# ANNUAL REPORT

## Iowa Highway Research Board
## Research and Development Activities
## FY 2024


**DECEMBER 2024**

IOWA DOT

# ANNUAL REPORT
# OF
# IOWA HIGHWAY RESEARCH BOARD
# RESEARCH AND DEVELOPMENT ACTIVITIES

**FOR THE**
**FISCAL YEAR ENDING JUNE 30, 2024**

RESEARCH AND ANALYTICS BUREAU
(515) 239-1382
**www.iowadot.gov/research**

TRANSPORTATION DEVELOPMENT DIVISION
IOWA DEPARTMENT OF TRANSPORTATION
AMES, IOWA 50010

**DECEMBER 2024**

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## RESEARCH AND DEVELOPMENT

The Iowa DOT's Research section is dedicated to *driving a quality research program that delivers targeted solutions for Iowa's transportation future.*

This report, entitled "Iowa Highway Research Board Research and Development Activities FY2024" is submitted in compliance with Sections 310.36 and 312.3A, Code of Iowa, which direct the submission of a report of the Secondary Road Research Fund and the Street Research Fund, respectively. It is a report of the status of research and development projects in progress on June 30, 2024. It is also a report on projects completed during the fiscal year beginning July 1, 2023 and ending June 30, 2024. Detailed information on each of the research and development projects mentioned in this report is available from the Research and Analytics Bureau, Transportation Development Division, Iowa Department of Transportation.

## THE IOWA HIGHWAY RESEARCH BOARD

In developing a progressive, continuing, and coordinated program of research and development, the Iowa DOT is assisted by the Iowa Highway Research Board (IHRB). This is advisory group established in 1949 by the Iowa State Highway Commission.

The IHRB consists of 15 regular members: seven Iowa county engineers, four Iowa DOT engineers, one representative from Iowa State University, one from The University of Iowa, and two engineers employed by Iowa municipalities. Each regular member may have an alternate who will serve at the request of the regular member. The regular members and their alternates are appointed for a three-year term. The membership of the Research Board for FY24 is listed in Tables I and II.

The Research Board held several regular meetings during the period from July 1, 2023, through June 30, 2024. Suggestions for research and development were reviewed at these meetings and recommendations were made by the Board. Meeting agenda and minutes can be found at https://iowadot.gov/research/IOWA-HIGHWAY-RESEARCH-BOARD/Meeting-agenda-and-minutes


Members of the IHRB are serious about the future of transportation. Understanding that every research project has the potential to strengthen the infrastructure and save lives, time, and precious resources, they work hard to make sure new methods, technologies, and materials are developed efficiently and economically for application in the real world.

# Table I - 2023 IOWA HIGHWAY RESEARCH BOARD

| Member | Term Expires | Alternate |
|---|---|---|
| James Hauber, P.E.<br>Chief Structural Engineer, Iowa DOT<br>800 Lincoln Way<br>Ames, IA 50010<br>(515) 239-1393<br>james.hauber@iowadot.us | 12/31/2024 | Ashley Buss, P.E.<br>Bituminous Engineer, Iowa DOT<br>800 Lincoln Way<br>Ames, IA 50010<br>(515) 233-7837<br>Ashley.Buss@iowadot.us |
| Dustin Skogerboe, P.E.<br>Resident Construction Engineer, Iowa DOT<br>1308 Iowa Avenue West<br>Marshalltown 50158<br>(641) 752-4657<br>Dustin.Skogerboe@iowadot.us | 12/31/2024 | Michael Nop, P.E.<br>Bridge Project Development Engineer, Iowa DOT<br>800 Lincoln Way<br>Ames, IA 50010<br>(515) 239-1233<br>michael.nop@iowadot.us |
| Daniel Harness, P.E.<br>Design Methods Section , Iowa DOT<br>800 Lincoln Way<br>Ames, IA 50010<br>(515) 239-1727<br>Daniel.Harness@iowadot.us | 12/31/2025 | Allen Karimpour, P.E.<br>District 5 Materials Engineer, Iowa DOT<br>205 E. 227th Street<br>Fairfield, IA 52556<br>(641) 469-4040<br>allen.karimpour@iowadot.us |
| Clayton Burke, P.E.<br>Lansing Bridge Project Manager, Iowa DOT<br>800 Lincoln Way<br>Ames, IA 50010<br>(515) 239-1587<br>Clayton.burke@iowadot.us | 12/31/2023 | Jeff De Vries, P.E.<br>Materials Testing Engineer, Iowa DOT<br>800 Lincoln Way<br>Ames, IA 50010<br>(515) 239-1237<br>jeff.devries@iowadot.us |
| **Rudy Koester, P.E., Vice-Chair**<br>Public Works Director, City of Waukee<br>805 University Avenue<br>Waukee, IA 50263<br>(515) 978-7388<br>rkoester@waukee.org | 12/31/2023 | Matt Cox, P.E.<br>Public Works Director, City of Council Bluffs<br>209 Pearl Street<br>Council Bluffs, IA 51503-0826<br>(712) 328-4635<br>mcox@councilbluffs-ia.gov |
| Ronald Knoche, P.E.<br>Director of Public Works, Iowa City<br>410 E. Washington Street<br>Iowa City, IA 52240-1825<br>(319) 356-5138<br>Ron-Knoche@iowa-city.org | 12/31/2024 | John Joiner, P.E.<br>Public Works Director, City of Ames<br>515 Clark Ave<br>Ames, IA<br>(515) 239-5165<br>john.joiner@cityofames.org |
| Allen Bradley, P.E.<br>The University of Iowa – Dept. Chair of CEE<br>4105 Seamans Center<br>Iowa City, IA 52242<br>(319) 335-6117<br>allen-bradley@uiowa.edu | ---------- | Paul Hanley<br>The University of Iowa – Dept. of CEE<br>4105 Seamans Center<br>Iowa City, IA 52242<br>(319) 335-8137<br>paul-hanley@uiowa.edu |
| **David Sanders, P.E. - Chair**<br>Iowa State University, Dept. Chair of CCEE<br>390 Town Engineering Bldg.<br>Ames, IA 50011<br>(515) 294-8044<br>sandersd@iastate.edu | ---------- | Omar Smadi<br>Iowa State University, Associate Professor, CCEE<br>2711 S. Loop Drive, Suite 4700<br>Ames, Iowa 50010-8664<br>(515) 294-8103<br>smadi@iastate.edu |

