Dynamic Modulus Characterization of Lime Modified Asphalt Mixtures," Presented at the Workshop Entitled *Extending the Life of Asphalt Pavements Using Hydrated Lime* Sponsored by Chemical Lime Company, Raleigh, NC, February 26, 2005.
17. "Viscoelasticity and Continuum Damage Mechanics," Presented at the 84th Annual Meeting of the Transportation Research Board, Washington, D.C., January 12, 2005.
18. "Multiscale Modeling of Asphalt Pavements," Presented at the FHWA Turner-Fairbank Highway Research Center, McLean, VA, 2003.
19. "Mechanistic-Empirical Pavement Design Method for Korean Asphalt Pavements," Presented at the International Workshop hosted by Korea Institute of Construction Technology, 2003.
20. "Dynamic Modulus – Its Role in Mechanistic-Empirical Pavement Design Method," Presented at the workshop hosted by Korea Highway Corporation, Seoul, Korea, July 12,

2002.

21. “Characterization of Asphalt-Aggregate Mixtures in Tension Using a ViscoElastoPlastic Model,” Presented at the 14th US National Congress of Theoretical and Applied Mechanics, Blacksburg, VA, June 25, 2002.
22. “Fracture Energy from Indirect Tension Testing,” Presented at the Symposium Session of Physical Tests for Mixture Evaluation Using Gyratory Compacted Specimens, the Association of Asphalt Paving Technologists, March 19, 2002.
23. “A Simplified Fatigue Performance Prediction Model based on Viscoelasticity and Continuum Damage Mechanics,” Presented at the Fatigue Damage Prediction Symposium, Western Research Institute, Laramie, WY, July 18-20, 2001.
24. “A Unified Approach to Predicting Long Term Performance of Asphalt-Aggregate Mixtures,” Presented at the Durability 2000 Workshop, University of California, Berkeley, CA, October 27, 2000.
25. “Artificial Neural Networks for Pavement Evaluation,” Keynote address at the 2nd International Workshop on Artificial Intelligence and Mathematical Methods in Pavement and Geomechanical Systems, University of Delaware, Newark, Delaware, August 12, 2000.
26. “Viscoelasticity and Continuum Damage Mechanics,” Presented at Texas A&M University in Kelleher Lecture series, October 1999.
27. “Determination of Depth to a Stiff Layer,” Opening presentation made at the Transportation Research Board A2B05 Subcommittee Contest on determining depth to a stiff layer using various techniques, Washington, D.C., January 1999.
28. “Performance Evaluation of Modified Asphalt Mixtures Using the Viscoelastic, Continuum Damage Fatigue Model,” Presentation made to the Asphalt Modeling Group formed by the FHWA at FHWA Turner-Fairbank Highway Research Center, McLean, Virginia, July 1998.
29. “Performance Prediction Modeling of Asphalt Concrete” at Daewoo Corporation, Hyundai Engineering and Construction Co., Daebon Engineering Co., Yukong Ltd., and Korea Advanced Institute of Science and Technology, May 1997.
30. “Mechanistic-Empirical Flexible Pavement Design Method” at Korea Highway Corporation, Yonsei University and Korea Institute of Construction Technology, May 1997.
31. **“**Fatigue Performance Prediction Using Viscoelasticity and Continuum Damage Theory” at Koch Materials Company, Wichita, Kansas, August 1996.
32. “Superpave Asphalt Mixture Design and Analysis” at the Center for Advanced Mineral Aggregate Composite Products, Kangwon National University, Chun Cheon, Korea, June 1, 1995.
33. “Advanced Asphalt-Aggregate Mix Design” at the Highway Research Laboratory of Korean Highway Corporation, Seoul, Korea, May 30, 1995.
34. “Performance-Graded Superpave Binder Specification” at the Korea Institute of Construction Technology, Seoul, Korea, May 29, 1995.
35. “Nondestructive Evaluation of Civil Infrastructure” at Seoul National University, Seoul, Korea, May 27, 1995.
36. “Condition Assessment of Marine Timber Pilings Using Stress Wave Technique” at the Annual Meeting of the NC Chapter of Acoustical Society of America, Raleigh, NC, April 21, 1995.
37. "Pavement Serviceability Measurement and Performance Prediction Models" at the Highway Research Laboratory of Korean Highway Corporation, Seoul, Korea, May 17, 1991.
38. "Mechanistic Pavement Research in North Carolina" at the Southern Regional Conference,

sponsored by the Korean Scientists and Engineers Association, February 23, 1991.

39. "State-of-the-Art Flexible Pavement Design Method in North Carolina" at three major universities (Seoul National University, Hanyang University, Yeonsei University) and Korea Institute of Construction Technology (KICT) in Seoul, Korea, June 25 - July 13, 1990.

PUBLICATIONS:

Editorship:

- Working on an ASCE book entitled "Modeling of Asphalt Concrete" as the editor. This book will have seven chapters, and each chapter will be composed of two to three papers written by national and international experts in the subject areas.

Journal Papers and Book Chapters:

1. Kim, Y.R., C. Baek, B.S. Underwood, V. Subramanian, M.N. Guddati, and K. Lee, "Application of Viscoelastic Continuum Damage Model Based Finite Element Analysis to Predict the Fatigue Performance of Asphalt Pavements," KSCE Journal of Civil Engineering, Volume 12, Number 2, March 2008, pp. 109-120.
2. Lacroix, A., Y.R. Kim, and S.R. Ranjithan. "Backcalculation of the Dynamic Modulus from the Resilient Modulus of Asphalt Concrete Using an Artificial Neural Network," In Press, Journal of Transportation Research Board, National Research Council, Washington, D.C., 2007.
3. Lee, J.S. and Y.R. Kim. "Understanding the Effects of Aggregate and Emulsion Application Rates on the Performance of Asphalt Surface Treatments," In Press, Journal of Transportation Research Board, National Research Council, Washington, D.C., 2007.
4. Muthadi, N.R. and Y.R. Kim. "Local Calibration of the MEPDG for Flexible Pavement Design," In Press, Journal of Transportation Research Board, National Research Council, Washington, D.C., 2007.
5. Mun, S., G. Chehab, and Y.R. Kim. "Determination of Time-domain Viscoelastic Functions Using Optimized Interconversion Techniques," Road Materials and Pavement Design, Lavoisier, Vol. 8/No. 2, 2007, pp. 351-365.
6. Underwood, B.S. and Y.R. Kim, "Determination of the Appropriate Representative Elastic Modulus for Asphalt Concrete," In Press, International Journal of Pavement Engineering, 2007.
7. LaCroix, A., Mosavi Khandan, and Y.R. Kim, "Predicting the Resilient Modulus of Asphalt Concrete from the Dynamic Modulus," In Press, Journal of Transportation Research Board, National Research Council, Washington, D.C., 2007.
8. Kim, Y., H.J. Lee, D.N. Little, and Y.R. Kim. "A Simple and Reliable Testing Method to Evaluate Fatigue Fracture and Damage Performance of Asphalt Mixtures," In Press, Journal of Association of Asphalt Paving Technologists, 2006.
9. Chehab, G.R., Y. Seo, and Y.R. Kim. "Viscoelastoplastic Damage Characterization of Asphalt-Aggregate Mixtures Using Digital Image Correlation," International Journal of Geomechanics, ASCE, Volume 7, No. 2, March/April 2007, pp. 111-118.

