

CURRICULUM VITAE

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And

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Rolla, Missouri 65409

This document is divided into six areas:

- **Professional Background and Activities**
 - **Construction Materials Program Development at Missouri S&T**
 - **Scholarly Contributions**
 - **Teaching**
 - **University Service**
 - **Professional Course Development (Continuing Education)**
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CAREER SUMMARY

ACTIVITY	CAREER
Years full-time service	31
Years at Chancellor's Professor status	3 (max. allowed)
Years Associate Professor Emeritus	1
Professional Status	
Professional registration	PE in 2 states
Fellow status	Fellow of ACI
University Teaching	
Awards (CET, campus, national)	20
CET average	3.5+
No. courses developed	9
No. sections taught	156+
Learning pedagogy committees	5
Scholarly Contributions	
No. external research grants / as PI	20 / 18
Funding (PI share of grants)	>\$3,100,000
Total publications/reports	64/77
Refereed journal publications	18
Refereed conference proceedings	3
Published technical reports	24
Published books/book chapters	9
Published manuals	6
Conference paper proceedings	4
Other technical reports	13
Conference presentations	54
Workshop presentations	480
Continuing Education	
Short courses directed	197
No. participants	3283
Conferences directed	68
Approximate no. participants	>11,000+
Campus income	>\$3,900,000+
Campus Service	
Professorships / Fellowships developed	\$560,000
Lab equipment procured	\$1,200,000
Laboratories designed/implemented	4
Committee chairs / total committees	19 / 60
Professional Service	
ACI national technical committees	6 currently
ACI regional chapter offices	President, VP, Director
Awards	
Teaching	20
Advising	2
Faculty	5
Research / Scholarly	1
Technical Society	3
Professional	3
National	6

PROFESSIONAL BACKGROUND AND ACTIVITIES

PROFESSIONAL BACKGROUND AND ACTIVITIES

EDUCATION

- B.S. in Civil Engineering, University of Missouri-Rolla, 1971
- M.S. in Civil Engineering (Environmental), University of Missouri-Rolla, 1973
- Ph.D. in Civil Engineering (Geotechnical), University of Missouri-Rolla, 1984
Dissertation: "Relative Durability of Shale"; advisor: R.W. Stephenson

PROFESSIONAL EXPERIENCE

- 2018-present Associate Professor Emeritus
- 2015-2018 Chancellor's Professor, Missouri S&T
- 1991-2015 Associate Professor, Department of Civil Engineering, UMR/Missouri S&T
- 1984-1991 Assistant Professor, Department of Civil Engineering, UMR
- 1980-1984 Graduate Teaching Assistant, Department of Civil Engineering, UMR
- 1980-1996 Consultant, Rolla Geotechnical Engineers, part-time
- 1975-1980 Owner/Operator, Richardson Testing Laboratories, Searcy, Arkansas (retained ownership through 1996)
- 1977-1980 Partner, Long and Richardson Consultants, Searcy, Arkansas (time concurrent with Richardson Testing Laboratories)
- 1975-1976 Staff Engineer, Blaylock, Threet, and Associates, Searcy, Arkansas, part-time (time concurrent with Richardson Testing Laboratories)
- 1973-1975 Project Engineer/Manager, Johnson Engineers, Inc., Palestine, Texas
- 1969-1971 Technician, St. Louis County Highway Dept, Materials Laboratory (part-time)

REGISTRATION/CERTIFICATION

Registered Professional Engineer

- State of Missouri (No. E-21513)
- State of Arkansas (No. 4440)

Certification

- Certified Nuclear Density Gauge Operator
- MoDOT Bituminous QC/QA Certification
- ACI Grade 1 Field Certification Examiner

HONORS

National Awards

- 2018 Chi Epsilon James M. Robbins Excellence in Teaching Award-National
- 2018 Chi Epsilon James M. Robbins Excellence in Teaching Award-Central District
- 2014 Fellow of American Concrete Institute
- 1993 ASCE Best Practice-Oriented Paper, **ASCE Journal of Materials in Civil Engineering**
- 1988 ASEE National New Engineering Educator Award
- 1981 Member status: Chi Epsilon honor society

Professional Awards

- 2017 Alumni Merit Award – Miner Alumni Association
- 2015 Member- Academy of Civil Engineers
- 2003 ACI Missouri Chapter Concrete Person of the Year

University Awards

Teaching: Student-voted

- Missouri S&T CET Outstanding Teaching Awards- 2015, 2014, 2012, 2010, 2008, 2007, 2006, 2005, 2004, 2001, 2000, 1997, 1987
- Dean of Engineering Teaching Excellence Award- 2006, 2005, 2004

Teaching: Peer-selected

- 2011 Campus Faculty Teaching Award
- 1988 ASEE National New Engineering Educator Award

Advising: Student-voted

- 2005 UMR Outstanding Freshmen Student Advisor Award

Advising: Peer-selected

- 2006 Campus Freshmen Engineering Outstanding Advising Award

Faculty: Student-selected

- 2011 Chi Omega Outstanding Professor Award
- 2004 Bernard R. Sarchet Outstanding Faculty Award

Faculty: Peer-selected

- 2015 Chancellor's Professor
- 2012 Forsee Family Engineering Faculty Excellence Award
- 1995 UMR Academy of Civil Engineers Faculty Achievement Award

PROFESSIONAL SERVICE

Current Technical Society Membership

- American Concrete Institute (Fellow)
- American Society of Civil Engineers (Life Member)
- Association of Asphalt Pavement Technologists (Life Membership)
- American Concrete Pavement Association (Member)
- Missouri S&T Academy of Civil Engineers (Treasurer-elect)

Current Technical Committee Activities

- *Voting member:* ACI Committee 325 -Concrete Pavements (2004-present)
- *Voting member:* ACI 325 A Subcommittee –Design (2006-present)
- *Chair:* ACI 325 D Subcommittee -Proportioning for Pavements (2010-2017)
- *Voting member:* ACI Committee 214 -Evaluation of Results of Tests Used to Determine of the Strength of Concrete (2004-present)
- *Voting member:* ACI Committee 330 -Concrete Parking Lots and Site Paving (2005-present)
- *Voting member:* ACI 330 TG Subcommittee -Heavy Duty Concrete Parking Lots (2006-2017)
- *Associate member:* ACI Committee 211 –Proportioning of Concrete Mixtures (2009-present)

Past Professional Society Offices/Committees

ACI:

- *ACI Examiner* for Grade I Field Technician Certification Program (1998-2007; 2010, 2011)
- *Past-President*, Missouri Chapter, ACI (2006)
- *President*, Missouri Chapter, ACI (2005)
- *Vice-President*, Missouri Chapter, ACI (2004)
- *Director*, Missouri Chapter, ACI (1985-1987; 2001-2003)
- ACI - Missouri Chapter, member, Student Activities Committee
- ACI - Missouri Chapter, member, Certification Committee
- *ACI Supplementary Examiner* for Grade I Field Technician Certification Program (2018)

MoDOT:

- MoDOT Technical Advisory Group-Pavements
- MoTREC UMR representative
- MoDOT High Performance Concrete Task Force

Association of Asphalt Technologists:

- *Continuing Member*

Other:

- Mid-West Concrete Consortium: academic representative

Professional Journal Reviewer/ Software Beta Tester

- ACI Materials Journal
- ASCE Journal of Transportation Engineering
- ASCE Journal of Materials in Civil Engineering
- AAPT Journal
- FHWA “DRIP”-Drainage in Pavements software

**CAREER TOTAL INCOME at MISSOURI S&T (last updated: fall 2014)
(Richardson share)**

Source	Funds
Research Grants: (2014 dollars)	
External	3,103,593
Internal	4570
<i>Subtotal</i>	3,108,164
Continuing Education: (2014 dollars)	
QC/QA Certification Short Courses	~2,516,400
Conferences	~1,373,400
ACI Certifications	28,540
<i>Subtotal</i>	~3,918,340
<i>Subtotal</i>	~7,026,504
Development:	
MAPA Professorship	550,000
MAPA Fellowship	10,000
<i>Equipment</i>	1,206,000
Total	8,792,504

**CONSTRUCTION MATERIALS PROGRAM DEVELOPMENT
at MISSOURI S&T**

FOUNDING and DEVELOPMENT CONSTRUCTION MATERIALS PROGRAM at MISSOURI S&T

In 1984, the Construction Materials Program at the then-University of Missouri-Rolla essentially did not exist. There was no active faculty, no history of funded research, three graduate courses were taught at irregular intervals- many times by graduate students, lab equipment was minimal, no cadre of graduate students, and no short courses being taught. The following are the highlights of the development of the program accomplished by David Richardson:

