ANNUAL REPORT

Iowa Highway Research Board
Research and Development Activities
FY 2023

DECEMBER 2023

IOWA DOT

ANNUAL REPORT
OF
IOWA HIGHWAY RESEARCH BOARD
RESEARCH AND DEVELOPMENT ACTIVITIES

FOR THE
FISCAL YEAR ENDING JUNE 30, 2023

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

TRANSPORTATION DEVELOPMENT DIVISION
IOWA DEPARTMENT OF TRANSPORTATION
AMES, IOWA 50010

DECEMBER 2023

TABLE OF CONTENTS

Page

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 FY2023" 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, 2023. It is also a report on projects completed during the fiscal year beginning July 1, 2022 and ending June 30, 2023. 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 FY23 is listed in Tables I and II.

The Research Board held several regular meetings during the period from July 1, 2022, through June 30, 2023. 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 - 2022 IOWA HIGHWAY RESEARCH BOARD

Member	Term Expires	Alternate
James Hauber, P.E. Chief Structural Engineer, Iowa DOT 800 Lincoln Way Ames, IA 50010 (515) 239-1393 james.hauber@iowadot.us	12/31/2024	Ashley Buss, P.E. Bituminous Engineer, Iowa DOT 800 Lincoln Way Ames, IA 50010 (515) 233-7837 Ashley.Buss@iowadot.us
Dustin Skogerboe, P.E. Resident Construction Engineer 1308 Iowa Avenue West Marshalltown 50158 (641) 752-4657 Dustin.Skogerboe@iowadot.us	12/31/2024	Zach Gunsolley, P.E. Local Systems Field Engineer, Western Region 800 Lincoln Way Ames, IA 50010 (515) 250-0354 Zach.Gunsolley@iowadot.us
Jeff De Vries, P.E. Materials Testing Engineer, Iowa DOT 800 Lincoln Way Ames, IA 50010 (515) 239-1237 jeff.devries@iowadot.us	12/31/2022	Daniel Harness, P.E. Design Methods Section , Iowa DOT 800 Lincoln Way Ames, IA 50010 (515) 239-1727 Daniel.Harness@iowadot.us
Clayton Burke, P.E. WZ Traffic and Safety Engineer, Iowa DOT 800 Lincoln Way Ames, IA 50010 (515) 239-1587 Clayton.burke@iowadot.us	12/31/2023	Sarah Okerlund, P.E. Local Systems Deputy Director, Iowa DOT 800 Lincoln Way Ames, IA 50010 (515) 239-1291 sarah.okerlund@iowadot.us
Rudy Koester, P.E. Public Works Director, City of Waukee 805 University Avenue Waukee, IA 50263 (515) 978-7388 rkoester@waukee.org	12/31/2023	Matt Cox, P.E. Public Works Director, City of Council Bluffs 209 Pearl Street Council Bluffs, IA 51503-0826 (712) 328-4635 mcox@councilbluffs-ia.gov
Ronald Knoche, P.E. Director of Public Works, Iowa City 410 E. Washington Street Iowa City, IA 52240-1825 (319) 356-5138 Ron-Knoche@iowa-city.org	12/31/2024	John Joiner, P.E. Public Works Director, City of Ames 515 Clark Ave Ames, IA (515) 239-5165 john.joiner@cityofames.org
Allen Bradley, P.E. The University of Iowa – Dept. Chair of CEE 4105 Seamans Center Iowa City, IA 52242 (319) 335-6117 allen-bradley@uiowa.edu	----------	Paul Hanley The University of Iowa – Dept. of CEE 4105 Seamans Center Iowa City, IA 52242 (319) 335-8137 paul-hanley@uiowa.edu
David Sanders, P.E. - Vice Chair Iowa State University, Dept. Chair of CCEE 390 Town Engineering Bldg. Ames, IA 50011 (515) 294-8044 sandersd@iastate.edu	----------	Omar Smadi Iowa State University, Associate Professor, CCEE 2711 S. Loop Drive, Suite 4700 Ames, Iowa 50010-8664 (515) 294-8103 smadi@iastate.edu