10. Seo, Y., O. El-Haggan, M. King, S.J. Lee, and Y.R. Kim. "Air Void Models for the Dynamic Modulus, Fatigue Cracking, and Rutting of Asphalt Concrete," In Press, Journal of Materials in Civil Engineering, ASCE, 2006.
11. Kweon, G. and Y.R. Kim. "Determination of the Complex Modulus of Asphalt Concrete Using the Impact Resonance Test," Journal of Transportation Research Board, No. 1970, National Research Council, Washington, D.C., 2006, pp. 151-160.
12. Seo, Y., Y.R. Kim, and Z. Zhang. "Laboratory Evaluation of CCM Parameters for Mode-I Cracks in HMAs," KSCE Journal of Civil Engineering, Vol. 10, No. 3, Korean Society of Civil Engineers, May 2006, pp. 201-206.
13. Mun, S., M.N. Guddati, and Y.R. Kim. "Viscoelastic Continuum Damage Finite Element Modeling of Asphalt Pavements for Fatigue Cracking Evaluation," KSCE Journal of Civil Engineering, Vol. 10, No. 2, Korean Society of Civil Engineers, March 2006, pp. 97-104.
14. Underwood, B.S., Y.R. Kim, and M.N. Guddati. "Characterization and Performance Prediction of ALF Mixtures Using a Viscoelastoplastic Continuum Damage Model," Journal of Association of Asphalt Paving Technologists, Vol. 75, 2006, pp. 577-636.
15. Lee, J., Y.R. Kim, and E.O. McGraw. "Performance Evaluation of Bituminous Surface Treatment Using the Third-Scale Model Mobile Loading Simulator," Journal of Transportation Research Board, No. 1958, National Research Council, Washington, D.C., 2006, pp. 59-70.
16. Lee, S.J., Y. Seo, and Y.R. Kim. "Validation of Material-Level Performance Models: Using the Third-Scale Model Mobile Loading Simulator," Journal of Transportation Research Board, No. 1949, National Research Council, Washington, D.C., 2006, pp. 75-82.
17. Lee, S.J., Y. Seo, and Y.R. Kim. "Performance Prediction of Asphalt Pavements Loaded by MMLS3 Using Material-Level Laboratory Test Methods and Performance Models," Proceedings of the 10th International Conference of Asphalt Pavements, 2006.
18. Lee, S.J., Y. Seo, and Y.R. Kim. "Experimental Validation of Laboratory Performance Models Using the Third Scale Accelerated Pavement Testing," KSCE Journal of Civil Engineering, Vol. 10, No. 1, Korean Society of Civil Engineers, January 2006, pp. 9-14.
19. Underwood, B.S., Y.R. Kim, and G.R. Chehab. "A Viscoelastoplastic Continuum Damage Model of Asphalt Concrete in Tension," Proceedings of the 10th International Conference of Asphalt Pavements, 2006.
20. Underwood, B.S., A.H. Heidari, M.N. Guddati, and Y.R. Kim. "Experimental Investigation of Anisotropy in Asphalt Concrete," Journal of Transportation Research Board, No. 1929, National Research Council, Washington, D.C., 2005, pp. 238-247.
21. Park, H., Y.R. Kim, and S. Park. "Assessment of Pavement Layer Condition with Use of Multiload-Level Falling Weight Deflectometer Deflections," Journal of Transportation Research Board, No. 1905, National Research Council, Washington, D.C., 2005, pp. 107-116.
22. Lee, S.J., J.P. Rust, H. Hamouda, Y.R. Kim, R.H. Borden, "Fatigue Cracking Resistance of Fiber-Reinforced Asphalt Concrete," Textile Research Journal, Vol. 75, No. 2, 2005, pp. 123-128.
23. Chehab, G.R. and Y.R. Kim, "Viscoelastoplastic Continuum Damage Model Application to Thermal Cracking of Asphalt Concrete," Journal of Materials in Civil Engineering, ASCE, Vol. 17, Number 4, 2005, pp. 384-392.

24. Kim, Y.R., Y. Seo, M. King, and M. Momen, “Dynamic Modulus Testing of Asphalt Concrete in Indirect Tension Mode,” Journal of Transportation Research Board, No. 1891, National Research Council, Washington, D.C., 2004, pp. 163-173.
25. Mun, S., M. Guddati, and Y.R. Kim, “Fatigue Cracking Mechanisms in Asphalt Pavements with Viscoelastic Continuum Damage Finite-Element Program,” Journal of Transportation Research Board, No. 1896, National Research Council, Washington, D.C., 2004, pp. 96-106.
26. Daniel, J.S., W. Bisirri, and Y.R. Kim, “Fatigue Evaluation of Asphalt Mixtures Using Dissipated Energy and Viscoelastic Continuum Damage Approaches,” Journal of Association of Asphalt Paving Technologists, Vol. 73, 2004, pp. 557-583.
27. Seo, Y., Y.R. Kim, R.A. Schapery, M.W. Witczak, R. Bonaquist, “A Study of Crack-Tip Deformation and Crack Growth in Asphalt Concrete Using Fracture Mechanics,” Journal of Association of Asphalt Paving Technologists, Vol. 73, 2004, pp. 697-730.
28. Nilsson, B.R., G.R. Chehab, and Y.R. Kim, "Application of a Viscoelastoplastic Continuum Damage Tensile Model to Asphalt Mixes in Sweden," International Journal of Road Materials and Pavement Design, Volume 5 - Special Issue, 2004.
29. Daniel, J.S., G.R. Chehab, and Y.R. Kim, “Issues Affecting Measurement of the Complex Modulus of Asphalt Concrete,” ASCE Journal of Materials in Civil Engineering, Volume 16, Number 5, 2004, pp. 469-476.
30. Chehab, G.R., Y.R. Kim, R.A. Schapery, M.W. Witczak, and R. Bonaquist, “Characterization of Asphalt Concrete in Uniaxial Tension Using a Viscoelastoplastic Continuum Damage Model,” Journal of Association of Asphalt Paving Technologists, Vol. 72, 2003, pp. 315-355.
31. Lee, H.J., Y.R. Kim, and S.W. Lee, “Prediction of Asphalt Mix Fatigue Life with Viscoelastic Material Properties,” Journal of the Transportation Research Board, No. 1832, National Research Council, Washington, D.C., 2003, pp. 139-147.
32. Underwood, S. and Y.R. Kim, “Determination of Depth of Surface Cracks in Asphalt Pavements,” Journal of the Transportation Research Board, No. 1853, National Research Council, Washington, D.C., 2003, pp. 143-149.
33. Zhao, Y. and Y.R. Kim, “Time-Temperature Superposition for Asphalt Mixtures with Growing Damage and Permanent Deformation in Compression,” Journal of the Transportation Research Board, No. 1832, National Research Council, Washington, D.C., 2003, pp. 161-172.
34. Xu, B., S.R. Ranjithan, and Y.R. Kim, “Using the Asphalt Pavement Layer Condition Assessment Program: Case Studies,” Journal of the Transportation Research Board, No. 1860, National Research Council, Washington, D.C., 2003, pp. 66-75.
35. Park, H. and Y.R. Kim, “Prediction of Remaining Life of Asphalt Pavement Using Falling-Weight Deflectometer Multiload-Level Deflections,” Journal of the Transportation Research Board, No. 1860, National Research Council, Washington, D.C., 2003, pp. 48-56.
36. Kim, Y.R. and H. Wen, “Fracture Energy from Indirect Tension Testing,” Journal of Association of Asphalt Paving Technologists, 2002, Vol. 71, pp. 779-793.
37. Daniel, J.S. and Y.R. Kim, “Development of a Simplified Fatigue Test and Analysis Procedure Using a Viscoelastic Damage Model,” Journal of Association of Asphalt Paving Technologists, 2002, Vol. 71, pp. 619-650.
38. Chehab, G.R., Y.R. Kim, R.A. Schapery, M.W. Witczak, and R. Bonaquist, “Time-Temperature Superposition Principle for Asphalt Concrete Mixtures with Growing Damage

in Tension State," Journal of Association of Asphalt Paving Technologists, 2002, Vol. 71, pp. 559-593.

