OKLAHOMA
Transportation

State Planning and Research Work Program
FFY 2024
(October 1, 2023 to September 30, 2024)

Part 1
Planning

Part 2
Research

Prepared by:
Oklahoma Transportation
in cooperation with
US Department of Transportation
Federal Highway Administration

October 2023

Executive Summary

This document describes the Federal Fiscal Year (FFY) 2024 State Planning and Research Work Program for the Oklahoma Department of Transportation (ODOT). This program is prepared and submitted according to provisions of Title 23, United States Code, regulated under 23 CFR Part 420. Part 1 of the work program describes the Planning and Policy Branch and Part 2, the Office of Research and Implementation activities, as well as, national pooled fund studies. The work program is developed and updated annually in cooperation with the Federal Highway Administration.

Planning activities to be conducted in FFY 2024 include data collection, data analysis, data reporting, and planning coordination. Oklahoma Transportation continues to build upon the permanent traffic count inventory. This radar inventory technology allows for better decision making and improves the safety of the Oklahoma Transportation workforce as well as the traveling public. As Oklahoma Transportation progresses through a modernization effort, Planning activities have been managed by different departments in FFY 2023 than in previous years. Funding for Part 1 of the work plan is approximately $14 million dollars in FFY 2024.

Research activities for FFY2024 will include six continuing research projects and four new research projects. Two continuing implementation projects for a total of twelve research projects. The ORI Branch will begin supporting SPTC UTC activities, with task order-based projects that SPR funds will be providing a total of $1 Million dollars. Our pooled fund studies have continued to provide exceptional knowledge through participation in 17 National Pooled Fund projects, two of which Oklahoma acts as the lead state. Pooled Fund participation of contributed participation totals $1.9 Million dollars. FHWA and ODOT SPR funds are used together to support over $600 Thousand Dollars toward the Local Technical Assistance Program (LTAP) in collaboration with Oklahoma State University. All of these projects & pooled funds together total a large amount of funding towards Research in the amount of $5.4 Million dollars.

The detailed projects for each section are listed by item number and include a description of the purpose and scope of the project, and the proposed activities for the upcoming fiscal year (FFY 2024). In addition, the Financial Section shows the amount programmed for the FFY 2023 in the last work program, and the projected costs for the upcoming fiscal year (FFY 2024). A detailed Annual Performance and Expenditure Report of accomplishments and expended funds for the current FFY 2023 will be completed and submitted for FHWA review by the end of December 2023.

U.S. Department of Transportation
Federal Highway Administration

Oklahoma Division

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September 28, 2023

In Reply Refer To:
HDA-OK

Tim Gatz
Secretary of Transportation
Oklahoma Department of Transportation
200 NE 21st Street
Oklahoma City, OK 73105

The Federal Highway Administration - Oklahoma Division (FHWA-OK) has completed its review of the proposed Fiscal Year 2024 State Planning and Research (SPR) Part I (Planning) and Part II (Research) Work Programs and Budget for the Oklahoma Department of Transportation (ODOT) as submitted by Ms. Beckie Lyons on August 22, 2023. Based on our review we hereby approve the FY 2024 SPR Part I & Part II work programs and budgets.

Following our review, the federal share of FY 2024 SPR Part I funding has been authorized in FMIS, and the FY 2024 SPR Part II funds have similarly been authorized. The total Research funding includes the annual Local Technical Assistance Program (LTAP) funding that was authorized separately in FMIS.

We commend ODOT for committing more than the required federal minimum (25%) in statewide matching funds for Research-related activities in FY 2024. ODOT has also maintained its support for Local Technical Assistance Programs (LTAP) administered by the Center for Local Government Technology (CLGT) at Oklahoma State University (OSU). Overall, the FY 2024 SPR – Part I budget grew by 5% over the previous year, including increases in GIS, Traffic and Pavement Data, while funding for Safety, Urban Planning, and non HPMS-related activities was unchanged or decreased slightly over the same period. These fluctuations are consistent with current ODOT priorities as reflected in project task descriptions within the SPR document.

The distribution of FY 2024 Research funding is well balanced among the major work elements, including Pooled Fund Studies, New and Continuing Research, New and Continuing Implementation Projects, support for Southern Plains Transportation Center (SPTC) – part of the USDOT University Transportation Center (UTC) programs, and General Research activities and programs initiated by ODOT.

Thank you for developing the FY 2024 State Planning & Research Work Program and budget. We appreciate your cooperation, and we look forward to our collaboration to implement all aspects of this work program. We also await the submittal of the Annual Performance and Expenditure Report (APER), which represents the conclusion of projects and activities associated with the FY 2023 SPR Work Program.

Please contact Mr. Isaac N Akem at (405) 254-3343 for any questions related to SPR Part I – Planning. Mr. Waseem Fazal can be contacted for SPR Part II at (405) 254-3332 for any questions or comments related to SPR Part II – Research, work program.

Sincerely,

BASHARAT SIDDIQI

Digitally signed by BASHARAT SIDDIQI
Date: 2023.09.28 15:51:37 -05'00'

Basharat Siddiqi,
Division Administrator

cc: Dawn Sullivan, ODOT
Joni Seymore, ODOT
Beckie Lyons, ODOT
Waseem Fazal, FHWA Oklahoma Division
Isaac Akem, FHWA Oklahoma Division
Carl Selby, FHWA Oklahoma Division

Table of Contents

SP&R Part 2 Items

PARTICIPATING POOLED FUNDS

State Planning and Research Program

Management October 1, 2023

Deputy Director

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SPR Part 1 – Planning

GIS and Data Management Projects
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System and Program Projects
Angel Gonzalez, P.E.
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Urban/Regional Transportation /Long Range Planning and Other Projects
Laura Chaney – Planning Branch Manager
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OKLAHOMA DEPARTMENT OF TRANSPORTATION

