

Isaac L. Howard

Professor, Materials and Construction Industries Chair
Civil and Environmental Engineering (CEE), Mississippi State University (MSU)

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Year of Birth: 1979, Marital Status: Married (Natalie), Children: Daughter (Julie)

<i>Degree</i>	<i>University</i>	<i>Year</i>	<i>Area</i>	<i>Coursework Credit Hours</i>
BSE	Arkansas State University - ASU	2001	Civil Engineering	141 GPA Hours
MSCE	West Virginia University - WVU	2002	Civil Engineering	24 GPA Hours, 15 Thesis
PhD	University of Arkansas - UA	2006	Civil Engineering	36 GPA Hours, 21 Diss.

--Major Professors were Dr. Hota V. GangaRao for MSCE and Dr. Kimberly A. Warren for PhD.

Professional Engineer (PE), State of Mississippi, License Number 21027.

SUMMARY OF TECHNICAL BACKGROUND AND INTERESTS

Construction materials and infrastructure are primary interests, where characterization, rehabilitation, recycling, or interfacing materials/design with construction are focus areas. Airfield and highway flexible pavements are of particular interest. Materials background includes: aggregates, aluminum, asphalt, emulsions, chemically stabilized soil, concrete, fiber reinforced polymer composites, geosynthetics, wood.

PROFESSIONAL EXPERIENCE

- ***Undergraduate Teaching Assistant***, Arkansas State University College of Engineering, Jan 2000 to May 2001, Position grading papers and conducting course help sessions.
- ***Engineering Intern***, Arkansas Highway and Transportation Department, May 2001 to Aug 2001, Position with surveying and field inspection duties.
- ***Graduate Research Assistant***, West Virginia University Department of Civil and Environmental Engineering, Aug 2001 to Dec 2002, Position studying fiber reinforced polymer bridge decks.
- ***Temporary Instructor***, Arkansas State University College of Engineering, Jan 2003 to May 2003, Position teaching undergraduate engineering courses.
- ***Graduate Research Assistant***, University of Arkansas Department of Civil Engineering, Jun 2003 to Aug 2006, Position studying geosynthetic reinforced flexible pavements.
- ***Assistant Professor***, Mississippi State University CEE Department, Aug 2006 to Aug 2012, Tenure track position with teaching, research, and service duties.
- ***Associate Professor***, Mississippi State University CEE Department, Aug 2012 to Dec 2012, Tenured position with teaching, research, and service duties.
- ***Associate Professor and Endowed Chair***, Mississippi State University CEE Department. Engineering, Jan 2013 to Aug 2017, Tenured position with teaching, research, and service duties.
- ***Consultant***, Independent work for clients on as needed basis, Aug 2013 to Present, Provided technical guidance on various activities – secondary to duties at MSU.
- ***Research Civil Engineer***, US Army Engineer Research & Development Center Temporary Mobility Assignment, Jun 2015 to Dec 2016, Jun 2018 to Present, Airfield repair and composites duties.
- ***Professor and Endowed Chair***, Mississippi State University CEE Department, Aug 2017 to Present, Tenured position with teaching, research, and service duties.

DOCUMENTS WRITTEN

Refereed Journal Articles

1. Warren, K.A., Howard, I.L. (2007). "Sensor Selection, Installation, and Survivability in a Geosynthetic-Reinforced Flexible Pavement," *Geosynthetics International*, 14(5), 298-315.
2. Howard, I.L., Warren, K.A. (2008). "Innovative Data Acquisition for Heavily Instrumented Flexible Pavements," *Journal of Computing in Civil Engineering*, 22(3), 206-215.
3. Shmulsky, R., Saucier, C.L., Howard, I.L. (2008). "Composite Effect of Bolt Laminated Sweetgum and Mixed Hardwood Billets," *Journal of Bridge Engineering*, 13(5), 547-549.
4. Howard, I.L. (2008). "Practical Approaches for Evaluating Bending and Torsion of Fiber Reinforced Polymer Components Using Instrumented Testing," *Journal of Applied Science and Engineering Technology*, 2, 24-30.
5. Howard, I.L., Warren, K.A. (2008). "Investigation of Thin Flexible Pavement Response Between Traffic and the Falling Weight Deflectometer (FWD)," *International Journal of Geotechnical Engineering*, 2(4), 329-341.
6. Howard, I.L., Warren, K.A. (2009). "Finite-Element Modeling of Instrumented Flexible Pavements under Stationary Transient Loading," *Journal of Transportation Engineering*, 135(2), 53-61.
7. Howard, I.L., GangaRao, H.V. (2009). "Testing and Evaluation of Adhesive Bonded Fiber Reinforced Polymer Bridge Decks," *Journal of Advanced Materials*, 41(2), 28-46.
8. Howard, I.L., James, R.S. (2009). "Bottom-Up Fatigue Cracking of Low-Volume Flexible Pavement Analysis from Instrumented Testing," *Transportation Research Record: Journal of the Transportation Research Board*, 2094, 43-52.
9. Warren, K.A., Christopher, B., Howard, I.L. (2010). "Geosynthetic Strain Gage Installation Procedures and Alternative Strain Measurement Methods for Roadway Applications," *Geosynthetics International*, 17(6), 403-430.
10. Howard, I.L. (2011). "Preservation of Low-Volume Flexible Pavement Structural Capacity by Use of Seal Treatments," *Transportation Research Record: Journal of the Transportation Research Board*, 2204, 45-53.
11. Rushing, T.W., Howard, I.L. (2011). "Matting Solutions for Low-Volume Roads," *Transportation Research Record: Journal of the Transportation Research Board*, 2204, 92-101.
12. Jordan, W.S., Howard, I.L. (2011). "Applicability of Modified Vialit Adhesion Test for Seal Treatment Specifications," *Journal of Civil Engineering and Architecture*, 5(3), 215-223.
13. Howard, I.L., Shuler, S., Jordan, W.S., Hemsley, J.M., McGlumphy, K. (2011). "Correlation of Moisture Loss and Strength Gain in Chip Seals," *Transportation Research Record: Journal of the Transportation Research Board*, 2207, 49-57.
14. Howard, I.L., Warren, K.A. (2011). "Finite Element Analysis of Instrumented Thin Flexible Pavement to Quantify Variability," *International Journal of Pavement Research and Technology*, 4(6), 337-346.
15. Doyle, J.D., Mejias-Santiago, M., Brown, E.R., Howard, I.L. (2011). "Performance of High RAP-WMA Surface Mixtures," *Journal of the Association of Asphalt Paving Technologists*, 80, 419-457.
16. Doyle, J.D., Howard, I.L., Robinson, W.J. (2012). "Prediction of Absorbed, Inert, and Effective Bituminous Quantities in Reclaimed Asphalt Pavement," *Journal of Materials in Civil Engineering*, 24(1), 102-112.
17. Stroble, M.F., Howard, I.L., Shmulsky, R. (2012). "Wood Construction Platform Design Using Instrumentation," *Wood Material Science and Engineering*, 7(1), 13-24.
18. Bell, H.P., Howard, I.L., Freeman, R.B., Brown, E.R. (2012). "Evaluation of Remaining Fatigue Life Model for Hot-Mix Asphalt Airfield Pavements," *International Journal of Pavement Engineering*, 13(4), 281-296.
19. Howard, I.L., Doyle, J.D., Barham, J.M. (2012). "Uniformity, Repeatability, and Permanent Deformation Resistance of Slabs Produced With the Linear Asphalt Compactor," *Advances in Civil Engineering Materials*, 1(1), 1-17.

20. Baumgardner, G.L., Hemsley, J.M., Jordan, W., Howard, I.L. (2012). "Laboratory Evaluation of Asphalt Mixtures Containing Dry Added Ground Tire Rubber and a Processing Aid," *Journal of the Association of Asphalt Paving Technologists*, 81, 507-539.
21. Carruth, W.D., Howard, I.L. (2013). "Use of Portland Cement and Polymer Fibers to Stabilize Very High Moisture Content Fine-Grained Soils," *Advances in Civil Engineering Materials*, 2(1), 1-24.
22. Doyle, J.D., Howard, I.L. (2013). "Thermal Cracking Potential of High RAP-WMA Evaluated With Bending Beam Rheometer Mixture Beam Test," *Journal of Testing and Evaluation*, 41(2), 236-246.
23. Braham, A., Howard, I.L., Barham, J. (2013). "Exploration of a Performance Test for Emulsion Treated Asphalt Surfaces," *Journal of Testing and Evaluation*, 41(2), 269-277.
24. Howard, I.L., Doyle, J.D., Cox, B.C. (2013). "Merits of Reclaimed Asphalt Pavement-Dominated Warm Mixed Flexible Pavement Base Layers," *Road Materials and Pavement Design*, Special Issue from 88th Association of Asphalt Paving Technologists' Annual Meeting, 14(S2), 106-128.
25. Doyle, J.D., Howard, I.L. (2013). "Rutting and Moisture Damage Resistance of High Reclaimed Asphalt Pavement Warm Mixed Asphalt: Loaded Wheel Tracking vs. Conventional Methods," *Road Materials and Pavement Design*, Special Issue from 88th Association of Asphalt Paving Technologists' Annual Meeting, 14(S2), 148-172.
26. Cost, V.T., Howard, I.L., Shannon, J. (2013). "Improving Concrete Sustainability and Performance with Use of Portland-Limestone Cement Synergies," *Transportation Research Record: Journal of the Transportation Research Board*, 2342, 26-34.
27. Howard, I.L., Baumgardner, G.L., Jordan, W.S., Menapace, A.M., Mogawer, W.S., Hemsley, J.M. (2013). "Haul Time Effects on Unmodified, Foamed, and Additive-Modified Binders Used in Hot-Mix Asphalt," *Transportation Research Record: Journal of the Transportation Research Board*, 2347, 88-95.
28. Doyle, J.D., Howard, I.L., Alvarado, A. (2013). "Virgin and Aged Binder Interaction Measured on Mixture Bars via Repeated Creep in the Dynamic Shear Rheometer," *International Journal of Pavement Research and Technology*, 6(6), 721-729.
29. Howard, I.L., Doyle, J.D., Hemsley, J.M., Baumgardner, G.L., Cooley, L.A. (2014). "Emergency Paving Using Hot-Mixed Asphalt Incorporating Warm Mix Technology," *International Journal of Pavement Engineering*, 15(3), 202-214.
30. Doyle, J.D., Howard, I.L., Gartrell, C.A., Anderton, G.L., Newman, J.K., Berney, E.S. (2014). "Full-Scale Instrumented Testing and Three-Dimensional Modeling of Airfield Matting Systems," *International Journal of Geomechanics*, 14(2), 161-170.
31. Howard, I.L., Carruth, W.D. (2014). "Dewatering and Stabilizing Fine-Grained Soils with Very High Moisture Content," *Advances in Civil Engineering Materials*, 3(1), 220-237.
32. Howard, I.L., Doyle, J.D. (2014). "Investigating the Consistency of Asphalt Density Measurement Methods Over a Wide Range of Air Voids," *Journal of Testing and Evaluation*, 42(3), 749-760.
33. Baumgardner, G.L., Hardee, J.R., Negulescu, I.I., Williams, E.R., Howard, I.L., St John, R.C. (2014). "Quantitative Analysis of Functional Polymer in Recycled Tyre Rubber used in Modified Asphalt Binders," *Road Materials and Pavement Design*, Special Issue from 89th Association of Asphalt Paving Technologists' Annual Meeting, 15(S1), 263-278.
34. Howard, I.L. (2014). "Measurement of Asphalt Concrete Temperatures During Transport with the Use of an Instrumented Probe System," *Transportation Research Record: Journal of the Transportation Research Board*, 2408, 78-85.
35. Cox, B.C., Howard, I.L. (2014). "Vacuum Sealing-Based Volumetric Density Measurement Approach for Cold In-Place Recycling," *Transportation Research Record: Journal of the Transportation Research Board*, 2444, 11-19.
36. Rushing, T.W., Howard, I.L. (2015). "Prediction of Soil Deformation Beneath Temporary Airfield Matting Systems Based on Full-Scale Testing," *Journal of Terramechanics*, Vol. 58, April Issue, 1-9.
37. Howard, I.L., Carruth, W.D. (2015). "Chemical Stabilization of VHMS for Disaster Recovery Applications," *Journal of Materials in Civil Engineering*, 27(7), 04014200.