| Member | Term Expires | Alternate |
|---|---|---|
| Jacob Thorius, P.E.<br>Washington County Engineers Office<br>210 W Main St., Ste. 2<br>Washington, IA, 52353-1723<br>(319) 653-7731<br>thorius@co.washington.ia.us | ----------<br>TRB Rep | Wade Weiss, P.E.<br>Greene County Engineer<br>114 N. Chestnut Street<br>Jefferson, IA 50129<br>(515) 386-5650<br>wweiss@greenecounty.iowa.gov |
| Taylor Roll, P.E.<br>Hardin County Engineer<br>708 16th Street<br>Eldora, IA 50627<br>(641) 858-5058<br>troll@hardincountyia.gov | 12/31/2023<br>District 1 | Jamie Johll, P.E.<br>Webster County Engineer<br>703 Central Ave, Suite 3<br>Fort Dodge, IA 50501-3895<br>(515) 576-3281<br>jjohll@webstercountyia.org |
| Adam Clemons, P.E.<br>Wright County Engineer<br>416 5th Ave SW<br>Clarion, IA 50525-0269<br>(515) 532-3597<br>aclemons@co.wright.ia.us | 12/31/2025<br>District 2 | Brandon Billings, P.E.<br>Cerro Gordo County Engineer<br>17274 Lark Ave.<br>Mason City, IA 50401<br>(641) 424-9058<br>bbillings@cgcounty.org |
| William Rabenberg, P.E.<br>Clay County Engineer<br>300 W 4th St #5<br>Spencer, IA 51301-3806<br>(712) 262-2825<br>wrabenberg@claycounty.iowa.gov | 12/31/2024<br>District 3 | Bret Wilkinson, P.E.<br>Buena Vista County Engineer<br>215 East 5th Street /PO Box 368<br>Storm Lake, IA 50588-0368<br>(712) 749-2540<br>bwilkinson@bvcountyiowa.com |
| Mitchel Rydl, P.E.<br>Audubon County Engineer<br>2147 Highway 71<br>Audubon, IA 50025-7444<br>(712) 563-4286<br>mrydl@audubooncountyia.gov | 12/31/2023<br>District 4 | Trent Wolken, P.E.<br>Cass County Engineer<br>5 W 7th St<br>Atlantic, IA 50022<br>(712) 243-2442<br>twolken@casscoia.us |
| Brad Skinner, P.E.<br>Appanoose County Engineer<br>1200 HWY 2 West<br>Centerville, IA 52544<br>(641) 856-6193<br>bskinner@appanoosecounty.net | 12/31/2025<br>District 5 | Dillon Davenport, P.E.<br>Decatur County Engineer<br>207 N. Main St.<br>Leon, IA 50144<br>(641) 446-7131<br>deceng@grm.net |
| Derek Snead, P.E.<br>Jones County Engineer<br>19501 Highway 64 East<br>Anamosa, IA 52205-0368<br>(319) 462-3785<br>derek.snead@jonescountyiowa.gov | 12/31/2024<br>District 6 | Angela Kersten, P.E.<br>Scott County Engineer<br>950 E. Blackhawk Trail Rd.<br>Eldridge, IA 52748<br>(563) 326-8640<br>engineer@scottcountyiowa.gov |