State Planning & Research (SPR) Financial Summary Sheet Federal Fiscal Year 2024

Program Period October 1, 2023 through September 30, 2024

SPR Part 1 - Planning, SPRY-0010(092)PL, JP# 01946(89)

A. Estimated Costs

SPR Part 1 - Planning	$	14,033,500.00
Total Estimated Costs	**$**	**14,033,500.00**

B. Available Funds

SPR Part 1 Unobligated Balance	$	15,182,739.00
Total Available Funds	**$**	**15,182,739.00**

C. Proposed Financing

Type	Federal	Rate	State	Local		Total
SPR Part 1	$14,033,500	80%	SMC	$0.00	$	14,033,500.00
Total Proposed Financing JP # 01946(89)					**$**	**14,033,500.00**

SPR Part 2 - Research, SPRY-0010(093)RS, JP# 01946(90)

A. Estimated Costs

SPR Part 2 - Research	$	3,191,000.00
LTAP - SPR	$	307,044.00
Total SPR Pooled Fund Commitments	$	1,994,652.00
Total Estimated Cost	**$**	**5,492,696.00**

B. Available Federal Funds

SPR Part 2 Unobligated Balance	**$**	**4,343,457.00**
SPR Part 1 Unobligated Balance (remainder)	**$**	**1,149,239.00**
Total Available Funds	**$**	**5,492,696.00**

C. Proposed Financing

Type	Federal	Ratio	State	Local		Total
SPR Part 2	$5,492,696	80%	SMC	$0.00		
Total Proposed Financing					**$**	**5,492,696.00**

SPR Part 1 & Part 2 Totals

Total SPR Unobligated Balance	**$**	**19,497,196.00**
Total SPR Part 1 and Part 2 Estimated Costs	**$**	**17,502,544.00**
Total SPR Pooled Fund Commitments	**$**	**1,994,652.00**
Total SPR Research Funding	**$**	**3,498,044.00**
Total SPR Research & Pooled Fund Commitments	**$**	**5,492,696.00**
% of SPR Funds for Research		**28%**

***Chart updated 9/18/2023**

SP&R PART 1 - Planning, SPRY-0010(092)PL, JP# 01946(89)

FEDERAL FISCAL YEAR 2024

		PROGRAMMED				
GIS AND DATA MANAGEMENT		**SP&R**	**State**	**PL**	**Local**	**Total**
1101	Continuing Inventory Data Studies	$604,000.00	$0.00	$0.00	$0.00	$604,000.00
1102	Highway Performance Monitoring System	$136,000.00	$0.00	$0.00	$0.00	$136,000.00
1103	Geographical Information Management System for Transportation	$2,659,000.00	$0.00	$0.00	$0.00	$2,659,000.00
	TOTAL GIS AND DATA MANAGEMENT	**$3,399,000.00**	**$0.00**	**$0.00**	**$0.00**	**$3,399,000.00**
TRAFFIC AND DATA COLLECTION						
1301	Coverage Count Program	$735,000.00	$0.00	$0.00	$0.00	$735,000.00
1302	Permanent Traffic Count Program	$1,585,000.00	$0.00	$0.00	$0.00	$1,585,000.00
1304	Purchase of Traffic Count Equipment	$1,460,000.00	$0.00	$0.00	$0.00	$1,460,000.00
1305	Vehicle Classification Counting Program	$610,000.00	$0.00	$0.00	$0.00	$610,000.00
1308	Traffic Monitoring System	$700,000.00	$0.00	$0.00	$0.00	$700,000.00
1309	Traffic Analysis and Projections	$170,000.00	$0.00	$0.00	$0.00	$170,000.00
	TOTAL TRAFFIC AND DATA COLLECTION	**$5,260,000.00**	**$0.00**	**$0.00**	**$0.00**	**$5,260,000.00**
ECONOMIC, SAFETY, AND FISCAL STUDIES						
1405	Motorcycle Safety and Education Program	$62,000.00	$0.00	$0.00	$0.00	$62,000.00
1406	Bridge Health Monitoring	$0.00	$0.00	$0.00	$0.00	$0.00
	TOTAL ECONOMIC, SAFETY AND FISCAL STUDIES	**$62,000.00**	**$0.00**	**$0.00**	**$0.00**	**$62,000.00**
SYSTEMS AND PROGRAMS						
1604	Pavement Management Systems	$2,055,000.00	$0.00	$0.00	$0.00	$2,055,000.00
	TOTAL SYSTEMS AND PROGRAMS	**$2,055,000.00**	**$0.00**	**$0.00**	**$0.00**	**$2,055,000.00**
URBAN / REGIONAL TRANSPORTATION PLANNING						
1700	General Urban Transportation Planning Activities	$75,000.00	$0.00	$0.00	$0.00	$75,000.00
1701	Oklahoma City Area Regional Transportation Study	$40,000.00	$0.00	$2,038,402.00	$407,680.00	$2,486,082.00
1702	Tulsa Metropolitan Area Transportation Study	$40,000.00	$0.00	$1,600,000.00	$320,000.00	$1,960,000.00
1703	Lawton Metropolitan Area Transportation Study	$30,000.00	$0.00	$350,000.00	$69,229.00	$449,229.00
1704	Chisholm Trail Metro Planning Organization	$40,000.00	$0.00	$100,000.00	$19,500.00	$159,500.00
1709	Ft. Smith Transportation Study	$20,000.00	$0.00	$29,062.00	$5,687.00	$54,749.00
1710	Regional Transportation Planning	$790,000.00	$0.00	$0.00	$178,750.00	$968,750.00
	TOTAL URBAN TRANSPORTATION PLANNING	**$1,035,000.00**	**$0.00**	**$4,117,464.00**	**$1,000,846.00**	**$6,153,310.00**
LONG RANGE PLAN / OTHER PLANNING ACTIVITIES						
1719	Statewide Transportation Improvement Program	$375,000.00	$0.00	$0.00	$0.00	$375,000.00
1720	Statewide Travel Demand Model	$115,000.00	$0.00	$0.00	0,00	$115,000.00
1730	Connected and Autonomous Vehicle (CAV)	$78,500.00	$0.00	$0.00	$0.00	$78,500.00
1902	Statewide Long Range Transportation	$1,015,000.00	$0.00	$0.00	$0.00	$1,015,000.00
1904	Air Quality Transportation Planning	$15,000.00	$0.00	$0.00	$0.00	$15,000.00
1905	Freight Planning	$12,000.00	$0.00	$0.00	$0.00	$12,000.00
1913	Active Transportation Planning	$250,000.00	$0.00	$0.00	$0.00	$250,000.00
1914	Transportation Asset Management Plan	$12,000.00	$0.00	$0.00	$0.00	$12,000.00
1915	Performance Measurement Coordination	$350,000.00	$0.00	$0.00	$0.00	$350,000.00
	TOTAL OTHER	**$2,222,500.00**	**$0.00**	**$0.00**	**$0.00**	**$2,222,500.00**
	GRAND TOTAL SPRY-0010(92)PL	**$14,033,500.00**	**$0.00**	**$4,117,464.00**	**$1,000,846.00**	**$19,151,810.00**