39. Park, H.M., Y.R. Kim, and S. Park, "Temperature Correction of Multi-Load Level Falling Weight Deflectometer Deflections," Transportation Research Record, No. 1806, Transportation Research Board, National Research Council, Washington, D.C., 2002, pp. 3-8.
40. Xu, B., S.R. Ranjithan, and Y.R. Kim, "New Relationships between Falling Weight Deflectometer Deflections and Asphalt Pavement Layer Condition Indicators," Transportation Research Record, No. 1806, Transportation Research Board, National Research Council, Washington, D.C., 2002, pp. 48-56.
41. Xu, B., S.R. Ranjithan, and Y.R. Kim, "New Condition Assessment Procedure for Asphalt Pavement Layers, Using Falling Weight Deflectometer Deflections," Transportation Research Record, No. 1806, Transportation Research Board, National Research Council, Washington, D.C., 2002, pp. 57-69.
42. Wen, H. and Y.R. Kim, "Simple Performance Test for Fatigue Cracking and Validation with WesTrack Mixtures," Transportation Research Record, No. 1789, Transportation Research Board, National Research Council, Washington, D.C., 2002, pp. 66-72.
43. Guddati, M.N., Z. Feng, and Y.R. Kim, "Toward a Micromechanics-based Procedure to Characterize Fatigue Performance of Asphalt Concrete," Transportation Research Record, No. 1789, Transportation Research Board, National Research Council, Washington, D.C., 2002, pp. 121-128.
44. Seo, Y., Y.R. Kim, M.W. Witczak, and R. Bonaquist, "Application of Digital Image Correlation Method to Mechanical Testing of Asphalt-Aggregate Mixtures," Transportation Research Record, No. 1789, Transportation Research Board, National Research Council, Washington, D.C., 2002, pp. 162-172.
45. Lee, H.J., J.Y. Choi, Y. Zhao, and Y.R. Kim, "Laboratory Evaluation of the Effects of Aggregate Gradation and Binder Type on Performance of Asphalt Mixtures," Proceedings of International Conference of Asphalt Pavements, 2002.
46. Daniel, J.S. and Y.R. Kim, "Laboratory Evaluation of Fatigue Damage and Healing of Asphalt Mixtures," ASCE Journal of Materials in Civil Engineering, Vol. 13, No. 6, 2001, pp. 434-440.
47. Park, S.W. and Y.R. Kim, "Fitting Prony-Series Viscoelastic Models with Power-Law Pre-smoothing," ASCE Journal of Materials in Civil Engineering, Vol. 13, No. 1, 2001, pp. 26-32.
48. Lee, H.J., J.S. Daniel, and Y.R. Kim, "Continuum Damage Mechanics-Based Fatigue Model of Asphalt Concrete," ASCE Journal of Materials in Civil Engineering, Vol. 12, No. 2, May 2000, pp. 105-112.
49. Lee, H.J., J.S. Daniel, and Y.R. Kim, "Laboratory Performance Evaluation of Modified Asphalt Mixtures for Inchon Airport Pavements," International Journal of Pavement Engineering, Vol. 1, No. 2, April 2000.
50. Chehab, G., E. O'Quinn, and Y.R. Kim, "Specimen Geometry Study for Direct Tension Test Based on Mechanical Tests and Air Void Variation in Asphalt Concrete Specimens Compacted by Superpave Gyratory Compactor," Transportation Research Record, No. 1723, Transportation Research Board, National Research Council, Washington, D.C., 2000, pp. 125-132.
51. Little, D.N., R.L. Lytton, D. Williams, and Y.R. Kim, "An Analysis of the Mechanism of

Microdamage Healing Based on the Application of Micromechanics First Principles of Fracture and Healing," Journal of Association of Asphalt Paving Technologists, Vol. 68, 1999, pp. 501-542.

52. Park, S.W., Y.R. Kim, and H.J. Lee, "Fracture Toughness for Microcracking in Viscoelastic Particulate Composites," Technical Notes in the ASCE Journal of Engineering Mechanics, Vol. 125, No. 6, June 1999, pp. 722-725.
53. Park, S.W. and Y.R. Kim, "Interconversion between Relaxation Modulus and Creep Compliance for Viscoelastic Solids," ASCE Journal of Materials in Civil Engineering, Vol. 11, No. 1, February 1999, pp. 76-82.
54. Lee, Y.C., Y.R. Kim, and S.R. Ranjithan, "Dynamic Analysis-Based Approach to Determine Flexible Pavement Layer Moduli Using Deflection Basin Parameters," Transportation Research Record, No. 1639, Transportation Research Board, National Research Council, Washington, D.C., 1998, pp. 36-42.
55. Kim, Y. and Y.R. Kim, "Prediction of Layer Moduli from FWD and Surface Wave Measurements Using Artificial Neural Network," Transportation Research Record, No. 1639, Transportation Research Board, National Research Council, Washington, D.C., 1998, pp. 53-61.
56. Daniel, J.S. and Y.R. Kim, "Relationships among Rate-Dependent Stiffnesses of Asphalt Concrete Using Laboratory and Field Test Methods," Transportation Research Record, No. 1630, Transportation Research Board, National Research Council, Washington, D.C., 1998, pp. 3-9.
57. Daniel, J.S., Y.R. Kim, and H.J. Lee, "Effects of Aging on Viscoelastic Properties of Asphalt-Aggregate Mixtures," Transportation Research Record, No. 1630, Transportation Research Board, National Research Council, Washington, D.C., 1998, pp. 21-27.
58. Lee, H.J. and Y.R. Kim, "A Viscoelastic Continuum Damage Model of Asphalt Concrete with Healing," ASCE Journal of Engineering Mechanics, Vol. 124, No. 11, November 1998, pp. 1-9.
59. Park, S.W. and Y.R. Kim, "Analysis of Layered Viscoelastic System with Transient Temperatures," ASCE Journal of Engineering Mechanics, Vol. 124, No. 2, February 1998, pp. 223-231.
60. Lee, H.J. and Y.R. Kim, "Viscoelastic Constitutive Model for Asphalt Concrete under Cyclic Loading," ASCE Journal of Engineering Mechanics, Vol. 124, No. 1, January 1998, pp. 32-40.
61. Lee, H.J., Y.R. Kim, and S.H. Kim, "Viscoelastic Constitutive Modeling of Asphalt Concrete with Growing Damage," Journal of Structural Engineering and Mechanics, Vol. 7, No. 2, 1997.
62. Little, D.N., R.L. Lytton, D. Williams, and Y.R. Kim, "Propagation and Healing of Microcracks in Asphalt Concrete and Their Contributions to Fatigue," Asphalt Science and Technology, Edited by Arthur M. Usmani, Marcel Dekker, Inc., New York, NY, 1997, pp. 149-195.
63. Lee, H.J., Y.R. Kim, and S.H. Kim, "Constitutive Modeling of Asphalt Concrete with Time-Dependent Damage Growth," Computational Structure Engineering, Vol. 10, No.4, 1997, pp. 229-238.
64. Kim, Y.R., H.J. Lee, and D.N. Little, "Fatigue Characterization of Asphalt Concrete Using Viscoelasticity and Continuum Damage Theory," Journal of the Association of Asphalt Paving Technologists, Vol. 66, 1997, pp. 520-569.