CURRICULUM: <i>all sections in all courses taught solely by DR 1984-2012</i>
CE 216 Construction Materials: <ul style="list-style-type: none"> • Course content completely re-configured • In 1984, was essentially a concrete course; lecture portion was expanded to include asphalt, masonry, steel, and different types of aggregate • Number of lab exercises were expanded from 4 to 9 periods • Number of ASTM procedures taught was expanded from 7 to over 60 • Replication of equipment expanded from 3 squads to 8
CE 312 Bituminous Materials: <ul style="list-style-type: none"> • Course content completely re-configured • Course expanded from 2 credit hours to 3 to allow the addition of a lab component to include full asphalt-aggregate, binder, and mix testing capabilities • Taught on a rotating regular basis
CE 313: Properties of Concrete <ul style="list-style-type: none"> • Course content completely re-configured • Course included a minor lab component • Taught on a rotating regular basis
CE 317 (Asphalt) Pavement Design <ul style="list-style-type: none"> • Course content completely re-configured • Taught on a rotating regular basis • Course eventually split into 2 courses
CE 356 Concrete Pavement Design <ul style="list-style-type: none"> • Newly developed course in 2008 • Taught on a rotating regular basis
CE 401 Advanced Properties of Concrete <ul style="list-style-type: none"> • Developed and taught 1986
CE 401 Advanced Construction Materials <ul style="list-style-type: none"> • Developed and taught 1992
CE 401 Advanced Construction Materials Laboratory <ul style="list-style-type: none"> • Developed 1986, taught 1986 and 2002

LABORATORY EQUIPMENT: (only equipment secured by DR is shown)

Asphalt Lab

- Over 140 items of new lab equipment added, sources of funds primarily from research grants and short course income
- Equipment added/refurbished:

Binder Lab: 2 Brookfield rotational viscometers, Prentex pressure-aging vessel, degassing oven, Bohlin Gemini 150 dynamic shear rheometer, Applied Test Systems bending beam rheometer, absolute and kinematic viscosity equipment, ductility device, thin-film and rolling-thin-film ovens, penetrometer, ring and ball softening point equipment, clay-gel column chromatography equipment, asphalt cement pycnometers, asphalt extraction/recovery equipment (reflux, Abson, continuous-flow centrifuge, and rotary evaporator methods plus non-standard equipment/methods for large-scale extraction/recovery, 1 small and 2 large batch centrifuges)

Mixture Lab: Asphalt Mixture Performance Tester (AMPT) with fatigue testing jig and overlay testing jig and 4 dedicated environmental chambers, plus a 4" core drill for preparing specimens, APA Loaded Wheel Tester fitted to also run the Hamburg Wheel Test, MTS 651 environmental chamber for creep compliance and tensile strength, 3 Rice method specific gravity workstations, 3 Pine gyratory shear compactors, three asphalt ignition ovens, CoreLok device, CoreDry device, Geotest multi-loading machine (TSR, Marshall or CBR), mechanical and manual Marshall compaction equipment, water baths, ovens, 2 sample extruders, 2 five-gal can mixers, 10-gal can mixer, 2 five-quart Hobart mixers, 20-quart Hobart mixer w/heater, specific gravity electronic balance workstation, resilient modulus indirect tension equipment, including a PC workstation for data acquisition and test control and Tensile Strength Ratio (Lottman) equipment.

Cost: \$747,000

Aggregate Lab

- Over 100 items of new lab equipment added, sources of funds for the larger (greater than \$1000) items were primarily from research grants and short course income.
- Major equipment added/refurbished: Los Angeles Abrasion machine, 3 Gilson testing screen shakers, 4 Rotosift-type sieve shakers, CBR equipment (includes 1 motorized and 2 manually operated load frames and field CBR kits), resilient modulus equipment, a range of sampling and splitting devices, 7 large exterior-access aggregate bins, 18 small bins, 8 specific gravity workstations, permeability workstation for 10 in. diameter specimens, 8 SUPERPAVE consensus and source testing equipment workstations (sand equivalent, flat/elongated aggregate templates, sand particle shape analyzers, and plasticity index), 3-tier Micro-Deval station, wet-ball mill device, aggregate crushing value test equipment, methylene blue testing equipment, sand organic impurities kit, water-alcohol freeze/thaw station, sulfate soundness station, slake durability device, bench-scale and portable point-load test devices, large six-person minus #200 washing station, ultrasonic sieve cleaner, type M laboratory crusher from American Pulverizer Company, Iowa Pore Index testing station, carbonate analyzer, pH meter, unconfined compression frame, and falling head permeameter.
- **Cost: \$258,000**

Concrete Lab

- Over 75 items of new lab equipment added, sources of funds for the larger (greater than \$1000) items were primarily from research grants and short course income
- Major equipment added/refurbished: controlled-environment room for moist-curing and conditioning specimens, freeze/thaw cabinet, Blaine cement fineness apparatus, mini-slump devices, James maturity meter, Intellirock maturity equipment, Schmidt hammer and calibration

<p>anvil, air content meters (3 pressuremeter "B"-type, 4 roll-a-meters, and Chace air indicator), cylinder capping station that includes compound heater and cylinder capping molds for 2 in. through 6 in. diameter specimens, concrete saw, microwave workstation for concrete moisture content determination, Kestrel weather station, spud vibrator, various electronic balances, various ovens, ring shrinkage device, curing tanks, dust collection system, storage racks, and miscellaneous supporting items.</p> <ul style="list-style-type: none"> • Steel connections lab: Skidmore-Wilhelm calibration device, Torquon shear wrench, non-impact electric torque wrench, large manual torque wrench, and weld inspection equipment: magnetic particle, dye penetrant, and weld measuring gages. • Cost : \$57,000
<p>Masonry Lab</p> <ul style="list-style-type: none"> • Several items of new lab equipment added, sources of funds primarily from departmental/campus sources • Major equipment added: water retentivity device, brick/block capping molds, brick/block unit weight station, a concrete block-forming machine, and a bond-wrench load frame. • Cost: \$8,000
<p>Load Frame Lab</p> <ul style="list-style-type: none"> • Over 25 items of new lab equipment added, sources of funds for the larger (greater than \$1000) items were primarily from research grants and short course income • Major equipment added/refurbished: load testing equipment including a concrete cylinder (4" and 6") compressometer/extensometers, a 200,000 lb Tinius-Olsen universal compression/tension machine updated to be servo-controlled with data acquisition PC workstation, a Rainhart portable beam tester, an MTS 651 environmental chamber, accessories for split-tensile and TestMark, ASTM, and Forney flexural (beam) strength testing, and rebar tension and bending testing equipment. • Cost: \$136,000
<p>Total Laboratory Equipment Cost: \$1,206,000</p>

<p>LABORATORY SPACE DESIGN:</p> <ul style="list-style-type: none"> • 1990: Developed separate Asphalt Lab Room in old Butler-Carlton Hall • 2000: Designed layout and details of the Materials Lab complex for the new Butler-Carlton Hall: Reese Asphalt Lab (Room 112), Aggregate Lab (Room 111), Concrete & Masonry Lab (Room 109), Jones Structural Materials (Load Frame) Lab (Room 106), and the Ross Materials classroom (Room 110)
<p>RESEARCH GRANTS:</p> <ul style="list-style-type: none"> • Research sponsors: NAS, NSF, MATC, ASEE, MoDOT, MAPA, NUTC/UTC, MRTC, numerous industrial • 20 externally-sponsored projects • Several internal projects involving undergraduates <p>Income: \$3.1 M</p>
<p>GRADUATE STUDENTS:</p> <ul style="list-style-type: none"> • 21 graduate students recruited
<p>FULL-TIME RESEARCH ASSOCIATE:</p> <ul style="list-style-type: none"> • 2005: full-time senior research associate supported 100% by the PI

SHORT COURSES: through 2014

1998:

- Developed the QC/QA certification training program for MoDOT
- 51 five-day Superpave certification training courses held (1998-present)

1999:

- Developed QC/QA aggregate certification training course
- 2 courses held (1998-present)

2000:

- Developed the Superpave re-certification course
- 53 two-day courses held (1998-present)

2006:

- Developed the aggregate consensus tests certification training course
- 23 one-day courses held (1998-present)

