

Isaac L. Howard

Professor, James T. White Endowed Chair, School Director, and
Director of Construction Materials Research Center (CMRC)
Richard A. Rula School of Civil & Environmental Engineering (CEE)
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<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, asphalt pavements, and infrastructure are primary interests, where characterization, rehabilitation, recycling, and interfacing materials/design with construction are focus areas. Materials background includes: aggregates, aluminum, asphalt, emulsions, chemically stabilized soil, cement, concrete, fiber reinforced polymer composites, geosynthetics, and 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 Civil & Environmental Engineering Department, Aug 2006 to Aug 2012, Tenure track position with teaching, research, and service duties.
- ***Associate Professor***, Mississippi State University Civil & Environmental Engineering Department, Aug 2012 to Dec 2012, Tenured position with teaching, research, and service duties.
- ***Associate Professor, Materials & Construction Industries Endowed Chair***, Mississippi State University Civil & Environmental Engineering Department, 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 June 2021, Airfield repair and composites duties.

- **Professor, Materials & Construction Industries Endowed Chair**, Mississippi State University Civil & Environmental Engineering Department, Aug 2017 to May 2021, Tenured position with teaching, research, and service duties.
- **Professor, Materials & Construction Industries Endowed Chair, and Interim Director**, Richard A. Rula School of Civil & Environmental Engineering at Mississippi State University, June 2021 to June 2022, Tenured position with teaching, research, service, and administrative duties.
- **Professor, James T. White Endowed Chair, and Director**, Richard A. Rula School of Civil & Environmental Engineering at Mississippi State University, July 2022 to Present, Tenured position with teaching, research, service, and administrative 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, 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 Infrasound," *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. Sullivan, W.G., Howard, I.L. (2019). "Case Study of Interstate 269 Corridor Through Mississippi Focusing on Chemically Stabilized Pavement Layers," *Transportation Research Record: Journal of the Transportation Research Board*, 2673(5), 374-388.
84. Robinson, W.J., Mahaffay, B.J., Howard, I.L., Norwood, G.J. (2019). "Cyclic Plate Testing of Geosynthetic-Reinforced Airfield Pavements," *Ground Improvement*, 172(4), 229-243.
85. Brown, J.L., Howard, I.L., Woodson, B.G. (2019). "Influence of Compressive Strength, Fiber Reinforcement, and Thickness on Spall and Breach Performance of Concrete Elements Impacted With High-Aspect-Ratio Fragments," *International Journal of Impact Engineering*, 133, Nov Issue, 103342.
86. Smith, B.T., Bazuhair, R.W., Daranga, C., Baumgardner, G.L., Howard, I.L. (2019). "Comparing Laboratory Pressure Aging Vessel Conditioning to Field Aging of Asphalt Binder within Compacted Mixtures," *Journal of Materials in Civil Engineering*, 31(11), 04019271.
87. Bazuhair, R.W., Easterling, J., Cox, B.C., Howard, I.L. (2019). "Assessing the Micro-Deval Test for Compacted Dense-Graded Asphalt," *Advances in Civil Engineering Materials*, 8(1), 670-687.
88. Anderson, B.K., Cox, B.C., Howard, I.L. (2019). "Gradation Variability Assessment of Thick-Layer Cement-Stabilised Full-Depth Reclamation," *Construction Materials*, 172(6), 271-283.
89. Pittman, C.V., Bazuhair, R.W., Howard, I.L., Hemsley, J.M. (2019). "Fifteen Years of Warm-Mix Asphalt in the United States: Overall Implications of Warm-Mix Technologies at Varying Testing Temperatures," *Journal of the Association of Asphalt Paving Technologists*, 88, 115-155.

90. Allard, T.E., Priddy, M.W., Howard, I.L., Shannon, J. (2020). "Isothermal Strength Development Models of Ultra-High-Performance Concrete," *ACI Materials Journal*, 117(1), 175-185.
91. Carey, A.S., Howard, I.L., Scott, D.A., Moser, R.D., Shannon, J., Knizley, A. (2020). "Impact of Materials, Proportioning, and Curing on Ultra-High-Performance Concrete Properties," *ACI Materials Journal*, 117(1), 213-222.
92. Brown, J.L., Howard, I.L., Barnes, A.T. (2020). "Evaluation of Breach Behavior Due to Plate Fragment Impact," *International Journal of Impact Engineering*, 138, April Issue, 103502.
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94. Carey, A.S., Howard, I.L., Knizley, A., Shannon, J. (2020). "Modeling Convection Boundary Conditions for Ultra-High-Performance Concrete in Cylindrical Columns," *ACI Materials Journal*, 117(3), 123-131.
95. Robinson, W.J., Howard, I.L., Tingle, J.S., Norwood, G.J. (2020). "Analysis of Full-Scale Geosynthetic Reinforced Airfield Pavement Subjected to Accelerated Aircraft Loading," *Journal of Transportation Engineering, Part B: Pavements*, 146(3), 04020052.
96. Gullett, P.M., Dickey, M-M., Howard, I.L. (2020) "Finite Element Analysis of Highway Bridges Subjected to Hurricane Storm Surge via the AMBUSH Framework," *Journal of Bridge Engineering*, 25(9), 04020065.
97. Hansen, B.S., Howard, I.L. (2020). "Measuring Aggregate and Binder Interaction Via Mixture Tests Before and After Field Aging," *Construction Materials*, 173(6), 270-283.
98. Bazuhair, R.W., Howard, I.L., Middleton, A., Jordan, W.S., Cox, B.C. (2020). "Combined Effects of Oxidation, Moisture, and Freeze-Thaw on Asphalt Mixtures," *Transportation Research Record: Journal of the Transportation Research Board*, 2674(12), 409-424.
99. Brown, J.L., Howard, I.L., Barnes, A.T. (2021). "Response of Concrete Elements Subjected to Impact by Fragments with Varying Aspect Ratios," *Journal of Materials in Civil Engineering*, 33(4), 04021031.
100. Howard, I.L., Baumgardner, G.L., Jordan, W.S., Hemsley, J.M., Hopkins, C. (2021). "Comparing Ground Tire Rubber, Styrene-Butadiene-Styrene, and GTR-SBS Hybrids as Asphalt Binder Modifiers," *Journal of Materials in Civil Engineering*, 33(5), 04021091.
101. Carruth, W.D., Edwards, L., Tingle, J.S., Howard, I.L. (2021). "Full-Scale Testing of Flowable Cementitious Materials for Rapid Pavement Repair," *Advances in Civil Engineering Materials*, 10(1), 93-106.
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105. Robinson, W.J., Howard, I.L. (2021). "Implications of Incorporating Geosynthetics in Airfield Pavements," *Transportation Geotechnics*, 28, 100533.
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23. Howard, I.L., Alvarado, A., Floyd, W.C. (2013). *Performance Oriented Guidance for Mississippi Chip Seals-Volume II*. Report FHWA/MS-DOT-RD-13-211-Volume II, Mississippi Department of Transportation, pp. 66.
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25. Cox, B.C., Howard, I.L. (2015). *Cold In-Place Recycling Characterization Framework and Design Guidance for Single or Multiple Component Binder Systems*. Report FHWA/MS-DOT-RD-15-250-Volume 2, Mississippi Department of Transportation, pp. 184.
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27. Vahedifard, F., Howard, I.L., Bazne, M., Smith, B.T., Barksdale, M.A. (2015). *Sustainably Enhancing Intermodal Freight Operation of Ports using Geotextile Tubes*. Report NCITEC 2013-05, National Center for Intermodal Transportation for Economic Competitiveness – US Department of Transportation, pp. 122.
28. Carruth, W.D., Howard, I.L. (2016). *Evaluation of Flowable Fill Surface Performance*. Report ERDC/GSL TR-16-33, US Army Corps of Engineers Engineer Research and Development Center, Vicksburg, MS, pp. 75.
29. Edwards, L., Carruth, W.D., Tingle, J.S., Howard, I.L. (2018). *Rapid-Setting Flowable Fill Performance in Cold Weather for Airfield Damage Repair*. Report ERDC/GSL TR-18-26, US Army Corps of Engineers Engineer Research and Development Center, Vicksburg, MS, pp. 60.
30. Howard, I.L., Carey, A., Burcham, M., Scott, D.A., Shannon, J.D., Moser, R.D., Horstemeyer, M.F. (2018). *Mechanical Behavior of Cor-Tuf Ultra-High-Performance Concrete Considering Aggregate and Paste Effects*. Report ERDC/GSL TR-18-31, US Army Corps of Engineers Engineer Research and Development Center, Vicksburg, MS, pp. 74.
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33. Howard, I.L., Bazuhair, R.W., Pittman, C.V., Smith, B.T. (2018). *Columbus Mississippi Field Aging and Laboratory Conditioning Study: Plant Mixed and Laboratory Compacted Asphalt Mixtures*. Report FHWA/MS-DOT-RD-18-266/270-Volume 3, Mississippi Dept. of Transportation, pp. 144.