Final 8.9.2023

1101 Continuing Inventory Data Studies

PURPOSE AND SCOPE: Catalog physical characteristics of statewide public roads; which are used to update the Department's ESRI Roads & Highways Database. Conduct meetings with County Commissioners relating to inventory modifications. Inventory Modifications are also based on completed construction projects and County Action Reports. Use SQL queries, procedures and reports to extract inventory data to publish various mileage reports for state, federal and public needs. Maintain data for the National Network of Defense, NHS System, Control Section and Public Roads. Produce AVMT figures that will be used to calculate Annual Accident and Fatality Rates. Keep abreast of the latest technological advances through the attendance of seminars and conferences.

PROPOSED ACTIVITIES FOR FFY 2024: Incorporate technological advancements in data collection to streamline field inventory operations. Continue monitoring all County Action Reports, Highway Construction projects and continue collecting HPMS data items. Compile and publish various state and federal reports including: 2023 Certification of County Road Mileage, 2022 Oklahoma Statewide Statistics Book, 2022 HPMS Mileage and Travel Summary Tables.

FINANCIALS	Amount	Fund	Amount	Fund
Programmed Amount FFY 2023	$ 700,000	SPR	$0.00	STATE
Estimated Cost FFY 2024	$ 604,000	SPR	$0.00	STATE

CONTACT INFORMATION

Alexander Couch, Inventory Branch Manager / HPMS Coordinator, GIM II 405-446-4691

1102 Highway Performance Monitoring System

PURPOSE AND SCOPE: To collect, process, and compile data and information as needed to prepare and submit an accurate and timely HPMS submission to the Federal Highway Administration (FHWA) according to the reporting requirements established.

PROPOSED ACTIVITIES FOR FFY 2024: A HPMS sample adequacy review will be conducted and additional samples will be added in the appropriate categories. Any changes in the HPMS data structure and HPMS console interface as required by changing FHWA requirements will be implemented and tested. Field review documents will be generated and a HPMS data field review will be conducted in cooperation with the Local FHWA Division. The 2023 HPMS data submittal will be transmitted to FHWA using latest HPMS Console and will be consistent with the latest FHWA Version 8 web-based software. Prepare for the HPMS Version 9 which will be released in the near future.

FINANCIALS	**Amount**	**Fund**	**Amount**	**Fund**
Programmed Amount FFY 2023	$100,000	SPR	$0.00	STATE
Estimated Cost FFY 2024	$136,000	SPR	$0.00	STATE

CONTACT INFORMATION

Samuel Coldiron, HPMS Coordinator, GIM II 405-446-4691

1103 Geographical Information Management System for Transportation

PURPOSE AND SCOPE: To design, develop, implement and maintain a Geospatial Information Management System for Transportation (GIMS-T). The system supports transportation related decision making by producing high quality map products and reports generated from enterprise data as well as geospatial data management for various ODOT divisions. The maps convey specific topics of interest that require customer input and the use of complex GIS software. GIS services are offered to ODOT staff as well as customers outside the Department. The system utilizes aerial photography, GPS, and other sources of data. The efficient use of resources requires a considerable investment in hardware, software, and training for GIMS-T staff. New methods and software are continuously being investigated and tested in order to improve the effectiveness, efficiency, and usability of the Departments applications.

PROPOSED ACTIVITIES FOR FFY 2024: Continue to expand the Map & Data Portal and dashboards. Update Asset Inventory to current year and begin implementation of AI technology to expedite and improve Asset Inventory yearly processes. Support GIS cross-functional team via expanded staffing and software systems to assist in implementation and support of Maintenance, Traffic Safety, Environmental, Planning, Design, Project Delivery, and Traffic Data systems. Continue the ROW digitization effort. Expand software licensing and existing data-set utilization to support data driven project planning expansions. Other map products where appropriate. Continue to provide support to ODOT personnel, other state agencies and partners with map and other products to assist them in their transportation needs. Coordinate with all business units to identify needs and develop solutions that will enable them to efficiently and accurately perform their individual missions via cross-functional GIS deployment. Continue to utilize training of staff. Continue to coordinate with OTA to merge the GIS needs of both agencies.

FINANCIALS	**Amount**	**Fund**	**Amount**	**Fund**
Programmed Amount for FFY 2023	$1,500,000	SPR	$0.00	STATE
Estimated Cost for FFY 2024	$2,659,000	SPR	$0.00	STATE

CONTACT INFORMATION

Gwen Johnson, GIS Mapping & Analytics Branch Manager, 405-416-3871

1301 Coverage Count Program

PURPOSE AND SCOPE: To collect traffic data on state highways, national highways, interstates and the National Functional Classified System for establishing average daily traffic volumes. Approximately 3,300 short duration locations are counted on the highway system and 11,700 on the secondary system that includes the county road coverage and urban city street coverage in cities with populations over 5,000. State highway and interstate locations are counted on a three-year cycle twice a year along with portions of the county and city system coverage once a year. Counts collected on the highway system are incorporated into an Annual Average Daily Traffic (AADT) map published annually for distribution. Counts collected on the county and city systems are then recorded and retained for office and public use. Highway traffic maps are published for public distribution.