# Table II - 2024 IOWA HIGHWAY RESEARCH BOARD

| Member | Term Expires | Alternate |
|---|---|---|
| **James Hauber, P.E., Vice Chair**<br>Chief Structural Engineer, Iowa DOT<br>800 Lincoln Way<br>Ames, IA 50010<br>(515) 239-1393<br>james.hauber@iowadot.us | 12/31/2024 | Michael Nop, P.E.<br>Bridge Project Development Engineer, Iowa DOT<br>800 Lincoln Way<br>Ames, IA 50010<br>(515) 239-1233<br>michael.nop@iowadot.us |
| Dustin Skogerboe, P.E.<br>Resident Construction Engineer, Iowa DOT<br>1308 Iowa Avenue West<br>Marshalltown 50158<br>(641) 752-4657<br>Dustin.Skogerboe@iowadot.us | 12/31/2024 | Ashley Buss, P.E.<br>Pavement Management Leader, Iowa DOT<br>800 Lincoln Way<br>Ames, IA 50010<br>(515) 233-7837<br>Ashley.Buss@iowadot.us |
| Daniel Harness, P.E.<br>Design Methods Section , Iowa DOT<br>800 Lincoln Way<br>Ames, IA 50010<br>(515) 239-1727<br>Daniel.Harness@iowadot.us | 12/31/2025 | Allen Karimpour, P.E.<br>District 5 Materials Engineer, Iowa DOT<br>205 E. 227th Street<br>Fairfield, IA 52556<br>(641) 469-4040<br>allen.karimpour@iowadot.us |
| Jeff De Vries, P.E.<br>Materials Testing Engineer, Iowa DOT<br>800 Lincoln Way<br>Ames, IA 50010<br>(515) 239-1237<br>jeff.devries@iowadot.us | 12/31/2026 | Jakob Lang, P.E.<br>District 3 Materials Engineer, Iowa DOT<br>6409 Gordon Drive<br>Sioux City IA 51106<br>(515) 567-0368<br>jakob.lang@iowadot.us |
| **Rudy Koester, P.E., Chair**<br>Public Works Director, City of Waukee<br>805 University Avenue<br>Waukee, IA 50263<br>(515) 978-7388<br>rkoester@waukee.org | 12/31/2026 | Matt Cox, P.E.<br>Public Works Director, City of Council Bluffs<br>209 Pearl Street<br>Council Bluffs, IA 51503-0826<br>(712) 328-4635<br>mcox@councilbluffs-ia.gov |
| Ronald Knoche, P.E.<br>Director of Public Works, Iowa City<br>410 E. Washington Street<br>Iowa City, IA 52240-1825<br>(319) 356-5138<br>rknoche@iowa-city.org | 12/31/2024 | John Joiner, P.E.<br>Public Works Director, City of Ames<br>515 Clark Ave<br>Ames, IA<br>(515) 239-5165<br>john.joiner@cityofames.org |
| Allen Bradley, P.E.<br>The University of Iowa – Dept. Chair of CEE<br>4105 Seamans Center<br>Iowa City, IA 52242<br>(319) 335-6117<br>allen-bradley@uiowa.edu | ---------- | Paul Hanley<br>The University of Iowa – Dept. of CEE<br>4105 Seamans Center<br>Iowa City, IA 52242<br>(319) 335-8137<br>paul-hanley@uiowa.edu |
| David Sanders, Ph.D.<br>Iowa State University, Dept. Chair of CCEE<br>390 Town Engineering Bldg.<br>Ames, IA 50011<br>(515) 294-8044<br>sandersd@iastate.edu | ---------- | Omar Smadi, Ph.D.<br>Iowa State University, Associate Professor, CCEE<br>2711 S. Loop Drive, Suite 4700<br>Ames, Iowa 50010-8664<br>(515) 294-8103<br>smadi@iastate.edu |