38. Braham, A., Howard, I.L., Barham, J, Cox, B.C. (2015). "Characterising Emulsion Effects on Aged Asphalt Concrete Surfaces Using Bending Beam Rheometer Mixture Beams," *International Journal of Pavement Engineering*, 16(7), 620-631.
39. James, R.S., Cooley, L.A., Ahlrich, R.C., Prowell, B.D., Howard, I.L. (2015). "Development of Design Gyration Levels for Airfield Asphalt Pavement," *Advances in Civil Engineering Materials*, 4(1), 61-79.
40. Cox, B.C., Howard, I.L., Jordan, W.S. (2015). "Recommendations for Seal Treatment Rejuvenation Specifications Based on Bending Beam Rheometer Testing of Mixture Beams," *Transportation Research Record: Journal of the Transportation Research Board*, 2473, 23-32.
41. Howard, I.L., Alvarado, A., Floyd, W.C. (2015). "Development of Equipment and Protocols to Test Laboratory or Field Applied Chip Seals on Compacted Asphalt Concrete," *International Journal of Pavement Research and Technology*, 8(5), 295-304.
42. Sullivan, W.G., Howard, I.L., Anderson, B.K. (2015). "Development of Equipment for Compacting Soil-Cement into Plastic Molds for Design and Quality Control Purposes," *Transportation Research Record: Journal of the Transportation Research Board*, 2511, 102-111.
43. Cox, B.C., Howard, I.L., Williams, K.L., Cooley, L.A. (2015). "Asphalt Concrete Field Compactibility Models Focusing on Aggregate Properties and Moisture," *Transportation Research Record: Journal of the Transportation Research Board*, 2509, 18-28.
44. Howard, I.L., Carruth, W.D., Cost, V.T. (2015). "Improving Early Age Strength of Very High Moisture Content Fine Grained Soil via Specialty Ground Portland Cement," *Advances in Civil Engineering Materials*, 4(1), 218-236.
45. Williams, K.L., Cox, B.C., Howard, I.L., Cooley, L.A. (2015). "Models of Asphalt Concrete Field Compactibility with Focus on Lift Thickness," *Transportation Research Record: Journal of the Transportation Research Board*, 2504, 135-147.
46. Howard, I.L., Shannon, J., Cost, V.T., Stovall, M. (2015). "Davis Wade Stadium Expansion and Renovation: Performance of Concrete Produced with Portland-Limestone Cement, Fly Ash, and Slag Cement," *Journal of Materials in Civil Engineering*, 27(12), 04015044.
47. Doyle, J.D., Howard, I.L. (2016). "Characterization of Dense-Graded Asphalt With the Cantabro Test," *Journal of Testing and Evaluation*, 44(1), 77-88.
48. Vahedifard, F., Robinson, J.D., Mason, G.L., Howard, I.L., Priddy, J.D. (2016). "Mobility Algorithm Evaluation using a Consolidated Database Developed for Wheeled Vehicles Operating on Dry Sands," *Journal of Terramechanics*, Vol. 63, February Issue, 13-22.
49. Howard, I.L., Sullivan, W.G., Anderson, B.K. (2016). "Soil-Cement Laboratory Mixture Design That Interfaces with Pavement Design and Construction Quality Control," *Transportation Research Record: Journal of the Transportation Research Board*, 2580, 1-9.
50. Cox, B.C., Howard, I.L., Campbell, C.S. (2016). "Cold In-Place Recycling Moisture-Related Design and Construction Considerations for Single or Multiple Component Binder Systems," *Transportation Research Record: Journal of the Transportation Research Board*, 2575, 27-38.
51. Vahedifard, F., Howard, I.L., Badran, W.H., Carruth, W.D., Hamlehdari, M., Jordan, B.D. (2016). "Strength Indices of High-moisture Soils using Handheld Gauges," *Ground Improvement*, 169(GI3), 167-181.
52. Mason, G.L., Vahedifard, F., Robinson, J.D., Howard, I.L., McKinley, G.B., Priddy, J.D. (2016). "Improved Sinkage Algorithms for Powered and Unpowered Wheeled Vehicles Operating on Sand," *Journal of Terramechanics*, 67, October Issue, 25-36.
53. Garcia, L., Howard, I.L. (2016). "Full-Scale Instrumented Testing of Multiple Airfield Matting Systems on Soft Soil to Characterize Permanent Deformation," *Transportation Geotechnics*, 9, 80-95.
54. Howard, I.L., Cox, B.C. (2016). "Multiyear Laboratory and Field Performance Assessment of High-Traffic US-49 Full-Depth Reclamation," *Transportation Research Record: Journal of the Transportation Research Board*, 2573, 86-97.
55. Cox, B.C., Howard, I.L. (2016). "Cold In-Place Recycling Characterization for Single-Component or Multiple-Component Binder Systems," *Journal of Materials in Civil Engineering*, 28(11), 04016118.

56. Rushing, T.W., Howard, I.L., Jordan, J.B., Allison, P.G. (2016). "Laboratory Characterization of Fatigue Performance of AM2 Aluminum Airfield Matting," *Journal of Materials in Civil Engineering*, 28(11), 04016134.
57. Vahedifard, F., Williams, J.M., Mason, G.L., Howard, I.L., Priddy, J.D. (2017). "Development of a Multi-Year Database to Assess Off-Road Mobility Algorithms in Fine-Grained Soils," *International Journal of Vehicle Performance*, 3(1), 3-18.
58. Shannon, J., Howard, I.L., Cost, V.T. (2017). "Potential of Portland-Limestone Cement to Improve Performance of Concrete Made With High Slag Cement and Fly Ash Replacement Rates," *Journal of Testing and Evaluation*, 45(3), 872-889.
59. Rushing, T.W., Howard, I.L. (2017). "Analysis of AM2 Airfield Matting Performance Under Six-Wheel Boeing C-17 Gear Loading," *Journal of Testing and Evaluation*, 45(6), 2243-2258.
60. Shannon, J., Howard, I.L., Cost, V.T., Crawley, W. (2017). "Synergistic Potential of Fly Ash in Concrete Featuring Portland-Limestone Cement," *ACI Materials Journal*, 114(2), 295-306.
61. Bazne, M.O.A., Howard, I.L., Vahedifard, F. (2017). "Stabilized Very High-Moisture Dredged Soil: Relative Behavior of Portland-Limestone Cement and Ordinary Portland Cement," *Journal of Materials in Civil Engineering*, 29(9), 04017110.
62. Smith, B.T., Moore, R.A., Howard, I.L. (2017). "Density Observations from a Full-Scale, Untrafficked Test Section with Guidance for Dryback Methods," *Transportation Research Record: Journal of the Transportation Research Board*, 2630, 134-146.
63. Cox, B.C., Smith, B.T., Howard, I.L., James, R.S. (2017). "State of Knowledge for Cantabro Testing of Dense Graded Asphalt," *Journal of Materials in Civil Engineering*, 29(10), 04017174.
64. Sullivan, W.G., Howard, I.L. (2017). "Piloted Quality Control Techniques Using the Plastic Mold Compaction Device for Cement Stabilized Materials," *Advances in Civil Engineering Materials*, 6(1), 385-402.
65. Howard, I.L., Bilberry, A.C. (2017). "Stabilizing Very High Moisture Content Fine Grained Soils with Calcium Sulfoaluminate Cements," *Advances in Civil Engineering Materials*, 6(1), 412-428.
66. Howard, I.L. (2018). "Full-Scale Emergency Paving Demonstration of Hot-Mixed and Warm-Compacted Asphalt," *Journal of Transportation Engineering, Part B: Pavements*, 144(1), 04017020.
67. Bazne, M.O.A., Vahedifard, F., Howard, I.L. (2018). "Effects of Light Cement Stabilization on Properties of Fine-Grained Dredged Soils," *Geotechnical Testing Journal*, 41(2), 280-291.
68. Smith, B.T., Howard, I.L. (2018). "Short- and Longer-Term Effects of Short-Term Aging on Asphalt Mixture Properties," *Journal of Materials in Civil Engineering*, 30(3), 04018005.
69. Baumgardner, G.L., Hemsley, J.M., Jordan, W.S., D'Angelo, J.A., Howard, I.L. (2018). "Characterization of Dense-Graded Asphalt Containing Virgin, Postconsumer, or Blended Polymer Systems," *Advances in Civil Engineering Materials*, 7(1), 113-131.
70. Howard, I.L., Cox, B.C., Alvarado, A., Jordan, W.S. (2018). "Material Selection and Traffic Opening Guidance for Chip or Scrub Seals," *Road Materials and Pavement Design*, 19(7), 1651-1673.
71. Sullivan, W.G., Howard, I.L., Cost, T., Shannon, J. (2018). "Early Age Thermal Measurements of Soil-Cement Mixtures for Quality Control During Paving," *Journal of Testing and Evaluation*, 46(5), 1957-1971.
72. Howard, I.L., Vahedifard, F., Williams, J.M., Timpson, C. (2018). "Geotextile Tubes and Beneficial Reuse of Dredged Soil: Applications Near Ports and Harbours," *Ground Improvement*, 171(4), 244-257.
73. Smith, B.T., Howard, I.L., Vahedifard, F. (2018). "Lightly Cemented Dredged Sediments for Sustainable Reuse," *Environmental Geotechnics*, 5(6), 324-335.
74. Bazuhair, R.W., Pittman, C.V., Howard, I.L., Jordan, W.S., Hemsley, J.M., Baumgardner, G.L. (2018). "Conditioning and Testing Protocol Combinations to Detect Asphalt Mixture Damage," *Transportation Research Record: Journal of the Transportation Research Board*, 2672(28), 10-21.
75. Smith, B.T., Howard, I.L., Jordan, W.S., Daranga, C., Baumgardner, G.L. (2018). "Comparing Pressure Aging Vessel Time to Field Aging of Binder as a Function of Pavement Depth and Time," *Transportation Research Record: Journal of the Transportation Research Board*, 2672(28), 223-234.

76. Cox, B.C., Howard, I.L. (2018). "Evaluation of Marshall Stability Design Principles: Applied to Cold In-Place Recycling," *Transportation Research Record: Journal of the Transportation Research Board*, 2672(28), 211-222.
77. Cox, B.C., Howard, I.L., Hopkins, C.A. (2018). "Universal Method to Measure Water Infiltration into Asphalt Pavements Independent of Pavement Preservation Surface Treatment," *Transportation Research Record: Journal of the Transportation Research Board*, 2672(12), 40-50.
78. Robinson, W.J., Tingle, J.S., Norwood, G.J., Howard, I.L. (2018). "Assessment of Equivalent Thickness Design Principles for Geosynthetic Reinforced Pavements by Way of Accelerated Testing," *Transportation Research Record: Journal of the Transportation Research Board*, 2672(40), 132-142.
79. Smith, B.T., Howard, I.L. (2019). "Comparing Laboratory Conditioning Protocols to Longer-Term Aging of Asphalt Mixtures in the Southeast United States," *Journal of Materials in Civil Engineering*, 31(1), 04018346.
80. Whitlow, R.D., Haskins, R., McComas, S.L., Crane, C.K., Howard, I.L., McKenna, M.H. (2019). "Remote Bridge Monitoring Using Infrasonics," *Journal of Bridge Engineering*, 24(5), 04019023.
81. Williams, J.M., Vahedifard, F., Howard, I.L., Borazjani, A., Mason, G.L., Priddy, J.D. (2019). "Mobility Guidance for Tracked Vehicles on Fine-Grained Soil from Historical Full-Scale Test Data in DROVE 2.0," *Journal of Terramechanics*, 84, August Issue, 1-12.
82. Hansen, B.S., Shannon, J., Howard, I.L. (2019). "Improved Understanding of Concrete Compressive Strength Utilizing Cement Paste Testing," *Advances in Civil Engineering Materials*, 8(1), 267-284.
83. Anderson, B.K., Cox, B.C., Howard, I.L. (Print Year Forthcoming). "Gradation Variability Assessment of Thick-Layer Cement-Stabilized Full-Depth Reclamation," *Construction Materials*, doi: 10.1680/jcoma.16.00070, In Press.
84. Hansen, B., Howard, I.L. (Print Year Forthcoming). "Measuring Aggregate and Binder Interaction Via Mixture Tests Before and After Field Aging," *Construction Materials*, In Press, doi: 10.1680/jcoma.17.00070.
85. Robinson, W.J., Mahaffay, B.J., Howard, I.L., Norwood, G.J. (Print Year Forthcoming). "Cyclic Plate Testing of Geosynthetic-Reinforced Airfield Pavements," *Ground Improvement*, In Press, doi: 10.1680/jgrim.18.00106.
86. Sullivan, W.G., Howard, I.L. (Print Year Forthcoming). "Case Study of Interstate 269 Corridor Through Mississippi Focusing on Chemically Stabilized Pavement Layers," *Transportation Research Record: Journal of the Transportation Research Board*, In Press, doi: 10.1177/0361198119836773.
87. Brown, J.L., Howard, I.L., Varner, R. (Print Year Forthcoming). "Concrete Compressive Strength Variation Due to Cement Source Change," *Construction Materials*, doi: 10.1680/jcoma.18.00067, In Press.