2006:

- Developed the TSR certification training course
- 16 one-day courses held (1998-present)

2010:

- Developed the ignition oven binder content certification training course
- 4 one-day courses held (1998-present)

1996-2011:

- 14 ACI one-day Grade 1 field certification courses held

Total Courses: 156

Income: \$2.4 M

CONFERENCES:

1985-present:

- Directorship of the annual Asphalt Conference; expanded to day-and-a-half
- 31 Asphalt Conferences directed

1986-present:

- Directorship of the annual Concrete Conference; expanded to day-and-a-half
- 30 Concrete Conferences directed

Income: \$1.3 M

ENDOWMENTS:

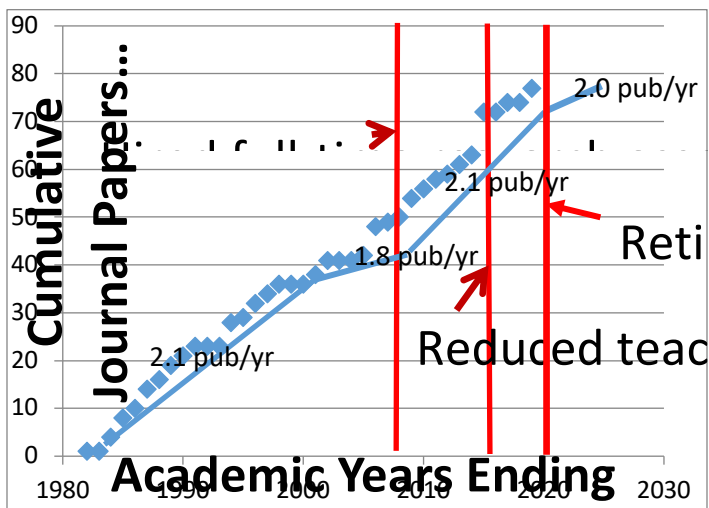
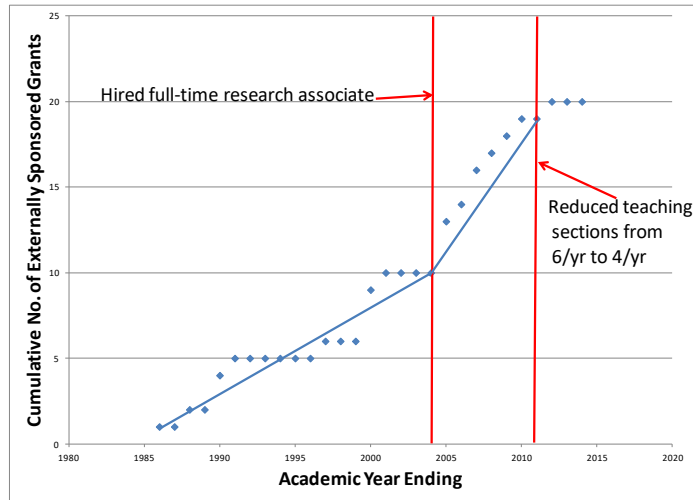
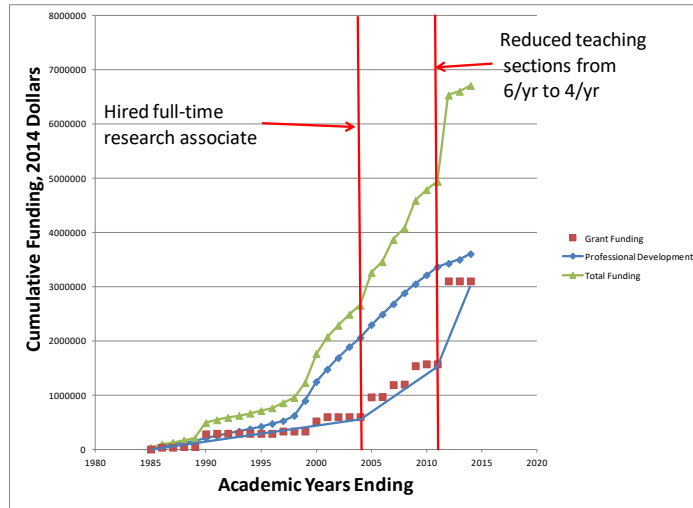
- 2000: Initiation and development of the **MAPA Endowed Asphalt Graduate Student Fellowship**
- 2011: Initiation and development of the **MAPA Endowed Asphalt Materials Professorship**

Total: \$560 K

NATIONAL RECOGNITION:

- Authored over 75 technical publications
- Given over 533 presentations
- Currently active in 6 national technical society (ACI) committees, including authorship of several national consensus Guidelines
- Directed 68 conferences and paper sessions

Milestones



SCHOLARLY CONTRIBUTIONS

SCHOLARLY CONTRIBUTIONS

REFEREED JOURNAL PUBLICATIONS

*= Major advisor for student

**= Corresponding/Leading author

1. **Richardson, D.N.****, Beckemeier, K.W.* , and Volz, J.S., (2015), "Effects of Powder Additives on High Volume Fly Ash Mixtures," *ACI Materials Journal*, Vol. 112, No. 4, pp.535-546.
2. **Richardson, D.N.**** and Davis, C.P.* , (2015), "Particle Size and Specimen Preparation Effects on the Iowa Pore Index," *ACI Materials Journal*, Vol. 112, No. 3, 477-485 pp.
3. **Richardson, D.N.**** and Lusher, S.M.* , (2015), "Prediction of Freeze-Thaw Durability of Concrete," *ACI Materials Journal*, Vol. 112, No. 3, 439-450 pp.
4. Lusher, S.M.*** and **Richardson, D.N.**, (2015), "Guayule Plant Extracts as Recycling Agents in Asphalt Mixtures with High Reclaimed Binder Content," *ASCE Journal of Materials in Civil Engineering*, Vol. 27, No. 10, pp. 04014269, 1-10.
5. **Richardson, D.N.**** and Whitwell, B.A.* , (2014), "Concrete Production Plant Variables Affecting Flexural Strength Relative to Compressive Strength", *ASCE Journal of Materials in Civil Engineering*, Vol. 26, No. 8, pp. 04014032, 1-10.
6. Belarbi, B.** , **Richardson, D.N.****, Swenty, M.K., and Taber, L.H.* , (2010), "Effect of Contamination on Steel-Reinforcing Bar-Concrete Bond", *ASCE Journal for Performance of Constructed Facilities*, Vol. 24, No.3, pp. 206-214.
7. Han, Y-P.* ,** , Petry, T.M. and **Richardson, D.N.** (2006), "Resilient Modulus Estimation System for Fine Grained Soils", *Transportation Research Record*, No. 1967, Transportation Research Board, pp.69-77.
8. Taber, L.H.* , Belarbi, D.J., and **Richardson, D.N.** (2002), "Effects of Reinforcing Bar Contamination on the Steel-Concrete Bond During Concrete Construction", *ACI 5th International Conference, Special Publication SP-209*, Cancun, Mexico, pp. 839-861.
9. **Richardson, D.N.**** (2001), "AASHTO Drainage Coefficients for Flexible Pavements", *Transportation Research Record*, No. 1778, Transportation Research Board, pp.73-80.
10. **Richardson, D.N.**** (1997), "Drainability Characteristics of Granular Pavement Base Material", *ASCE Journal of Transportation*, Vol.123, No. 5, pp. 385-392.
11. Gawedzinski, M.J.* and **Richardson, D.N.**** (1997), "Waste Thermoplastic in Concrete Masonry", *The Masonry Society Journal*, Vol.15, No.1, pp.27-30.
12. **Richardson, D.N.**** (1996), "AASHTO Layer Coefficients for Cement-Stabilized Soil Bases", *ASCE Journal of Materials in Civil Engineering*, Vol. 8, No. 2, pp.83-87.
13. **Richardson, D.N.**** (1991), "Review of Variables That Influence Measured Concrete Compressive Strength", *ASCE Journal of Materials in Civil Engineering*, Vol. 3, No. 2, pp. 95-112.
14. **Richardson, D.N.**** (1990), "Effects of Testing Variables on the Comparison of Neoprene Pad and Sulfur-Mortar Capped Concrete Test Cylinders", *ACI Materials Journal*, Vol. 87, No. 5, pp. 489-495.