| Member | Term Expires | Alternate |
|---|---|---|
| Jacob Thorius, P.E.<br>Washington County Engineers Office<br>210 W Main St., Ste. 2<br>Washington, IA, 52353-1723<br>(319) 653-7731<br>thorius@co.washington.ia.us | ----------<br>TRB Rep | Andrew McGuire<br>Keokuk County Engineer<br>1301 East Jackson St<br>Sigourney, IA 52591<br>(641) 622-2610<br>amcguire@keokukcounty.iowa.gov |
| Taylor Roll, P.E.<br>Hardin County Engineer<br>708 16th Street<br>Eldora, IA 50627<br>(641) 858-5058<br>troll@hardincountyia.gov | 12/31/2026<br>District 1 | Jamie Johll, P.E.<br>Webster County Engineer<br>703 Central Ave, Suite 3<br>Fort Dodge, IA 50501-3895<br>(515) 576-3281<br>Jamie.Johll@webstercountyia.gov |
| Adam Clemons, P.E.<br>Wright County Engineer<br>416 5th Ave SW<br>Clarion, IA 50525-0269<br>(515) 532-3597<br>aclemons@wrightco.iowa.gov | 12/31/2025<br>District 2 | Brandon Billings, P.E.<br>Cerro Gordo County Engineer<br>17274 Lark Ave.<br>Mason City, IA 50401<br>(641) 424-9058<br>bbillings@cgcounty.org |
| Bret Wilkinson, P.E.<br>Buena Vista County Engineer<br>215 East 5th Street /PO Box 368<br>Storm Lake, IA 50588-0368<br>(712) 749-2540<br>bwilkinson@bvcountyiowa.com | 12/31/2027<br>District 3 | Joel Sikkema, P.E.<br>Sioux County Engineer<br>207 Central Ave SE<br>Orange City, IA 51041-0017<br>(712) 737-2248<br>joels@siouxcounty.org |
| Trent Wolken, P.E.<br>Cass County Engineer<br>5 W 7th St<br>Atlantic, IA 50022<br>(712) 243-2442<br>twolken@casscoia.us | 12/31/2026<br>District 4 | Jacob Ferro, P.E.<br>Mills County Engineer<br>305 Railroad Avenue<br>Glenwood, IA 51534-1967<br>(712) 527-4873<br>jferro@millscountyiowa.gov |
| Brad Skinner, P.E.<br>Appanoose County Engineer<br>1200 HWY 2 West<br>Centerville, IA 52544<br>(641) 856-6193<br>bskinner@appanoosecounty.net | 12/31/2025<br>District 5 | Dillon Davenport, P.E.<br>Wayne County Engineer<br>100 North Lafayette, Suite 201<br>Corydon, IA 50060<br>(641) 872-2025<br>ddavenport@waynecountyia.org |
| Derek Snead, P.E.<br>Jones County Engineer<br>19501 Highway 64 East<br>Anamosa, IA 52205-0368<br>(319) 462-3785<br>engineer@jonescountyiowa.gov | 12/31/2024<br>District 6 | Angela Kersten, P.E.<br>Scott County Engineer<br>950 E. Blackhawk Trail Rd.<br>Eldridge, IA 52748<br>(563) 326-8640<br>Angela.Kersten@scottcountyiowa.gov |

## RESEARCH AND DEVELOPMENT PROJECTS

Proposals for research, development, innovation, implementation, and engineering studies are reviewed by the Iowa Highway Research Board. Expenditure of funds are then authorized on an individual project basis.

These expenditures may be charged to the Primary Road Research Fund, Secondary Road Research Fund or the Street Research Fund, or a combination and the costs are shared.

Table III is a record of expenditures for IHRB Projects made during the fiscal year ending June 30, 2024. Total expenditure was $3,691,150.56.