Refereed Journal Technical Notes (*) or Case Study Papers ()**

1. Doyle, J.D., Howard, I.L. (2012). "Factors Affecting the Measurement of Effective Specific Gravity for Reclaimed Asphalt Pavement," *International Journal of Pavement Research and Technology*, 5(2), 128-131*.
2. Hughes, S.A., Shaw, J.M., Howard, I.L. (2012). "Earthen Levee Shear Stress Estimates for Combined Wave Overtopping and Surge Overflow," *Journal of Waterway, Port, Coastal, and Ocean Engineering*, 138(3), 267-273*.
3. Cox, B.C., Howard, I.L., Middleton, A. (2016). "Case Study of High-Traffic In-Place Recycling on U.S. Highway 49: Multiyear Performance Assessment," *Journal of Transportation Engineering*, 142(12), 05016008**.
4. Cox, B.C., Howard, I.L. (2018). "Time-Dependent Water Infiltration Resistance of Thin-Lift Asphalt Overlay Longitudinal Joints," *Journal of Transportation Engineering, Part B: Pavements*, 144(3), 06018003*.

Peer Reviewed Conference Proceedings

1. Howard, I., Warren, K. (2005). "Improved Data Acquisition For Instrumented Flexible Pavements Reinforced With Geosynthetics," *Proc. of the 2005 International Conference on Computing in Civil Engineering*, July 12-15, Cancun, Mexico.
2. Howard, I., Warren, K. (2006). "Finite Element Modeling Approach for Flexible Pavements with Geosynthetics," *Proc. of GeoCongress 2006*, Feb 26-Mar 1, Atlanta, GA.
3. Warren, K., Howard, I.L., Brooks, J. (2006). "Use of Digital Photography to Analyze Foil Strain Gages on Geosynthetics," *Proc. of GeoCongress 2006*, Feb 26-Mar 1, Atlanta, GA.
4. Warren, K., Brooks, J., Howard, I.L. (2006). "Foil Strain Gage Attachment Techniques for Geotextile and Geogrid," *Proc. of GeoCongress 2006*, Feb 26-Mar 1, Atlanta, GA.
5. Howard, I.L., Saucier, C.L., Shmulsky, R. (2008). "Testing of Instrumented Construction Mats and Billets," *Proc. of GeoCongress 2008 (GSP 179)*, Mar 9-12, New Orleans, LA, pp. 340-347.
6. Howard, I.L., Warren, K.A. (2008). "Performance Analysis of Heavily Instrumented Flexible Pavement," *Proc. of GeoCongress 2008 (GSP 179)*, Mar 9-12, New Orleans, LA, pp. 348-355.
7. Howard, I.L., Warren, K.A. (2008). "Preliminary Analysis Comparing Measured Responses of FWD and Traffic Data," *Proc. of GeoCongress 2008 (GSP 179)*, Mar 9-12, New Orleans, LA, pp. 380-387.
8. Warren, K., Christopher, B., Howard, I. (2008). "Techniques Used to Measure Strain on Geosynthetics in Dynamic Applications," *Proc. of GeoCongress 2008 (GSP 179)*, Mar 9-12, New Orleans, LA, pp. 541-548.
9. Howard, I.L., Warren, K.A., Lord, C.R. (2008). "Statistical Analysis of Unbound Subgrade Pressure Measurements," *Proc. of GeoCongress 2008 (GSP 179)*, Mar 9-12, New Orleans, LA, pp. 990-997.
10. Cooley, L.A., Howard, I.L., Baumgardner, G., and Ross, M. (2008). "Case History on Surface Initiated Cracks on Urban Thoroughfare Pavements," *Proc. of the Sixth RILEM International Conference on Cracking in Pavements*, June 16-18, Chicago, IL, pp. 843-852.
11. Carruth, W.D., Howard, I.L. (2011). "Evaluation of Unconfined Compression Area Correction Methods for Cementitious and Fiber Stabilized Fine Grained Soils," *Proc. of Geo-Frontiers 2011 (GSP 211)*, Mar 13-16, Dallas, TX, pp. 2564-2573.
12. Howard, I.L., Badran, W.H. (2011). "Comparison of Hand Held Gage and Unconfined Compression Results in Low Strength Cementitious Stabilized Materials," *Proc. of Geo-Frontiers 2011 (GSP 211)*, Mar 13-16, Dallas, TX, pp. 2574-2583.
13. Doyle, J.D., Howard, I.L. (2011). "Laboratory Assessment of Skid Resistance for High RAP Content Warm Mixed Asphalt," *Proc. of Geo-Frontiers 2011 (GSP 211)*, Mar 13-16, Dallas, TX, pp. 4515-4524.
14. Doyle, J.D., Howard, I.L. (2011). "Evaluation of the Cantabro Durability Test for Dense Graded Asphalt," *Proc. of Geo-Frontiers 2011 (GSP 211)*, Mar 13-16, Dallas, TX, pp. 4563-4572.
15. Mejias-Santiago, M., Doyle, J., Howard, I.L., Brown, R. (2011). "Moisture Damage Potential for Warm Mix Asphalt Containing Reclaimed Asphalt Pavement," *Proc. of 2nd International Warm-Mix Conference*, Oct 11-13, St. Louis, MO, Paper WM43, pp 16.
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PRESENTATIONS

--Presentations listed were given by Isaac L. Howard; colleagues co-presented where noted.

Podium Presentations of Peer Reviewed Papers

1. Improved Data Acquisition For Instrumented Flexible Pavements Reinforced With Geosynthetics (2005). *2005 International Conference on Computing in Civil Engineering*.
2. How Well Does The Falling Weight Deflectometer Simulate Traffic Loads for Thin Low Volume Pavements? (2008). *Transportation Research Board 87th Annual Meeting*.
3. Testing of Instrumented Construction Mats and Billets (2008). *GeoCongress 2008*.
4. Performance Analysis of Heavily Instrumented Flexible Pavement (2008). *GeoCongress 2008*.
5. Preliminary Analysis Comparing Measured Responses of FWD and Traffic Data (2008). *GeoCongress 2008*.
6. Statistical Analysis of Unbound Subgrade Pressure Measurements (2008). *GeoCongress 2008*.
7. Bottom-Up Fatigue Cracking of Low-Volume Flexible Pavement Analysis from Instrumented Testing (2009). *Transportation Research Board 88th Annual Meeting*.
8. Comparison of Hand Held Gage and Unconfined Compression Results in Low Strength Cementitious Stabilized Materials (2011). *Geo-Frontiers 2011*.
9. Preservation of Low-Volume Flexible Pavement Structural Capacity by Use of Seal Treatments (2011). *10th International Conference on Low-Volume Roads*.
10. Haul Time Effects on Unmodified, Foamed, and Additive Modified Binders used in Hot Mixed Asphalt (2013). *Transportation Research Board 92nd Annual Meeting*.
11. Full-Scale Shallow Anchor Testing in High Moisture Content Fine-Grained Levee Soils (2013). *GeoCongress 2013*.
12. Case Study of Rapid Levee Armoring During 2011 Mississippi River Flood and Potential Future Applications (2013). *GeoCongress 2013*.
13. Merits of RAP Dominated Warm Mixed Flexible Pavement Base Layers (2013). Association of Asphalt Paving Technologists 88th Annual Meeting.
14. Measurement of Asphalt Concrete Temperatures During Transport Using an Instrumented Probe System (2014). *Transportation Research Board 93rd Annual Meeting*.
15. Asphalt Concrete Field Compactibility Models Focusing on Aggregate Properties and Moisture (2015). *Transportation Research Board 94th Annual Meeting*.
16. Beneficial Reuse of Fine Grained Soils for Port, River, and Shoreline Applications (2015). *International Foundations Congress and Equipment Expo 2015*.
17. Engagement of Practitioners to Produce Balanced and Fundamentally Well Grounded Civil Engineers (2015). *2015 ASEE Annual Conference and Exposition*.
18. Hands on Development of Communication Skills Within an Undergraduate Construction Materials Laboratory (2015). *2015 ASEE Annual Conference and Exposition*.
19. Recommendations for Seal Treatment Rejuvenation Specifications Based on Bending Beam Rheometer Testing of Mixture Beams (2015). *11th International Conference on Low-Volume Roads*.
20. Multiyear Laboratory and Field Performance Assessment of High-Traffic U.S. Highway 49 Full-Depth Reclamation (2016). *Transportation Research Board 95th Annual Meeting*.
21. Stabilizing Very High Moisture Content Fine Grained Soils: Early Age Strength and Later Age Property Correlations (2017). *Geotechnical Frontiers 2017*.
22. Time Dependent Properties of Very High Moisture Content Fine Grained Soils Stabilized with Portland and Slag Cement (2017). *Geotechnical Frontiers 2017*.
23. Fifteen Years of Warm-Mix Asphalt in the United States: What are the Overall Implications of Varying Warm-Mix Technologies on High, Intermediate, and Low Temperature Behaviors? (2019). Association of Asphalt Paving Technologists 94th Annual Meeting.

Poster Presentations of Peer Reviewed Papers

1. Finite Element Modeling Approach for Flexible Pavements with Geosynthetics (2006). *GeoCongress 2006*.
2. Use of Digital Photography to Analyze Foil Strain Gages on Geosynthetics (2006). *GeoCongress 2006*. Co-presenter, Warren, K.A.
3. Full-scale Data Acquisition Programming and Implementation for Instrumented Low Volume Flexible Pavement (2007). *Transportation Research Board 86th Annual Meeting*.
4. Variability Analysis of Low Volume Instrumented Thin Flexible Pavements (2008). *Transportation Research Board 87th Annual Meeting*.
5. Chip and Scrub Seal Binder Evaluation by Frosted Marble Aggregate Retention Test (2009). *Transportation Research Board 88th Annual Meeting*. Co-presenters, Baumgardner, G.L., Hemsley, J.M., Jordan, W.S.
6. Applicability of Modified Vialit Adhesion Test for Seal Treatment Specifications (2010). *Transportation Research Board 89th Annual Meeting*. Co-presenter, Jordan, W.S.
7. Use of Hot Mixed-Warm Compacted Asphalt in Construction (2011). *Transportation Research Board 90th Annual Meeting*. Co-presenters, Baumgardner, G.L., Doyle, J.D., Hemsley, J.M.
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9. Comparison of Available Density Measurement Methods Applicable for Design and Construction (2012). *Transportation Research Board 91st Annual Meeting*. Co-presenter, Doyle, J.D.
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11. Improving Concrete Sustainability and Performance using Portland-Limestone Cement (PLC) Synergies (2013). *Transportation Research Board 92nd Annual Meeting*. Co-presenters, Cost, V.T., Shannon, J.
12. Investigation into the Compatibility of Chip Seal Aggregates and Emulsions (2014). *Transportation Research Board 93rd Annual Meeting*.
13. Characterizing Dense-Graded Asphalt Concrete with the Cantabro Test (2014). *Transportation Research Board 93rd Annual Meeting*. Co-presenter, Doyle, J.D.
14. Curing Temperature Effects on Soils Stabilized With Portland Cement Having Different Sulfate Contents (2014). *GeoCongress 2014*.
15. Effects of Brackish, Salt, and Fresh Water on Very High Moisture Content Cement Stabilized Fine Grained Soil (2014). *GeoCongress 2014*. Co-presenter, Carruth, W.D.
16. Effects of Soil Processing on Cementitiously Stabilized Soil Slurries (2014). *GeoCongress 2014*. Co-presenter, Carruth, W.D.
17. Durability Indices via Cantabro Testing for Unaged, Laboratory Conditioned, and One Year Outdoor Aged Asphalt Concrete (2015). *Transportation Research Board 94th Annual Meeting*.
18. Laboratory and Field Aging Effects on Emulsion-Treated Bending Beam Rheometer Mixture Beams (2015). *Transportation Research Board 94th Annual Meeting*. Co-presenter, Cox, B.C.
19. Benefits of Portland-Limestone Cement for Concrete with Rounded Gravel Aggregates and Higher Fly Ash Replacement Rates (2015). *Transportation Research Board 94th Annual Meeting*. Co-presenter, Cost, V.T.
20. Merits of Asphalt Concrete Durability and Performance Tests When Applied to Cold In-Place Recycling (2015). *International Foundations Congress and Equipment Expo 2015*. Co-presenter, Cox, B.C.
21. Cold In-Place Recycling Moisture-Related Design and Construction Considerations for Single or Multiple Component Binder Systems (2016). *Transportation Research Board 95th Annual Meeting*. Co-presenter, Campbell, C.S.
22. Polymer Modified Asphalt Binder Comparison: GTR, SBS, and Hybrids of GTR and SBS (2017). *Transportation Research Board 96th Annual Meeting*. Co-presenters, Baumgardner, G.L., Jordan, W.S., and Hemsley, J.M.