PROPOSED ACTIVITIES FOR FFY 2024: Continue to analyze all road systems for areas where coverage is deficient, establish new count locations as needed and retire locations that are no longer needed. Collect short duration traffic counts on the State Highway System, county off-system and small urban system in the 25 counties scheduled for FY 2024. Update GPS coordinates and site characteristics for all traffic count sites on all systems as needed. Attend seminars, conferences and workshops to keep abreast of the latest technological advances in traffic counting equipment and data collection processes.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2023	$680,000	SPR	$0.00	STATE
Estimated Cost FFY 2024	$735,000	SPR	$0.00	STATE

CONTACT INFORMATION:

Aaron Fridrich, Field Data Collection Manager, 405-567-7876

1302 Permanent Traffic Count Program

PURPOSE AND SCOPE: To collect hourly and 15 minute increment traffic data by lane for traffic monitoring design needs. There are currently 92 Automatic Vehicle Classification (AVC) and 150 radar station locations in Oklahoma. The traffic data obtained by these AVC sites are the basis for seasonal and axle factor variation as recommended for traffic monitoring in FHWA's Traffic Monitoring Guide. A biennial traffic characteristic report is generated from the data collected at these sites. Utilities provided for operational support are maintained for permanent AVC stations through accounts supplied by the contractor, at their expense.

PROPOSED ACTIVITIES FOR FFY 2024: A new TMS Radar Installation Contract was awarded to Traffic Signals Inc. in FFY 2023 to install an additional 30-90 radar sites per year statewide. Under the TMS Data Collection Connectivity Contract, the additional 30-90 radar AVC units will be brought on-line after installation. Under the TMS Maintenance and Repair Contract, existing in-ground AVC sensors will be replaced at selected locations. The TMS Site Repair Contract was reduced to $400,000 to allow some repairs at most sites as needed and data will continue to be collected by both the radar unit and the in-ground AVC sensors until such time that the in-ground sensors require excessive maintenance. At this time, the in-ground AVC site will be monitored for repairs or discontinued and the radar unit will be the sole permanent data collection mechanism. As additional radar units are installed each year, the Connectivity Contract will need to be increased minimally in order to continue to collect data and maintain the radar systems.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2023	$1,520,000	SPR	$0.00	STATE
Estimated Cost FFY 2024	$1,585,000	SPR	$0.00	STATE

CONTACT INFORMATION:

Aaron Fridrich, Field Data Collection Manager, Phone: 405-567-7876

1304 Purchase of Traffic Counting Equipment

PURPOSE AND SCOPE: To improve the efficiency of the traffic counting operation by systematic replacement of older outdated equipment and stolen or damaged equipment as well as support of increased equipment requirements resulting from expanded operations.

PROPOSED ACTIVITIES FOR FFY 2024: The proposed construction and installation of new radar traffic monitoring stations, replacement of old equipment and the purchase additional counters to outfit new personnel comprises the majority of the expenditures for FFY 2024. As older, outdated data recorders become uneconomically repairable and obsolete, timely replacement becomes vital to maintaining data integrity and continuity of operations in the permanent traffic monitoring stations and particularly the short duration count program which depends on hardware availability and continuous replacement of road tubes and accessories. 70 additional radar installations by ODOT personnel is included in Item 1304 including the purchase of radars, poles, cabinets, bases, anchors, solar panels and all associated equipment needed.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2023	$275,000	SPR	$0.00	STATE
Estimated Cost FFY 2024	$1,460,000	SPR	$0.00	STATE

CONTACT INFORMATION:

Aaron Fridrich, Field Data Collection Branch Manager, 405-567-7876

1305 Vehicle Classification Counting Program

PURPOSE AND SCOPE: To gather vehicle classification data and develop estimates of the composition of traffic on the various Functional Classifications of roadways in the state and to collect complex traffic data required for planning, traffic and design studies. Data gathered and used to facilitate these studies includes machine counts, vehicle classification counts and turning movement studies with pedestrian counts.

PROPOSED ACTIVITIES FOR FFY 2024: ODOT forces will continue the collection of ramp classification counts statewide in the 25 counties scheduled for FFY 2024.VVarious special studies, including turning movements, utilizing the Miovision scout system and volume classification counts will be conducted throughout the year providing timely data for traffic engineers, planners and designers in the department s central office division as well as for traffic engineers, construction and maintenance managers in the eight field divisions. Continue to provide resources to fulfill the requests for various types of traffic studies and produce all reports associated with those studies.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2023	$450,000	SPR	$0.00	STATE
Estimated Cost FFY 2024	$610,000	SPR	$0.00	STATE

CONTACT INFORMATION:

Aaron Fridrich, Field Data Collection Manager, 405-567-7876

1308 Traffic Monitoring System

PURPOSE AND SCOPE: To manage, estimate, report, and publish traffic data estimates as specified in the Highway Performance Monitoring System (HPMS) Manual and the Federal Highway Administration (FHWA) Traffic Monitoring Guide. The program also provides design traffic analysis and forecasts for new highways, planning functions, and improvement of the existing highways. Writing specifications, review and corrections, and approval of consultant engineering contract design traffic projects and research projects are performed as needed. Economic, environmental, and other factors of roadway improvements such as interchanges, realignments, and pedestrian structures are studied for the purpose of determining the economic and engineering feasibility of such proposals.