65. Shao, L., S. Park, and Y.R. Kim, “A Simplified Procedure for Prediction of Asphalt Pavement Subsurface Temperatures Based on Heat Transfer Theories,” Transportation Research Record, No. 1568, Transportation Research Board, National Research Council, Washington, D.C., 1997, pp. 114-123.
66. Park, S. and Y.R. Kim, “Temperature Correction of Backcalculated Moduli and Deflections Using Linear Viscoelasticity and Time-Temperature Superposition,” Transportation Research Record, No. 1570, Transportation Research Board, National Research Council, Washington, D.C., 1997, pp. 108-117.
67. Kim, Y. and Y.R. Kim, “In-Situ Evaluation of Fatigue Damage Growth and Healing of Asphalt Concrete Pavements Using Stress Wave Method,” Transportation Research Record, No. 1568, Transportation Research Board, National Research Council, Washington, D.C., 1997, pp. 106-113.
68. Park, S.W. Y.R. Kim, and R.A. Schapery, “A Viscoelastic Continuum Damage Model and Its Application to Uniaxial Behavior of Asphalt Concrete,” Mechanics and Materials, Vol. 24, No. 4, December 1996, pp. 241-255.
69. Chen, S. and Y.R. Kim, "Condition Assessment of Installed Timber Piles by Dispersive Wave Propagation," Transportation Research Record, No. 1546, Transportation Research Board, National Research Council, Washington, D.C., 1997, pp. 112-120.
70. Kim, Y.R. and Y.C. Lee, "Interrelationships among Stiffnesses of Asphalt-Aggregate Mixtures," Journal of the Association of Asphalt Paving Technologists, Vol. 64, 1995, pp. 575-609.
71. Kim, Y.R., B.O. Hibbs, and Y.C. Lee, "Temperature Correction of Deflections and Backcalculated AC Moduli," Transportation Research Record, No. 1473, Transportation Research Board, National Research Council, Washington, D.C., 1995, pp. 55-62.
72. Inge, E.H. and Y.R. Kim, "Prediction of Effective Asphaltic Layer Temperature," Transportation Research Record, No. 1473, Transportation Research Board, National Research Council, Washington, D.C., 1995, pp. 93-100.
73. Kim, Y.R., S.L. Whitmoyer, and D.N. Little, "Healing in Asphalt Concrete Pavements: Is It Real?" Transportation Research Record, No. 1454, Transportation Research Board, National Research Council, Washington, D.C., 1995, pp. 89-96.
74. Little, D.N., A. Letton, S. Prapnnachari, and Y.R. Kim, "Rheological and Rheo-Optical Characterization of Asphalt Cement and Evaluation of Relaxation Properties," Transportation Research Record, No. 1436, Transportation Research Board, National Research Council, Washington, D.C., 1995, pp. 71-82.
75. Kim, Y.R., Y. Lee, and H.J. Lee, "Correspondence Principle for Characterization of Asphalt Concrete," ASCE Journal of Materials in Civil Engineering, Vol. 7, No. 1, February 1995, pp. 59-68.
76. Whitmoyer, S.L. and Y.R. Kim, "Determination of Elastic Properties of Asphalt Concrete Using Vibrational Analysis," ASTM Journal of Testing and Evaluation, Vol. 22, No. 2, March 1994, pp. 139-148.
77. Kim, Y.R., N.P. Khosla, S. Satish, and T. Scullion, "Validation of Moduli Backcalculation Procedure Using Multidepth Deflectometers Installed in Various Flexible Pavement Structures," Transportation Research Record, No. 1377, Transportation Research Board, 1993, pp. 128-142.
78. Kim, Y.R., K.A. Shah, and N.P. Khosla, "Influence of Test Parameters in SHRP P07 Procedure on Resilient Moduli of Field Cores," Transportation Research Record, No. 1353,

Transportation Research Board, 1992, pp. 82-89.
79. Kim, Y.R., N. Kim, and N.P. Khosla, "Effect of Aggregate Type and Gradation on Fatigue and Permanent Deformation of Asphalt Concrete," in Effects of Aggregates and Mineral Fillers on Asphalt Mixture Performance, Edited by R. C. Meininger, ASTM Special Technical Publication, STP No. 1147, October 1992, pp. 310-328.
80. Kim, Y.R. and D.L. Eaddy, "Status of PAVER Implementation within the U.S. Air Force," in Pavement Management Implementation, Edited by Holt and Gramling, ASTM Special Technical Publication, STP No. 1121, April 1992, pp. 272-296.
81. Kim, Y.R., N.P. Khosla, and N. Kim, "Effect of Temperature and Mixture Variables on Fatigue Life Predicted by Diametral Fatigue Testing," Transportation Research Record, No. 1317, Transportation Research Board, 1991, pp. 129-139.
82. Kim, Y.R., D.N. Little, and R.C. Burghardt, "SEM Analysis on Fracture and Healing of Sand-Asphalt Mixtures," ASCE Journal of Materials in Civil Engineering, Vol. 3, No. 2, May 1991, pp. 140-153.
83. Kim, Y.R. and D.N. Little, "One-Dimensional Constitutive Modeling of Asphalt Concrete," ASCE Journal of Engineering Mechanics, Vol. 116, No. 4, April 1990, pp. 751-772.
84. Kim, Y.R., D.N. Little, and F.C. Benson, "Chemical and Mechanical Evaluation on Healing Mechanism of Asphalt Concrete," Journal of Association of Asphalt Paving Technologists, Vol. 59, 1990, pp. 240-275.
85. Kim, Y.R. and D.N. Little, "Evaluation of Healing in Asphalt Concrete by Means of the Theory of Nonlinear Viscoelasticity," Transportation Research Record, No. 1228, Transportation Research Board, 1989, pp. 198-210.
86. Kim, Y.R. and D.N. Little, "The Prediction of Fracture Fatigue Parameters from Creep Testing of Soil-Cement," ASTM Geotechnical Testing Journal, Vol. 10, No. 3, September 1987, pp. 97-104.
87. Little, D.N., J.W. Button, Y.R. Kim, and J. Ahmed, "Mechanistic Evaluation of Selected Additives," Journal of Association of Asphalt Paving Technologists, Vol. 56, 1987, pp. 62-90.