23. Conditioning and Testing Protocol Combinations to Detect Asphalt Mixture Damage (2018). *Transportation Research Board 97th Annual Meeting*. Co-presenters, Bazuhair, R., Pittman, C.V., Jordan, W.S., Hemsley, J.M., and Baumgardner, G.L.
24. Matching Asphalt Mixture Longer Term Aging in the Southeast United States to Laboratory Conditioning Protocols (2018). *Transportation Research Board 97th Annual Meeting*. Co-presenter, Smith, B.T.
25. Comparing Pressure Aging Vessel Time to Field Aging of Binder as a Function of Pavement Depth and Time (2018). *Transportation Research Board 97th Annual Meeting*. Co-presenters, Smith, B.T., Jordan, W.S., Daranga, C., Baumgardner, G.L.
26. Evaluation of Marshall Stability Design Principles Applied to Cold In-Place Recycling (2018). *Transportation Research Board 97th Annual Meeting*. Co-presenter, Cox, B.C.
27. Comparing Pressure Aging Vessel Time to Field Aging of Asphalt Binder in Compacted Mixtures (2019). *Transportation Research Board 98th Annual Meeting*. Co-presenters, Bazuhair, R., Daranga, C., Baumgardner, G.L.

Presentations at Events With Registered Attendees - No Associated Paper

1. *Composite Bridges of West Virginia*. 77th Annual Meeting of the West Virginia Academy of Science, April 20, 2002, Morgantown, WV, Invited Podium Presentation.
2. *Full-Scale Field Study and Finite Element Modeling of a Flexible Pavement Containing Geosynthetics*. USUCGER-Doctoral Student Geotechnical Research in the Information Age Workshop, GeoCongress 2006, Feb 26, 2006, Atlanta, GA, Selected Podium Presentation.
3. *Increased RAP Usage: Key Parameters for Mississippi*. Mississippi Quality Asphalt Conference, Feb 4-5, 2010, Ridgeland, MS, Co-presenter, Doyle, J.D., Invited Podium Presentation.
4. *Warm Compacted HMA*. 2nd Annual Mississippi Quality Asphalt Conference, April 4-5, 2011, Ridgeland, MS., Invited Podium Presentation
5. *State of Practice in Soil Cement*. Mississippi Transportation Institute Conference 2011, Nov 1-3, 2011, Biloxi, MS, Selected Podium Presentation.
6. *Warm Mix Asphalt Research at MSU*. 3rd Annual Mississippi Quality Asphalt Conference, Feb 7-8, 2012, Jackson, MS, Invited Podium Presentation.
7. *Improving Response Effectiveness After Natural Disasters Using Warm Mix Asphalt Technology*. 4th Annual Transportation Workshop, Transportation & Economic Symposium: Transportation for Mississippi's Sustainable Economic Growth, Feb 21-22, 2012, Starkville, MS, Abstract and Selected Poster Presentation.
8. *Use of Warm Mix Technology to Facilitate Long Haul Distances and Emergency Paving*. Mississippi Engineering Society 2012 Winter Meeting, March 11-13, 2012, Jackson, MS, Abstract and Invited Podium Presentation.
9. *Improving Soil Cement Quality Using Thermal Measurements Testing*. 2012 ACI Mid-South Chapter Symposium, April 19, 2012, Ridgeland, MS, Co-presenter, Sullivan, W.G., Invited Podium Presentation.
10. *Concrete Research at Mississippi State University*. Alabama-Mississippi 2012 Summer Convention, May 31-June 3, 2012 Destin, FL, Co-presenter, Shannon, J., Invited Podium Presentation.
11. *WMA Research-SERRI*. Southeastern Asphalt User/Producer Group (SEAUPG) Annual Meeting & Exhibits, Nov 12-15, 2012, Hilton Head Island, SC, Invited Podium Presentation.
12. *Use of Thermal Measurements in Soil Stabilization Quality Control*. Workshop on Thermal Methods for Prediction of Properties of Cementitious Systems-Sponsored by ASTM C094800, Dec 2, 2012, Atlanta, GA, Abstract and Selected Podium Presentation.
13. *Portland-Limestone Cement Research for Davis-Wade Stadium Expansion*. 2013 ACI Mid-South Chapter Symposium, April 11, 2013, Ridgeland, MS, Co-presenter, Shannon, J., Invited Podium Presentation.
14. *Current & Future Research*. 5th Annual Mississippi Quality Asphalt Conference, Jan 16-17, 2014, Jackson, MS, Invited Podium Presentation.

15. *Characterizing Durability and Toughness Effects of Field Aging on Asphalt Concrete*. 40th DAWG Forum on Pavement Performance Data Analysis: in Conjunction with Transportation Research Board 93rd Annual Meeting, Jan 11, 2014, Washington, D.C., Abstract and Selected Podium Presentation.
16. *MSU CMRC Update with a Recap of the Davis-Wade Stadium Expansion Project*. 2014 ACI Mid-South Chapter Symposium, May 20, 2014, Ridgeland, MS, Invited Podium Presentation.
17. *Beneficial Reuse of Very High Moisture Soils by way of Geotextile Tubes and Low Cementitious Dosage Rates*. 2014 ASCE Mississippi Section Meeting, Sept 3-5, 2014, Vicksburg, MS, Abstract and Selected Podium Presentation.
18. *Sustainability-Driven Developments in Concrete Materials and Related MSU Research*. 2014 ASCE Mississippi Section Meeting, Sept 3-5, 2014, Vicksburg, MS, Co-presenter, Cost, T., Abstract and Selected Podium Presentation.
19. *Cantabro Testing for Mixture Durability*. Southeastern Asphalt User/Producer Group (SEAUPG) Annual Meeting & Exhibits, Nov 17-20, 2014, Nashville, TN, Invited Podium Presentation.
20. *Monitoring Joint Performance for ThinLay Pavements*. Transportation Research Board 95th Annual Meeting, Jan 10-14, 2016, Washington, D.C., Invited Podium Presentation.
21. *Chip Seal & Scrub Seal Mixture Design & Performance Testing*. 7th Annual Mississippi Quality Asphalt Conference, Feb 02-03, 2016, Jackson, MS, Invited Podium Presentation.
22. *Debating Cracking Performance Methods – Overview of Current Methods and State of Practice*. Leading Edge Workshop at the 91st Annual Meeting of the Association of Asphalt Paving Technologists (AAPT), Mar 13-16, 2016, Indianapolis, IN, Invited Podium Presentation.
23. *PM Soil-Cement Compaction Device: Overview of Applications for Pavement Design & Construction Quality Assurance: Operational Aspects & Test Method Development*. 102nd AASHTO Subcommittee on Materials Meeting, July 31-Aug 05, 2016, Greenville, SC, Invited Podium Presentations.
24. *Civil Infrastructure in the Face of Hurricanes and Flooding*. 2016 ASCE Mississippi Section Meeting, Oct 17-19, 2016, Biloxi, MS, Abstract and Selected Podium Presentation.
25. *Some Beneficial Uses of Dredged Materials*. Mississippi Water Resources Association 2016 Education Conference – Port Symposium, Oct 19, 2016, Jackson, MS, Invited Podium Presentation.
26. *Performance Oriented Guidance for Mississippi Chip Seals*. Asphalt Emulsion Manufacturers Association International Symposium on Asphalt Emulsion Technology (ISAET). Nov 1-4, 2016, Washington, D.C., Invited Podium Presentation.
27. *Asphalt Mix Testing: Design, Construction & Performance Measurement Needs*. Southeastern Asphalt User/Producer Group (SEAUPG) Annual Meeting & Exhibits, Nov 15-17, 2016, Corpus Christi, TX, Invited Podium Presentation.
28. *The Future of Asphalt Paving: Education, Technology Transfer, and Craft Training – A Practical Approach for Pavements*. 8th Annual Mississippi Quality Asphalt Conference, Feb 07-08, 2017, Starkville, MS, Invited Podium Presentation, Co-presenters, Allard, T., Booth, R., Byrd, C., Pittman, C., Sparks, A., Williams, J.
29. *New Techniques for Controlling Mixed In-Place Soil Cement Road Base*. 60th Annual Alabama Transportation Conference, Feb 09-10, 2017, Montgomery, AL, Invited Podium Presentation.
30. *Multiyear Performance of High Traffic US 49 FDR Project*. 44th Annual Rocky Mountain Asphalt Conference & Equipment Show, Feb 22-24, 2017, Denver, CO, Invited Podium Presentation.
31. *Soil-Cement Design and Construction Protocols for Mixed-in-Place Highway Projects*. American Concrete Institute (ACI) Convention and Exposition, Oct 15-19, 2017, Anaheim, CA, Invited Podium Presentation.
32. *The Future of Asphalt Paving: Education, Technology Transfer, and Craft Training – A Practical Approach for Pavements (Year 2)*. Mississippi Quality Asphalt Conference, Feb 06-07, 2018, Starkville, MS, Invited Podium Presentation, Co-presenters, Bazuhair, R., Booth, R., Finney, M., Hufft, A., Pittman, C.V.
33. *Pavement Preservation – Mississippi DOT/Academic Perspective*. 93rd Annual Meeting of the Association of Asphalt Paving Technologists (AAPT), Mar 18-21, 2018, Jacksonville, FL, Invited Podium Presentation also Live Streamed through YouTube.

34. *Steps Toward an Improved Pavement Infrastructure in Mississippi*. 2018 ASCE Mississippi Section Meeting, Sept 5-7, 2018, Vicksburg, MS, Abstract and Selected Podium Presentation.
35. *Transportation Infrastructure: Paving a Road to Success*. Transportation Research Board 98th Annual Meeting, Jan 13-17, 2019, Washington, D.C., Invited Podium Presentation.
36. *Laboratory Mixture Conditioning Protocols Compared to Field Aging in Mississippi*. Transportation Research Board 98th Annual Meeting, Jan 13-17, 2019, Washington, D.C., Invited Podium Presentation.
37. *Laboratory and Field Experiences Utilizing the PM Device to Compact and Test a Range of Chemically Stabilized Materials*. Transportation Research Board 98th Annual Meeting, Jan 13-17, 2019, Washington, D.C., Invited Podium Presentation.
38. *Workforce Development Perspectives and Tools*. Mississippi Quality Asphalt Conference, Feb 05-06, 2019, Starkville, MS, Invited Podium Presentation, Co-presenters, Bullock, J., Booth, R.

EXTERNAL FUNDING

--Total external funding involvement of \$13,085,472, which is broken down below by category.

Principal Investigator of Project Funded Through Civil & Environmental Engineering Department

--Total of \$5,628,943, where Isaac L. Howard had \$5,275,980 of responsibility assigned within MSU, \$746,969 was subcontracted, and there was an additional \$64,522 of cost share.