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1. Howard, I. (2002). *Development of Lightweight FRP Bridge Deck Designs and Evaluations*. M.S. Thesis, West Virginia University.
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3. Warren, K.A., Brooks, J.A., Howard, I.L. (2005). "Survivability of Foil Strain Gages Mounted on Geosynthetics Under Full-Scale Construction Loads," *Proc. of Geo-Frontiers 2005 (GRI-18)*, Jan 24-26, Austin, TX.
4. Howard, I.L., Warren, K. (2005). "Practical Construction Details Used to Build an Instrumented Flexible Pavement with Geosynthetics," *Proc. of the NAGS 2005/GRI-19 Joint Conference*, Dec 14-16, Las Vegas, NV, GSA Tech ID 532.
5. Howard, I. (2006). "Full-Scale Field Study and Finite Element Modeling of a Flexible Pavement Containing Geosynthetics," *Geotechnical News*, Thesis Abstract, 24(2), 73.
6. Howard, I. (2006). *Full-Scale Field Study and Finite Element Modeling of a Flexible Pavement Containing Geosynthetics*. Ph.D. Dissertation, University of Arkansas.
7. Doyle, J.D., Howard, I.L. (2011). *Linear Asphalt Compactor Operator's Manual*. Manual CMRC M 10-1, Version 1 (Jan 2010), Version 2 (Mar 2011), Construction Materials Research Center.
8. Howard, I.L., Doyle, J.D., White, T.D., Ivy, J., Booth, O. (2010). *PURWheel Laboratory Wheel Tracker Operator's Manual*. Manual CMRC M 10-2, Version 1, Construction Materials Research Center.
9. Howard, I.L., Doyle, J.D. (2010). "Economics of Mississippi RAP," *The Profiler-Mississippi Department of Transportation Research Division*, Fall 2010.
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14. Cost, V.T., Knight, G., Wilson, W., Shannon, J., Howard, I.L. (2013). "Performance of Typical Concrete Mixtures for Transportation Structures as Influenced by Portland-Limestone Cements from Five Sources," *Proc. of 2013 International Concrete Sustainability Conference*, San Francisco, CA.
15. Cox, B.C., Howard, I.L. (2013). *Cold In-Place Recycling and Full-Depth Reclamation Literature Review*. White Paper CMRC WP 13-1, Construction Materials Research Center.
16. Howard, I.L. (2013). *Development of an Instrumented Probe System to Measure Asphalt Concrete Temperatures During Transport*. White Paper CMRC WP 13-2, Construction Materials Research Center.

17. Cost, V.T., Matschei, T., Shannon, J., Howard, I.L. (2014). "Extending the Use of Fly Ash and Slag Cement in Concrete Through the use of Portland-Limestone Cement," *Proc. of 2014 International Concrete Sustainability Conference*, May 12-15, Boston, MA.
18. Howard, I.L., Baumgardner, G.L., Monismith, C.L. (2016), "Asphalt Mix Cracking State of the Art: Materials, Design, and Testing," *Journal of the Association of Asphalt Paving Technologists*, Invited Paper, Vol. 85, 777-805.
19. Williams, J.M., Vahedifard, F., Mason, G.L., Howard, I.L., Borazjani, A., Priddy, J.D. (2017). "Expansion and Application of Database Records for Off-Road Vehicle Environments (DROVE)," *Proc. of the AVT-265 Research Specialists Meeting on Integrated Virtual NATO Vehicle Development*, Vilnius, Lithuania, May 15-17, Paper 13.
20. Cox, B.C., Middleton, A., Pittman, C.V., Howard, I.L. (2018). "A Viable Method – Successful Uses of the Mississippi Permeameter to Date," *Roads & Bridges Web Exclusive*, Posted Nov 29, 2018. <http://web.archive.org/web/20181203143227/https://www.roadsbridges.com/viable-method> (Accessed 12/3/18).
21. Howard, I.L., Bazuhair, R. (2019). "Taking Age Into Account: Field Study Watches How Asphalt Ages in Southern U.S. Climate," *Roads & Bridges Magazine*, 57(4), 48-51.
22. Robinson, J., Ramsey, M., Pittman, C.V., Booth, R., Howard, I.L. (2019). *Mississippi's Transportation Infrastructure: Paving Everyone's Road to Success*. White Paper CMRC WP 19-1, Construction Materials Research Center.
23. Howard, I.L. (2019). "MSU Research Center Unites Students, Private Sector for Preservation Study," *Pavement Preservation Journal*, Fall 2019, pp 34-36.
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25. Vahedifard, F., Howard, I.L., Borazjani, A., Mason, G.L., Priddy, J.D. (2019). "Update From a Multi-Year Data Mining Effort on DROVE: Database Records for Off-Road Vehicle Environments," *Proc. of the ISTVS 15th European-African Regional Conference, Prague, Czech Republic, Sept 9-11*.
26. Whitlow, R.D., Howard, I.L., Jordan, A.M., McComas, S.L., McKenna, M.H. (2020). "Infrastructure Structural Health Monitoring via Infrasond," *Proc. of Structures Congress 2020*, Apr 05-08, St. Louis, MO, pp. 239-250.
27. Willis, J.R., Howard, I.L. (2020). "Asphalt Recycling: History of Recycled Materials and Lessons Learned About Recycling Plastic," *TR News*, No. 330, November-December Issue, pp. 21-27.