Conference Proceedings:

88. Lee, J. and Y. R. Kim. “Optimizing the Rolling Protocol for Chip Seals,” Proceedings of Transportation Research Board, 2008.
89. Kim, Y.R., B.S. Underwood, S. Mun, and M.N. Guddati. “Perpetual Pavement Evaluation Using the Viscoelastic Continuum Damage Finite Element Program,” Proceedings of the 2006 International Conference on Perpetual Pavement, Columbus, Ohio, September 2006.
90. Lee, Jusang and Y.R. Kim. “Performance Evaluation of Asphalt Surface Treatments Using the MMLS3,” Proceedings of the 2006 Airfield and Highway Pavement Specialty Conference, May 2006, pp. 86-97.
91. Kim, Y.R., S.J. Lee, Y. Seo, and O. El-Haggan. “A Mechanistic Approach to Determine Price Reduction Factors for Density-Deficient Asphalt Pavements,” Proceedings of the 2006 Airfield and Highway Pavement Specialty Conference, May 2006, pp. 1018-1029.
92. Kim, Y.R., T. Yun, and M.N. Guddati, “Modeling of the Behavior of Hot Mix Asphalt in Compression,” Proceedings of Transportation Research Board, 2006.
93. Chehab, G.R. and Y.R. Kim, "Application of the Viscoelastoplastic Continuum Damage Model to Thermal Cracking of Asphalt Concrete Pavements," Proceedings of the

International Symposium on Cold Regions Engineering, (Smith, Daniel W., editor; *et al.*); *Meeting:* Cold regions engineering and construction conference 2004, May 16-19, 2004, Edmonton, AB, Canada.

94. King, M., M. Momen, and Y.R. Kim, "Typical Dynamic Moduli Values of Hot Mix Asphalt in North Carolina and Their Prediction," Proceedings of Transportation Research Board, 2005.
95. Chehab, G.R. and Y.R. Kim, "Time-Temperature Superposition Principle for Asphalt Concrete under Multi-axial loading," Joint ASCE/ASME/SES Conference on Mechanics and Materials, Baton Rouge, LA, 2005.
96. Kim, Y.R., S. Lee, Y. Seo, and O. El-Haggan, "Determination of Price Reduction Factors for Density Deficient Asphalt Pavements," *Roads to Global Society*, Proceedings of the First International Road and Transportation Conference, Seoul, Korea, July 2005, pp. 131-144.
97. Mun, S., M.N. Guddati, and Y.R. Kim, "Viscoelastic Continuum Damage Finite Element Modeling of Asphalt Pavements for Fatigue Cracking Evaluation," Proceedings, The 5th International Conference on Road and Airfield Pavement Technology, Seoul, Korea, May 2005, pp. 18-29.
98. Lee, J. and Y.R. Kim, "Development of a New Performance Test Method for Asphalt Surface Treatment," Proceedings, The 5th International Conference on Road and Airfield Pavement Technology, Seoul, Korea, May 2005, pp. 963-972.
99. Lee, S., Y. Seo, and Y.R. Kim, "Validation of Mechanistic Performance Models Using the Third Scale Model Mobile Loading Simulator," Proceedings, The 5th International Conference on Road and Airfield Pavement Technology, Seoul, Korea, May 2005, pp. 1036-1044.
100. Chehab, G.R. and Y.R. Kim, "Application of the Viscoelastoplastic Continuum Damage Model to Thermal Cracking of Asphalt Concrete Pavements," Proceedings of the International Symposium on Cold Regions Engineering, (Smith, Daniel W., editor; *et al.*); *Meeting:* Cold regions engineering and construction conference 2004, May 16-19, 2004, Edmonton, AB, Canada.
101. Chehab, G.R. and Y.R. Kim, "Prediction of Thermal Cracking Behavior of Asphalt Concrete Using the Viscoelastoplastic Continuum Damage Model," Proceedings of Transportation Research Board, 2004.
102. Lee, S. and Y.R. Kim, "Fatigue Investigation of Laboratory Asphalt Pavement Using the Third Scale Model Mobile Loading Simulator," Proceedings of the 5th International RILEM Conference on Cracking in Pavements, France, 2004, pp. 29-36.
103. Daniel, J.S. and Y.R. Kim, "A Simplified Test and Analysis Procedure for Fatigue Characterization of Asphalt Mixtures," Proceedings of the 5th International RILEM Conference on Cracking in Pavements, France, 2004, pp. 131-138.
104. Seo, Y. and Y.R. Kim, "The Mechanical Testing of Asphalt Concrete Mixtures Using Digital Image Correlation," Proceedings of the 5th International RILEM Conference on Cracking in Pavements, France, 2004, pp. 155-162.
105. Feng, Z., P. Zhang, M. Guddati, and Y.R. Kim, "Multi-Scale Micromechanical Lattice Modeling of Cracking in Asphalt Concrete," Proceedings of the 5th International RILEM Conference on Cracking in Pavements, France, 2004, pp. 283-290.
106. Chehab, G.R. and Y.R. Kim, "Application of the Viscoelastoplastic Continuum Damage Model to Thermal Cracking Behavior of AC Pavements," Proceedings of the Cold