Project is Complete

1. *Mississippi DOT (2007-2008)*. "Utilization of Reclaimed Asphalt Pavement (RAP) in Construction-Phase I: Detailed Literature Review, Feasibility Study, & Preliminary Economic Analysis," State Study 200, 100% Responsibility, Funding Type-State.
2. *MODUMAT (2007-2008)*. "Instrumentation and Analysis of Wood Matting Systems," 90% Responsibility, Funding Type-Private.
3. *Department of Homeland Security-Oak Ridge National Laboratory-Southeast Region Research Initiative (2007-2012)*. "Increasing Community Disaster Resilience Through Targeted Strengthening of Critical Infrastructure," SERRI Project 70015, 85% Responsibility, Funding Type-Federal.
4. *Mississippi DOT (2008-2009)*. "Laboratory and Field Study of Chip and Scrub Seals for Development of Asphalt Pavement Maintenance Toolbox," State Study 202, 100% Responsibility, Funding Type-State.
5. *Mississippi DOT (2008-2011)*. "The Effects of Coarse Aggregate Cleanliness and Moisture Content on Stripping Susceptibility and on the Long Term Performance of HMA Mixes," State Study 208, 100% Responsibility, Funding Type-State.
6. *Mississippi DOT (2009-2010)*. "Utilization of RAP in Construction-Phase II: High RAP Surface Coarse," State Study 212, 100% Responsibility, Funding Type-State.
7. *Mississippi DOT (2008-2013)*. "Performance Specification for Chemically Stabilized Pavement Layers," State Study 206, 100% Responsibility, Funding Type-State.
8. *Mississippi DOT (2009-2013)*. "Laboratory Testing and Evaluation of Near Surface Properties of Flexible Pavements Due to Bituminous Surface Treatments," State Study 211, 100% Responsibility, Funding Type-State.
9. *Mississippi DOT (2013-2014)*. "Asphalt Mixture Field Aging Study Preliminary Testing," Project No. 106526 101000, 100% Responsibility, Funding Type-State.
10. *Janesville Acoustics (2015)*. "Fee for Service Agreement-Thermal Conditioning of Fibers," 100% Responsibility, Funding Type-Private.
11. *Mississippi DOT (2012-2015)*. "Full Depth Reclamation for High Traffic Applications," State Study 250, 100% Responsibility, Funding Type-State.
12. *Holcim (US), Inc. (2014-2015)*. "Concrete Sustainability and Performance Through Synergies of Portland-Limestone Cement and Supplementary Cementitious Materials," 100% Responsibility, Funding Type-Private.

13. *National Center for Intermodal Transportation for Economic Competitiveness-NCITEC (2016)*. “Beneficial Reuse of Dredged Soil-Transferring Portland-Limestone Cement and Geosynthetics Technology Toward Sustainable Solutions to Dredged Material Management,” 100% Responsibility, Funding Type-US Dept. of Transportation UTC.
14. *Holcim (US), Inc. (2014-2016)*. “Concrete Sustainability Tools Focusing on Cementitious Systems Containing Portland-Limestone Cement,” 100% Responsibility, Funding Type-Private.
15. *U.S. Army Engineer Research and Development Center-ERDC. (2015-2016)*. “MOS Requirements for Modern Aircraft,” 100% Responsibility, Funding Type-Federal IPA Assignment.
16. *Mississippi DOT (2014-2017)*. “Field Aging Effects on Asphalt Mixed at Different Temperatures and Hauled Different Distances,” State Study 266, 100% Responsibility, Funding Type-State.
17. *Mississippi DOT (2016-2018)*. “Laboratory Conditioning and Field Aging of Asphalt Mixtures,” State Study 270, 100% Responsibility, Funding Type-State.
18. *Mississippi Concrete Association (MCA). (2016-2019)*. “Improvement of Paste-Aggregate Bond in Concrete Made with Mississippi Gravel,” 100% Responsibility, Funding Type-Private.

Project is Ongoing

1. *Edw C. Levy Company (2017-2019)*. “Enhancing Steel Slag Utilization in the Southeast U.S. Construction Market,” 100% Responsibility, Funding Type-Private.
2. *Mississippi DOT (2016-2020)*. “Soil-Cement Manual of Practice: Interconnected Framework for Pavement Design, Laboratory Mixture Design, and Construction Quality Control/Assurance,” State Study 276, 100% Responsibility, Funding Type-State.
3. *Mississippi DOT (2018-2020)*. “Conversion Factors and Regression Parameters to Back Cast Strength and Modulus of Cementitious Stabilized Materials,” State Study 285, 100% Responsibility, Funding Type-State.
4. *U.S. Army Engineer Research and Development Center-ERDC. (2018-2020)*. “Assessment of Polymeric or Composite Materials for Use as Infrastructure Elements Such as Railroad Ties,” 100% Responsibility, Funding Type-Federal IPA Assignment.
5. *Paragon Technical Services, Inc. (2014-2021)*. “Bituminous Material and Pavement Preservation Research Collaboration,” 100% Responsibility, Funding Type-Private.
6. *USDA Forest Products Laboratory (2016-2021)*. “Sustainable Construction Materials by way of Resilient Forest Products,” 80% Responsibility, Funding Type-Federal.
7. *Mississippi State Board of Contractors (2016-2021)*. “Construction Education Fund – Construction Craft Training in Mississippi,” 100% Responsibility, Funding Type-State.
8. *Mississippi State Board of Contractors (2017-2021)*. “Growing Interest and Knowledge Within the Mississippi Construction Industry,” 100% Responsibility, Funding Type-State.
9. *Mississippi State Board of Contractors (2018-2021)*. “Building a Strong Foundation within the Mississippi Construction Industry by Sparking Curiosity and Reinforcing Fundamentals,” 100% Responsibility, Funding Type-State.
10. *Mississippi DOT (2017-2022)*. “MDOT Specific Materials, Design, and Construction Procedures for Chip and Scrub Seals,” State Study 272, 100% Responsibility, Funding Type-State.
11. *Mississippi DOT (2019-2023)*. “Characterization of Combined Environmental Effects on Bituminous Paving Materials,” State Study 296, 100% Responsibility, Funding Type-State.
12. *Mississippi State Board of Contractors (2019-2022)*. “Investing in Mississippi Current and Potential Construction Workforce Through Safety, Knowledge Transfer, and Promotional Tool Development Initiatives,” 60% Responsibility, Funding Type-State.

Team Member of Project Funded Through Civil & Environmental Engineering Department

--Total of \$76,986, where Isaac L. Howard had \$23,096 of responsibility assigned within MSU, and there was an additional \$77,661 of cost share.

Project Complete

1. *National Center for Intermodal Transportation for Economic Competitiveness-NCITEC (2013-2015). “Sustainably Enhancing Intermodal Freight Operation of Ports Using Geotextile Tubes,” 30% Responsibility, Funding Type-US DOT UTC, Principal Investigator-Farshid Vahedifard.*

Research Center Funding

--Total of \$6,165,866 within projects or tasks where Isaac L. Howard worked alongside several other investigators; responsibility values within MSU were often not assigned.

Project Complete

1. *U.S. Army Corps of Engineers, Engineer Research and Development Center-ERDC (2013-2014). “Computational Research for Engineering and Science-Ground Vehicles (CRES-GV),” Multi-Task Program with Principal Investigator Roger L. King (Center for Advanced Vehicular Systems, CAVS).*
 - a. *Task 1-Highly Scalable Fluid-Solid Interaction Model for Terramechanics, Lead Investigator: Bohumir Jelinek, % Responsibility Not Defined-Role Was a Project Team Member.*
2. *Consortium for Energy, Environment & Demilitarization (CEED) with the Department of Defense (DoD) as the Prime Sponsor (2013-2014). “Military Engineering and Engineered Resilient Systems Software,” Multi-Task Program with Principal Investigator Roger L. King (CAVS).*
 - a. *Overall Program Activities (i.e. Parent Account)-Military Engineering and Engineered Resilient Systems Software, 10% Responsible, Lead Investigator: Roger L. King.*
 - b. *Task 12-Mobility Modeling for Soils, Lead Investigator: Farshid Vahedifard, % Responsibility Not Defined-Role Was a Project Team Member.*
 - c. *Task 19-Multiscale Cementitious Materials, Lead Investigator: Mark Horstemeyer, % Responsibility Not Defined-Role Was a Project Team Member.*
3. *U.S. Army Corps of Engineers, Engineer Research and Development Center-ERDC (2015-2017). “Integrated Virtual Prototyping for Product Engineering and Design (IVPPED),” Multi-Task Program with Principal Investigator Roger L. King (CAVS).*
 - a. *Task 12-Mobility Modeling for Soils, Lead Investigator: Farshid Vahedifard, % Responsibility Not Defined-Role Was a Project Team Member.*
 - b. *Task 19-Multiscale Cementitious Materials, Lead Investigator: Mark Horstemeyer, % Responsibility Not Defined-Role Was a Project Team Member.*
4. *United States Army Tank Automotive and Armaments Command (2016-2017). “Simulation Based Reliability and Safety (SimBRS) Research Program,” Multi-Directive Program with Principal Investigator Roger L. King (CAVS).*
 - a. *WD 63-HPC Modeling & Definition of Blast Environment & Loads on Surfaces, Topic 7-Ultra High Performance Concrete, Lead Investigator: Mark Horstemeyer, % Responsibility Not Defined-Role Was a Project Team Member.*
 - b. *WD 64-Virtual Prototyping of Vehicle Systems, Topic 3-Mobility Modeling, Lead Investigator: Farshid Vahedifard, % Responsibility Not Defined-Role Was a Project Team Member.*
5. *United States Department of Army (ARMY) (DoD) TACOM (2016-2018). “WD67 Modeling and Simulation of Multi-Physics Material Response in Geo-environments,” Multi-Topic Program with Principal Investigator Roger L. King (CAVS).*
 - a. *Topic 1-Advanced Materials and Modeling for Force Projection and Protection, Role-Lead Investigator for Topic 1 and 6% Responsible for WD67 Program.*

Project is Ongoing

1. *U.S. Army Corps of Engineers-DoD (2017-2020)*. “Proving Ground and Dismounted Troops,” Multi-Task Program with Principal Investigator Clay Walden (CAVS).
 - a. Task 6-Modeling Multi-Physics Processes in Variably Saturated Soils for Off-Road Ground Vehicle Mobility, Lead Investigator: Farshid Vahedifard, % Responsibility Not Defined-Role Was a Project Team Member.
2. *United States Army Tank Automotive & Armaments Command (DoD) (2017-2022)*. “SiMBRS II TO 002 - Advanced Modeling and Simulation of Multi-Physics Material Response in Geo-environments,” Multi-Topic Program with Principal Investigator Clay Walden (CAVS).
 - a. Topic 1-Thermal Modeling of Geomaterials, Role-Lead Investigator for Topic 1 and 15% Responsible for TO 002 Program.

Development

--Total of \$1,213,678 raised by Isaac L. Howard alongside MSU Foundation & BCoE Development Office.

1. *Ergon Asphalt & Emulsions Distinguished Doctoral Fellowship in Construction Materials (2012-2015)*.
2. *Cement and Concrete Industries Excellence Fund (2012-2015)*. Donors: Holcim (US) Inc., CEMEX, Argos USA, and One Individual.
3. *Infinite Impact When We All Work Together (2013)*. Remarks Given at Kickoff to Public Phase of Six-Hundred Million Dollar Comprehensive Capital Campaign Titled “Infinite Impact: The Mississippi State University Campaign”, October 11, Starkville, MS.
4. *Construction Materials Research Center (CMRC) Teaching Assistant Award (2014-2015)*. Donors: Mississippi Asphalt Pavement Association, Mississippi Concrete Industries Association, Mississippi Road Builders Association.
5. *Ergon Asphalt & Emulsions Student Support Initiative in Construction Materials (2015-2019)*.
6. *CMRC Endowment Campaign (2015-2019)*. Donors: APAC Mississippi, B&B Concrete, Blackledge Emulsions, Burns Cooley Dennis, CTS Cement, Delta Industries, Dickerson & Bowen, Dunn Roadbuilders, Edw. C. Levy Co, Ergon Asphalt & Emulsions, Forterra Pipe & Precast, Hammett Gravel, Headwaters Construction Materials, Huey P. Stockstill, Hunt Refining Company, Key Constructors, LafargeHolcim, Lehman-Roberts, Mississippi Asphalt Pavement Association, Mississippi Concrete Association, MMC Materials, Sunbelt Sealing, TenCate, The Blain Companies, Vulcan Materials Company, Warren Paving, and Multiple Individuals.
7. *Ergon Asphalt & Emulsions Student and Laboratory Support Initiative in Construction Materials (2020-2023)*.

HONORS AND AWARDS

1. *Walton Distinguished Doctoral Fellowship*, University of Arkansas, 2003-2006.
2. *MSU StatePride Faculty Award*, MSU, 2010 and 2011.
3. *BCoE Hearin Faculty Excellence Award*, MSU, 2010.
4. *Young Engineer of the Year*, Mississippi Section of ASCE, 2010.
5. *Best Poster Award-Asphalt Materials Section*, TRB 90th Annual Meeting, Paper 11-3522, Session 551, Poster Title: Use of Hot-Mixed Warm-Compacted Asphalt in Construction, 2011.
6. *W.J. Emmons Annual Award Runner-Up*, Paper Title: Laboratory Evaluation of Asphalt Mixtures Containing Dry Added Ground Tire Rubber and a Processing Aid, Association of Asphalt Paving Technologists (AAPT), 2012.
7. *Faculty Leadership Award-President Buz M. Walker Class*, Participant in Select Entry Administration Program, Sponsored by MSU Office of Research & Economic Development, Aug 2012 to May 2013.
8. *Bagley College of Engineering Academy of Distinguished Teachers*, 2013 Inductee, Student Nominated and Selected by a Panel Including Administration, Faculty, and Students.