## TABLE III
### FINANCIAL SUMMARY OF RESEARCH AND DEVELOPMENT PROJECT EXPENDITURES

| Project # | Project Title | Primary Road Research Fund Expenditures | Secondary Road Research Fund Expenditures | Street Research Fund Expenditures | Total Expenditures |
|---|---|---|---|---|---|
| HR-140 | Collection & Analysis of Streamflow Data | $ 170,730.00 | $ 243,070.00 | $ | $ 413,800.00 |
| HR-296 | Iowa Local Technical Assistance Program (LTAP) | $ 74,371.88 | $ 92,964.86 | $ 18,592.96 | $ 185,929.70 |
| HR-1027 | Iowa Secondary Road Research Support | | $ 181,171.71 | | $ 181,171.71 |
| TR-710 | Partially Grouted Revetment for Low Volume Road Bridges | | $ 24,517.29 | $ 8,404.25 | $ 32,921.54 |
| TR-712 | Evaluate, Modify and Adapt the Concrete Works Software for Iowa's Use | | $ 47,981.79 | | $ 47,981.79 |
| TR-722 | Increase Service Life at Bridge Ends by Improved Abutment | | | $ 7,522.47 | $ 7,522.47 |
| TR-739 | Limitations for Semi-Integral Abutment Bridges | | | $ 7,202.09 | $ 7,202.09 |
| TR-749 | Impact of Curling & Warping on Concrete Pavement Systems-Phase I | | | $ 379.77 | $ 379.77 |
| TR-753 | Evaluation of Otta Seal Surfacing for Low-Volume Roads in Iowa - Phase II | | $ 10,978.16 | | $ 10,978.16 |
| TR-759 | Un-Ticketing: An Upside-Down Approach to Speed Compliance | | $ 10,300.34 | | $ 10,300.34 |
| TR-764 | Use of Concrete Grinding Residue as a Soil Amendment | | $ 179.97 | | $ 179.97 |
| TR-766 | Evaluation of Galvanized and Painted - Galvanized Steel Piling | | $ 866.25 | | $ 866.25 |
| TR-771 | Performance Evaluation of Very Early Strength Latex Modified Concrete - Phase III | | $ 9,139.87 | | $ 9,139.87 |
| TR-772 | Performance Evaluation of Polyester Polymer Concrete Overlays Continuation - Phase II | | $ 3,103.00 | | $ 3,103.00 |
| TR-774 | Cold In-Place Recycling Project Selection and Guidance for Iowa Roadways | | $ 26,524.83 | | $ 26,524.83 |
| TR-777 | Development of a Smartphone-Based Road Performance Data Collection Tool | | $ 11,082.98 | | $ 11,082.98 |
| TR-780 | Advanced Testing and Characterization of Iowa Soils | $ 26,000.00 | $ 32,500.00 | $ 6,500.00 | $ 65,000.00 |

| | | | | | |
|---|---|---|---|---|---|
| TR-781 | Development of Approaches to Quantify Superloads and Their Impacts on the Iowa Road Infrastructure System | | $ 55,326.42 | $ 21,215.43 | $ 76,541.85 |
| TR-783 | Improving the Performance of Granular Roadways with Organosilanes | $ 25,023.00 | $ 49,797.04 | | $ 74,820.04 |
| TR-784 | Iowa's Pavement Preservation Guide | | $ 23,575.23 | $ 9,972.27 | $ 33,547.50 |
| TR-788 | Mitigation of Chloride-Induced Corrosion through Chemisorption | | $ 20,265.35 | | $ 20,265.35 |
| TR-789 | Accelerated Bridge Construction (ABC) Methodology for Integral Abutments | $ 15,762.55 | $ 9,835.51 | | $ 25,598.06 |
| TR-791 | Bridges Designed for Minimum Maintenance | $ 61,000.00 | $ 8,000.00 | | $ 69,000.00 |
| TR-792 | Assessing the Flood Reduction Benefits of On-Road Structures | $ 17,313.38 | $ 204,487.87 | | $ 221,801.25 |
| TR-794 | Iowa Public Works Service Bureau Phase II | $ 45,838.02 | $ 16,049.85 | | $ 61,887.87 |
| TR-795 | Next Generation Life-Cycle Cost Analysis Tool for Bridges in Iowa - Phase II | | $ 10,881.39 | | $ 10,881.39 |
| TR-796 | Iowa Granular Road Structural Design Tool | $ 33,678.02 | $ 77,705.22 | | $ 111,383.24 |
| TR-797 | Feasibility of Granular Road and Shoulder Recycling Phase II | $ 40,139.38 | $ 42,767.29 | | $ 82,906.67 |
| TR-798 | Impact of Legalized 25-kip Axle Loads for Self-Propelled Implements of Husbandry on Iowa Bridges | $ 40,000.00 | $ 50,000.00 | $ 10,000.00 | $ 100,000.00 |
| TR-799 | Base Stabilization of Iowa Granular Roads Using Recycled Plastics | $ 92,582.90 | $ 37,250.17 | | $ 129,833.07 |
| TR-800 | Helical Pile Foundation Implementation for Bridge Structures | $ 369.63 | $ 19,200.23 | $ 4,926.29 | $ 24,496.15 |
| TR-801 | Accelerated Bridge Construction (ABC) Methods for Pile-Footing-Column Systems using Lightweight Precast Members | $ | $ 3,338.96 | | $ 3,338.96 |
| TR-802 | Beam End Repair for Prestressed Concrete Beams – Phase II | $ 17,827.23 | $ 4,718.27 | | $ 22,545.50 |
| TR-803 | Accelerated Bridge Construction (ABC) Methodology for Integral Abutments | $ 23,422.44 | | | $ 23,422.44 |
| TR-805 | Design of Self-Cleaning Solutions for Mitigating Sedimentation at Twin and Single Box Culvers | $ 46,681.18 | | | $ 46,681.18 |
| TR-806 | Ultra High-Performance Concrete Repair of Steel Bridge Girder Ends | $ 76,119.61 | | | $ 76,119.61 |
| TR-807 | Beneficial Use of Iowa Waste Ashes in Concrete through Carbon Sequestration | | $ 11,525.78 | | $ 11,525.78 |
| TR-808 | A Sustainable Air-entraining and Internal Curing Agent | $ 716.02 | | | $ 716.02 |
| TR-809 | Introducing Smart Materials in Granular Roadway and Pavement Foundation Systems for Mitigating Freeze-Thaw Damage | $ 8,554.11 | $ 29,466.86 | | $ 38,020.97 |
| TR-810 | Use of Iowa Eggshell Waste as Bio-Cement Materials in Pavement and Gravel Road Geo-Material Stabilization | $ | $ 15,921.72 | | $ 15,921.72 |
| TR-813 | An Economical and Sustainable Dust Suppressant for Gravel Roads | $ 45,346.28 | $ 24,329.67 | | $ 69,675.95 |
| TR-814 | Concentration Preserving Deicing Solutions for Higher Ice Melting | $ 2,077.37 | | | $ 2,077.37 |
| TR-815 | Advancing the Design of Flexible Ancillary Structures | $ 31,687.95 | | | $ 31,687.95 |
| TR-816 | Field Performance of Fiber-Reinforced Concrete Overlays | $ 60,147.22 | $ 10,634.64 | | $ 70,781.86 |
| TR-817 | Central Iowa Expo Pavement Project: Performance Assessment | $ 235,176.50 | $ 16,592.66 | $ | $ 251,769.16 |
| TR-818 | Development of Guidance for Roadway Cross Section Re-Configuration Decisions | $ 16,355.87 | $ 14,372.25 | | $ 30,728.12 |
| TR-819 | New and Updated Statewide Historic Bridge Survey | | $ 108,859.50 | | $ 108,859.50 |
| TR-820 | ISU - Performance Monitoring of Two-Course Bridge Deck Utilizing Ultra High Performance Concrete | $ 143,944.99 | $ 11,483.80 | | $ 155,428.79 |
| TR-821 | County Bridge Standards for Single Span Concrete Slabs - Final Design (Phase 2) | | $ 328,038.68 | | $ 328,038.68 |
| TR-822 | WJE - Performance Monitoring of Two-Course Bridge Deck Utilizing Ultra High Performance Concrete | $ 21,292.56 | | | $ 21,292.56 |