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.
24. Practical Considerations and Potential Impacts of Implementing AASHTO PP 92-18 PM Device Soil-Cement Protocols (2020). *Geo-Congress 2020*.

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.
8. Correlation of Moisture Loss and Strength Gain in Chip Seals (2011). *Transportation Research Board 90th Annual Meeting*. Co-presenters, Hemsley, J.M., Jordan, W.S., McGlumphy, K, Shuler, S.

9. Comparison of Available Density Measurement Methods Applicable for Design and Construction (2012). *Transportation Research Board 91st Annual Meeting*. Co-presenter, Doyle, J.D.
10. Alternative Geotextile Tube Fill Materials for Marine Applications (2012). *GeoCongress 2012*. Co-presenter, Trainer, E.
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.
28. Optimization and Simulation Based Individualized Airfield Pavement Maintenance Recommendations to Reduce Total Cost of Ownership for the U.S. Air Force (2020). *Transportation Research Board 99th Annual Meeting*.

29. Strength and Modulus Implications of Incorporating Steel Slag Aggregates into Cement Stabilized Cold-in-Place Recycling (2020). *Geo-Congress 2020*.
30. Twenty-Five Years of Rubber Tire Wheel Tracking of Asphalt Pavements in a Laboratory (2022). *Transportation Research Board 101st Annual Meeting*. Co-presenters, Cox, B.C., Carey, A.S., Lewis, J.V.
31. Statewide Spectra of Chemically Stabilized Soil Strength and Modulus Properties Applicable to Mechanistic-Empirical Pavement Design (2022). *Transportation Research Board 101st Annual Meeting*. Co-presenter, Carey, A.S.
32. Soil-Cement Pavement Layer Compaction with Time: Microstructural and Physiochemical Assessment (2022). *Geo-Congress 2022*. Co-presenter, Lewis, J.V.
33. Laboratory Wheel Tracking of Asphalt with Rubber Tires or Rubber Hoses (2023). *Transportation Research Board 102nd Annual Meeting*. Co-presenters, Cox, B.C., Carey, A.S., Lewis, J.V.
34. Balancing Availability, Quality, Economics, and the Environment When Using Steel Slag Within Pavements (2023). *Geo-Congress 2023*.

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.
39. *Current and Potential Applications for Steel Slag in Mississippi's Construction Market*. National Slag Association – 101st Annual Meeting, Sept 16-19, 2019, Pensacola, FL, Invited Podium Presentation.
40. *Workforce Development*. Southeastern Asphalt User/Producer Group (SEAUPG) Annual Meeting & Exhibits, Nov 19-21, 2019, Baton Rouge, LA, Invited Podium Presentation.
41. *Student Chapter & Civil Engineering Dept. Updates - Overview of Civil & Environmental Eng. at MSU*. 2021 ASCE Mississippi Section Meeting, Sept 16-17, Gulfport, MS, Invited Podium Presentation.
42. *Unpaved Roads, Parking Lots, and Shoulders*. 2021 ASCE Mississippi Section Meeting, Sept 16-17, Gulfport, MS, Abstract and Selected Podium Presentation.
43. *Past, Present, and Future of Testing Asphalt via Rubber Tire Wheel Tracking*. 2021 ASCE Mississippi Section Meeting, Sept 16-17, Gulfport, MS, Abstract and Selected Podium Presentation, Co-presenter, Lewis, J.V.
44. *Update on Richard A. Rula School of Civil & Environmental Engineering with Emphasis on Facilities and Student Opportunities*. Mississippi Engineering Society Southeast Area Chapter, Dec 16, 2021, Hattiesburg, MS, Professional Development Hour Podium Presentation, Co-presenter, Lewis, J.V.
45. *Infrastructure Maintenance Activities with MSU: Parts I and II*. MDOT Annual Maintenance Meeting, Apr 20, 2022, Starkville, MS, Invited Podium Presentation.
46. *Update on Richard A. Rula School of Civil & Environmental Engineering*. Mississippi Engineering Society, Dec 15, 2022, Invited Virtual Presentation.
47. *Workforce Training*. 21st Annual Tennessee Quality Asphalt Initiative (TQAI), Jan 20, 2023, Franklin, TN, Invited Podium Presentation, Co-presenter, Lewis, J.V.
48. *Advances in Highway Maintenance Materials*. MDOT Annual Maintenance Meeting, May 16, 2023, Flowood, MS, Invited Podium Presentation.
49. *Best Practices for Steel Slag Usage in Unpaved Roadway and Shoulders Applications*. National Slag Association – 105th Annual Meeting, Sept 18-21, 2023, Isle of Palms, SC, Selected Podium Presentation, Co-presenter, Lewis, J.V.

EXTERNAL FUNDING: RESEARCH OR SERVICE

--Total external funding of \$15,141,358 which is broken down below by category.

Principal Investigator of Project Funded Through Civil & Environmental Engineering

--Total of \$6,157,159, where Isaac L. Howard had \$5,793,546 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.
19. *Edw C. Levy Company (2017-2020)*. “Enhancing Steel Slag Utilization in the Southeast U.S. Construction Market,” 100% Responsibility, Funding Type-Private.
20. *Mississippi State Board of Contractors (2016-2021)*. “Construction Education Fund – Construction Craft Training in Mississippi,” 100% Responsibility, Funding Type-State.
21. *Mississippi State Board of Contractors (2017-2021)*. “Growing Interest and Knowledge Within the Mississippi Construction Industry,” 100% Responsibility, Funding Type-State.
22. *U.S. Army Engineer Research and Development Center-ERDC. (2018-2021)*. “Assessment of Polymeric or Composite Materials for Use as Infrastructure Elements Such as Railroad Ties,” 100% Responsibility, Funding Type-Federal IPA Assignment.
23. *USDA Forest Products Laboratory (2016-2021)*. “Sustainable Construction Materials by way of Resilient Forest Products,” 80% Responsibility, Funding Type-Federal.

24. *Mississippi DOT (2018-2022)*. “Conversion Factors and Regression Parameters to Back Cast Strength and Modulus of Cementitious Stabilized Materials,” State Study 285, 100% Responsibility, Funding Type-State.
25. *Mississippi DOT (2016-2023)*. “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.