Engineering and Construction Conference, ASCE, Alberta, Canada, 2004.
107. Kim, Y.R. and G.R. Chehab, "Viscoelastoplastic Continuum Damage Modeling of Asphalt Concrete in Tension," Proceedings of the International Conference on Computational & Experimental Engineering & Sciences, Corfu Island, Greece, July 2003.
108. Chehab, G.R., J.S. Daniel, and Y.R. Kim, "Development of a Constitutive Model for Fatigue Cracking in Asphalt Concrete," Proceedings of the 16th Engineering Mechanics Conference, Pavement Mechanics Symposium, ASCE, Seattle, WA, 2003.
109. Chehab, G.R., Y.R. Kim, M.W. Witczak, and R. Bonaquist, "Comprehensive Material Characterization of Asphalt Concrete in Tension Based on a Viscoelastocplastic Model," Proceedings of the 6th international RILEM Symposium on Performance Testing and Evaluation of Bituminous Materials, PTEBM '03, Zurich, Switzerland, 2003.
110. Lee, H. J., J. Y. Choi, Y. Zhao, and Y. R. Kim, "Laboratory evaluation of the effects of aggregate gradation and binder type on performance of asphalt mixtures," Proceedings of the 9th International Conference on Asphalt Pavements, Copenhagen, Denmark, 2002.
111. Kim, Y.R., "Multi-Scale Modeling of Asphalt Pavement for Long-Term Life Prediction," Proceedings of WCSE/UKC 2002, Seoul, Korea, 2002, pp. 1048-1056.
112. Kim, Y.R., R.H. Borden, and M.N. Guddati, "A Unified Approach to Predicting Long Term Performance of Asphalt-Aggregate Mixtures," Proceedings of NSF Durability 2000 Workshop Entitled Long Term Durability of Structural Materials, Edited by P.J.M. Monteiro, K.P. Chong, and J. Larsen-Basse, Elsevier Science Ltd., 2001.
113. Kim, Y. R., Y-C. Lee, and S.R. Ranjithan, "Flexible Pavement Condition Evaluation Using Deflection Basin Parameters and Dynamic Finite Element Analysis Implemented by Artificial Neural Networks," *Nondestructive Testing of Pavements and Backcalculation of Moduli*, Eds. S.D. Tayabji and E.O. Lukanen, ASTM STP 1375, March 2000, pp. 514-530.
114. Kim, Y. R., B. Xu, and Y. Kim, "A New Backcalculation Procedure Based on Dispersion Analysis of FWD Time-History Deflections and Surface Wave Measurements Using Artificial Neural Networks," *Nondestructive Testing of Pavements and Backcalculation of Moduli*, Eds. S.D. Tayabji and E.O. Lukanen, ASTM STP 1375, March 2000, pp. 297-312.
115. Kim, Y.R., B. Kasal, S. Chen, and S.R. Auger, "Condition Assessment of an Underwater Timber Gate Using Dispersive Wave Propagation Analysis," Proceedings of the 5th World Conference on Timber Engineering, Lausanne, Switzerland, August 1998.
116. Park, S.W., H.J. Lee, and Y.R. Kim, "Evolution of Damage in a Viscoelastic Particulate Composite under Uniaxial Loading," Proceedings of the 12th ASCE Engineering Mechanics Conference, La Jolla, CA, 1998, pp. 908-911.
117. Kim, Y.R., H.J. Lee, Y. Kim, D.N. Little, "Mechanistic Evaluation of Fatigue Damage Growth and Healing of Asphalt Concrete: Laboratory and Field Experiments," Proceedings of the 8th International Conference on Asphalt Pavements, 1997, pp. 1089-1108.
118. Khosla, N.P., N. Kim, S. Satish, and Y.R. Kim, "A Comparative Study of Performance of Different Designs for Flexible Pavements," Proceedings of the 8th International Conference on Asphalt Pavements, 1997, pp. 1489-1504.
119. Lee, Y-C., Y.R. Kim, and S.R. Ranjithan, "Determination of Elastic Modulus of Subgrade Using Deflection Data, " In the 9th Conference on Pavement Engineering, the Chinese Institute of Civil and Hydraulic Engineering, Taichung, Taiwan, Aug. 21-22, 1997, pp. 475-485.
120. Auger, S. and Y.R. Kim, "Condition Assessment of a Submerged Timber Gate Using Stress Wave Testing Methods," Proceedings of the 1996 Association of State Dam Safety

Officials Annual Conference, 1997.

121. Lee, H.J. and Y.R. Kim, “Prediction of Fatigue Damage in Asphalt Concrete Using a Viscoelastic Continuum Damage Model,” Proceedings of the International RILEM Symposium on Mechanical Test for Bituminous Mixes, 1997.
122. Kim, Y. and Y.R. Kim, "Evaluation of Microcrack Damage Growth and Healing of Asphalt Concrete Pavements Using Stress Wave Method," Proceedings of the 11th ASCE Engineering Mechanics Specialty Conference, 1996, pp. 612-615.
123. Lee, H.J. and Y.R. Kim, "A Uniaxial Constitutive Model Accounting for Viscoelasticity and Damage Evolution under Cyclic Loading," Proceedings of the 11th ASCE Engineering Mechanics Specialty Conference, 1996, pp. 693-696.
124. Chen, S. and Y.R. Kim, "Dispersive Wave Propagation Analysis for Condition Assessment of Marine Timber Piles," Stress Wave 96, Proceedings of the Fifth International Conference on the Application of Stress-Wave Theory to Piles, Edited by F. C. Townsend, 1996, pp. 721-732.
125. Chen, S. and Y.R. Kim, "Condition Assessment of Marine Timber Piles Using Stress Wave Method," Proceedings of Structures Congress XIV, Building an International Community of Structural Engineers, Edited by S.K. Ghosh and J. Mohammadi, Vol. 2, 1996, pp. 853-860.
126. Kim, Y.R., B.O. Hibbs, and Y. Lee, "New Temperature Correction Procedure for FWD Deflections of Flexible Pavements," Proceedings, The 4th International Conference on Bearing Capacity of Roads and Airfields, Vol 1, Minneapolis, Minnesota, 1994, pp. 413-443.
127. Kim, Y.R. and Y.C. Lee, "Rheological Characterization of Asphaltic Mixtures under Repetitive Loading," Proceedings of the Third Materials Engineering Conference, Infrastructure: New Materials and Methods of Repair, Edited by K.D. Basham, ASCE, 1994, pp. 796-803.
128. Kim, Y.R., "Mechanistic Pavement Research in North Carolina," Proceedings of the First Southeast Regional Conference, Korean Scientists and Engineers Association, 1991.
129. Kim, Y.R., D.L. Eaddy, and P.S. Dunston, "State-of-the-art Review on Project Survey and Evaluation of Pavement Management Systems in U.S.A.," Proceedings of the Eleventh International Technical Symposium, Korean Scientists and Engineers Association, Seoul, Korea, 1990, pp. 2145-2151.
130. Fairhurst, C.E., Y.R. Kim, and N.P. Khosla, "Resilient Modulus Testing of Asphalt Specimens in Accordance with ASTM D4123-82," Proceedings of RILEM Fourth International Symposium, Budapest, Hungary, October 1990.

Research Project Final Reports:

1. Kim, Y.R. and N. Muthady. “Implementation Plan for the New Mechanistic-Empirical Pavement Design Guide,” Final report to the North Carolina Department of Transportation, Report No. FHWA/NC/2006-23, February 2007.
2. Kim, Y.R., M.N. Guddati, B.S. Underwood, T.Y. Yun, and V. Subramanian. “Development of the Asphalt Pavement Performance Prediction Methodology Based on the Viscoelastoplastic Continuum Damage Theory,” Final report to the Korea Highway Corporation, December 2006.