15. **Richardson, D.N.**** and Wiles, T.T.* (1990), "Shale Durability Rating System Based on Loss of Shear Strength", *ASCE Journal of Geotechnical Engineering*, Vol. 116, No. 12, pp. 1864-1880.
16. **Richardson, D.N.**** (1989), "Relationship of Point-Load Index to Compressive Strength of Concrete", *ACI Materials Journal*, Vol. 86, No. 4, pp. 409-416.
17. **Richardson, D.N.****, Stephenson, R.W., and Molloy, D. (1987), "Soil Shrinkage-Induced Failure of a Foundation", *ASCE Journal of the Performance of Constructed Facilities*, Vol. 1, No. 4, pp. 210-228.
18. **Richardson, D.N.**** and Long, J.* (1987), "The Sieved Slake Durability Test", *Journal of the Association of Engineering Geologists*, Vol. XXIV, No. 2, pp. 247-258.

PEER-REVIEWED CONFERENCE PROCEEDINGS (Full-length)

1. Han, Y-P.*, Petry, T.M., and **Richardson, D.N.** (Jan. 2006), "A Systems Approach for Estimating Field Moisture Contents", Compendium of papers, *85th Annual Meeting of the Transportation Research Board*, CD-ROM, National Research Council, Washington, D.C..
2. **Richardson, D.N.****, (July, 1998), "Making Concrete Less Abstract", Proceedings: *Fifth Annual Undergraduate Faculty Enhancement Workshop/Symposium*, Univ. Of Calif.- Berkeley, Berkeley, California.
3. **Richardson, D.N.****, (May, 1985), "Relative Durability of Shale-A Suggested Rating System", *Proceedings of the 36th Annual Highway Geology Symposium*, Clarksville, Indiana.

BOOKS/SPECIAL PUBLICATIONS/SPECIFICATIONS

1. **Richardson, D.N.****, Cost, V.T., Holland, J., Sorcic, A., Roberts, J., and Taylor, P., (2017), *ACI 325.14R-17*, "Guide for Design and Proportioning of Mixtures for Concrete Pavements", *American Concrete Institute*, 71 pp., ISBN 978-1-945487-66-8.
2. Kazanis, K,** Birdwell, B., Buzelli, D., Cook, M., Gaspey, B., Holland, J., Parkes, N, **Richardson, D.N.**, Rodden, R., Scurto, G., Tu, D., Tull, C., Varner, R., (2017), *ACI 330.2R-17*, "Guide for Design and Construction of Concrete Site Paving for Industrial and Trucking Facilities", *American Concrete Institute*, 67 pp., ISBN 978-1-945487-60-6.
3. Mullarky, J.I.**, Parkes, N.K., **Richardson, D.N.**, Roberts, J.W., Smith, K.D., and Smith, T.J., (2015), *ACI 325.9R-15*, "Guide for Construction of Concrete Pavements", (Richardson: Chapters 5.10 - Opening to Traffic, Chapter 5.11- Quality Control and Quality Assurance, and Chapter 5.12 – Inspection), *American Concrete Institute*, 62 pp., ISBN 978-1-942727-31-6.
4. Luke, A., Bognacki, C.**, Castles, B., Lobo, C.L., **Richardson, D.N.**, Takhtovich, E., and Vogt, W.L. (2011), *ACI 214R-11*, "Guide to Evaluation of Strength Test Results of Concrete", *American Concrete Institute*, 52 pp., ISBN 978-0-87031-423-0.
5. Bartlett, F.M.**, Kaufman, A.L., **Richardson, D.N.**, and Vogt, W.L., (2010), *ACI 214.4R-10* "Guide for Obtaining Cores and Interpreting Compressive Strength Results", *American Concrete Institute*, 17 pp., ISBN 978-0-87031-254-0.
6. **Richardson, D.N.**** (1991), "Review of Variables That Influence Measured Concrete Compressive Strength", *National Ready Mix Concrete Publication No. 170* and *National Aggregate Association Circular No. 132*, Silver Spring, Maryland, 17 pp.

BOOKS/SPECIAL PUBLICATIONS/SPECIFICATIONS PENDING

1. Sorcic, A., Cost, T., Delatte, N., Mullarky, J., **Richardson, D.**, Roberts, J., and Smith, K., **ACI 325.11R-XX**, “Accelerated Techniques for Concrete Paving”, *American Concrete Institute*, in TAC-review.
2. **ACI 325.xx**, “Guide for Design of Concrete Pavements”, *American Concrete Institute*, in-committee.
3. **ACI 330xx**, “Guide for Design and Construction of Concrete Parking Lots,” *American Concrete Institute*, in-committee.

PUBLISHED TECHNICAL REPORTS

1. **Richardson, D.N.****, (2015), “Volume I: Summary Report”, *MoDOT Pavement Preservation Research Program*, MoDOT TRyy1141, 51 pp.
2. **Richardson, D.****, Lusher, S.M., Boeckmann, A., and Luna, R., (2015), “Volume II: Data Collection for Pavement Management: Historical Data Mining and Production of Data”, *MoDOT Pavement Preservation Research Program*, MoDOT TRyy1141, 159 pp.
3. **Richardson, D.**** and Lusher, S.M., (2015), “Volume III: Development of Pavement Family and Treatment Performance Models”, *MoDOT Pavement Preservation Research Program*, MoDOT TRyy1141, 57 pp.
4. **Richardson, D.N.**** and Lusher, S.M., (2015), “Volume VI: Pavement Treatment Trigger Tables/Decision Trees and Treatment Candidate Selection Process”, *MoDOT Pavement Preservation Research Program*, MoDOT TRyy1141, 122 pp.
5. **Richardson, D. N.****, Anderson, N., Boeckmann, A.Z., Luna, R., Lusher, S.M., Rosenblad, B., Sneed, L., (2014), “NUTC/MoDOT Pavement Preservation Research Program,” **NUTC Project 00039112**, National University Transportation Center, Rolla, Missouri, <http://transportation.mst.edu/research/r300/>, 228 pp.
6. **Richardson, D.N.****, and Lusher, S.M.*, (2013), “The Guayule Plant: A Renewable, Domestic Source of Binder Materials for Flexible Pavement Mixtures”, **New Ideas for Highway Systems, NCHRP-IDEA Project 143**, Trans. Res. Board, Washington, D.C., pp. 149-154.
7. Maerz, N.H.**, and **Richardson, D.N.** (2013), “Aggregate Shape Characterization Using Digital Image Processing”, **New Ideas for Highway Systems, NCHRP-IDEA Project 78**, Trans. Res. Board, Washington, D.C., p. 75.
8. **Richardson, D.N.****, Beckemeier, K.W.* , and Davis, D.D.* (2012), “Evaluation of HVFA Cementitious Paste and Concrete Mixtures,” **Final Report A, TRyy1110**, Missouri Department of Transportation, 252 p.
9. **Richardson, D.N.**** (2009), “Quick Test for Percent Deleterious Material”, **Contract No. RI07-052**, Missouri Department of Transportation, 166 p.
10. **Richardson, D.N.**** (2009), “Quick Test for Durability Factor Estimation”, **Contract No. RI07-042**, Missouri Department of Transportation, 113 p.
11. **Richardson, D.N.**** and Lusher, S.M.* , (2009), “Resilient Moduli of Granular Base Materials Using a Modified Type 5 Gradation”, **Contract No. RI08-021**, Missouri Department of Transportation, 40 p.