Project is Ongoing

1. *Mississippi DOT (2019-2024)*. “Characterization of Combined Environmental Effects on Bituminous Paving Materials,” State Study 296, 100% Responsibility, Funding Type-State.
2. *Mississippi State Board of Contractors (2021-2025)*. “Developing Mississippi’s Workforce at K12, University, and Practitioner Levels via Promotional Tools and Construction Education Curriculum,” 100% Responsibility, Funding Type-State.
3. *Mississippi DOT (2017-2024)*. “MDOT Specific Materials, Design, and Construction Procedures for Chip and Scrub Seals,” State Study 272, 100% Responsibility, Funding Type-State.
4. *Paragon Technical Services, Inc. (2014-2024)*. “Bituminous Material and Pavement Preservation Research Collaboration,” 100% Responsibility, Funding Type-Private.
5. *Mississippi State Board of Contractors (2018-2025)*. “Building a Strong Foundation within the Mississippi Construction Industry by Sparking Curiosity and Reinforcing Fundamentals,” 100% Responsibility, Funding Type-State.
6. *Mississippi State Board of Contractors (2019-2025)*. “Investing in Mississippi Current and Potential Construction Workforce Through Safety, Knowledge Transfer, and Promotional Tool Development Initiatives,” 60% Responsibility, Funding Type-State.
7. *Mississippi State Board of Contractors (2020-2025)*. “Developing Mississippi’s Workforce at K12 and University Levels: Promotional Tools and Construction Education Curriculum,” 100% Responsibility, Funding Type-State.
8. *Mississippi DOT (2021-2025)*. “Durability Improvements By Way of a Holistic Assessment of the Mississippi Department of Transportation’s Asphalt Practices,” State Study 321, 100% Responsibility, Funding Type-State.
9. *Mississippi State Board of Contractors (2022-2025)*. “Developing Mississippi’s Workforce via Promotional Tools and Construction Education Curriculum Advancements,” 100% Responsibility, Funding Type-State.

Team Member of Project Funded Through An Academic Unit

--Total of \$745,576 where Isaac L. Howard had \$158,243 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, Academic Unit-Civil & Environmental Engineering.

Project is Ongoing

1. *Precast/Prestressed Concrete Institute-PCI (2020-2024)*. “Concrete Collaborations: Architecture and Building Construction Science Problem-Solving with Precast Concrete,” 5% Responsibility, Funding Type-Private, Principal Investigator-Alexis Gregory, Academic Unit-School of Architecture.
2. *Mississippi DOT (2021-2024)*. “Assessing the Effectiveness of Blue Lights on Work Zone Safety,” State Study 324, 25% Responsibility, Funding Type-State, Principal Investigator-Jun Wang, Academic Unit-Civil & Environmental Engineering.

3. *Mississippi DOT (2022-2024)*. “Safety Training Platform Using Virtual Reality (VR) for Road Construction Workers (i) in Work Zones and (ii) with Ergonomic Risks,” State Study 327, 30% Responsibility, Funding Type-State, Principal Investigator-Jun Wang, Academic Unit-Civil & Environmental Engineering.
4. *Mississippi DOT (2023 to 2025)*. “Gap Analysis of MDOT’s Safety Program and Roadmap Development,” State Study 333, 20% Responsibility, Funding Type-State, Principal Investigator-Jun Wang, Academic Unit-Civil & Environmental Engineering.
5. *Mississippi State Board of Contractors (2023-2026)*. “Developing Mississippi’s Workforce at K12 and University Levels: Promotional Tools and Education Curriculum on Utility Construction,” 10% Responsibility, Funding Type-State, Principal Investigator-Jun Wang, Academic Unit-Civil & Environmental Engineering.

Research Center Funding

--Total of \$8,238,623 within tasks where Isaac L. Howard was directly involved and active in technical matters with research and/or management of research; responsibility values within MSU were often not assigned and there were several other investigators involved in these programs. The total amount of funding within the grants under which these tasks reside is approximately \$69,400,000, but only the \$8,238,623 is reflected in the total funding involvement listed earlier in this CV.

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) Software Development and Support,” 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 and in a leadership role with DROVE Database.
 - 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 and in a leadership role with DROVE Database.
 - 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 and in a leadership role with DROVE Database.
- 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.
- 6. *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 and in a leadership role with DROVE Database.
- 7. *United States Army Tank Automotive & Armaments Command (DoD) (2017-2022)*. “SimBRS2 and TO 002 - Advanced Modeling and Simulation of Multi-Physics Material Response in Geo-environments,” Multi-Topic Program with Principal Investigator Clay Walden (CAVS).
 - a. Responsible for 8% of Overall Program.
 - b. Topic 1-Thermal Modeling of Geomaterials, Role-Lead Investigator for Topic 1, 12% Responsible for TO 002 Program.

Project is Ongoing

- 1. *Engineer Research and Development Center (ERDC) (DoD) (2021-TBD)*. “Military Engineering,” Multi-Task Program with Principal Investigator Clay Walden (CAVS).
 - a. Task 4 – Bio-Inspired Approaches for Construction, Role-Lead Investigator, 100% Responsibility.
 - b. Task 6 – High Strength Concrete, Role-Lead Investigator, 100% Responsibility.

EXTERNAL FUNDING: DEVELOPMENT

--Total of \$1,863,428 raised by Isaac L. Howard alongside MSU Foundation & BCoE Development Office.

- 1. *Ergon Asphalt & Emulsions Distinguished Doctoral Fellowship - 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-Present)*. 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, Hemphill Construction Company, Huey P. Stockstill, Hunt Refining, Key Constructors, LafargeHolcim, Lehman-Roberts, Mississippi Asphalt Pavement Association, Mississippi Concrete Association, MMC Materials, Murphree Paving, Sunbelt Sealing, TenCate, Blain Companies, Vulcan Materials Company, Warren Paving, and Multiple Individuals.
- 7. *Ergon Asphalt & Emulsions Student and Laboratory Support Initiative in Construction Materials (2020-2023)*.
- 8. *Major Gift From Individual Donor for CMRC Laboratory Equipment and Student Support (2020)*.
- 9. *Ergon Asphalt & Emulsions Office Suite (2020-2025)*.
- 10. *Rula School Excellence Funds (2022-Present)*.

EXTERNAL FUNDING: EQUIPMENT GRANTS

--Total of \$152,289 in funded equipment grants where Isaac L. Howard was listed as having grant responsibility. Three additional grants occurred from 2015 to 2021 to the Mississippi Board of Licensure for Professional Engineers and Surveyors where Isaac L. Howard assisted in an informal capacity; the total amount of those grants was \$520,595 and the responsibly party was Dennis D. Truax.

1. *Mississippi Board of Licensure for Professional Engineers and Surveyors (2023)*. “Instructional Equipment to Support the Bachelor of Science in Civil Engineering Program at Mississippi State University,” 100% Responsibility, Funding Type-State.