9. *2015 Triad Award Runner-Up*, Project Title: Davis Wade Stadium Expansion and Renovation, Award Sponsored by *Concrete Construction*, *The Concrete Producer*, and *Public Works* Magazines. Role: Participated in Technical Aspects of Portland-Limestone Cement's Project Incorporation, and Served on a Six Member Panel at World of Concrete Event on Feb 05, 2015 in Las Vegas, NV Titled: *Building Successful Public Projects Through Innovation, Sustainability, and Leadership Luncheon & Forum*.
10. *Slag Cement Association 2014 Project of the Year-Sustainability*. Project Title: Davis Wade Stadium Expansion and Renovation. Role: Participated in Technical Aspects of Slag and Portland-Limestone Cement's Project Incorporation, and Represented Project at ACI Convention and Exposition on Apr 15, 2015 in Kansas City, MO. Awards featured in *Concrete International* Article in August of 2015.
11. *2015 Practice-Ready Paper Award*. Presented by the Transportation Research Board's Design and Construction Group at their 95th Annual Meeting on Jan 11, 2016 for the paper: Development of Equipment for Compacting Soil-Cement into Plastic Molds for Design and Quality Control Purposes.
12. *Best Paper in the Category of "Maintenance, Materials" from the 11th International Conference on Low Volume Roads*. Findings from the Transportation Research Record Article "Recommendations for Seal Treatment Rejuvenation Specifications Based on Bending Beam Rheometer Testing of Mixture Beams" were re-presented in a Best Papers Session at the TRB 95th Annual Meeting on Jan 12, 2016.
13. *AASHTO Subcommittee on Materials Innovation Award*. Presented at the 102nd AASHTO Subcommittee on Materials Meeting for Efforts in the Development and National Acceptance of "Design and Construction Control Guidance for Chemically Stabilized Base Layers Using the PM Device", August 01, 2016, Greenville, SC, First Recipient of This Award.
14. *Engineer of the Year*, Mississippi Section of ASCE, 2016.
15. *J. of Terramechanics 2016 Editor's Choice*. "Improved Sinkage Algorithms for Powered and Unpowered Wheeled Vehicles Operating on Sand" was 1 of 3 articles out of 32 selected by the journal's Editor-In-Chief as noteworthy or likely to be of high interest to the terramechanics community.
16. *MDOT State Study 250 was voted by AASHTO's Research Advisory Committee as High-Value Research and a Featured Maintenance Project for 2017*. Summaries appear in AASHTO publications titled "Maintenance Research 2017: Innovations from State DOTs" and "Research Impacts 2017: Better-Faster-Cheaper", and a poster presentation was given at TRB's 97th Annual Meeting on Jan 08, 2018 titled "Investigation of MDOT's Full-Depth Reclamation and Cold In-Place Recycling Projects".
17. *Teaching Award for Distance Learning*. Bagley College of Engineering (BCoE), 2018.
18. *Academy of Fellows*. Bagley College of Engineering (BCoE), Inducted April 19, 2018.

AFFILIATIONS

Previous

1. Industry Studies Assn., Alfred P. Sloan Foundation Industry Studies Program, *Member*, 2007-2011.

Current

1. American Society of Civil Engineers (ASCE), *Student Member* 2000-2006, *Member* 2006-2018, *Geo-Institute (G-I) Member* 2010-present, *Fellow* 2018-present.
2. Order of the Engineer, University of Arkansas-Link 206, *Member* 2003-present.
3. American Society of Engineering Education (ASEE), *Member* 2006-present.
4. Association of Asphalt Paving Technologists (AAPT), *Member* 2010-present.
5. Transportation Research Board (TRB), *Individual Affiliate* 2010-present.
6. Honor Society of Phi Kappa Phi, Elected by Mississippi State Univ. Chapter, *Member* 2015-present.
7. American Concrete Institute (ACI), *Member* 2017-present.

TEACHING

Review Courses Taught

1. PE Exam Materials Review (1 Day) for Mississippi DOT Employees. Taught 4 times 2006 to 2008.
2. FE Exam Soils or Materials Review (2 hr) for CEE Students. Taught 16 times 2006 to 2018.

Select Teaching Workshops and Training Courses Attended

1. *Professor Training Course in Asphalt Technology*, National Center for Asphalt Technology, Role-Attendee for Select Entry Course, June 19-28, Auburn University, 2007.
2. *ExCEED Teaching Workshop*, American Society of Civil Engineers (ASCE), Role-Attendee for Select Entry Workshop, July 25-30, West Point, NY, 2007.

K-12 Outreach

1. *Mississippi Summer Transportation Institute*. Two week summer camp sponsored by Mississippi DOT. Audience: Rising high school sophomores and juniors mostly, other grades occasionally. Organized and/or led construction materials discussion and/or laboratory exercises lasting the equivalent of one to two days per year. A total of 135 students have participated in materials activities between 2007 and 2014. Undergraduate and/or graduate students have been involved some years.
2. *QUEST*. Two to three week summer research program sponsored by James Worth Bagley College of Engineering (BCoE)-MSU. Audience: Advanced high school students. Mentored 6 total students between 2007 and 2013 for half days during most of the program duration.

University Courses Taught

-- 5,900 credit hours taught (4,695 undergraduate, 532 graduate, and 673 thesis/dissertation)

<i>Class Title-Number-University</i>	<i>Credit</i>	<i>Sections Taught</i>	<i>Credit Hours</i>	<i>Evaluations on 5 Point Scale¹</i>
Statics-ENGR 2403-ASU	3 hr	2 - Sp 03	126	4.4 to 4.5 (4.5)
Fluid Mechanics-ENGR 3473-ASU	3 hr	1 - Sp 03	93	4.3 to 4.3 (4.3)
Engineering Economics-ENGR 3433-ASU	3 hr	1 - Sp 03	54	4.4 to 4.4 (4.4)
Construction Materials Lecture-CE 3313-MSU	3 hr	13 - Fa 06 to Sp 19	2,694	4.0 to 4.7 (4.4)
Construction Materials Laboratory-CE 3313-MSU	0 hr	7 - Fa 06 to Sp 13	0	3.8 to 4.1 (3.9)
Construction Materials Laboratory-CE 3311-MSU ²	1 hr	6 - Sp 14 to Sp 19	513	4.0 to 4.5 (4.3)
Pavement Materials & Design-CE 4103/6103-MSU	3 hr	9 - Fa 07 to Fa 16	1,230	4.2 to 4.7 (4.5)
Material Characterization-CE 8303-MSU ³	3 hr	4 - Fa 10 to Fa 17	147	4.2 to 4.6 (4.5)
Pavement Rehabilitation-CE 8333-MSU ⁴	3 hr	3 - Sp 14 to Sp 19	114	4.5 to 4.8 (4.7)
Advanced Pavement Materials-CE 8343-MSU ⁵	3 hr	2 - Fa 14 to Sp 18	81	4.3 to 4.7 (4.5)
Special Topics ⁶ – CE 4990/6990/8990-MSU	3 hr	6 - Sp 07 to Su 16	87	4.9 to 5.0 (4.9)
Directed Individual Study-CE 4000-MSU	3 hr	2 - Su 15 to Sp 18	6	Not Performed
Directed Individual Study-CE 7000-MSU	1-6 hr	27 - Su 08 to Sp 19	82	Not Performed
Thesis Hours-CE 8000-MSU	1 hr	Multiple Sections	295	Not Performed
Dissertation Hours-CE 9000-MSU	1 hr	Multiple Sections	378	Not Performed

1: Range of composite student evaluation scores are given, and average of all composite scores is in parenthesis.

2: Teaching assistants were listed as a co-instructor in some semesters.

3: Sole developer of CE 8303, approved in 2008.

4: Co-developer of CE 8333 with Dr. Gary L. Anderton, approved in 2009.

5: Co-developer of CE 8343 with Dr. E. Ray Brown, approved in 2010.

6: Special Topics: Concrete Applications (Sp 07), Site Improvement (Fa 07), Pavement Performance (Sp 08), Warm Mixed Asphalt (Sp 12), Asphalt Durability (Su 13), The Paving Process (Su 16).

SERVICE

University Service-MSU

Previous

1. *CEE Advisory Board Peer Committee*. Member, 2008-2009.
2. *CEE Faculty Search Committee*. Member, Served 3 Times, 2009, 2010, and 2012.
3. *James Worth Bagley College of Engineering (BCoE) Dean Search Committee*. Member, 2013.
4. *BCoE Dean's Faculty Advisory Team on National Stature*, Member, Fall 2013.

5. *Internal Review Committee for Dave C. Swalm School of Chemical Eng.* Chairman, 2014-2015.
6. *University Assigned Mentor to Dr. Farshid Vahedifard*, 2015-2018.
7. *BCoE Associate Dean for Research and Graduate Studies Search Committee*, Member, 2016.
8. *Bagley Research Advisory Group*. Member, 2008-2009 and 2016.
9. *CEE Construction Engineering & Management Search Committee*. Chairman, 2017.
10. *CEE Scholarship Committee*. Member, 2007-2017.
11. *Industrial & Systems P&T Committee*. Member, 2018.

Current

1. *CEE Laboratory Committee*. Chairman, 2008-present.
 - a. Developed department wide laboratory policy in 2008.
 - b. Initiated yearly department wide external calibration program in 2009.
 - c. Initiated recurring safety meetings focused on geotechnical and materials labs in 2013.
 - d. Mississippi Board of Licensure for Professional Engineers and Surveyors Educational Grant.
 - Developed materials and construction equipment needs and justifications that were \$54,966 of a \$195,643 departmental award for equipment purchases, 2015 to 2016.
 - Developed materials and geotechnical equipment needs and justifications that were \$22,900 of a \$141,690 departmental award for equipment purchases, 2018 and 2019.
 - e. Laboratories have been certified to perform work for MDOT (expires December 2019).
 - f. *Richard A. Rula Engineering and Science Complex*. Assisted design professionals with configuration, design, and layout of laboratory spaces, equipment detailing, and Walker Hall relocation logistics. Documented activities were in 2008 to 2009 and 2017 to present with intermittent activities from 2008 to present.
2. *Materials Working Group*. CEE Program Advisor, BCoE, 2012-present.
3. *Design Review Subcommittee of the Master Plan Development and Advisory Committee*. Member. From initial appointment in August of 2015 through December of 2018, subcommittee has reviewed/provided guidance for new design/construction or renovation/modification of 13 buildings, 3 athletic facilities, 4 signage projects, 1 road, 1 parking garage, 2 parking lots, and 13 special projects.
4. *CEE Hazardous Waste Committee*. Member, 2017-present.
5. *CEE Promotion and Tenure (P&T) Committee*. Member, 2017-present.

Service on National Committees, Boards, or Panels

Previous

1. Transportation Research Board of the National Academies, TRB, *Committee on Flexible Pavement Construction and Rehabilitation-AFH60*, Member, Appointed 2008 to 2017 (9 years).
2. National Cooperative Highway Research Program, NCHRP, *Advisory Panel SP20-07(386)-Update of the 2008 Guide Specifications for Highway Construction*, Member, Appointed 2015 to 2018 (2.7 years).

Current

1. Transportation Research Board of the National Academies, TRB, *Committee on Critical Issues and Emerging Technologies in Asphalt-AFK10*, 1st Young Member Ever Appointed to Committee, Appointed 2011 to 2016 (5 years), Member, Appointed 2016 to 2018 (2 years), Chairman, Appointed 4/15/2018 to 4/14/2021.
2. Geo-Institute (G-I) of the American Society of Civil Engineers, *G-I Pavements Committee*, Member, September 2012 to present.
3. Editorial Advisory Panel of the Institution of Civil Engineers (ICE) *Ground Improvement Journal*, Member, Appointed November 2015 to present.
 - a. *Themed Issue on Ground Improvement with Geosynthetics – the Sustainability Triple Bottom Line*. Vol. 171, No. 4, 2018, Role: Championed/organized with J. Han and wrote Editorial.
4. Transportation Research Board of the National Academies, TRB, *Committee on Surface Requirements of Asphalt Mixtures-AFK40*, Member, Appointed 6/22/2017 to 4/14/2020.