PROPOSED ACTIVITIES FOR FFY 2024: Traffic Monitoring System will continue the process of verifying, validating, and analyzing automatic vehicle classifiers and short-term traffic counts for AADT estimation and HPMS data submittal. Applications will continue to be researched and developed for an automated estimation process for statewide AADT. Continue assessment of proposed and existing count site locations for coverage of the functional classified roadway system. Remain informed of technological advances and current best practices through attendance of seminars, conferences, and workshops. Manage consultant contracts that help Traffic Monitoring System with data collection and data processing.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2023	$605,000	SPR	$0.00	STATE
Estimated Cost FFY 2024	$700,000	SPR	$0.00	STATE

CONTACT INFORMATION:

Cody Hamblin P.E., Traffic Division, 405-227-6425

1309 Traffic Analysis and Projections

PURPOSE AND SCOPE: To provide traffic analysis and forecasts for geometric and structural design of new highways, roadway planning functions, roadway maintenance, and improvement of existing highways. To write specifications and to review, correct, and approve consultant work for engineering contract design traffic projects as well as research projects.

PROPOSED ACTIVITIES FOR FFY 2024: Design traffic data will continue to be furnished for cities, counties, and to ODOT divisions upon approved requests. Consultant design projects as well as feasibility and justification studies will be overseen through completion. Traffic analysis and projections will be completed, as requested for all programmed planning, construction, and maintenance projects. Remain informed of technological advances through attendance of seminars, conferences, and workshops.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2023	$150,000	SPR	$0.00	STATE
Estimated Cost FFY 2024	$170,000	SPR	$0.00	STATE

CONTACT INFORMATION:

Cody Hamblin P.E., Traffic Division, 405-227-6745

1405 Motorcycle Safety & Education Program

PURPOSE AND SCOPE: The statewide motorcycle safety and education program seeks to reduce motorcycle crashes that result in fatalities and injuries. The program focuses on educating motorcyclists about safe riding habits and techniques to prevent crashes. The Oklahoma Highway Patrol (OHP), in coordination with the ODOT Traffic Engineering Division's Collision Analysis & Safety Branch, conducts motorcycle safety course and participates in education, outreach, and public awareness activities as a means of improving motorcycle user safety on the public roadways.

PROPOSED ACTIVITIES FOR FFY 2024: The Oklahoma Highway Patrol, in partnership with ODOT, will continue implementation of the state-wide motorcycle safety and education program. The program will include multiple classroom and experiential educational training sessions and public outreach and awareness. OHP will use ODOT collision data to examine program effectiveness and use variables such as age, locations, types of crash etc., to further refine program strategies.

FINANCIALS	**Amount**	**Fund**	**Amount**	**Fund**
Programmed Amount FFY 2023	$61,678	SPR	$0.00	STATE
Estimated Cost FFY 2024	$62,000	SPR	$0.00	STATE

CONTACT INFORMATION

Beckie Lyons, SPR Program Manager 405-514-1642

1604 Pavement Management System

PURPOSE AND SCOPE: To develop and implement the Department's Pavement Management System. To maintain a computer database of pavement distresses and other roadway characteristics used for the analysis of pavement condition and performance. Maintain application software necessary to analyze roadway information for pavement management. Supply data for inclusion in the Highway Performance Monitoring System (HPMS). Maintain a database indicating ratings for roadways with suggested improvements and costs.

PROPOSED ACTIVITIES FOR FFY 2024: Perform Pavement Management System collection and analysis on all NHS and SHS routes in Oklahoma as well as all non-highway samples required for HPMS. Conduct data quality testing to ensure pavement data quality. Continue refinement of analysis for deterioration curves, pavement strategies, and project optimization utilized by the pavement management software. Provide technical support for the video log software. Document Pavement Management processes by providing training for Collection, Analysis, and Reporting. Keep informed of the latest technological advances and practices by attending meeting, webinars and workshops. Proposed increase in cost for FY2024 due to new contract for pavement data collection and increases in PMS software support.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2023	$1,500,000	SPR	$0.00	STATE
Estimated Cost FFY 2024	$2,055,000	SPR	$0.00	STATE

CONTACT INFORMATION

Angel Gonzalez, P.E., Assistant Maintenance Engineer, 405-437-5688

1700 General Urban Transportation Planning

PURPOSE AND SCOPE: To coordinate transportation planning efforts which cannot be ascribed to specific transportation studies contained in the unified planning work programs of the State Planning and Research Work Program. To provide linkage between transportation planning and project development, environmental review, and other topics as needed.

PROPOSED ACTIVITIES FOR FFY 2024: Provide coordination with ODOT Central Office, Field Divisions and local, state and federal officials. Disseminate pertinent planning data and information as needed. Provide technical assistance as requested concerning transportation planning and the Infrastructure Investment andJjobs Act. Build upon staff knowledge through attendance at workshops, seminars and conferences.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2023	$75,000	SPR	$0.00	STATE
Estimated Cost FFY 2024	$75,000	SPR	$0.00	STATE

CONTACT INFORMATION

Laura Chaney, Planning Branch Manager, 405-819-3719

1701 Oklahoma City Area Regional Transportation Study

PURPOSE AND SCOPE: Assist and oversee transportation planning processes and coordination with the Association of Central Oklahoma Governments (ACOG) in the execution of the Unified Planning Work Program (UPWP), Transportation Improvement Program (TIP), and Long Range Transportation Planning (LRTP) for the Oklahoma City Area Regional Transportation Study Area (OCARTS).

PROPOSED ACTIVITIES FOR FFY 2024: Continue to implement activities in Encompass 2045 plan. An emphasis will continue to be placed on financial feasibility, public involvement and the economic and environmental impacts of transportation decisions, and performance-based planning. Continuation of the Regional Transit Authority Task Force activities. Continue utilizing the STBG-UZA evaluation criteria to reflect evolving regional goals and performance measures. Continued coordination with local governments regarding federal transportation funding opportunities. Continue work in areas of air quality, ozone reduction and environmental program planning to comply with federal transportation law. Update and maintain the TIP for FFY 2024-2027 through modifications and amendments as needed.