| | | | | | |
|---|---|---|---|---|---|
| TR-823 | Effectiveness and Guidance of Aggressive Rehab of Gravel Roads | | $ 125,786.56 | | $ 125,786.56 |
| TR-824 | Develop and Field Test Non-Proprietary Ultra-High Performance Concrete for New Bridge Decks | $ 4,148.21 | | | $ 4,148.21 |
| TR-825 | Iowa Highway Research Board 75 Year Anniversary History | $ 8,977.97 | | | $ 8,977.97 |
| TR-826 | Development of Quality Standards for Inclusion of High Recycled Asphalt Pavement Content in Asphalt Mixtures | $ 16,932.80 | | | $ 16,932.80 |
| TR-827 | Effect of Vibration on Concrete Mixtures | $ 24,286.50 | | | $ 24,286.50 |
| TR-828 | Low Cost Safety Strategies for Unpaved Rural Roads | $ 6,994.41 | | | $ 6,994.41 |
| TR-829 | Use of Roller Compacted Concrete for Paved Shoulders | $ 20,799.64 | | | $ 20,799.64 |
| TR-830 | Best Practices for Joint Sawing | $ 6,164.91 | | | $ 6,194.91 |
| TR-831 | Qualitative Relationship between Increased Legal Loads and Reduced Bridge Service Life | $ 19,216.59 | | | $ 19,216.59 |
| TR-832 | Implementation of AASHTOWARE BrR program for Rating Iowa Bridges | $ 92,163.94 | | | $ 92,163.94 |
| | Project Total | $ 1,571,843.06 | $2,024,591.97 | $ 94,715.53 | $ 3,691,150.56 |

## SECONDARY ROAD RESEARCH FUND

Section 310.34 of the Iowa Code authorizes the Iowa Department of Transportation to set aside each year an amount not to exceed 1½% of the receipts to the Farm-to-Market Fund in a fund to be known as the Secondary Road Research Fund. This authorization was first made in 1949; it was repealed in 1963 and reinstated in 1965. When the fund was reinstated, the fund was designated to finance engineering studies and research projects. The Iowa Department of Transportation accounting procedure for the Secondary Road Research Fund is based on obligations for expenditures on research projects and not the actual expenditures.