12. **Richardson, D.N.****, Petry, T.M., Ge, L., Han, Y.P., and Lusher, S.M.* (2009), "Resilient Moduli of Typical Missouri Soils and Unbound Granular Base Materials", **Contract No. RI06-001, MoDOT**, Missouri Department of Transportation, 235 p.
13. **Richardson, D.N.**** and Lusher, S.M.* (2008), "Determination of Creep Compliance and Tensile Strength of Hot-Mix Asphalt for Wearing Courses in Missouri", **Contract No. RI05-052**, Missouri Department of Transportation, 68 p.
14. **Richardson, D.N.**** and Lusher, S.M.* (2006), "Calibration of the CoreLok Method for Determination of Missouri Aggregate Specific Gravities", **Contract No. RI06-017**, Missouri Department of Transportation, 37 p.
15. **Richardson, D.N.**** (2006), "Strength and Durability Characteristics of a 70% Ground Granulated Blast Furnace Slag Concrete Mix", **Project No. R199-035**, Missouri Department of Transportation, 134 p.
16. **Richardson, D.N.**** (2005), "Aggregate Gradation Optimization", **Task Order No. R198-035**, Missouri Department of Transportation, 111 p.
17. Maerz, N.H.** and **Richardson, D.N.** (2002), "Aggregate Shape Characterization Using Digital Image Processing", **IDEA Final Report, NCHRP-78**, Trans. Res. Board, Washington, D.C., 51 p.
18. **Richardson, D.N.****, Morrison, W.J.* , Kremer, P.A.* , and Hubbard, K.M. (1996) "Determination of AASHTO Drainage Coefficients", **MCHRP Final Report, Study 90-4**, Missouri Department of Transportation, 194 p.
19. **Richardson, D.N.****, and Hubbard, K.M. (1996) "Determination of AASHTO Drainage Coefficients: Missouri Climatological Data", **MCHRP Final Report, Study 90-4**, Missouri Department of Transportation, 204 p.
20. **Richardson, D.N.****, and Kremer, P.A.* (1994), "Determination of AASHTO Layer Coefficients, Vol. II: Unbound Granular Bases and Cement Treated Bases", **MCHRP Final Report, Study 90-5**, Missouri Department of Transportation, 166 p.
21. **Richardson, D.N.****, Lambert, J.K.* and Kremer, P.A.* (1994), "Determination of AASHTO Layer Coefficients, Vol. I: Bituminous Materials", **MCHRP Final Report, Study 90-5**, Missouri Department of Transportation, 237 p.
22. **Richardson, D.N.**** (Nov. 1987), "Parking Lot Flexible Pavement Design: State of the Practice in Missouri", **Tech. Rept. 1987-101**, Transportation Institute, Univ. of Missouri-Rolla, 54 p.
23. **Richardson, D.N.**** (Nov. 1985), "Evaluation and Preparation of Roadway Subgrades", **Tech. Rept. 85-101**, Transportation Institute, 35 p.
24. Cole, N.A.** , Stevens, G.T., Heagler, J.B. and **Richardson, D.N.** (1982), "Research Alternative Uses of Wastes Created by Industry's Use of High-Sulfur Coal", Office of Environmental Affairs, **Louisiana Department of Natural Resources**.

NON-REFEREED CONFERENCE PROCEEDINGS (Full-length Papers)

1. Richardson, D.N. (April, 1995), "D-Cracking of Concrete Pavements", **Missouri Concrete Conference**, Rolla, Missouri.
2. Richardson, D.N. (Nov. 9-10, 1994), "Estimation of Resilient Modulus of Coarse-Grained Granular Base Materials", **37th Annual Asphalt Conference**, Rolla, Missouri.

3. Richardson, D.N. (Nov. 9-10, 1994), "Estimation of Resilient Modulus of Fine-Grained Subgrade Soils", **37th Annual Asphalt Conference**, Rolla, Missouri.
4. Richardson, D.N. (Nov. 9-10, 1994), "Estimation of Drainage Coefficients", **37th Annual Asphalt Conference**, Rolla, Missouri.

WORKSHOP PROCEEDINGS

1. **Richardson, D. N.** (2011), "Short Course Notebook", **Ignition Oven Binder Content Testing QC/QA Short Course**, Rolla, Missouri.
2. **Richardson, D. N.** (2006), "Short Course Notebook", **Aggregate Consensus Testing QC/QA Short Course**, Rolla, Missouri.
3. **Richardson, D. N.** (2006), "Short Course Notebook", **Tensile Strength Ratio QC/QA Short Course**, Rolla, Missouri.
4. **Richardson, D. N.** (2001), "Short Course Notebook", **Level 2 Bituminous QC/QA Short Course**, Rolla, Missouri.
5. **Richardson, D. N.** (1998), "Short Course Notebook", **Superpave QC/QA Short Course**, Rolla, Missouri.
6. **Richardson, D.N.** (1988), "Workshop Notebook", **Pavement Design and Analysis Computer Workshop**, Rolla, Missouri.

OTHER REPORTS/NON-REFEREED PUBLICATIONS

1. Lusher, S.M.* and **Richardson, D.N.** (2006), "Enhancement of the California Bearing Ratio Test", Department of Civil Engineering, University of Missouri-Rolla, Rolla, Missouri, 28 p.
2. Wilson, P.* and **Richardson, D.N.** (2001), "Aggregate Optimization of Concrete Mixtures", Special Report, Department of Civil Engineering, University of Missouri-Rolla, Rolla, Missouri, 18 p.
3. Richardson, D.N. and Kotteman, J.* (1989), "Relationship of Durability of Shale to Soaked Compression and Static Compaction Characteristics", Special Investigation, Department of Civil Engineering, University of Missouri-Rolla, Rolla, Missouri.
4. Richardson, D.N. (1989), "Testing Variables Affecting the Compressive Strength of Concrete Cylinders", Special Report, Department of Civil Engineering, University of Missouri-Rolla, Rolla, Missouri.
5. Richardson, D.N. and Layman, R.S.* (1988), "Effect of Flyash in Bituminous Pavement Mixtures on Retained Strength", Special Investigation, Department of Civil Engineering, University of Missouri-Rolla, Rolla, Missouri.
6. Richardson, D.N. and Wiles, T.* (1987), "Relationship of California Bearing Ratio and Durability of Shale", Special Investigation, Department of Civil Engineering, University of Missouri-Rolla, Rolla, Missouri.
7. Richardson, D.N. (Dec. 1984), "Highlights of UMR's 27th Annual Asphalt Conference and Workshop", **Mid-West Contractor**, Kansas City, Missouri.

8. Richardson, D.N. (1984), "Subsurface Exploration: Hy-Point Industrial Park, Rolla, Missouri", Rolla Community Development Corp., 22 p.
9. Richardson, D.N. (1984), "Subsurface Exploration: Laclede-Christy Warehouse, Owensville, Missouri", Missouri Engineering Co. & Assoc., 18 p.
10. Richardson, D.N. (1985), "Subsurface Exploration: Sullivan City Building Site, Sullivan, Missouri", City of Sullivan, 24 p.
11. Richardson, D.N. (1985), "Subsurface Exploration: Sullivan Industrial Park No. 2, Sullivan, Missouri", City of Sullivan, 41 p.
12. Richardson, D.N. (1986), "Subsurface Exploration: Cuba Industrial Site, Cuba, Missouri", Missouri Engineering Corp., 22 p.
13. Richardson, D.N. (1986), "Subsurface Exploration: Pump Handle Convenience Store, Rolla, Missouri", Missouri Engineering Corp., 27 p.

INVITED CONFERENCE PRESENTATIONS

1. "New ACI Mixture Design Method for Paving Concrete", **Missouri Concrete Conference**, Rolla, Missouri (June 6, 2017)
2. "Introduction to New Pavement Construction Guide: ACI 325.9R-15", **Missouri Concrete Conference**, Rolla, Missouri (May 3, 2016)
3. "MoDOT Pavement Preservation Study", **58th Annual Asphalt Conference**, Rolla, Missouri (Nov. 2015).
4. "ACI 325 Guide for Design and Proportioning of Concrete Mixtures for Pavements", **ACI Spring National Convention**, Reno, Nevada (March 24, 2014).
5. "MoDOT Pavement Preservation Research Program", **2nd Annual CIES Transportation Research Conference**, Jefferson City, Missouri (September 13, 2013).
6. Lusher, S.M. and **Richardson, D.N.**, "High RAP/Shingle Mix Binder Modifiers Derived from the Guayule Plant," **55th Annual Asphalt Conference**, Rolla, Missouri (December 4, 2012)
7. "High Volume Flyash Concrete in Missouri", **Missouri Concrete Conference**, Rolla, Missouri (April 26, 2012)
8. "Strength Testing: Effect of Specimen Size", **Missouri Concrete Conference**, Rolla, Missouri (April 27, 2012)
9. "Poor Testing Techniques and Consequences for the Entire Project Team", **Concrete Council of St. Louis**, St. Louis, Missouri (September 22, 2011)
10. "Poor Testing Techniques and Consequences" **Missouri Concrete Conference**, Rolla, Missouri (April 26, 2011)
11. "Basis for Acceptance: Lab Cured vs. Field Cured Specimens", **Missouri Concrete Conference**, Rolla, Missouri (May 4, 2010)
12. **Richardson, D.N.**, and Snell, L., "Living With Variations in Slump", **ACI National Convention**, St. Louis, Missouri (Nov. 2008)
13. "Asphalt Program at UMR", **50th Annual Asphalt Conference**, Rolla, Missouri (Nov. 2007).