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.
19. *Irvin Atly Jefcoat Excellence in Advising Award*. Awarded yearly to one faculty at MSU for excellence in student advising, spring 2021.
20. *Henry L. Michel Award for Industry Advancement of Research*, Presented by ASCE for “bringing together exemplary research, instructional scholarship and professional practice that expands knowledge and new understanding in the area of pavement materials,” received in 2021.
21. *W.J. Emmons Annual Award Runner-Up*, Paper Title: Data Mining Statewide Department of Transportation Volumetrically Designed Asphalt Mixture Records, Association of Asphalt Paving Technologists (AAPT), 2021.

TEACHING

University Courses Taught

-- 8,369 credit hours taught (6,744 undergraduate, 745 graduate, and 880 thesis/dissertation research). A teaching breakdown is below, where there have been a total of 2,435 individual student evaluations leading to a weighted average career student evaluation of 4.39 on a 5 point scale. Spring 2003 evaluations were on a 10 point scale, while fall 2021 to present was on a 4 point scale; both were adjusted to a 5 point scale.

<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	17 - Fa 06 to Sp 23	3,912	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	10 - Sp 14 to Sp 23	921	4.0 to 4.5 (4.3)
Pavement Materials & Design-CE 4103/6103-MSU	3 hr	12 - Fa 07 to Fa 21	1,650	4.0 to 4.7 (4.5)
Material Characterization-CE 8303-MSU ³	3 hr	5 - Fa 10 to Sp 21	201	4.2 to 4.6 (4.5)
Pavement Rehabilitation-CE 8333-MSU ⁴	3 hr	4 - Sp 14 to Su 21	147	4.5 to 4.9 (4.7)
Advanced Pavement Materials-CE 8343-MSU ⁵	3 hr	3 - Fa 14 to Fa 21	141	4.3 to 4.7 (4.5)
Special Topics – CE 4990/6990/8990-MSU ⁶	3 hr	6 - Sp 07 to Su 16	87	4.9 to 5.0 (4.9)
Directed Individual Study-CE 4000-MSU	3 hr	5- Su 15 to Sp 23	18	Not Performed
Directed Individual Study-CE 7000-MSU	1-6 hr	41 - Su 08 to Fa 23	139	Not Performed
Thesis/Dissertation Hours-CE 8000/9000-MSU	1 hr	Multiple Sections	856	Not Performed

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

2: Teaching assistants were available for this laboratory and have been given varying instructor status over time.

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).

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. *ExCEEEd Teaching Workshop*, American Society of Civil Engineers (ASCE), Role-Attendee for Select Entry Workshop, July 25-30, West Point, NY, 2007.

K-12 Outreach and Summer Camps

1. *Mississippi Summer Transportation Institute*. Two week summer camp sponsored by Mississippi DOT. Audience: Rising high school sophomores and juniors mostly, other grades occasionally. Role: 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 were also involved in some activities.
2. *QUEST*. Two to three week summer research program sponsored by James Worth Bagley College of Engineering (BCoE)-MSU. Audience: Advanced high school students. Role: Mentored 6 total students between 2007 and 2013 for half days during most of the program duration.
3. *DIA de CIENCIAS – Engaging Communities in STEM*. Half day event sponsored by the MSU Society of Hispanic Professional Engineers (SHPE). Audience: Elementary to junior high school students and their parents. Role: Organized and facilitated a booth about infrastructure/construction alongside J. Lewis on Feb 29, 2020.
4. *Summer Bridge 2022 and 2023*. Facilitated four afternoons of hands-on asphalt activities for incoming freshmen engineering students in June (19 students in 2022 and 32 students in 2023) under the theme: *Asphalt is a Bridge to a High Tech and Sustainable Future. Summer Bridge is a five-week BCoE diversity program. Co-facilitator: J. Lewis.*

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.

SERVICE

University Service-MSU

Previous

1. *CEE Scholarship Committee*. Member, 2007-2017.
2. *CEE Advisory Board Peer Committee*. Member, 2008-2009.
3. *CEE Faculty Search Committee*. Member, Served 4 Times, 2009, 2010, 2012, 2020.
4. *Accreditation Board for Engineering and Technology (ABET) Accreditation Reviews*.
 - a. 2011 Cycle: Assessed three student outcomes & prepared materials for CE 4103.
 - b. 2017 Cycle: Assessed five student outcomes & prepared materials for CE 3311, CE 3313, CE 4103.
5. *Materials Working Group*. CEE Program Advisor, BCoE, 2012-2018.
6. *James Worth Bagley College of Engineering (BCoE) Dean Search Committee*. Member, 2013.

7. *BCoE Dean's Faculty Advisory Team on National Stature*, Member, Fall 2013.
8. *Internal Review Committee for Dave C. Swalm School of Chemical Eng.* Chairman, 2014-2015.
9. *University Assigned Mentor*:
 - a. Dr. Farshid Vahedifard, 2015-2018 (4 years).
 - b. Dr. Jun Wang, 2019-2022 (3 years).
10. *Legislature – Elected Officials and Staff Visits*, 2015 to 2022.
 - a. Rep. Bennie Thompson and Rep. Trent Kelly, Topic: Wood-based biomass utilization – 2015
 - b. Rep. Steven Palazzo and Senate Appropriations Committee, Topic: High value biomass – 2015
 - c. Senator Roger Wicker and Rep. Gregg Harper, Topic: Wood-based biomass utilization – 2015
 - d. Senator Roger Wicker, Topic: Transportation research – 2021
 - e. Mississippi Legislature Transportation Committees, Topic: Transportation & Infrastructure – 2022
11. *BCoE Associate Dean for Research and Graduate Studies Search Committee*, Member, 2016.
12. *Bagley Research Advisory Group*. Member, 2008-2009 and 2016.
13. *CEE Construction Engineering & Management Search Committee*. Chairman, 2017.
14. *Industrial & Systems P&T Committee*. Member, 2018.
15. *CEE Hazardous Waste Committee*. Member, 2017-2018.
16. *CEE Promotion and Tenure (P&T) Committee*. Member from 2017 to 2019, Chairman, 2019 to 2021.
17. *Richard A. Rula Engineering and Science Complex*. Assisted design and construction professionals internal and external to MSU with configuration, design, and layout of laboratory spaces, equipment detailing, construction inquiries, and re-location logistics. Documented activities were in 2008 to 2009 and 2017 to 2020 with intermittent activities from 2010 to 2016. Served in a leadership capacity during re-location and establishment of CEE's functional occupancy of the facility during 2021.
18. *MSU Advising Awards Committee*. Member, 2022.
19. *Engineer Research and Development Center (ERDC) Day at MSU*. Educational, networking, and public affairs events were held on April 14, 2022 focused on the ERDC-MSU partnership. Activities included twelve guest lectures by ERDC to approximately 600 students, a networking event with roughly 160 attendees, and a public affairs segment with roughly 135 attendees. Roles: Planning, organization, and coordination responsibilities in all activities and hosted the public affairs segment.