The fiscal year 2024 financial summary is:

| | | |
|---|---|---|
| Beginning Balance 7-1-23 | | $4,149,513.95 |
| Receipts | | |
| State Road Use Tax Fund | | |
| (1½% of receipts) | $1,913,423.23 | |
| Federal Aid Secondary | | |
| (1½% of receipts) | 0.00 | |
| Research Income | $ 0.00 | |
| Sub-Total | $1,913,423.23 | |
| Total Funds Available | | $1,913,423.23 |
| Obligation for Expenditures | | |
| Obligated for | | |
| Contract Research | $952,075.02 | |
| Non-Contract | | |
| Engineering Studies | $ 0.00 | |
| Total Expenditures | | $952,075.02 |
| Ending Balance 6-30-24 | | $5,110,862.16 |

## STREET RESEARCH FUND

The Street Research Fund was established in 1989 under Section 312.3A of the Iowa Code. Each year $200,000 is set aside from the street construction fund for the sole purpose of financing engineering studies and research projects. The objective of these projects is more efficient use of funds and materials available for construction and maintenance of city streets. The Iowa Department of Transportation accounting procedure for the Street Research Fund is based on obligations for expenditures on research projects and not the actual expenditures. The fiscal year 2024 financial summary is:

| | |
|---|---|
| Beginning Balance (7-1-23) | $136,638.10 |
| FY24 Street Research Funding | $200,000.00 |
| Total Funds Available for Street Research | $336,638.10 |
| Accounting Adjustment | ($65,385.37) |
| Total Obligated for Expenditure FY24 | ($182,698.80) |
| Ending Unobligated Balance 6-30-24 | $88,553.93 |

## PRIMARY ROAD RESEARCH FUND

The Primary Road Research Fund is sourced from non-obligated funds of the Primary Road Fund. These funds can only be expended on projects for which the funds were reserved, such as contracted research and project-specific research supplies or research equipment. An estimate of Primary Road Research Fund expenditures is made prior to the beginning of each fiscal year. The Primary Road Research Fund is split between the State Research Fund program and the Iowa Highway Research Board (IHRB) Program. The amount expended for IHRB contract research from the Primary Road Research Fund for FY24 was $ 1,571,843.06 and the estimate for obligations for FY24 is $2,000,000.

## PROJECTS APPROVED DURING FY 2024

The following IHRB projects were obligated in FY 24.

| | |
|---|---|
| HR-140 | Continuation of Collection and Analysis of Streamflow Data FY24 |
| HR-296 | Iowa Local Technical Assistance Program FY24 |
| TR-375 | Travel to TRB for City & County Engineers |
| TR-783 | Additional Funding Improving Performance of Granular Roadways |
| TR-784 | Additional Funding Iowa's Pavement Preservation Guide |
| TR-799 | Base Stabilization of IA Granular Roads using recycled Plastics Year 3 |
| TR-817 | Additional Funding Central Iowa Expo Pavement Projects: Performance Assessment |
| TR-820 | Additional Funding Performance Monitoring of Two-Course Bridge Deck Utilizing Ultra-High-Performance Concrete |
| TR-823 | Effectiveness and Guidance of Aggressive Rehabilitation of Gravel Roads |
| TR-824 | Develop & Field Test Non-Proprietary Ultra-High Performance Concrete for New Bridge Decks |
| TR-825 | Iowa Highway Research Board 75 Year Anniversary History |
| TR-826 | Development of Quality Standards for Inclusion of High Recycled Asphalt Pavement Content in Asphalt Mixtures – Phase V |
| TR-827 | Effect of Vibration on Concrete Mixtures |
| TR-828 | Low-Cost Safety Strategies for Unpaved Rural Roads |
| TR-829 | Use of Roller Compacted concrete for Paved Shoulders |
| TR-830 | Best Practices for Joint Sawing |
| TR-831 | Qualitative Relationship between Increased Legal Loads & Reduced Bridge Service Life |
| TR-832 | Implementation of AASHTOWare BrR Program for Rating Iowa Bridges |

## PROJECTS COMPLETED DURING FY 2024

The following projects were presented to the Iowa Highway Research board during FY 2024 and project Final Reports were approved. Links to the available final reports are provided.