14. "The Asphalt Conference: The First 50 Years", **50th Annual Asphalt Conference**, Rolla, Missouri (Nov. 2007).
15. "Concrete Research at UMR", **Missouri Concrete Conference**, Rolla, Missouri (April 3, 2007).
16. "UMR's Asphalt Program", **49th Annual Asphalt Conference**, Rolla, Missouri (Nov. 2006).
17. "ACI Activities", **Missouri Concrete Conference**, Rolla, Missouri (April 5, 2006),
18. "Concrete Testing in the Field", **ACPA Missouri-Kansas Paving Conference**, ACPA, Kansas City, Missouri (March, 2005).
19. "Concrete Testing in the Lab", **ACPA Missouri-Kansas Paving Conference**, ACPA, Kansas City, Missouri (March, 2005).
20. "Elements of Successful Chapter Seminars", **ACI National Convention**, Washington, D.C. (March, 2004).
21. "Concrete Testing: The What, Where, How, and Why", **ACPA Missouri-Kansas Paving Conference**, ACPA, Kansas City, Missouri (March, 2004).
22. "Case Study: Use of Ground Granulated Blast Furnace Slag", **Missouri Concrete Conference**, Rolla, Missouri (April 8, 2003).
23. "Concrete Basics", **Missouri Concrete Conference**, Rolla, Missouri (April 8, 2003).
24. "From Placing to Sawing", **ACPA Missouri-Kansas Paving Conference**, ACPA, Kansas City, Missouri (March, 2003).
25. "Nurturing Concrete Slabs During Gestation", **Dept. of Civil Engineering Materials Area Seminar Series**, Rolla, Missouri (Feb. 21, 2003).
26. "UMR's New Concrete Laboratories", **Missouri Concrete Conference**, Rolla, Missouri (April 9, 2002).
27. "Inspection Basics", **ACPA Missouri-Kansas Paving Conference**, ACPA, Kansas City, Missouri (March, 2002).
28. "Paving Basics", **MoDOT District 6 Presentation**, Chesterfield, Missouri (February, 2002).
29. "UMR's New Asphalt Laboratory", **44th Annual Asphalt Conference**, Rolla, Missouri (Nov. 2001)
30. "Intent of the Specifications", **ACPA Missouri-Kansas Paving Conference**, ACPA, Kansas City, Missouri (March, 2001).
31. "Basics of Concrete Testing", **ACPA Missouri-Kansas Paving Conference**, ACPA, Kansas City, Missouri (March 7, 2000).
32. "Glasphalt Update", **42nd Annual Asphalt Conference**, Rolla, Missouri (Nov.17, 1999).

33. "Certification: Superpave QC/QA", **42nd Annual Asphalt Conference**, Rolla Missouri (Nov. 17, 1999).
34. "Recent Developments in Highway Materials Engineering", **Dept. of Civil Engineering Graduate Seminar Series**, Rolla, Missouri (Oct. 14, 1999).
35. "Effects of Variables on Slump Test Results", **Missouri Concrete Conference**, Missouri (April 26-27, 1999).
36. "Testing Do's and Don'ts", **ACPA Missouri-Kansas Paving Conference**, ACPA, Kansas City, Kansas (1999).
37. "Concrete Properties Affecting Performance", **ACPA Missouri-Kansas Paving Conference**, ACPA, Kansas City, Kansas March, 1999).
38. "Testing: What It Can Do for You", **Missouri Concrete Conference**, Rolla, Missouri (1998).
39. "Testing Do's and Don'ts", **ACPA Missouri-Kansas Paving Conference**, ACPA, Kansas City, Missouri (1998).
40. "Superpave Laboratory/Field Testing Equipment", **39th Annual Asphalt Conference**, Rolla, Missouri (1996).
41. "Materials' Property Estimation for the Practicing Engineer", **Department of Civil Engineering Graduate Seminar Series**, Rolla, Missouri (1996).
42. "Impact of Improper Testing", **Missouri Concrete Conference**, Rolla, Missouri (1996).
43. "Variables That Influence Measured Concrete Strength", **ACPA 2nd Annual Meeting, Illinois Chapter**, Springfield, Illinois (1996).
44. "Use of Portland Cement in Concrete", **American Ceramic Society, UMR Student Chapter**, UMR, Rolla, Missouri (1995).
45. "Poor Specifications/Design Details", **ACI Missouri Chapter Meeting**, St. Louis, Missouri (1995).
46. "Flexural vs Compressive Strength—A Comparison", **Missouri Concrete Conference**, Rolla, Missouri (1995).
47. "Base Drainage", **ACPA Missouri-Kansas Paving Conference**, Kansas City, Kansas (1995).
48. "AASHTO Pavement Design Method—New Developments", **37th Annual Asphalt Conference**, Rolla, Missouri (1994).
49. "Soil-Cement Base Study", **Missouri Concrete Conference**, Rolla, Missouri (1994).
50. "Determination of AASHTO Layer and Drainage Coefficients for Pavement Design", **Department of Civil Engineering Graduate Seminar Series**, Rolla, Missouri (1993).

51. "Effects of Poor Test Cylinder Procedures", **Missouri Concrete Conference**, Rolla, Missouri (1989).
52. "Proper Cylinder Testing - Cradle to Grave", **29th Annual Meeting, Missouri Concrete Association**, Lake Ozark, Missouri (1989).
53. "Parking Lot Design: Current Practice", **30th Annual Asphalt Conference**, Rolla, Missouri (1987).
54. "Evaluation and Preparation of Subgrades", **28th Annual Asphalt Conference**, Rolla, Missouri (1985).

RESEARCH GRANTS AND CONTRACTS

Sponsors:

National:

- National Academy of Science (NAS)
- National Science Foundation (NSF)
- American Society of Engineering Educators (ASEE)

Regional:

- Midwest Transportation Center (MATC)
- National University Transportation Center (NUTC)
- University Transportation Center (UTC)

State:

- Missouri Dept. of Transportation (MoDOT)
- Missouri Asphalt Pavement Association (MAPA)
- Industrial

Externally Sponsored Research Summary

Role	Grants (2014 dollars)	Number Projects
PI	3,103,556	18
Co-PI	94,164	2
Total	3,108,164	20

External (not 2014 dollars)

Title: ***MoDOT Pavement Preservation Research Program***
 Total Amount: **\$1,429,187**
 Match Amounts: \$813,158 (MoDOT); \$500,000 (NUTC); \$116,029 (UMC)
 Sponsor: MoDOT
 Dates: June 2012- August 2014
 PI: David Richardson
 Co-PIs: Neil Anderson, Andrew Boeckmann, Ronaldo Luna, Michael Lusher, Brent Rosenblad, Lesley Sneed

Title: ***Design & Evaluation of HVFA Concrete Mixes***
 Total Amount: **\$150,000**
 Match Amounts: \$100,000 (MoDOT); \$50,000 (NUTC)
 Sponsor: MoDOT
 Dates: Dec. 6, 2010- May 31, 2012
 PI: Jeffery Volz
 Co-PIs: David Richardson (20%) and John Myers

Title: ***The Guayule Plant: A Renewable Source of Binder of Materials for Flexible Pavement Mixtures***
 Total Amount: **\$286,359**
 Match Amounts: \$ 99,996 (NAS); \$45,000 (MAPA); \$95,449 (NUTC); \$45,914 (P.I.'s Missouri S&T fixed price accounts)
 Sponsors: NAS; MAPA
 Dates: Feb 1, 2009-July, 2012
 PI: David Richardson

Title: ***Resilient Moduli of Type 5 Granular Base Materials***
 Amount: **\$ 7434** from the sponsor
 Sponsor: MoDOT
 Dates: June 15- August 15, 2008
 PI: David Richardson

Title: **Concrete Durability Factor Estimation (Quick Test for Durability Factor Estimation)**
Total Amount: **\$102,486**
Match Amounts: \$59,997 (MoDOT); \$34,162 (UTC); \$8327 (P.I.'s UMR fixed price accounts)
Sponsor: MoDOT
Dates: Dec. 2007-March 2009
PI: David Richardson

Title: **Innovative Deleterious Material Test (Quick Test for Percent of Deleterious Material)**
Total Amount: **\$ 70,184**
Match Amounts: \$44,812 (MoDOT); \$ 23,372 (UTC); \$2000 (UMR)
Sponsor: MoDOT
Dates: Dec. 2007-July 2009
PI: David Richardson