FINANCIALS	**Amount**	**Fund**	**Amount**	**Fund**	**Amount**	**Fund**
Programmed Amount FFY 2023	$40,000	SPR	$2,330,184	PL	$ 466,037	LOCAL
Estimated Cost FFY 2024	$40,000	SPR	$2,038,402	PL	$ 407,680	LOCAL

CONTACT INFORMATION

Laura Chaney, Planning Branch Manager, 405-819-3719

1702 Tulsa Metropolitan Area Transportation Study

PURPOSE AND SCOPE: Assist and oversee transportation planning processes and coordination with the Indian Nations Council of Governments (INCOG) in the execution of the Unified Planning Work Program (UPWP), Transportation Improvement Program (TIP), and Long Range Transportation Planning (LRTP) for the Tulsa Metropolitan Area Transportation Study Area (TMATS).

PROPOSED ACTIVITIES FOR FFY 2024: Continue data collection and monitoring of social, economic and environmental factors that directly relate to the transportation system. Address multi-modal transportation issues within the TMA aimed at maintaining a continuing, coordinated and comprehensive planning process. Responsible for preparing and maintaining the Regional Transportation Plan (RTP). Focus areas for FY 2024 will include: Implementation of the 2050 Regional Transportation Plan. Update the INCOG Local Road Safety Plan so it is fully compliant with all federal rules regarding the Safe Streets for All Program. Multi-modal connectivity and update of the 2015 GO plan for active transportation. Update and maintain the TIP for FFY 2024-2027 through modifications and amendments as needed. Continue coordinating the OZONE ALERT Program & the Clean Cities Program. Continue assisting member governments in the planning, funding and implementation of an alternative transportation system. Continue the implementation of the Transportation Alternatives (TA) program. Establish a program to best utilize the Carbon Reduction Program funds and may manage it in tandem with the TA and CMAQ programs. Develop a new Coordinated Public Transit and Human Services Transportation Plan in the second half of FY 2024.

FINANCIALS	**Amount**	**Fund**	**Amount**	**Fund**	**Amount**	**Fund**
Programmed Amount FFY 2023	$40,000	SPR	$1,554,036	PL	$310,807	LOCAL
Estimated Cost FFY 2024	$40,000	SPR	$1,600,000	PL	$320,000	LOCAL

CONTACT INFORMATION

Laura Chaney, Planning Branch Manager, 405-819-3719

1703 Lawton Metropolitan Area Transportation Study

PURPOSE AND SCOPE: Assist and oversee transportation planning processes and coordination with the Lawton Metropolitan Planning Organization (LMPO) in the Lawton Metropolitan area.

PROPOSED ACTIVITIES FOR FFY 2024: As defined in the FY 2024 UPWP Continue to monitor the consultant on Traffic Flow Studies. Rollout Zero-Emission Bus Analysis Plan for the Lawton Area Transit System. Monitor and report on performance measures and establish targets. Continue efforts working with key entities on the multi-modal transportation transfer center. Research and apply for grant opportunities for the construction of a bus transfer center. Update and maintain the FFY 2024-2027 TIP through modifications and amendments. Continue the public awareness campaign for air quality. RFP for a travel demand model consultant to aide in 2050 MTP update. Analyze pedestrian facilities to include pedestrian crossings. Study of available parking in the downtown area. Continue the bicycle safety education campaign.

FINANCIALS	Amount	Fund	Amount	Fund	Amount	Fund
Programmed Amount FFY 2023	$30,000	SPR	$192,723	PL	$38,545	LOCAL
Estimated Cost FFY 2024	$30,000	SPR	*$350,000	PL	$69,229	LOCAL

* Includes 2.5% set aside for complete streets planning activities which are 100% federally funded

CONTACT INFORMATION

Laura Chaney, Planning Branch Manager, 405-819-3719

1704 Chisholm Trail Metropolitan Planning Organization

PURPOSE AND SCOPE: Assist and oversee transportation planning processes and coordination with the Chisholm Trail Metropolitan Planning Organization (CTMPO) in the Enid Metropolitan area.

ACCOMPLISHMENTS DURING FFY 2024: Designate MPO in FY 2024 and begin addressing federal planning requirements outlined in 23 CFR 450.

FINANCIALS

	Amount	Fund	Amount	Fund	Amount	Fund
Programmed Amount FFY 2023	$0.00	SPR	$0.00	PL	$0.00	LOCAL
Estimated Cost FFY 2024	$40,000	SPR	*$100,000	PL	$19,500	LOCAL

***Includes 2.5% set aside for complete streets planning activities which are 100% federally funded**

CONTACT INFORMATION:

Laura Chaney, Planning Branch Manager, 405-819-3719

1709 Ft. Smith Transportation Study

PURPOSE AND SCOPE: Assist and oversee transportation planning processes and coordination with the Frontier Metropolitan Planning Organization in the Ft. Smith Metropolitan Area.

PROPOSED ACTIVITIES FOR FFY 2024: Frontier will continue to apply performance-based planning, take action to establish opportunities for local, regional, and statewide coordination, and advance efforts for transportation connectivity, equity and accessibility. Key activities will include: carrying out activities in the 2045 Metropolitan Transportation Plan. Continue creating bicycle and pedestrian plans for the region that will provide bicycle and pedestrian education through public outreach, training opportunities and partnerships with federal, state and local agencies. Monitoring safety needs and initiatives, Frontier will continue to evaluate crash data within the metropolitan planning area and coordinate on the use of the data to meet MAP-21 and FAST ACT performances measures with ARDOT and ODOT. Work with local governments to coordinate land use and transportation concerns. Frontier will continue to analyze socio-economic data, such as population, employment, household, and growth projections, as well as transit ridership for use in updating and improving transportation planning decision making. The MPO will continue to work in areas of air quality, ozone reduction and environmental program planning to comply with federal transportation law.