5. Editorial Board of the *Journal of the Association of Asphalt Paving Technologists (AAPT)*, Associate Editor (Inaugural Member), Appointed December 2017 to Present.

Conference, Workshop, and Professional Organization Service

1. *Moisture Damage to Hot-Mix Asphalt Mixtures*. Transportation Research Board 91st Annual Meeting, Session 158, Jan 22, 2012, Washington, D.C., Role-Presiding Officer of Half Day Workshop and Organizer of Subsequent TRB E-Circular 198 Published in June of 2015.
2. *Transportation & Economic Symposium: Transportation for Mississippi's Sustainable Economic Growth*. Feb 21-22, 2012, Starkville, MS, Role-Member of Conference Local Committee.
3. *Construction Materials Research Center (CMRC) Exhibit*. 98th AASHTO Subcommittee on Materials Meeting, Booth 6, Aug 5 to 8, 2012, Biloxi, MS, Role-Co-exhibitor with T.D. White.
4. *Asphalt Mixtures for Orthotropic Steel Decks*. Transportation Research Board 92nd Annual Meeting, Session 651, Jan 15, 2013, Washington, D.C., Role-Presiding Officer of Poster Session.
5. *Workshop on Portland-Limestone Cement (PLC)*. 3 PDH's Awarded, Event Number CMRC WS 13-1, Jan 23, 2013, Starkville, MS, Role-Co-Organizer and Presenter with T. Cost and H.L. James.
6. *Cold Planing, Compaction, and Pay Adjustments in Hot-Mix Asphalt Pavements*. Transportation Research Board 93rd Annual Meeting, Session 678, Jan 14, 2014, Washington, D.C., Role-Presiding Officer of Poster Session.
7. *Materials Division Technical Session I*. 2015 ASEE Annual Conference and Exposition, Session T536, June 16, 2015, Seattle, WA, Role-Co-Moderator of Lectern Session with S. Gupta.
8. *Fifth Technical Session – Field Performance of RAP*. 91st Annual Meeting of the Association of Asphalt Paving Technologists (AAPT), Mar 13-16, 2016, Indianapolis, IN, Role-Moderator.
9. *2016 Road Conference: Pavement Management Best Practices, Lowest Cost*. 4 PDH's Awarded, Event Number CMRC WS 16-1, March 23, 2016, Starkville, MS, Role-Hosted, Co-Organized with 11 Others.
10. *Technology Transfer Event Titled: Beneficial Reuse of Dredged Soil-Transferring Portland-Limestone Cement and Geosynthetics Technology Toward Sustainable Solutions to Dredged Material Management*. 3.5 PDH's Awarded, Event Number CMRC WS 16-2, May 24, 2016, Starkville, MS, Role-Organizer and Co-Presenter with T. Cost and C. Timpson.
11. *Professional Development Presentation*. 1 PDH Awarded, CMRC Spring 2016 Meeting, May 11, 2016, Role-Co-Presenter/Facilitator with B.C. Cox and V.T. Cost of the following topics - Portland-Limestone Cement (PLC): Implementation into Mississippi and Surrounding States; and Asphalt Density: Field Compaction Relationships and Laboratory Measurement for a Wide Range of Air Voids.
12. *Improved Specimen Preparation for Soil-Cement Design and Construction Monitoring*. TRB Webinar on September 12, 2016. Co-Presented with W.G. Sullivan.
13. *Asphalt Mixture Volumetrics: Applying Reasonableness and Avoiding Pitfalls*. Transportation Research Board 96th Annual Meeting, Session 174, Jan 8, 2017, Washington, D.C., Role-Presiding Officer of Half Day Workshop and Presenter.
14. *New Test Procedures for Cementitious or Chemically Stabilized Soils*. Transportation Research Board 96th Annual Meeting, Session 526, Jan 10, 2017, Washington, D.C., Role-Presiding Officer of Lectern Session.
15. *ASCE Mississippi Section Meeting*. American Society of Civil Engineers, October 11 to 13, 2017, Starkville, MS, Role-Transportation Infrastructure Program Co-Organizer that included an introductory presentation titled "Civil Engineers and Infrastructure: A Path to Success", a crack sealing demonstration, and two panel events with industry and the Mississippi Department of Transportation.
16. *Southeastern Asphalt User/Producer Group (SEAUPG) Annual Meeting & Exhibits*. November 14 to 16, 2017, Jacksonville, FL, Role-Gave Introductory Remarks and Facilitated a Panel Discussion titled "University, Agency & Industry Partnerships: Workforce Development and Implementable Solutions" where A. Bhasin, W.G. Sullivan, R. Lee, H. Mullen, and B. Smith also participated.
17. *Steel Slag as a Paving Aggregate: Properties, Applications, and Comparison to Alternatives*. 4 PDH's Awarded, Event Number CMRC WS 19-1, Feb 27, 2019, Starkville, MS, Workshop Role-Co-Developed, Organized, and Conducted alongside T. Zimmer, K. Cook, J. Yzenas, T. Cagle, & L. Ayers.

Review of Technical Papers (Total Reviewed of 131)

1. Conferences

<u>Venue</u>	<u>Papers Reviewed</u>	<u>Years Reviewed</u>
<i>Geo Americas 2008</i>	1	2007
<i>ASCE Geo-Congress 2012</i>	2	2011
<i>ASCE Geo-Congress 2013</i>	2	2012
<i>2013 Airfield Highway and Pavement Conference</i>	2	2013
<i>12th ISAP Conference on Asphalt Pavements</i>	1	2014
<i>IFCEE 2015</i>	1	2014
<i>ASCE Geo-Chicago 2016</i>	2	2015
<i>ASEE 123rd Annual Conference & Exposition</i>	2	2016
<i>ASCE Geo-Frontiers 2017</i>	4	2016
<i>ASCE Geo-Congress 2019</i>	2	2018
<i>ASEE 126th Annual Conference & Exposition</i>	2	2019

2. Journals

<u>Venue</u>	<u>Papers Reviewed</u>	<u>Years Reviewed</u>
<i>Int. J. of Pavement Engineering</i>	5	2008 to 2018
<i>Int. J. of Pavement Research and Technology</i>	2	2010 to 2011
<i>J. of Materials in Civil Engineering</i>	10	2010 to 2019
<i>J. of Transportation Engineering</i>	2	2012 to 2013
<i>J. of Transportation Engineering: Part B</i>	2	2017
<i>Geotechnical Testing Journal</i>	1	2013
<i>Construction and Building Materials</i>	3	2013 to 2016
<i>J. of Terramechanics</i>	1	2016
<i>J. of Testing and Evaluation</i>	3	2017 to 2018
<i>Road Materials and Pavement Design</i>	1	2017
<i>Environmental Geotechnics</i>	1	2019

3. Annual Meetings With Corresponding Journals

<u>Venue</u>	<u>Papers Reviewed</u>	<u>Years Reviewed</u>
<i>Transportation Research Board (TRB) Committees AFD60, AFH60, AFK10, AFK20, AFK30, AFK40 AFS80</i>	68	2008 to 2018
<i>Association of Asphalt Paving Technologists (AAPT)</i>	11	2011 to 2017

Accreditation Board for Engineering and Technology (ABET) Service

1. Course Materials and Student Work Notebooks

- Pavement Materials & Design-CE 4103 (Fa 10, Fa 16)
- Construction Materials Lecture-CE 3313 (Sp 17)
- Construction Materials Laboratory-CE 3311 (Sp 17)

2. Course Assessments for Student Outcomes (a through k)

- Demonstrate fundamental knowledge of mathematics, science, and engineering (a) CE 4103-Fa 10
- Demonstrate an ability to design and conduct experiments and to analyze and interpret experimental data (b) CE 3311-Sp 14
- Demonstrate an ability to design civil engineering systems (c) CE 4103-Fa 10
- Contribute to and effectively function in team undertakings, in leadership as well as non-leadership positions (d) CE 3311-Sp 14
- Demonstrate an ability to analyze and solve civil engineering problems (e) CE 4103-Fa 16
- Demonstrate proficiency in oral and written communications (g) CE 3311-Sp 14
- Demonstrate the independent study skills required for lifelong learning (i) CE 4103-Fa 16
- Demonstrate techniques and tools relevant to civil engineering practice (k) CE 4103-Fa 10

Student Service

-- Isaac L. Howard was major professor or work supervisor to enrolled students for all activities listed.

1. ASCE Student Chapter, Faculty Advisor, MSU, Jan 2008 to May 2011.
 - a. *The New Hire Experience-What to Expect the First Five Years*. Panel discussion organized in coordination with Career Center, 72 students attended, April 2010.
 - b. *Joint Meeting with ASCE North Mississippi Branch*. Panel discussion focusing on infrastructure of north Mississippi, over 80 students attended, September 2010.
2. Undergraduate Student Advisements on Curriculum and Registration-Fall 2006 to Spring 2019 (667).
3. Students Giving Presentations at Regional and National Conferences or Meetings.

<i>Number of Students</i>	<i>Presentations</i>	<i>Description</i>
12	21	Lectern Presenters of Peer Reviewed Papers
22	15	Lectern Presenters Without an Associated Paper
8	10	Poster Presenters of Peer Reviewed Papers
11	10	Student Forums-No Associated Paper ^(Notes 1 and 2)

G. Sullivan, B. Anderson, B. Payne won 4th Ann. Transportation Workshop Student Poster Competition, 2012
J. Shannon won STRIDE Student Research Poster Competition, 2013

4. *MSU National Television Spot 2011*. Arranged 2 graduate students to be included.
5. *Short Term Training for Engineer Research and Development Center (ERDC)*. Worked with ERDC and MSU faculty to set up a program for a PhD student to be on campus for the spring 2012 semester.
6. Undergraduate Research Proposal Awarded for \$2,000 by Office of Research and Economic Development, Student Experiences in Summer of 2016.
7. *Student Mentor Dinner (2018)*. Evening event sponsored by APAC-Mississippi, Dunn Roadbuilders, and the Mississippi Asphalt Pavement Association for students to interact with industry/agency employees and learn about infrastructure and construction. 79 attendees (54 students, 25 non-students).
8. *Inaugural CRH Americas Materials National Collegiate Asphalt Mixture Design Competition*, Faculty Advisor, MSU Was One of Ten Selected Universities, Fall 2018 to Spring 2019.

MEDIA, MAGAZINE, AND INDUSTRY COVERAGE

1. Making the Black Top Green. Story by S.E. Lassetter in *Dimensions Annual Research Report for James Worth Bagley College of Engineering*, 2007-2008 edition, pp. 20-21.
2. Postcards Developed by James Worth Bagley Publications & Communications Office.
 - a. *Civil Engineering With No Limits* (2008). I.L. Howard and C.L. Saucier Featured, 2500 printed, developed by S.E. Lassetter.
 - b. *Creating Future Destinations by Paving a Way With Recycling* (2009). I.L. Howard and J.D. Doyle Featured, 2500 printed, developed by D. Godwin.
3. Research at MSU to Create Environmentally Friendly Ways to Pave the Nation's Highways. I.L. Howard Interviewed by L. Childrey, Feb 23, 2011, Mississippi Public Broadcasting.
4. Magazine Coverage of Research or Other Activities.
 - a. *Better Roads*, August 2012, pp. 18-25.
 - b. *Asphalt Pavement-National Asphalt Pavement Association*, Vol 18(2), 2013, pp. 17.
 - c. *Concrete Products*, Vol 116(3), 2013, pp. 32-33.
 - d. *The Concrete Producer*, July-Aug, 2014.
 - e. *Concrete Products*, Vol 118(3), 2015, pp. 38.
5. Industry Newsletter (or Equivalent) Coverage of Research or Other Activities
 - a. *Oldcastle® Connections*, Vol 5(1), 2012, pp. 9.
 - b. *MCIA Today*, Special Edition-MDOT PLC Spec 2014.
6. Stadium Expansion Project Goes Green. Story by L. Barbour in *Mississippi State Alumnus*, Spring 2013 Edition, pp. 28-29.
7. Cementing Success: Sustainable Concrete at MSU Wins Recognitions. Story by L. Barbour, A. Matthews Posted on MSU, BCoE, and CEE Websites and Sent to Regional Media Outlets, May 2015.