Title: **Calibration of CoreLok Method for Determination of Missouri Aggregate Specific Gravities**
Total Amount: **\$5327**
Match Amounts: \$4946 (MoDOT); \$291 (P.I.'s UMR fixed price accounts)
Sponsor: MoDOT
Dates: May 2006-June 2006
PI: David Richardson

Title: **Resilient Moduli of Typical Missouri Soils and Unbound Granular Base Materials**
Total Amount: **\$150,004**
Match Amounts: \$100,004 MoDOT); \$50,000 (UTC)
Sponsor: MoDOT
Dates: March 2005-Jan 2009
PI: David Richardson (50%)
Co-PIs: Thomas Petry, Louis Ge

Title: **Determination of Creep Compliance and Tensile Strength of Hot-Mix Asphalt for Wearing Courses in Missouri**
Total Amount: **\$180,414**
Match Amounts: \$57,769 (MoDOT); \$60,247 (UTC); \$62,398 (P.I.'s UMR fixed price accounts)
Sponsor: MoDOT
Dates: Dec. 2005-Jan. 2008
PI: David Richardson

Title: **Strength & Durability Characteristics of a 70% GGBFS Concrete Mix**
Total Amount: **\$12,443**
Match Amounts: \$10,764 (MoDOT); \$1669 (P.I.'s UMR fixed price account)
Sponsor: MoDOT
Dates: July-October, 2005
PI: David Richardson

Title: **Aggregate Gradation Optimization**
Total Amount: **\$12,167**
Match Amounts: \$10,194 (MoDOT); \$1973 (P.I.'s UMR fixed price accounts)
Sponsor: MoDOT
Dates: 2001
PI: David Richardson

Title: ***Aggregate Shape Characterization Using Digital Image Processing***
Total Amount: **\$72,756**
Match Amounts: \$69,118 (NAS); \$3638 (P.I.'s UMR fixed price accounts)
Sponsor: NAS
Dates: 2000
PI: Norbert Maerz
Co-PI: David Richardson (53%)

Title: ***Acquisition of Automatic Pavement Analyzer***
Total Amount: **\$80,376**
Match Amounts: \$40,188 (MAPA); \$40,188 (P.I.'s UMR fixed price accounts)
Sponsor: Missouri Asphalt Pavement Assoc. (MAPA)
Dates: 2000
PI: David Richardson

Title: ***Effects of Contaminants of Bond on Reinforcing Bars***
Total Amount: **\$62,200**
Match Amounts: \$20,000 from the sponsors; \$20,000 (UTC), \$15,000 (MRTC), \$7200 Co-P.I.'s UMR fixed price accounts)
Sponsors: McCarthy (\$4500), Site Advancement Foundation (\$2500), AGC (\$1000), St. Louis CTAF (\$5000), Ind. Advancement Fund (\$5000), So. Ill. Const. Advance. Pgm. (\$1000), Erectors & Riggers (\$1000)
Dates: June 2000-May 2001
PIs: D.J. Belarbi and David Richardson (56%)

Title: ***Start-up of Superpave QC/QA Short Course***
Total Amount: **\$23,527**
Match Amounts: \$15,898 (MATC); \$7629 (P.I.'s UMR fixed price accounts)
Sponsor: MATC
Dates: Sept. 1997
PI: David Richardson

Title: ***Determination of AASHTO Layer Coefficients***
Total Amount: **\$63,686** (MHTD)
Sponsor: Missouri Highway and Transportation Dept. (MHTD)
Dates: 1990-1994
PI: David Richardson

Title: ***Determination of AASHTO Drainage Coefficients***
Total Amount: **\$38,924** (MHTD)
Sponsor: Missouri Highway and Transportation Dept.
Dates: 1990-1994
PI: David Richardson

Title: ***Undergraduate Construction Materials Laboratory Computer-Based Instrumentation***
Total Amount: **\$4175**
Sponsor: NSF
Dates: 4-1-91 to 9-30-92
PI: David Richardson

Title: ***New Engineering Educator Award***
Amount: **\$5000** (ASEE)
Sponsor: American Society of Engineering Educators (ASEE)
Dates: 1988
PI: David Richardson

Title: ***Strength Characteristics of Latex Modified Concrete***
Amount: **\$12,965** from the sponsor
Sponsor: Weldon Springs Fund, Univ. of Missouri
Dates: 1986
PI: David Richardson

Internal

Title: ***Effect of Beam Testing Variables on Flexural Strength***
Amount: **\$750** from the sponsor
Sponsor: UMR Alumni Development
Dates: 2000
PI: David Richardson

Title: ***Aggregate Contribution to VMA Collapse***
Amount: **\$1000** (OURE)
Sponsor: Office of Undergraduate Research Education, UMR
Dates: 1995
PI: David Richardson

Title: ***Aggregate Durability***
Amount: **\$650** (OURE)
Sponsor: Office of Undergraduate Research Education, UMR
Dates: 1991
PI: David Richardson

GRADUATE STUDENT DEVELOPMENT

Doctor of Philosophy:

Michael Lusher, graduated: May, 2018
Dissertation: *High RAP/Shingle Mix Binder Modifiers Derived from the Guayule Plant*

Y. P. Han, graduated December, 2005
Dissertation: *Resilient Modulus Estimation System*

David Blanpied, graduated: 1995
Dissertation: *D-Crackability: A Finite-Element Measure*

Masters of Science:

Clayton Reichle, graduated: August, 2013
Thesis: *"Effect of Mix Parameters on Longevity of Bituminous Mixtures"*

Karl Beckemeier, graduated: December, 2012
Thesis: *Effect of High Volumes of Fly Ash on Cement Paste*

Drew Davis, graduated: December, 2012
Thesis: *Effects of High Volume Flyash and Powder Activators on Plastic and Hardened Concrete Properties*

Christopher Davis, graduated: December 2011
Thesis: *Influence of Particle Size and Specimen Preparation on the Iowa Pore Index*

Gary Davis, graduated: December 2008
Thesis: *Estimation of Deleterious Materials*

Justin Carr, graduated: August 2008
Thesis: *Estimation of Concrete Durability Factor*

Brent Whitwell, graduated: December 2006
Thesis: *Effect of Mix Variation on Flexural Strength*

Michael Lusher, graduated: May 2004

Thesis: *Prediction of the Resilient Modulus of Unbound Granular Base and Subbase Materials Based on the California Bearing Ratio and Other Test Data*

Joseph Molinaro, graduated: 2003

Thesis: *Particle Shape Video Imaging: Flat and Elongated Aggregate Analysis*

Larry Taber, graduated: 2001

Thesis: *Effect of Contamination on the Steel-Concrete Bond During Concrete Construction*
Co-advisor

Y.P Han, graduated: 1996

Non-Thesis Topic: *Soil Stabilization Expert System*

Mark Gawedzinski, graduated: 1993

Thesis: *An Evaluation of the Use of Thermoplastics in Concrete Masonry*

Thomas Abkemeier, graduated: 1992

Thesis: *Indirect Tensile Test Correlative Study*

Rodney Joel, graduated: 1990

Thesis: *A Method for Controlling Concrete Workability Using Aggregate Gradation Control*

John Kotteman, graduated: 1989

Non-Thesis Topic: *Relationship of Durability of Shale to Soaked Compression and Static Compaction Characteristics*

Timothy Wiles, graduated: 1988

Thesis: *A Shale Durability Rating System Based on Shear Strength*

John Long, graduated: December 1987

Thesis: *Optimization of Richardson's Shale Durability Rating System*

Graduate Students Not Graduated (Major Advisor)

Joe Clendenen (MS): coursework and research completed

Phillip Wilson (MS): coursework and research started

Jim Morrison (PhD): coursework and research conducted

Jeffrey Lambert (MS): coursework and research completed

Keith Fiebig (MS): coursework and research completed

GRADUATE COMMITTEE MEMBERSHIP

Doctor of Philosophy

Joseph Wilson

Mahdi Arezoumandi

L.K. Crouch

Engin Koncagal

Yumin Yang

Mamuht Ekenal

Sutton Stephens

Adam Sevi

Carlos Ortega

Many more

Masters of Science

Trevor Looney
Kyle Holman
Brian Tucker
Kyle Marley
Michael Wolfe
Brian Swift
Edwin Reeves
Drew Sielbach
Thomas Smith
Hsun-Ming Chang
Donald Simpson
Nouri Ourfali
Dathan Jones
Chris Brammeier
Brian Carlson
Noppadol Jaisue
Chao-Wang Yeh
Greg Rice
Tint Lwin
Hta Hta Nyunt
Htay Kyaw
Janet Fraley
Kent MacPeak
Patrick Harrington
Houshmond Hossaingholi
Eric Lidholm
Dave Schledorn
Kathy Wertis
R. Prezbindowski
Many more