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. Laboratories have been certified to perform work for MDOT (Jan 2017 to Present).
2. *Design Review Subcommittee of the Master Plan Development and Advisory Committee*. Member. From initial appointment in August of 2015 through December of 2020, subcommittee has reviewed/provided guidance for new design/construction or renovation/modification of 17 buildings, 5 athletic facilities, 6 signage projects, 2 roads, 1 parking garage, 2 parking lots, and 16 special projects.
3. *Master Plan Development and Advisory Committee*. Member from Jan 2020 to Present.

Service on National Committees, Boards, or Panels

Previous

1. Transportation Research Board of the National Academies, TRB, Standing Committee Appointments.
 - a. *Flexible Pavement Construction and Rehabilitation-AFH60*, Member, 2008 to 2017 (9 years).
 - b. *General Issues in Asphalt Technology-AFK10*, 1st Young Member Appointed to Committee Since Inception in 1950's and Served From 2011 to 2016 (5 years).
 - c. *Critical Issues and Emerging Technologies in Asphalt-AFK10*, Member, 2016 to 2018 (2 years).
 - d. *Critical Issues and Emerging Technologies in Asphalt-AFK10*, Chairman, 2018 to 2020 (2 years).
 - e. *Surface Requirements of Asphalt Mixtures-AFK40*, Member, 2017 to 2020 (2.8 years).
 - f. *Asphalt Mixture Evaluation and Performance-AKM40*, Member, 2020 to 2022 (2 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).
3. Henry L. Michel Award Selection Committee, ASCE, Member, Appointed Spring 2023 (0.2 years).

Current

1. Transportation Research Board of the National Academies, TRB, *Standing Committee on Production and Use of Asphalt-AKM10 (Formerly AFK10)*, Appointed as Chairman 4/16/2020 to 4/14/2024.
2. Geo-Institute (G-I) of the American Society of Civil Engineers, *G-I Pavements Committee*, Member from September 2012 to March 2020, Secretary from March 2020 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. Editorial Board of the *Association of Asphalt Paving Technologists (AAPT)*.
 - a. Associate Editor (Inaugural Member) for 2018-2019 and 2019-2020 review cycles (2 years).
 - b. Senior Editor, beginning with the 2020-2021 review cycle, 4 year term.

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 on north Mississippi infrastructure, over 80 students attended, September 2010.
2. Undergraduate Student Advisements on Curriculum and Registration-Fall 2006 to Spring 2021 (723).
3. Students Giving Presentations at Regional and National Conferences or Meetings.

<i>Number of Students</i>	<i>Presentations</i>	<i>Description</i>
13	23	Lectern Presenters of Peer Reviewed Papers
25	21	Lectern Presenters Without an Associated Paper
9	14	Poster Presenters of Peer Reviewed Papers
14	14	Student Forums-No Associated Paper ^(Notes 1 and 2)

1: G. Sullivan, B. Anderson, B. Payne won 4th Ann. Transportation Workshop Student Poster Competition, 2012

2: 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.
9. *Student Mentor Dinner (2019)*. Evening event sponsored by Dunn Roadbuilders, Eutaw Construction, MMC Materials, Vulcan Materials, and Warren Paving for students to interact with industry/agency employees and learn about infrastructure and construction. 84 attendees (50 students, 34 non-students).

Technical Paper Review Service

-- Each paper reviewed (177 total) is listed once, irrespective of the number of revisions/re-reviews. An undocumented number of abstracts, extended abstracts, and non-full papers have also been reviewed.

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
<i>ASCE Geo-Congress 2020</i>	1	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>	19	2010 to 2022
<i>J. of Transportation Engineering</i>	2	2012 to 2013
<i>J. of Transportation Engineering: Part B</i>	3	2017 to 2020
<i>Geotechnical Testing Journal</i>	1	2013
<i>Construction and Building Materials</i>	14	2013 to 2022
<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
<i>Ground Improvement</i>	2	2020 to 2021

3. Annual Meetings With Corresponding Journals

<u>Venue</u>	<u>Papers Reviewed</u>	<u>Years Reviewed</u>
<i>Transportation Research Board (TRB) Events</i>	90	2008 to 2023
<i>Association of Asphalt Paving Technologists (AAPT)</i>	11	2011 to 2017

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. *Moderator or Equivalent for Conference Sessions***
 - a. *Asphalt Mixtures for Orthotropic Steel Decks.*** 92nd TRB Annual Meeting, Washington, D.C., Session 651, Jan 15, 2013, Poster Session.
 - b. *Cold Planing, Compaction, and Pay Adjustments in Hot-Mix Asphalt Pavements.*** 93rd TRB Annual Meeting, Washington, D.C., Session 678, Jan 14, 2014, Poster Session.

- c. Materials Division Technical Session I. 2015 ASEE Annual Conference and Exposition, Session T536, June 2016, 2015, Seattle, WA, Lectern Session, Co-moderated with S. Gupta.
- d. Field Performance of RAP. AAPT 91st Annual Meeting, Indianapolis, IN, 5th Technical Session, Mar 16, 2016, Lectern Session.
- e. New Test Procedures for Cementitious or Chemically Stabilized Soils. 96th TRB Annual Meeting, Washington, D.C., Session 526, Jan 10, 2017, Lectern Session.
- f. How Asphalt Test Methods Come to Be Through ASTM and AASHTO. 101st TRB Annual Meeting, Washington, D.C., Session 1122, Jan 10, 2022, Lectern 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. *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.
- 7. *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.
- 8. *Improved Specimen Preparation for Soil-Cement Design and Construction Monitoring*. TRB Webinar on September 12, 2016. Co-Presented with W.G. Sullivan.
- 9. *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.
- 10. *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.
- 11. *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.
- 12. *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.
- 13. *Practices for Stabilized and Recycled Base and Subgrade Materials*. TRB Webinar on October 07, 2019. Co-Presented with B. Diefenderfer, S. Nazarian, and T. Scullion.
- 14. *Technical Session Chair*. Geo-Congress 2020. Role: Worked With H. Ceylan, C. Schwartz, and B. Cetin to evaluate reviews and to organize podium and poster sessions on pavements.
- 15. *2020 Report Card for Mississippi's Infrastructure*. Document Released in April of 2020 by the Mississippi Section of the American Society of Civil Engineers (ASCE). Role – Chair of Rails Section.
- 16. *US Army Corps of Engineers 2021 Innovation Summit-Innovation to Impact: Leading From the Future*. Supported development of abstract and materials that were presented in a virtual forum by A.C. Carey on Oct 27 for more than 2,500 individuals on the subject of understanding the next generation of concrete materials.
- 17. *The 16th USEI/BAMI-I Utility Investigation School (UIS)*. Short Course for 40 PDH's Taught by the Buried Asset Management Institute and the ASCE Utility Engineering and Surveying Institute. Role – Assisted J. Wang and USEI/BAMI-I officials with advertisement, promotion, and on site logistics.