8. MDOT Employee Wins Award for Highway Design and Construction Approach. Story by M. Miller of MDOT Public Affairs Office Posted by Multiple Outlets Regarding Soil-Cement Paper Authored by W. Griffin Sullivan, Isaac L. Howard, and Brennan K. Anderson, December 2015.
9. The Science Behind Icy Bridges And Why They're So Dangerous. I.L. Howard Interviewed by S. Schaffer, Original Airing on Jan 06, 2017, WCBI-TV: A CBS Affiliate.
10. Legacy of Leadership Celebration. Fall 2018 Video by C. Misun Featuring Several Endowed Faculty.

VIDEO MEDIA CREATION

1. *Interstate 269 and the People Who Made it Possible* (2018). Video CMRC V 18-1, Released February. Key Collaborators: R. Booth, T. Robinson, C. Pendleton.
2. *Construction Matters 2 Video Series* (2019). Multiple video series; CMRC V 19-01 (Safety)-Released February; CMRC V 19-02 (Recycling)-Released April. Key Collaborators: J. Bullock, A. Krohn, W. Thomas.

TEST METHOD DEVELOPMENT

1. *Provisional Standard Practice for Preparation of Test Specimens Using the Plastic Mold Compaction Device* (2018). AASHTO Designation: PP 92-18, Key Collaborators: W. G. Sullivan and J. Ivy.

CONSULTING

Details available on a case by case basis upon request.

MANAGEMENT OF NON-STUDENT RESEARCHERS

1. Miriam E. Smith, PhD (2008 to 2009). Title: Assistant Research Professor; Role: Supervised approximately 52% full-time equivalent research efforts over an 11 month period.
2. Walaa H. Badran, MS (2011). Title: Intermittent Employee; Role: Supervised approximately 45% full-time equivalent research efforts over a 4 month period.
3. Nima Latifi, PhD (2018). Title: Postdoctoral Associate; Role: Supervised approximately 82% full-time equivalent research efforts over a 5.5 month period.
4. Taylor S. Cagle, BSCE (2019). Title: Intermittent Employee; Role: Active supervision as of May 2019.

UNDERGRADUATE STUDENTS

The following list of students are Undergraduate Research Assistants (URAs) that have performed funded work that was supervised by Isaac L. Howard. Students are identified with the semester they began working. As of the date of this curriculum vitae, the 101 URA's listed below have logged approximately 63,000 paid hours divided as follows: <100 hours (12 students), 100 to 500 hours (44 students), 501 to 1,000 hours (32 students), 1,001 to 2,000 hours (7 students), and >2,000 hours (6 students).

Year	URAs
2006	Randy Lord
2007	Kyle Crosby, Jacob Dykes, Hayley Martin, Adam McDaniel
2008	Derek Bullock, Sara Cox (Vargas), Heather Craft (Clark), Lance Curtrter, Keith Ferguson, Mary Goff (McGowan), Maggie Fournier, Jennifer Johnson (Allen), Brian Jordan, Trey Jordan, Jessica Richards, Clay Sanders, Justin Shaw, Josh Stubbs, Joe Tom
2009	Brennan Anderson, Richey Bailey, Amanda Bilberry, Nate Clifton, Stephen Dix, Paul Foley, Brittany Gunkel (McFall), Alex Middleton, Brent Payne, Vince Sisk, Drew Smith, Katie Strickland, Griffin Sullivan, Taylor Wilson, Michael Wilt, Tim Woolman
2010	Josh McCuiston, Michael Randle, Sarah Smith, Gray Spahn, Nick Zabrodiec
2011	Andy Anderton, Ethan Broadus, Austin Byrd, Derek Cameron, Ben Cox, Web Floyd, Chase Hurst, Katie Sloan (Odenthal), Will Smith, Hugh Windham
2012	Kyle Cody, Graham Coffelt, Josh Davis, Alyssa Leard (Barksdale), Jon Love
2013	Justin Cooper, Will Crawley, Patrick Kuykendall, Garrison Lipscomb, Rae Ann Otts (Lawrence), Drew Sensing
2014	Bradley Hansen, Chase Hopkins, Bradley Robinson, Matt Roddy
2015	Thomas Allard, Ashley Carey, Drew Moore
2016	Anna Baglan, Corbin Coker, Westin Graves, Carl Pittman, Abby Sparks
2017	Rachel Booth, Tyler Bowling, Amanda Bryan, Crystal Byrd, Brittni Cooper, Nicki Haines, Amanda Hufft, Logan Long, Summer May, Quentin Munn, Tom Paduch, Tanner Rhodes, Adrian Sanchez, Cody Smith, Jim Steele, Michael Walsleben
2018	Kushal Acharya, Jessica Bullock, Megan Finney, Zach Griffing, Alexis Krohn, Phong Ly, Garner Nance, Abhinash Subedi, Willie Thomas
2019	Taylor Cagle, Kathleen McMackin

GRADUATE STUDENTS

Master of Engineering with Non-Thesis Option = MEng-NT

Master of Science in Civil Engineering with Non-Thesis Option = MSCE-NT

Master of Science in Civil Engineering with Thesis Option = MSCE-Thesis

Master of Science in Mechanical Engineering with Thesis Option = MSME-Thesis

Doctor of Philosophy = PhD

Completed PhD Students: Major Professor, or Co-Major Professor if Denoted [*]

1. Doyle, Jesse D. (2011). *Characterization of Reclaimed Asphalt and Performance Based Evaluation of its Use in Recycled Mixtures.*
2. James, Robert S. (2014). *Performance Oriented Guidance for Airfield Asphalt Pavements Within the Superpave Context.*
3. Shannon, Jameson D. (2015). *Performance and Sustainability Benefits of Concrete Containing Portland-Limestone Cement.*
4. Cox, Benjamin C. (2015). *Cold In-Place Recycling Characterization Framework for Single or Multiple Component Binder Systems.*
5. Baumgardner, Gaylon L. (2015). *Characterization and Implementation of Ground Tire Rubber as Post-Consumer Polymers for Asphalt Concrete.*
6. Rushing, Timothy W. (2016). *Performance Prediction Relationships for AM2 Airfield Matting Developed From Full-Scale Accelerated Testing and Laboratory Experimentation.*
7. Bazne, Mohammed O.A. [*] (2016). *Geotechnical Properties of Very High Moisture Content Dredged Soil Lightly Cemented with Ordinary or Portland-limestone Cement.*
8. Smith, Braden T. (2017). *Characterizing Short and Long Term Mixture Aging of a Full-Scale and Non-Trafficked Asphalt Test Section.*
9. Whitlow, R. Danielle (2019). *Infrastructure Monitoring Through Frequency Change Detection Using Infrasond.*
10. Bazuhair, Rabeea W. (2019). *Capturing Individual or Combined Environmental Effects from Longer Term Field Aging of Asphalt Mixtures.*

Completed Thesis Option Master's Students: Major Professor, or Co-Major Professor if Denoted [*]

1. Stroble, Martin F. (2009). *Analysis and Design of Wood Construction Platforms Using Instrumentation.* MSCE-Thesis.
2. Bell, Haley P. (2009). *Fatigue Evaluation Criteria for Aged Hot-Mixed Asphalt Surfaces.* MSCE-Thesis.
3. Jordan, Walter S. (2010). *Laboratory Evaluation of Surface Treatments to Asphaltic Pavements in Mississippi.* MSCE-Thesis.
4. Shaw, Justin M. (2010). *Shear Stress Analysis of Levees Subjected to Combined Surge and Wave Overtopping.* MSCE-Thesis.
5. Rushing, Timothy W. (2010). *Full-Scale Evaluation of Matting Systems for Temporary Roads.* MSCE-Thesis.
6. Carruth, William D. (2011). *Laboratory Evaluation of Specialty Portland Cements and Polymer Fibers in Stabilization of Fine Grained Soils.* MSCE-Thesis.
7. Barham, Jason M. (2011). *Effect of Asphalt Emulsion on Surface Treated Flexible Pavements Using the Bending Beam Rheometer.* MSCE-Thesis.
8. Alvarado, Alejandro J. (2012). *Investigation of Chip Seal Aggregate Retention Using Sweep and Long Term Performance Testing.* MSCE-Thesis.
9. Williams, Kevin L. (2012). *The Effects of Coarse Aggregate Cleanliness on Asphalt Concrete Compactability and Moisture Susceptibility.* MSCE-Thesis.
10. Bilberry, Amanda C. (2012). *Rapidly Deployable Armoring System for Temporary Protection of Earthen Levees During Overtopping.* MSCE-Thesis.

11. Sullivan, William G. (2012). *Investigation of Compaction and Corresponding Thermal Measurement Techniques for Cementitiously Stabilized Soils*. MSCE-Thesis.
12. Anderson, Brennan K. (2013). *Investigation of Factors Influencing Design and Performance of Soil Cement Pavement Layers*. MSCE-Thesis.
13. Garcia-Beltran, Lyan I. (2015). *Full-Scale Instrumented Evaluations of Multiple Airfield Matting Systems on Soft Soil to Characterize Permanent Deformation*. MSCE-Thesis.
14. Smith, Braden T. (2016). *Lightly Cementing Marginal Materials to Improve Sustainability and Economic Competitiveness Near Ports and Harbors*. MSCE-Thesis.
15. Brown, Jared L. (2017). *Compressive Strength Variation Due to Cement Source Change*. MSCE-Thesis.
16. Hansen, Bradley (2017). *Capturing Aggregate and Binder Interaction Effects on Aging Via Mixture Testing for Single Aggregate Source Asphalt Mixtures*. MSCE-Thesis.
17. Pittman, Carl. (2018). *Isolated or Coupled Oxidative, Moisture, and Freeze-Thaw Effects on Warm Mix Asphalt*. MSCE-Thesis.
18. Allard, Thomas. (2018). *Mechanical Property Development and Numerical Modeling of Ultra-High Performance Concrete Focused on Isothermal Curing Conditions*. MSCE-Thesis.
19. Carey, Ashley S. [*] (2019). *Improved Understanding of Ultra-High Performance Concrete via Mechanical Property Testing of Mixes with Varying Ingredients and Proportions*. MSME-Thesis.

Completed Non-Thesis Option Master's Students: Major Professor

- | | |
|---|---|
| 1. (2010) Doyle, Jesse D. (MSCE-NT) | 2. (2010) Badran, Walaa H. (MSCE-NT) |
| 3. (2012) Norwood, Gregory J. (MSCE-NT) | 4. (2012) Cox, Ben C. (MSCE-NT) |
| 5. (2013) Craft (Clark), Heather D. (MSCE-NT) | 6. (2014) Towne, Brentton W. (MSCE-NT) |
| 7. (2014) Leard, Melanie A. (MSCE-NT) | 8. (2014) Floyd, Webster C. (MSCE-NT) |
| 9. (2014) Crawley, William C. (MSCE-NT) | 10. (2014) Cox (Vargas), Sara L. (MSCE-NT) |
| 11. (2015) Kuykendall, Patrick L. (MSCE-NT) | 12. (2015) Otts (Lawrence), Rae Ann (MSCE-NT) |
| 13. (2015) Bazuhair, Rabeea W. (MSCE-NT) | 14. (2016) Moore, Robert (MSCE-NT) |
| 15. (2019) Arthur, Joseph J. (MSCE-NT) | 16. (2019) Cooper, Justin T. (MSCE-NT) |

Completed Graduate Students: Degree is Denoted in Parenthesis: Committee Member

- | | |
|--|---|
| 1. (2006) Mann, Travis A. (MSCE-Thesis) | 2. (2007) Gartrell, Chad A. (MSCE-Thesis) |
| 3. (2008) Whittington, Jordan S. (MSCE-Thesis) | 4. (2009) Rushing, John F. (MSCE-Thesis) |
| 5. (2009) Velez, Eileen M. (MSCE-NT) | 6. (2009) May, Cecil (MEng-NT) |
| 7. (2010) Davis, Trey E. (MSCE-Thesis) | 8. (2010) Lamey, Katherine E. (MSCE-NT) |
| 9. (2010) Richard, Marneshia V. (MSCE-NT) | 10. (2012) Shannon, Jay (MSCE-NT) |
| 11. (2013) Crosby, Kyle (PhD) | 12. (2013) Tasmin, Farzana (MSCE-NT) |
| 13. (2015) Stevens, Maria, T. (MSCE-Thesis) | 14. (2017) Cassidy, Amy (MSCE-NT) |
| 15. (2017) Scott, Dylan, A. (MSME-Thesis) | 16. (2018) Wells, Matthew W. (MSCE-NT) |
| 17. (2018) Williams, James M. (MSCE-Thesis) | 18. (2018) Hernandez, Xzavier (MSCE-Thesis) |
| 19. (2018) Gee, Blane (MSCE-NT) | |