3. Kim, Y.R., M.N. Guddati, B.S. Underwood, T.Y. Yun, V. Subramanian, and A.H. Heidari. “Characterization of ALF Mixtures Using the Viscoelastoplastic Continuum Damage Model,” Final report to the Federal Highway Administration, September 2005.
4. Kim, Y.R. and J. Lee. “Optimizing Gradations for Surface Treatments,” Final report to the North Carolina Department of Transportation, Report No. FHWA/NC/2005-15, December 2005.
5. Kim, Y.R., M. Guddati, Z. Feng, P. Zhang, and V. Subramanian. “A Micromechanics-Based Methodology for the Study of Cracking in Asphalt Concrete,” Final report to Texas A&M Research Foundation, November 2005.
6. Kim, Y.R., S. Lee, Y. Seo, O. El-Haggan. “Impact of Price Reductions on the Long-Term Pavement Performance of HMA Mixes in North Carolina,” Final report to the North Carolina Department of Transportation, Report No. FHWA/NC/2005-09, August 2005.
7. Kim, Y.R., M. Momen, and M. King. “Typical Dynamic Moduli for North Carolina Asphalt Concrete Mixtures,” Final report to the North Carolina Department of Transportation, Report No. FHWA/NC/2005-03, May 2005.
8. Kim, Y.R. and G. Chehab. “Development of Viscoelastoplastic Continuum Damage Model for Asphalt-Aggregate Mixtures,” Final report to the Arizona State University/NCHRP, June 2004.
9. Kim, Y.R. and Y. Seo. “Advanced Characterization of Asphalt Concrete Using a Fracture Mechanics Approach,” Final report to the Arizona State University/NCHRP, June 2004.
10. Kim, Y.R. “A Unified Approach to Predicting Long Term Performance of Asphalt-Aggregate Mixtures,” Final report to the National Science Foundation, March 2003.
11. Kim, Y.R. “Laboratory Evaluation of Lime-Modified Asphalt Mixtures for City of Charlotte,” Final report to Chemical Lime Company, October 2002.
12. Kim, Y.R., J. Daniel, and H. Wen. “Fatigue Performance Evaluation of WesTrack and Arizona SPS-9 Asphalt Mixtures Using Viscoelastic Continuum Damage Approach,” Final report to Federal Highway Administration/ North Carolina Department of Transportation, Report No. FHWA/NC/2002-004, April 2002.
13. Kim, Y.R. and H. Park. “Use of FWD Multi-Load Data for Pavement Strength Estimation,” Final report to North Carolina Department of Transportation, June 2001.
14. Kim, Y.R. and S. Mun. “Determination of Subgrade Strength under Intact Portland Cement Concrete Slabs for Rubblization Projects,” Final report to North Carolina Department of Transportation, June 2000.
15. Kim, Y.R., S.R. Ranjithan, P. Donato, and C. Murphy. “Nondestructive Evaluation of Structural Condition of Timber Piles,” Final report to North Carolina Department of Transportation, December 1999.
16. Kim, Y.R. and J. Daniel. “Development of a Mechanistic Fatigue Prediction Model for Aging Asphalt-Aggregate Mixtures,” Final report submitted to Federal Highway Administration/Western Research Institute, May 1997.
17. Kim, Y.R., S.R. Ranjithan, J. Troxler, and B. Xu. “Assessing Pavement Layer Condition Using Deflection Data,” Final report submitted to National Cooperative Highway Research Program, April 2000.
18. Kim, Y.R., Y.C. Lee, S. Park, S.R. Ranjithan. "Interpretation of FWD Data When Pavement Layers Are Not Intact,” Final report submitted to North Carolina Department of Transportation, June 1997.

19. Kim, Y.R., S. Park, and L. Shao. "Statewide Calibration of Asphalt Temperature Study from 1992 and 1993," Final report submitted to North Carolina Department of Transportation, June 1996.
20. Kim, Y.R. and H.J. Lee. "Healing of Microcracks in Asphalt and Asphalt Concrete," Final report submitted to Federal Highway Administration/Western Research Institute, March 1997.
21. Kim, Y.R. and Y. Kim. "Field Investigation of Microdamage Growth and Healing in Asphalt Concrete," Final report submitted to Federal Highway Administration/Western Research Institute, March 1997.
22. Khosla, P., Y.R. Kim, S. Satish, and N. Kim. "A Comparative Study of Performance of Different Designs for Flexible Pavements," Final report submitted to North Carolina Department of Transportation, July 1996.
23. Kim, Y.R. and S. Chen. "Development of a Structural Condition Evaluation Method for Marine Wooden Piling Using Stress Wave Technology," Final report submitted to Office of Sea Grant, National Oceanic and Atmospheric Administration, U.S. Department of Commerce, January 1996.
24. Kim, Y.R., E. Inge, and Y.C. Lee. "Asphalt Paving Material Properties Affected by Temperature," Final report submitted to North Carolina Department of Transportation, December 1993.
25. Khosla, P., Y.R. Kim, P.C. Lambe, and M.S. Rahman. "Laboratory Determination of Resilient Modulus for Flexible Pavement Design," Final report submitted to National Cooperative Highway Research Program, June 1993.
26. Kim, Y.R. and Y.C. Lee. "Investigation of the Fracture Healing Mechanism in Asphalt Cements Using the Theory of Nonlinear Viscoelasticity," Final report submitted to Texas A&M University, August 1992.
27. Kim, Y.R. and N. Kim. "Resilient Modulus Testing for Korea Highway Corporation," Final report submitted to Korea Highway Corporation, December 1992.
28. Khosla, P., Y.R. Kim, N. Kim. "Performance Related Testing and Measuring of Asphalt-Aggregate Interactions and Mixtures," Final report submitted to Strategic Highway Research Program, NAS-NRC, December 1991.

RESEARCH CONTRACTS:

1. "Multiscale Modeling of Asphalt Concrete for Fatigue Cracking Evaluation," Texas A&M Research Foundation/FHWA, Dec. 26, 2006-Nov. 30, 2011, $466,000.

2. "Hot Mix Asphalt Performance-Related Specifications Based on Viscoelastoplastic Continuum Damage Models," DTFH61-08-H-00005, Federal Highway Administration, Feb. 6, 2008-Feb. 5, 2012, $2,142,401.

3. "Investigation of Highway Asset Inventory and Data Collection Methods," NCDOT, April 1, 2008-Dec. 31, 2008, $200,670.

4. "LTPP Computed Parameter: Dynamic Modulus," FHWA, September 1, 2007-April 30, 2009, $156,888.

5. “Development of a New Chip Seal Mix Design Method,” NCDOT, July 1, 2007-June 30, 2009, $258,835.

6. “Development of Traffic Data Input Resources for the Mechanistic-Empirical Pavement Design Process,” NCDOT, July 1, 2007-June 30, 2009, $339,030.

7. “Performance Based Mix Design for Lime-Modified Asphalt Mixtures,” Chemical Lime Company, August 15, 2006-December 15, 2006, $17,576.

8. “Comprehensive Performance Evaluation of Polymer Modified Hot Mix Asphalt Mixtures,” Kumho Petrochemical Co., Ltd., October 15, 2006-Oct. 14, 2007, $24,924.

9. “Performance Based Analysis of Polymer-Modified Emulsions in Asphalt Surface Treatments,” NCDOT, July 1, 2006-June 30, 2008, $248,097.

10. “Local Calibration of the MEPDG for Flexible Pavement Design,” NCDOT, July 1, 2006-June 30, 2008, $316,756.

11. “Development of a Virtual Testing Module for an Undergraduate Course on Materials Design,” LITRE Grant, North Carolina State University, January 2006-August 2007, $6,000.

12. “Top-Down Fatigue Cracking of Hot-Mix Asphalt Layers,” NCHRP 1-42A, Subcontract from the University of Florida, $120,000.

13. “Evaluation of Geosynthetics and GlasGrid for Rutting Prevention in Asphalt Pavement,” Saint-Gobain Technical Fabrics, Aug. 1, 2005-Oct. 31, 2005, $16,014.

14. “Effects of Various Mix Designs on the Performance of Lime-Modified Asphalt Mixtures,” Chemical Lime Company, Oct. 15, 2005-Feb. 15, 2006, $16,505.

15. “Development of a Multiaxial VEPCD-FEP++ and Its Extension to the Indirect Tension Test,” Federal Highway Administration, Sep. 1, 2005-Aug. 31, 2007, $499,907.

16. “Calibration of Rutting Models for HMA Structural and Mix Design,” NCHRP 9-30A, Subcontract from Applied Research Associates, Inc., November 1, 2005-October. 31, 2008, $70,000.

17. “Implementation Plan for the New Mechanistic-Empirical Pavement Design Guide,” NCDOT, May 1, 2005-June 30, 2006, $90,422.

18. “Quantifying the Benefits of Improved Rolling of Chip Seals,” NCDOT, July 1, 2005-June 30, 2007, $264,638.