Member	Term Expires	Alternate
Wade Weiss, P.E. Greene County Engineer 114 N. Chestnut Street Jefferson, IA 50129 (515) 386-5650 wweiss@greenecounty.iowa.gov	---------- TRB Rep	Jacob Thorius, P.E. Washington County Engineers Office 210 W Main St., Ste. 2 Washington, IA, 52353-1723 (319) 653-7731 thorius@co.washington.ia.us
Taylor Roll, P.E. Hardin County Engineer 708 16th Street Eldora, IA 50627 (641) 858-5058 troll@hardincountyia.gov	12/31/2023 District 1	Jamie Johll, P.E. Webster County Engineer 703 Central Ave, Suite 3 Fort Dodge, IA 50501-3895 (515) 576-3281 jjohll@webstercountyia.org
Joel D. Fantz, P.E. Fayette County Engineers Office 114 N. Vine Street West Union, IA 52175 (563) 422-3552 jfantz@co.fayette.ia.us	12/31/2022 District 2	Adam Clemons, P.E. Wright County Engineer 416 5th Ave SW Clarion, IA 50525-0269 (515) 532-3597 aclemons@co.wright.ia.us
William Rabenberg, P.E. Clay County Engineer 300 W 4th St #5 Spencer, IA 51301-3806 (712) 262-2825 wrabenberg@claycounty.iowa.gov	12/31/2024 District 3	Bret Wilkinson, P.E. Buena Vista County Engineer 215 East 5th Street /PO Box 368 Storm Lake, IA 50588-0368 (712) 749-2540 bwilkinson@bvcountyiowa.com
Mitchel Rydl, P.E. Audubon County Engineer 2147 Highway 71 Audubon, IA 50025-7444 (712) 563-4286 mrydl@audubooncountyia.gov	12/31/2023 District 4	Trent Wolken, P.E. Cass County Engineer 5 W 7th St Atlantic, IA 50022 (712) 243-2442 twolken@casscoia.us
Andrew McGuire, P.E. - Chair Keokuk County Engineer 1301 East Jackson Street Sigourney, Iowa 52591 (641) 622-2610 engineer@keokukcountyia.com	12/31/2022 District 5	Brad Skinner, P.E. Appanoose County Engineer 1200 HWY 2 West Centerville, IA 52544 (641) 856-6193 bskinner@appanoosecounty.net
Derek Snead, P.E. Jones County Engineer 19501 Highway 64 East Anamosa, IA 52205-0368 (319) 462-3785 derek.snead@jonescountyiowa.gov	12/31/2024 District 6	Angela Kersten, P.E. Scott County Engineer 950 E. Blackhawk Trail Rd. Eldridge, IA 52748 (563) 326-8640 engineer@scottcountyiowa.gov

Table II - 2023 IOWA HIGHWAY RESEARCH BOARD

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

sandersd@iastate.edu

smadi@iastate.edu

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

RESEARCH AND DEVELOPMENT PROJECTS

Proposals for research, development, implementation, and engineering studies are reviewed by the Iowa Highway Research Board. Expenditure of research and development 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, 2023. Total expenditure was $2,686,984.51.