| Project Number | Title |
|---|---|
| TR-710 | Partially Grouted Revetment for Low Volume Road Bridges https://publications.iowa.gov/48477/ |
| TR-722 | Increase Service Life at Bridge Ends Through Improved Abutment & Approach Slab Details & Water Management Practices https://publications.iowa.gov/46842/ |
| TR-753 | Evolution of Otta Seal Surfacing for Low-Volume roads in Iowa: Phase II https://publications.iowa.gov/48091/ |
| TR-759 | Unticketing: An Upside-Down Approach to Speed Compliance https://publications.iowa.gov/48479/ |
| TR-774 | Cold In-Place Recycling Project Selection & Guidance for Iowa Roadways https://publications.iowa.gov/45618/ |
| TR-777 | Development of a Smart Phone Based Road Performance Data Collection Tool https://publications.iowa.gov/49435 / |
| TR-780 | Advanced Testing & Characterization of Iowa Soils & Geomaterials https://publications.iowa.gov/48095/ |
| TR-788 | Mitigation of Chloride-Induced Corrosion Through Chemisorption https://publications.iowa.gov/48196/ |
| TR-795 | Next Generation Life-Cycle Cost Analysis Tool for Bridges in Iowa-Phase III https://publications.iowa.gov/46691/ |
| TR-800 | Helical Pile Foundation Implementation for Bridge Structures https://publications.iowa.gov/46843/ |

## STATE TRANSPORTATION INNOVATION COUNCIL

Since 2015, the Iowa Highway Research Board serves as the *State Transportation Innovation Council* for the State of Iowa. The Federal Highway Administration (FHWA) *State Transportation Innovation Council* (STIC) Incentive program provides resources to help STICs foster a culture for innovation and make innovations standard practice. Through the program, funding up to $125,000 of STIC Incentive Federal Funding is awarded to the State per Federal fiscal year. This funding is available to support or offset the costs of standardizing innovative practices for Iowa's transportation agencies. STIC Incentive funding may be used to conduct internal assessments; build capacity; develop guidance, standards, and specifications; implement system process changes; organize peer exchanges; offset implementation costs; or conduct other activities the STIC identifies to address innovation implementation goals and to foster a culture for innovation or to make an innovation a standard practice in the state. The requirements for eligibility of a project or activity are:

- The project must have a statewide impact in fostering a culture for innovation or in making an innovation a standard practice.
- The project/activity for which incentive funding is requested must align with innovation goals.
- The project/activity must be eligible for Federal-aid assistance and adhere to applicable federal requirements.
- The proposed project/activity must be started as soon as practical (preferably within 6 months, but no later than 1 year) after notification of approval for STIC Incentive funding and the funds must be expended within 2 years.

The following projects have been initiated through the STIC Incentive Fund program for the State of Iowa. Links to final reports are available for completed projects:

2014, "Design and performance verification of a bridge column/footing/pile system for accelerated bridge construction" http://publications.iowa.gov/32763/

2014, "Develop an implementation plan for using 3D tools for structural detailing" https://iowadot.gov/bridge/3dmodelworkshop

2015, "Technical guidance and training on the implementation of a self-cleaning culvert technology" http://publications.iowa.gov/27298/

2015, "Expand the use of mobile devices for e-Construction in field inspection applications"

2016, "Expand the use of mobile devices for e-Construction in field inspection applications"

2016, "Innovations in Transportation Conference"

2016, "Deployment of Iowa DOT Traffic Operations Open Data Service" http://publications.iowa.gov/27382/

2017, "In Situ Modulus Measurement Using Automated Plate Load Testing (APLT) to Support the Implementation of Pavement Mechanistic-Empirical (ME) Design" https://publications.iowa.gov/30754/

2018, “Virtual Reality Implementation for Public Engagement” https://publications.iowa.gov/49568/

2018. “Workshop to improve NEPA with Updated Red Book “

2019, “Updating Statewide Design Guidance with Complete Streets Considerations” https://publications.iowa.gov/42528/

2020, “Evaluating Electrical Resistivity as a Procedure to Aid in Characterizing Subsurface Conditions”

2021, “Development of Digital As-Built: Incorporating As-Built Information into the I-80/I-380 Building Information Model (BIM) for Use in Future Asset Management Applications” https://publications.iowa.gov/41870/

2021, “eTicketing: Implementation in Rural Areas”

2021, “Guidebook for Application of Polymer-modified Asphalt Overlays: from Decision-Making to Implementation” https://publications.iowa.gov/49863/

2021, “UHPC Preservation and Repair: Peer Exchange with Iowa DOT”

2022, “Pilot Hyperflow in the City of Dubuque for Signal Performance Assessment”

2022, “Peer Exchange for Bridge Digital Delivery”

2023, “Advance the use of Bridge Rating Software for Local Public Agencies’s”

2023, “Advancing Transportation Life-Cycle Digital Delivery”

2023, “Asset Management Tool for IA County Engineers – Unpaved Granular Road Modulus”

2024, “Advanced Digital As-Builts for Asset Management and Load Rating Reference”

2024, “Implementing a Reliable Concrete Testing Method for Concrete”