FINANCIALS	**Amount**	**Fund**	**Amount**	**Fund**	**Amount**	**Fund**
Programmed Amount FFY 2023	$25,000	SPR	$34,10	PL	$6,802	LOCAL
Estimated Cost FFY 2024	$20,000	SPR	*$29,062	PL	$5,687	LOCAL

* Includes 2.5% set aside for complete streets planning activities which are 100% federally funded.

CONTACT INFORMATION:

Laura Chaney, Planning Branch Manager, 405-819-3719

1710 Regional Transportation Planning

PURPOSE AND SCOPE: To provide transportation planning assistance for the non-metropolitan areas of the State through the Oklahoma Association of Regional Councils (OARC). The regional transportation planning program will assist ODOT in meeting federal and state requirements for the Statewide Planning Process to address the transportation needs in non-metropolitan areas. Develop and provide ongoing public participation for the transportation planning process.

PROPOSED ACTIVITIES FOR FFY 2024: The Oklahoma Department of Transportation will continue coordination with the RTPOs in maintaining the 3-C planning process in non-metropolitan areas. RTPOs will continue staff education, training and attendance at workshops and seminars. Key activities include assisting in public outreach, data collection, and monitoring of social, economic, environmental and transportation system data. The transportation planning process will be monitored for compliance with administrative, financial, and legal requirements. Program participants will maintain a continuous, cooperative, and comprehensive process.

FINANCIALS	**Amount**	**Fund**	**Amount**	**Fund**	**Amount**	**Fund**
Central Oklahoma Economic Development District	$60,000	SPR	$0.00	STATE	$15,000	LOCAL
Grand Gateway Economic Development District	$115,000	SPR	$0.00	STATE	$28,750	LOCAL
Northern Oklahoma Development Authority	$160,000	SPR	$0.00	STATE	$40,000	LOCAL
Southwestern Oklahoma Development Authority & Association of South Central Oklahoma Governments	$225,000	SPR	$0.00	STATE	$56,250	LOCAL
Southern Oklahoma Development Association & Kiamichi Economic Dev. District	$130,000	SPR	$0.00	STATE	$32,,500	LOCAL

FINANCIALS	**Amount**	**Fund**	**Amount**	**Fund**	**Amount**	**Fund**
Programmed Amount FF 2023	$750,000	SPR	$0.00	STATE	$190,,000	LOCAL
Estimated Cost FFY 2024	$790,000	SPR	$0.00	STATE	$197,500	LOCAL

CONTACT INFORMATION:

Laura Chaney, Planning Branch Manager, 405-819-3719

1719 Statewide Transportation Improvement Program

PURPOSE AND SCOPE: To develop, administer and revise a financially-constrained federally funded Statewide Transportation Improvement Program (STIP) for the State of Oklahoma in compliance with the Fixing America's Surface Transportation (FAST) Act and in cooperation with the Federal Highway Administration (FHWA), Federal Transit Administration (FTA), the four Metropolitan Planning Organizations (ACOG, INCOG, LMPO, and Frontier MPO), the Bureau of Indian Affairs, and Tribal Governments.

PROPOSED ACTIVITIES FOR FFY 2024: Update 2024-2027 STIP. Manage and amend or modify the STIP, as necessary. Continue use of the eSTIP for modifications and amendments. Continue administration of current STIP using approved procedures.

FINANCIALS	**Amount**	**Fund**	**Amount**	**Fund**
Programmed Amount for FFY2023	$375,000	SPR	$0.00	STATE
Estimated Cost for FFY 2024	$375,000	SPR	$0.00	STATE

CONTACT INFORMATION:

Laura Chaney, Planning Branch Manager, 405-819-3719

1720 Statewide Travel Demand Model

PURPOSE AND SCOPE: To use the developed statewide travel demand model to determine regional and corridor-based needs. Mode share will be addressed within regional corridors. The project will use the Statewide Travel Demand Model, which is based on the Oklahoma road network, traffic analysis zone, and demographic, mode, network data, and validation and calibration of a base year model.

PROPOSED ACTIVITIES FOR FFY 2024: Enhance staff knowledge through courses, seminars, trainings, and conferences hosted by the Federal Highway Administration, the National Highway Institute, and others. Initiate models runs to assist in Department planning activities.

FINANCIALS	**Amount**	**Fund**	**Amount**	**Fund**
Programmed Amount for FFY 2023	$ 130,000	SPR	$0.00	STATE
Estimated Cost for FFY 2024	$ 115,000	SPR	$0.00	STATE

CONTACT INFORMATION:

Laura Chaney, Planning Branch Manager, 405-819-3719

1730 Connected and Automated Vehicles (CAV) Working Group

PURPOSE AND SCOPE: The Department entered into a personal services agreement to develop and implement plans, polices and coordination procedures as maybe required in support of the Department objectives for the population of the Department's autonomous vehicle working group within the State of Oklahoma.

PROPOSED ACTIVITIES FOR FFY 2024: The services contract issued will be to assign tasks to the contractor that identify the required activities to be achieved.

- Coordinate the stakeholder's involvement with addressing the opportunities and risks associated with Oklahoma's adoption of autonomous vehicle technology.
- Assist the management of stakeholders for which their participation will be based on their expertise and reputation for promoting more efficient and effective coordination through professional collaboration.
- Provide insight through research as to best practices and lessons learned from states who have already formed and acted on similar autonomous vehicle technology working groups.
- The Consultant will provide to the Department written status reports on a monthly basis.
- Assist in the evaluation of whether participant adjustments need to be made to capture input from additional or even possible removal of identified stakeholders.
- Assist in the defining of critical areas of additional work that needs to be done within the monthly working group.
- Assist in the defining of what structure and funding should be perused to deliver the needed results.
- Assist in the development of a communication strategy to reach out to interested citizens and stakeholders on autonomous vehicle technology potential and risks in Oklahoma.
- Coordinate along with the working group on how a communications plan would be funded, executed with key messages and information delivered.
- Provide an overall assessment of the working groups status.