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	$ 164,680.00	$ 49,229.25	$ 26,152.00	$ 240,061.25
HR-296	Iowa Local Technical Assistance Program (LTAP)	$ 71,468.10	$ 89,335.17	$ 17,867.02	$ 178,670.29
HR-1027	Iowa Secondary Road Research Support		$ 141,110.01		$ 141,110.01
TR-375	Transportation Research Board Education for County Engineers		$2,751.75		$4,682.72
TR-701	Evaluation of the Use of Link Slabs in Bridge Projects			$ 3,334.19	$ 3,334.19
TR-710	Partially Grouted Revetment for Low Volume Road Bridges		$ 9,480.56		$ 9,480.56
TR-712	Evaluate, Modify and Adapt the Concrete Works Software for Iowa's Use		$ 73,476.05		$ 73,476.05
TR-731	Improving Concrete Patching Practices In Iowa Roadways			$ 1,800.00	$ 1,800.00
TR-738	Shrinkage and Temperature Forces in Frame Piers		$ 9,004.96	$ 14,999.99	$ 24,004.95
TR-739	Limitations for Semi-Integral Abutment Bridges			$ 435.98	$ 435.98
TR-743	Field Demonstration of an Innovative Box Beam Connection		$ 21,171.66	$ 9,552.94	$ 30,724.60
TR-745	Development of Operations Management System for Iowa Secondary Road Departments		$ 193,957.48		$ 193,957.48
TR-749	Impact of Curling & Warping on Concrete Pavement Systems-Phase I			$ 11,085.71	$ 11,085.71
TR-752	Validation of Gyratory Mix Design in Iowa Phase II		$ 2,288.05		$ 2,288.05
TR-753	Evaluation of Otta Seal Surfacing for Low-Volume Roads in Iowa - Phase II		$ 54,134.07		$ 54,134.07
TR-759	Un-Ticketing: An Upside-Down Approach to Speed Compliance	$ 14,942.90	$ 5,571.82		$ 20,514.72
TR-762	Development of Pavement Structural Analysis Tool for Iowa Local Roads		$ 22,531.05		$ 22,531.05

TR-763	Design of Drilled shafts in Iowa - Validation and Design Recommendations		$ 1,451.49		$ 1,451.49
TR-764	Use of Concrete Grinding Residue as a Soil Amendment		$ 10,629.91		$ 10,629.91
TR-766	Evaluation of Galvanized and Painted - Galvanized Steel Piling		$ 2,449.44		$ 2,449.44
TR-771	Performance Evaluation of Very Early Strength Latex Modified Concrete - Phase III		$ 22,176.39		$ 22,176.39
TR-772	Performance Evaluation of Polyester Polymer Concrete Overlays Continuation - Phase II		$ 16,635.00		$ 16,635.00
TR-774	Cold In-Place Recycling Project Selection and Guidance for Iowa Roadways		$ 287.83		$ 287.83
TR-777	Development of a Smartphone-Based Road Performance Data Collection Tool		$ 66,109.69		$ 66,109.69
TR-779	Evaluation of Performance of A709 Grade QST 65 Steel			$ 6,497.14	$ 6,497.14
TR-781	Development of Approaches to Quantify Superloads and Their Impacts on the Iowa Road Infrastructure System		$ 125,163.38		$ 125,163.38
TR-782	Guide to Remediate Bridge Deck Cracking		$ 7,500.00	$ 17,500.00	$ 25,000.00
TR-783	Improving the Performance of Granular Roadways with Organosilanes	$ 22,005.73	$ 161,193.09		$ 183,198.82
TR-784	Iowa's Pavement Preservation Guide	$ 20,687.96	$ 36,424.77		$ 57,112.73
TR-787	Utilization of Ground Tire Rubber for Energy Efficient Pavements			$ 7.00	$ 7.00
TR-788	Mitigation of Chloride-Induced Corrosion through Chemisorption	$ 17,767.16	$ 37,870.99		$ 55,638.15
TR-789	Accelerated Bridge Construction (ABC) Methodology for Integral Abutments	$ 23,636.74			$ 23,636.74
TR-791	Bridges Designed for Minimum Maintenance	$ 50,500.00			$ 50,500.00
TR-792	Assessing the Flood Reduction Benefits of On-Road Structures	$ 148,465.74			$ 148,465.74
TR-793	Superabsorbent Polymers In Concrete to Improve Durability		$ 17,418.40		$ 17,418.40
TR-794	Iowa Public Works Service Bureau Phase II	$ 35,356.47	$ 102,664.40		$ 138,020.87
TR-795	Next Generation Life-Cycle Cost Analysis Tool for Bridges in Iowa - Phase II		$ 33,006.31		$ 33,006.31
TR-796	Iowa Granular Road Structural Design Tool	$ 65,130.07			$ 65,130.07
TR-797	Feasibility of Granular Road and Shoulder Recycling Phase II	$ 37,185.26			$ 37,185.26
TR-799	Base Stabilization of Iowa Granular Roads Using Recycled Plastics	$ 61,342.41			$ 61,342.41
TR-800	Helical Pile Foundation Implementation for Bridge Structures	$ 26,065.60	$ 15,868.27	$ 1,708.56	$ 43,642.43
TR-801	Accelerated Bridge Construction (ABC) Methods for Pile-Footing-Column Systems using Lightweight Precast Members	$ 34,154.05	$ 27,262.35		$ 61,416.40
TR-802	Beam End Repair for Prestressed Concrete Beams – Phase II	$ 19,781.49			$ 19,781.49
TR-803	Accelerated Bridge Construction (ABC) Methodology for Integral Abutments	$ 18,979.55			$ 18,979.55
TR-805	Design of Self-Cleaning Solutions for Mitigating Sedimentation at Twin and Single Box Culvers	$ 35,902.49			$ 35,902.49