UNDERGRADUATE RESEARCH ADVISOR

Michael Ax
Tiffany Benda
Hans Buckwalter
Mariola Bush
S. Davies
Keith Fiebig
Joseph Gasaway
Ronald Hamm
Casey Haynes
R. Hiller
Steven Jackson
Vince Kaiman
Preston Kramer
Scott Kutter
Rodney Layman
Katherine Ragan
Carla Roth
Timothy Wiles
Philip Wilson
James Wright
R. Zankawisc
Several more

TEACHING

TEACHING

SUMMARY OF UNIVERSITY COURSES TAUGHT

Undergraduate:

- 1984-2015 CE 216 Construction Materials
- 1983-1984 CE 229 Foundation Engineering I
- 1980-1982 CE 215 Soil Mechanics Laboratory
- 1986-2015 CE 298 Civil Engineering Design Project (team advisor-72 teams)

Undergraduate/ Graduate:

- 2008-2018 CE 356 Concrete Pavement Design
- 2007-2017 CE 317 Asphalt Pavement Design
- 1985-2012 CE 312 Bituminous Materials
- 1984-2015 CE 313 Properties of Concrete
- 1986-2005 CE 317 Pavement Design
- 1983 CE 329 Foundation Engineering II

Graduate:

- 1998, 2002 CE 401 Advanced Construction Materials Laboratory
- 1992 CE 401 Advanced Construction Materials
- 1986 CE 401 Advanced Properties of Concrete

CURRICULUM DEVELOPMENT

- 2008 CE356 Concrete Pavement Design
- 2007 CE317 Asphalt Pavement Design
- 1998 CE401 Advanced Construction Materials Laboratory
- 1992 CE401 Advanced Construction Materials
- 1986 CE317 Pavement Design
- 1986 CE401 Advanced Properties of Concrete
- 1985 CE312 Bituminous Materials
- 1984 CE313 Properties of Concrete
- 1984 CE216 Construction Materials

EVALUATION OF INSTRUCTIONAL QUALITY

Summary Results of CET Evaluations:

Course	Years Offered	Number Sections	Mean Enrollment	Mean Score	Std. Dev.
CE 229 Foundation Engineering	1982-1984	5	25	3.6	0.2
CE 216 Construction Materials	1984-2015	89	33	3.4	0.2
CE 312 Bituminous Materials	1985-2012	17	11	3.6	0.3
CE 313 Properties of Concrete	1985-2015	21	19	3.6	0.2
CE 317 Asphalt Pavement Design	1986-2015	19	19	3.5	0.2
CE 356 Concrete Pavement Design	2008-2014	4	28	3.7	0.1
CE 401 Advanced Construction Materials	1992	1	2	4.0	--
Overall		156	23	3.5*	0.2

* Campus mean score = 2.9/4.0

Number of sections taught per year = 5, not including advising 74 CE 298 teams [prior to 2015 retirement]

Teaching Pedagogical Activity

Departmental

Chair, Quality in the Classroom Task Force

Campus

Communicating-Across-the-Curriculum Task Force
Communication Committee
Communication Implementation Committee
WAC Director Search Committee

UNIVERSITY SERVICE

UNIVERSITY SERVICE

ENDOWMENTS DEVELOPED

Title:	MAPA Graduate Student Fellowship
Amount:	\$10,000 (MAPA)
Sponsor:	Missouri Asphalt Pavement Association
Dates:	2000
Title:	MAPA Flexible Pavements Professorship
Amount:	\$550,000 (MAPA)
Sponsor:	Missouri Asphalt Pavement Association
Dates:	2011

ADMINISTRATIVE RESPONSIBILITY

1996-2011	Area Coordinator, Construction Materials
1992-1996	Area Coordinator, Construction Materials, Construction, & Transportation
1984-1992	Area Coordinator, Construction Materials
1984-1992	Area Coordinator, Construction

DEPARTMENTAL COMMITTEES

Chair

2014	Freshman Visit Coordinator
2012-2015	MAPA Professor Search Committee
2012	Phone-a-thon Director
2011-2012	Structures Faculty Search Committee
2009-2010	Strategic Planning Committee
2006-2007	Civil Engineering Undergraduate Program Committee
2005	Phone-a-thon Director
1990-2003	Extension Committee
2000-2001	G. Chen Mentoring Committee
1997-1999	Long Range Planning Curriculum Subcommittee
1994-1998	Quality in the Classroom Task Force
1995-1998	CE Finance Committee
1997-1998	Transportation Faculty Search Committee
1991-1997	Infrastructure Research Committee
1996	Senior Trip Task Force
1991-1992	Student Recruitment Committee

Member

2016-2018	H. Ma Mentoring Committee
2013-2014	Graduate Student Support Policy Task Force
2013-2014	Equipment Use Task Force
2008-2016	MAPA Professor Search Committee
2003-2014	Graduate Affairs Committee
2002-2013	Civil Engineering Program Committee
2008-2009	Architectural Engineering Program Committee
2006-2011	Jones Chair Search Committee
2006-2007	Transportation Faculty Search Committee
2002-2005	G. Morrison Mentoring Committee
1998-2004	New Building Equipment Committee

2002-2004	CE Faculty Search Committee
2003	ArchE Program Committee
1998-2003	New Building Committee
1998-2003	Scholarship Committee
2002	GTA Task Force
1998-2002	Curriculum Committee
1988-2001	Freshmen Engineering Presenter
1984-2001	University-Day Open House Committee
1998-1999	Undergraduate Affairs Committee
1996-1999	Long Range Planning Committee
1998-1999	CE Chairman Search Committee
1998-1999	Scholastic Action Committee
1995-1996	Construction Faculty Search Committee
1995-1996	Jones Chair Search Committee
1994-1995	CE Chairman Search Committee
1989-1991	Capstone Course Development Committee
1985-1989	Curriculum Committee
1986-1988	Scholastic Action Committee
1986-1987	CE Chairman Search Committee
1985-1987	Faculty Recording Secretary
1985-1987	Student Recruitment Committee

UNIVERSITY/SCHOOL COMMITTEES

1992-2007	Freshmen Engineering Advisor
2006	Freshmen Engineering Program Director Search Committee
1989-present	UMR Doctoral Faculty
1986-present	UMR Graduate Faculty
1995-1996	WAC Director Search Committee
1996-1998	Communication Implementation Committee
1995	Communication Committee
1994-1995	Communication-Across-the-Curriculum Task Force
1990	Extension Director Search Committee
1987-1988	Grievance Hearing Panel

**PROFESSIONAL COURSE DEVELOPMENT
(Continuing Education)**

PROFESSIONAL COURSE DEVELOPMENT AND INSTRUCTION

CONFERENCES/SESSIONS ORGANIZED and DIRECTED

Years	Number of Annual Conferences	Conference
1985-2018	34	Annual Asphalt Conference
1986-2019	34	Missouri Concrete Conference
2014	1	ACI National Meeting Paper Session
Total	69	

CERTIFICATION SHORT COURSES ORGANIZED, DIRECTED, and INSTRUCTED Last Update: 2014

Academic Year	Number of Courses	Course Length (days)	Course
1998-2018	59	5	Superpave QC/QA Certification Course
2000-2018	63	2	Superpave QC/QA Re-Certification Course
2006-2018	25	1	TSR Certification Course
2006-2018	32	1	Aggregate Consensus Testing Certification Course
2010-2018	9	1	Binder Ignition Certification Course
1999-2000	8	2	Aggregate/QA Certification Course
1998	1	1	Pavement Design Workshop
Total	197		

Summary Results of Short Course Evaluations:

Short Course	Years Offered	Number of Courses	Mean Score
Level 2 Bituminous QC/QA Certification Course	1998-2014	52	3.6
Level 2 Bituminous QC/QA Re-Certification Course	2000-2014	51	3.6
		103	3.6

ACI CERTIFICATION COURSES ORGANIZED and DIRECTED

Years	Number of Courses	Course
2010-2011	2	ACI Grade 1 Field Technician Certification
1996-2007	12	ACI Grade 1 Field Technician Certification
Total	14	

LAST REVISION DATE
February 6, 2019