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. *MCIAToday*, 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.
11. Ergon Asphalt & Emulsions: The College Connection. Story by C. Pendleton About Industry Partnering with Universities, Issue 18 (Summer 2019) of *Our Roads Magazine*, pp. 22-26.
12. Rebuilding Mississippi Special Report – Engineering Majors at Mississippi State Work to Revolutionize State Infrastructure. A. Love interviewed and engaged in laboratory activities with A. Carey, I.L. Howard, A. Hufft, J. Lewis, and N. Laird to produce an afternoon Facebook live feed and an evening news segment, Original airing on Nov 22, 2019, WJTV-Jackson: A CBS Affiliate.
13. Building Community Through Distance. Story by S. Steinberg in *Mississippi State Alumnus*, Summer 2020 Edition, pp. 15-17.
14. Mississippi’s I-20 Bridge Project on Track Despite Weather. Story by E. Lamb for Transport Topics posted on Feb 22, 2021 where I.L. Howard provided content via an interview.
15. Mississippi State University: True Leadership Episode 15 – Isaac Howard. Video Produced by MSU Public Affairs and Released Oct 17, 2022. Students in Video: J.V. Lewis, and A. Thomas.
16. State Spotlight – Rula’s Research Resources. Story with participants J.V. Lewis and I.L. Howard by MSU Office of Public Affairs that was dated Jan 24, 2023 and appeared on MSU main web page.
17. Asphalt Academic – Isaac L. Howard. Story in *Magazine of the Asphalt Institute*, 38(1), 41, 2023.
18. Volunteer Voices – Isaac Howard. Brief Note in *TR News*, Issue 343, 2023.

VIDEO MEDIA CREATION

1. *Interstate 269 and the People Who Made it Possible* (2018). Video CMRC V 18-1, Released February. Collaborators: R. Booth, T. Robinson, C. Pendleton.
2. *Construction Matters 2 Video Series* (2019). CMRC V 19-01 (Safety)-Released February; CMRC V 19-02 (Recycling)-Released April; CMRC V 19-03 (Networks)-Released June; CMRC V 19-04 (The Military)-Released July; CMRC V 19-05 (Quality of Life)-Released August; CMRC V 19-06 (Sustainability)-Released September. Collaborators: J. Bullock, T. Cagle, A. Krohn, W. Thomas.
3. *How to Build a Highway in Mississippi* (2019). Video CMRC V 19-07, Released October. Collaborator: T. Cagle.

4. *Construction Fast Facts Video Series* (2019). CMRC V 19-08 (Building Blocks for Adults)-Released October; CMRC V 19-09 (Building Our Future)-Released October; CMRC V 19-10 (Erosion Control)-Released November; CMRC V 19-11 (Let's Share the River)-Released November; CMRC V 19-12 (Pipe Production)-Released November. Collaborator: T. Cagle.

TEST METHOD DEVELOPMENT OR MODIFICATION

-- Development of New Test Methods

1. *Provisional Standard Practice for Preparation of Test Specimens Using the Plastic Mold Compaction Device* (2019). AASHTO Designation: PP 92-18 (Released August 2018) and PP 92-19 (Released July 2019), Collaborators: J. Ivy and W. G. Sullivan.

-- Technical Revisions of Existing Test Methods

1. *Standard Practice for Recovery of Asphalt Binder from Solution by Absorption Method* (2011). AASHTO Designation: R 59-11. Role: Worked to add proper specifications and drawings for centrifuge tubes to replace reliance on ASTM D96, which was withdrawn in 2000. Collaborator: T.D. White.
2. *Standard Method of Test for Cantabro Abrasion Loss of Asphalt Mixture Specimens* (2022). AASHTO Designation: T 401-22. Role: Updated significance and use, modified some tolerances, made overall procedural updates, and added field aging simulation protocols appendix. Collaborators: R.W. Bazuhair, B.C. Cox, J.D. Doyle, J. Easterling, J.V. Lewis, A. Middleton, C. Pittman, B.T. Smith, A. Subedi, W.G. Sullivan.
3. *Moisture-Density Relations of Soil-Cement Mixtures* (2022). AASHTO Designation: T 134-22. Role: Added appendix to consider time delay effects on compaction. Collaborator: W.G. Sullivan.

LICENSING OF INTELLECTUAL PROPERTY – INVENTIONS

1. *A Portable Materials Tester for Pavement Testing, Measuring, and Construction* (2021). Invention 2020.1140 – PM Device; License Agreement 2266 Between Mississippi State University and Pavement Technology, Inc.; Co-Inventors: 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: Supervised approximately 57% full-time equivalent research efforts over a 2.5 month period.
5. Madeleine M. Roberson, BSCE (2020 to 2022). Title: Research Engineer I; Role: Supervised 100% full-time equivalent research efforts over a 24 month period.
6. Ashley S. Carey, PhD (2021 to 2023). Title: Research Engineer II; Role: Supervised 100% full-time equivalent research efforts over a 25 month period.

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 year they began working. As of the date of this vitae, the 117 URA's listed below have logged approximately 75,000 paid hours divided as follows: <100 hours (12 students), 100 to 500 hours (55 students), 501 to 1,000 hours (32 students), 1,001 to 2,000 hours (11 students), and >2,000 hours (7 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	Alwyn Ambrose, Brian Batinick, Arman Borazjani, Grayson Brown, Taylor Cagle, Jessica Lewis, Alexis McDonald, Kathleen McMackin, Madeleine Roberson, Dylan Miley
2020	Will Priest, Will Valentine
2021	Joy Lampkin
2022	Aden Thomas, Jordan Cockrell
2023	Olivia Keeter, Jacob Doler, Layton Hughes

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. (2011). *Characterization of Reclaimed Asphalt and Performance Based Evaluation of its Use in Recycled Mixtures.*
2. James, Robert. (2014). *Performance Oriented Guidance for Airfield Asphalt Pavements Within the Superpave Context.*
3. Shannon, Jameson. (2015). *Performance and Sustainability Benefits of Concrete Containing Portland-Limestone Cement.*