TR-806	Ultra High-Performance Concrete Repair of Steel Bridge Girder Ends	$ 21,523.16			$ 21,523.16
TR-807	Beneficial Use of Iowa Waste Ashes in Concrete through Carbon Sequestration	$ 24,000.00	$ 4,330.75		$ 28,330.75
TR-808	A Sustainable Air-entraining and Internal Curing Agent	$ 12,949.85			$ 12,949.85
TR-809	Introducing Smart Materials in Granular Roadway and Pavement Foundation Systems for Mitigating Freeze-Thaw Damage	$ 30,000.00	$ 7,815.94		$ 37,815.94
TR-810	Use of Iowa Eggshell Waste as Bio-Cement Materials in Pavement and Gravel Road Geo-Material Stabilization	$ 29,861.25	$ 7,114.97		$ 36,976.22
TR-811	Changes to Procurement of Short Span Box Beam Bridge Standards		$ 34,457.85		$ 34,457.85
TR-812	County Bridge Standards for Single Short Span CIP Slab Bridges		$ 14,913.30	$ 2,092.80	$ 17,006.10
TR-813	An Economical and Sustainable Dust Suppressant for Gravel Roads	$ 4,394.72			$ 4,394.72
TR-814	Concentration Preserving Deicing Solutions for Higher Ice Melting	$ 26,186.45			$ 26,186.45
TR-816	Field Performance of Fiber-Reinforced Concrete Overlays	$ 16,611.98			$ 16,611.98
TR-817	Central Iowa Expo Pavement Project: Performance Assessment	$ 18,328.40	$ 22,910.50	$ 1,821.27	$ 43,060.17
TR-818	Development of Guidance for Roadway Cross Section Re-Configuration Decisions	$ 8,194.13			
TR-820	ISU - Performance Monitoring of Two-Course Bridge Deck Utilizing Ultra High Performance Concrete	$ 22,497.04			$ 22,497.04
TR-821	County Bridge Standards for Single Span Concrete Slabs - Final Design (Phase 2)		$ 39,655.35		$ 39,655.35
TR-822	WJE - Performance Monitoring of Two-Course Bridge Deck Utilizing Ultra High Performance Concrete	$ 178.96			$ 178.96
	Project Total	$ 1,082,777.66	$1,489,352.25	$ 114,854.60	$ 2,686,984.51

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 2023 financial summary is:

Beginning Balance 7-1-22		$3,268,147.20
Receipts		
State Road Use Tax Fund (1½% of receipts)	$1,979,051.10	
Federal Aid Secondary (1½% of receipts)	0.00	
Research Income	$ 0.00	
Sub-Total	$1,979,051.10	
Total Funds Available		$1,979,051.10
Obligation for Expenditures		
Obligated for Contract Research	$1,097,684.35	
Non-Contract Engineering Studies	$ 0.00	
Total Expenditures		$1,097,684.35
Ending Balance 6-30-23		$4,149,513.95

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 2022 financial summary is:

Beginning Balance (7-1-22)	$5,958.00
FY23 Street Research Funding	$200,000.00
Total Funds Available for Street Research	$205,958.00
Total Obligated for Expenditure FY23	($84,175.00)
Ending Unobligated Balance 6-30-23	$136,638.10

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 FY23 was $ 1,082,777.66 and the estimate for obligations for FY24 is $2,000,000.

PROJECTS APPROVED DURING FY 2023

The following IHRB projects were approved in FY 23.

HR-140	Continuation of Collection and Analysis of Streamflow Data 2023-2025
HR-296	Iowa Local Technical Assistance Program 2023 - 2025
TR-815	Advancing the Design of Flexible Ancillary Structures
TR-816	Field Performance of Fiber-Reinforced Concrete Overlays
TR-817	Central Iowa Expo Pavement Project: Performance Assessment
TR-818	Development of Guidance for Roadway Cross Section Re-Configuration Decisions
TR-819	New and Updated Statewide Historic Bridge Survey
TR-820	Performance Monitoring of Two-Course Bridge Deck Utilizing Ultra-High-Performance Concrete
TR-821	County Bridge Standards for Single Span Concrete Slabs – Final Design (Phrase 2)
TR-822	Evaluation of RePLAY for Mainline, Shoulders, and Rumbles, Phase II Study: Proprietary Bio-based Fog Sealer and Rejuvenator Reapplication in Clinton County
TR-823	Effectiveness and Guidance of Aggressive Rehabilitation of Gravel Roads

11 Projects Initiated

PROJECTS COMPLETED DURING FY 2023

The following projects were presented to the Iowa Highway Research board during FY 2023 and project Final Reports were approved. Links to the available final reports are provided.

Project Number	Title
TR-701	Evaluation of the Use of Link Slab in Bridge Projects
	https://publications.iowa.gov/45296/
TR-731	Improving Concrete Patching Practices on Iowa Roadways
	https://publications.iowa.gov/42532
TR-738	Shrinkage and Temperature Forces in Frame Piers
TR-743	Field Demonstration of an Innovative Box Beam Connection
	https://publications.iowa.gov/44704/
TR-749	Impact of Curling and Warping on Concrete Pavement: Phase II
	https://publications.iowa.gov/44705/
TR-752	Implementation of Recommendations for Eliminating Longitudinal Median Joints in Wide Bridges
	http://publications.iowa.gov/41332
TR-762	Development of Pavement Structural Analysis Tool (PSAT) for Iowa Local Roads
	https://publications.iowa.gov/44433/
TR-764	Use of Concrete Grinding Residue as a Soil Amendment
TR-766	Evaluation of Galvanized and Painted Galvanized Steel Piling
	https://publications.iowa.gov/41871
TR-779	Evaluation of the Performance of A709 Grade 65 QST Bridge
	https://publications.iowa.gov/41872
TR-782	Guide to Remediate Bridge Deck Cracking
	https://publications.iowa.gov/42533/
TR-811	Update to Standards for Single Span Prefabricated Bridges
	https://publications.iowa.gov/42834/
TR-812	Phase 1: Development of County Bridge Standards for Single Span Concrete Slab Bridges
	https://publications.iowa.gov/41873
TR-817	Central Iowa Expo Pavement Project: Performance Assessment Phave IV - Interim Report
	https://publications.iowa.gov/44706/

14 Projects Completed and Approved

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 $100,000 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/

2019, "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”

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”

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”