19. **“**Viscoelastoplastic Continuum Damage Modeling of Modified and Unmodified Asphalt Mixtures,” Dwight David Eisenhower Transportation Fellowship to Mr. Benjamin Shane

Underwood, US Department of Transportation, Sep. 1, 2004-Sep. 1, 2006, $60,800.

20. "Development of the Asphalt Pavement Performance Prediction Methodology Based on the Viscoelastoplastic Continuum Damage Theory," Korea Highway Corp., Sep. 1, 2004-Dec. 18, 2006, $335,021.

21. "Investigation of the Causes for Cracking on Longitudinal Joints in Glassgrid Reinforced Asphalt Pavements," Saint-Gobain Technical Fabrics, June 15, 2004-Sep. 30, 2004, $13,808.

22. "Characterization of ALF Mixtures Using the Viscoelastoplastic Continuum Damage Model," FHWA, Aug. 15, 2003-Aug. 14, 2005, $199,795.

23. "Optimizing Gradations for Surface Treatments," NCDOT, July 1, 2003-June 30, 2005, $215,576.

24. "Determination of Dynamic Moduli for Typical North Carolina Asphalt Mixtures Modified with Lime," Chemical Lime Company, May 15, 2003-May 14, 2004, $24,966.

25. "Typical Dynamic Moduli for North Carolina Asphalt Concrete Mixes," NCDOT, July 1, 2002-June 30, 2004, $210,810.

26. "Impact of Price Reductions on the Long-Term Pavement Performance of HMA Mixes in North Carolina," NCDOT, July 1, 2001 - June 30, 2003, $271,742.

27. "Laboratory Evaluation of Lime-Modified Asphalt Mixtures for City of Charlotte," Chemical Lime Company, November 1, 2000 – October 31, 2001, $14,949.

28. "Development of Nondestructive Test Methods and Performance Prediction Models for Asphalt Concrete Pavements Using Model Mobile Loading Simulator and Dispersion Analysis of Surface Waves," National Science Foundation Research Experiences for Undergraduates Program, September 1, 1998 – August 31, 2001, $12,000.

29. "Development of Specification Testing to Promote Fracture Fatigue Resistance and to Optimize Microdamage Healing," Texas A&M Research Foundation/Western Research Institute/FHWA, July 1, 1999 – June 30, 2003, $300,000, Co-PI: Y. Horie.

30. "A Unified Approach to Predicting Long Term Performance of Asphalt-Aggregate Mixtures," National Science Foundation, September 1, 1998 – December 31, 2002, $454,793, Co-PI's: R. H. Borden, Y. Horie.

31. "Fatigue Performance Evaluation of WesTrack and Arizona SPS-9 Asphalt Mixtures Using Viscoelastic Continuum Damage Approach," FHWA/NCDOT, July 1, 1998 – June 30, 2000, $224,610.

32. Dwight David Eisenhower Transportation Fellowship, U.S. Department of Transportation, September 1, 2000 – August 31, 2001, $78,100.

33. "Development of Visco-Elasto-Plastic Continuum Damage Model for Asphalt-Aggregate Mixtures," Arizona State University, March 1, 2000 – August 09, 2003, $212,496.

34. "Numerical Modeling of Pavement Materials and Structures Using Finite Element and Discrete Element Methods," North Carolina Supercomputing Center, November 1, 1999 – October 31, 2000, 4800 SGI Origin hours.

35. "Use of FWD Multi-Load Data for Pavement Strength Estimation," NCDOT, July 1, 1999 - June 30, 2001, $139,810.

36. "Determination of Subgrade Strength under Intact Portland Cement Concrete Slabs for Rubblization Projects," NCDOT, July 1, 1998 – June 30, 2000, $128,778.

37. "Dynamic Finite Element Analysis for Condition Assessment of Distressed Pavements," North Carolina Supercomputing Center, July 1, 1998 – June 30, 1999, 2400 Cluster hours.

38. "Nondestructive Evaluation of Structural Condition of Timber Piles," North Carolina Department of Transportation, July 1, 1997 – December 31, 1999, $111,773, Co-PI: S. R. Ranjithan.

39. "Development of a Mechanistic Fatigue Prediction Model for Aging Asphalt-Aggregate Mixtures," Federal Highway Administration/Western Research Institute, $89,486, August 1996 - May 1997.

40. "Assessing Pavement Layer Condition Using Deflection Data," National Cooperative Highway Research Program, $363,637, February 1997 - April 2000, Co-PI: S. R. Ranjithan.

41. "Finite Element Analysis for Condition Assessment of Distressed Pavements," North Carolina Supercomputing Center, July 1, 1997 – June 30, 1998, 200 Cray T90 hours.

42. "Interpretation of FWD Data When Pavement Layers Are Not Intact," North Carolina Department of Transportation, $75,000, July 1995 - June 1997.

43. "Finite Element Analysis of FWD Deflections Measured from Broken Pavements," North Carolina Supercomputing Center, 499 Cray Y-MP hours, July 1995 - June 1997.

44. "Statewide Calibration of Asphalt Temperature Study from 1992 and 1993," North Carolina Department of Transportation, $76,422, July 1994 - June 1996.

45. "Healing of Microcracks in Asphalt and Asphalt Concrete," Federal Highway Administration/Western Research Institute. Subcontract from Texas A&M University, $250,000, April 1993 - March 1997.

46. "Field Investigation of Microdamage Growth and Healing in Asphalt Concrete," Federal Highway Administration/Western Research Institute. Subcontract from Texas A&M

University, $194,079, June 1994 - March 1997.

47. "Development of a Structural Condition Evaluation Method for Marine Wooden Piling Using Stress Wave Technology," Office of Sea Grant, National Oceanic and Atmospheric Administration, U.S. Department of Commerce, $49,746 plus one graduate student at an annual stipend of $13,500, February 1994 - January 1996, Co-PI: J.S. Fisher.

48. "Nonlinear Viscoelastic Three-Dimensional Analysis of Multi-Layered Pavement Structures," North Carolina Supercomputing Center, 25 Cray Y-MP hours, July 1994 - June 1995.

49. "Asphalt Paving Material Properties Affected by Temperature," North Carolina Department of Transportation, $50,000, July 1992 - December 1993.

50. "Investigation of the Fracture Healing Mechanism in Asphalt Cements Using the Theory of Nonlinear Viscoelasticity," Air Force Office of Scientific Research. Subcontract from Texas A&M University, $18,766, July 1991 - August 1992.

51. "Nondestructive Testing Method Based on Spectral Analysis of Surface Waves," NCSU Faculty Research and Development Fund, $3,500, January 1992 - August 1992.

52. "Resilient Modulus Testing for Korea Highway Corporation," Korea Highway Corporation. $3,282, October 1992 - December 1992.

53. "Laboratory Determination of Resilient Modulus for Flexible Pavement Design," National Cooperative Highway Research Program, $425,000, January 1990 - June 1993, Co-PI's: N. P. Khosla, P. C. Lambe, M. S. Rahman.

54. "Large Sized Aggregate Asphaltic Concrete Mixtures - A Design Approach and Performance Evaluation," North Carolina Department of Transportation, $117,000, July 1989 - June 1992, PI: N. P. Khosla.