4. Cox, Ben. (2015). *Cold In-Place Recycling Characterization Framework for Single or Multiple Component Binder Systems*.
5. Baumgardner, Gaylon. (2015). *Characterization and Implementation of Ground Tire Rubber as Post-Consumer Polymers for Asphalt Concrete*.
6. Rushing, Timothy. (2016). *Performance Prediction Relationships for AM2 Airfield Matting Developed From Full-Scale Accelerated Testing and Laboratory Experimentation*.
7. Bazne, Mohammed. [*] (2016). *Geotechnical Properties of Very High Moisture Content Dredged Soil Lightly Cemented with Ordinary or Portland-limestone Cement*. Major Professor: Farshid Vahedifard.
8. Smith, Braden. (2017). *Characterizing Short and Long Term Mixture Aging of a Full-Scale and Non-Trafficked Asphalt Test Section*.
9. Whitlow, Danielle. (2019). *Infrastructure Monitoring Through Frequency Change Detection Using Infrasond*.
10. Bazuhair, Rabeea. (2019). *Capturing Individual or Combined Environmental Effects from Longer Term Field Aging of Asphalt Mixtures*.
11. Hansen, Bradley. (2019). *Furthering Understanding of Concrete Containing Portland-Limestone Cement from Mechanical Property Measurements on Concrete and Cement Paste*.
12. Robinson, Jeremy. (2020). *Characterization of Geosynthetic Reinforced Airfield Pavements at Varying Scales*.
13. Brown, Jared. (2020). *Response of Concrete Elements With Varying Compressive Strength to Impact by Fragments With Different Aspect Ratios*.
14. Synovec, Thomas. (2020). *A Strategy to Reduce Total Cost of Ownership of the U.S. Air Force's Airfield Pavements*.
15. Carey, Ashley. [*] (2021). *Laboratory Testing Protocols to Represent Thermo-Mechanical Signatures of High Strength Concrete in Medium to Mass Sized Placements*. Major Professor: Alta Knizley.
16. Sullivan, Griffin. (2021). *Field Application of the PM Device and Assessment of Early Age Behaviors of Cement Stabilized Pavement Materials*.
17. Ayers, Leigh. (2022). *Mechanical Property Relationships of Cement or Lime Stabilized Soils Throughout a Pavement's Life*.
18. Baldwin, Jordan. (2023). *Advancements in Geospatial Monitoring of Structures*.

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

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

11. Sullivan, Griffin. (2012). *Investigation of Compaction and Corresponding Thermal Measurement Techniques for Cementitiously Stabilized Soils*. MSCE-Thesis.
12. Anderson, Brennan. (2013). *Investigation of Factors Influencing Design and Performance of Soil Cement Pavement Layers*. MSCE-Thesis.
13. Garcia-Beltran, Lyan. (2015). *Full-Scale Instrumented Evaluations of Multiple Airfield Matting Systems on Soft Soil to Characterize Permanent Deformation*. MSCE-Thesis.
14. Smith, Braden. (2016). *Lightly Cementing Marginal Materials to Improve Sustainability and Economic Competitiveness Near Ports and Harbors*. MSCE-Thesis.
15. Brown, Jared. (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. [*] (2019). *Improved Understanding of Ultra-High Performance Concrete via Mechanical Property Testing of Mixes with Varying Ingredients and Proportions*. MSME-Thesis. Major Professor: Alta Knizley.
20. Hufft, Amanda. (2019). *Durability Characteristics of Asphalt Mixtures Containing Bio-Additives*. MSCE-Thesis.
21. Subedi, Abhinash. (2021). *Mixing Temperature, Binder Content, and Dust Content Effects on Stone Matrix Asphalt*. MSCE-Thesis.
22. Lewis, Jessica. (2023). *Aggregate Characteristics for Unpaved Highway Shoulders*. MSCE-Thesis.
23. Murphy, Timothy. (2023). *Integrating Steel Slag Aggregates into Asphalt Paving by Harmonizing Availability, Quality, Economics, and the Environment*. MSCE-Thesis.
24. Ordaz, Margarita. (2023). *Assessment of Light Weight Deflectometer for Low Volume Roads Experiencing Rapidly Increased Traffic Levels*. MSCE-Thesis.
25. Sisung, Lana Grayson. (2023). *Cement Stabilization of Poorly Graded Sand*. MSCE-Thesis.

Completed Non-Thesis Option Master's Students (MSCE-NT): Major Professor

- | | |
|----------------------------------|-------------------------------------|
| 1. (2010) Doyle, Jesse | 2. (2010) Badran, Walaa |
| 3. (2012) Norwood, Gregory | 4. (2012) Cox, Ben |
| 5. (2013) Craft (Clark), Heather | 6. (2014) Towne, Brentton |
| 7. (2014) Leard, Melanie | 8. (2014) Floyd, Webster |
| 9. (2014) Crawley, William | 10. (2014) Cox (Vargas), Sara |
| 11. (2015) Kuykendall, Patrick | 12. (2015) Otts (Lawrence), Rae Ann |
| 13. (2015) Bazuhair, Rabeea | 14. (2016) Moore, Robert |
| 15. (2019) Arthur, Joseph | 16. (2019) Cooper, Justin |
| 17. (2019) Ramsey, Monica | 18. (2019) Laird, Nicki |
| 19. (2021) Aung, Phyo | 20. (2021) Whaley, Ethan |
| 21. (2021) Egbert, Kyle | 22. (2023) Giles, Blake |

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

1. (2006) Mann, Travis. (MSCE-Thesis)
2. (2007) Gartrell, Chad. (MSCE-Thesis)
3. (2008) Whittington, Jordan. (MSCE-Thesis)
4. (2009) Rushing, John. (MSCE-Thesis)
5. (2009) Velez, Eileen. (MSCE-NT)
6. (2009) May, Cecil (MEng-NT)
7. (2010) Davis, Trey. (MSCE-Thesis)
8. (2010) Lamey, Katherine. (MSCE-NT)
9. (2010) Richard, Marneshia. (MSCE-NT)
10. (2012) Shannon, Jay (MSCE-NT)
11. (2013) Crosby, Kyle (PhD)
12. (2013) Tasmin, Farzana (MSCE-NT)
13. (2015) Stevens, Maria. (MSCE-Thesis)
14. (2017) Cassidy, Amy (MSCE-NT)
15. (2017) Scott, Dylan. (MSME-Thesis)
16. (2018) Wells, Matthew. (MSCE-NT)
17. (2018) Williams, James. (MSCE-Thesis)
18. (2018) Hernandez, Xzavier (MSCE-Thesis)
19. (2018) Gee, Blane (MSCE-NT)
20. (2019) Long, Wendy. (MSCE-Thesis)
21. (2019) Stache, Jeremiah (PhD)
22. (2019) Jasim, Firas. (PhD)
23. (2020) Tehrani, Behnam (MSCE-Thesis)
24. (2021) Elebash, Karl (MSCE-NT)
25. (2021) Flynn, Stefan (MSCE-Thesis)
26. (2022) Daggitt, Kimberly (MSCE-NT)
27. (2022) Hitt, Matthew (MSCE-NT)
28. (2022) Cleveland, Brandon (MSCE-NT)
29. (2022) Hawkins, Alex (MSCE-NT)
30. (2023) Garrett, Steven (PhD)
31. (2023) Miller, Kevin (PhD)