FINANCIALS	**Amount**	**Fund**	**Amount**	**Fund**
Programmed Amount FFY 2023	$78,500	SPR	$0.00	STATE
Estimated Cost FFY 2024	$78,500	SPR	$0.00	STATE

CONTACT INFORMATION

Andres Weber, Transportation Manager I, Multi-modal Div. 918-968-3509

1902 Statewide Long Range Transportation Planning

PURPOSE AND SCOPE: To maintain the Oklahoma Long Range Transportation Plan (LRTP) and other associated statewide planning activities in accordance with the provisions of federal law.

PROPOSED ACTIVITIES FOR FFY 2024: Continue maintenance and implementation of the 2020-2045 LRTP. Continue coordination with ODOT divisions, MPOs and local governments in relation to long range transportation plans. Review federal regulations, and pertinent state legislative transportation issues. Keep apprised of possible changes in long range transportation planning requirements as new federal legislation is developed. Hire a consultant to update the LRTP. Continue development of a Carbon Reduction Strategy in coordination with MPOs and FHWA.

FINANCIALS	**Amount**	**Fund**	**Amount**	**Fund**
Programmed Amount for FFY 2023	$800,000	SPR	$0.00	STATE
Estimated Cost for FFY 2024	$1,015,000	SPR	$0.00	STATE

CONTACT INFORMATION:

Laura Chaney, Planning Branch Manager, 405-819-3719

1904 Air Quality Planning

PURPOSE AND SCOPE: Monitor and participate in air quality transportation planning developments relating to requirements of the Clean Air Act Amendments and the FAST Act. Represent the Department in air quality non-attainment and transportation conformity actions. Analyze and comment on air quality non-attainment and transportation regulations and laws. Maintain information flow to and from decision-makers regarding air quality/transportation issues, developments, regulations, and laws. Continue staff education, training and attendance at workshops and seminars. Assist the Department to be a progressive participant in reducing the impacts of transportation-related pollution.

PROPOSED ACTIVITIES FOR FFY 2024: Maintain research and participation in air quality transportation issues, developments, regulations, and laws continue to develop education materials and resources for Department personnel regarding air quality and transportation. Continue to monitor the air quality regulations and impact to the Department. Continue monitoring attainment status throughout the state and facilitate relationships as necessary pertaining to federal attainment requirements. Attend air quality transportation planning activities of the LMPO, ACOG, and INCOG. Participate in MPO and ODEQ air quality transportation initiatives, educational programs, and efforts to reduce pollution. Continue partnership with ACOG and INCOG to enhance and extend data collection and modeling outside of the study areas to establish base data for air quality issues in rural areas. Continue staff education through courses, seminars, and conferences.

FINANCIALS	**Amount**	**Fund**	**Amount**	**Fund**
Programmed Amount FFY 2023	$300,000	SPR	$0.00	STATE
Estimated Cost FFY 2024	$15,000	SPR	$0.00	STATE

CONTACT INFORMATION:

Laura Chaney, Planning Branch Manager, 405-819-3719

1905 FREIGHT TRANSPORTATION PLANNING

PURPOSE AND SCOPE: To coordinate freight planning and freight data analysis with the Long Range Transportation Plan (LRTP), the Oklahoma Freight Transportation Plan, the State Rail Plan, waterway freight planning reports and project development processes. To ensure Oklahoma's freight planning efforts are in compliance with federal regulations.

PROPOSED ACTIVITIES FOR FFY 2024: Review existing and proposed federal regulations as they relate to freight planning. Review and analyze the freight analysis framework (FAF) data, freight congestion, the national performance measures roadway data set, and urban and rural freight transport.

The Oklahoma Freight Transportation Plan was updated in FFY 2022 and because of this the estimated cost of this item for FFY 2023 significantly declined.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2023	$40,000	SPR	$0.00	STATE
Estimated Cost FFY 2024	$12,000	SPR	$0.00	STATE

CONTACT INFORMATION:

Laura Chaney, Planning Branch Manager, 405-819-3719

1913 Active Transportation Planning

PURPOSE AND SCOPE: To coordinate and develop a bicycle and pedestrian program for the State of Oklahoma in compliance with the provisions of existing federal regulations and Fixing Americas Surface Transportation (FAST) Act provisions and all applicable transportation planning regulations and requirements in compliance with the FHWA, FTA, the four Metropolitan Planning Organizations (ACOG, INCOG, LMPO, and Frontier MPO), and non-metropolitan areas.

PROPOSED ACTIVITIES FOR FFY 2024: Monitor bicycle and pedestrian issues, developments, regulations, and laws. Develop educational materials and resources for Department personnel regarding bicycle and pedestrian safety, infrastructure design, and transportation. Attend bicycle and pedestrian planning activities of ACOG, INCOG, LMPO and Frontier MPO and other non-metropolitan areas of the State. Participate in bicycle and pedestrian transportation planning initiatives, seminars, workshops and educational programs across the State. Continue supporting ODOT GIS on data needs and updates for the ODOT Bicycle App. Coordinate the development of a statewide inventory of existing and proposed bicycle and pedestrian facilities. Enhance staff knowledge through courses, seminars, trainings, and conferences hosted by FHWA, LTAP, APBP, Walk Bike Places, TRB and others. Work with local communities across the State to install USBR 66 signage and promote cycling along the USBR 66 route. Begin development of the Oklahoma Statewide Active Transportation Plan. Begin development of the Oklahoma Statewide Mobility Plan. Coordinate efforts and projects with the ODOT ADA Coordinator. Work with Local Government on Transportation Alternatives Program (TAP) and Safe Routes to School (SRTS) projects and implementation.

FINANCIALS	**Amount**	**Fund**	**Amount**	**Fund**
Programmed Amount FFY 2023	$ 350,000	SPR	$0.00	STATE
Estimated Cost FFY 2024	$ 250,000	SPR	$0.00	STATE

CONTACT INFORMATION:

Active Transportation Coordnator

1914 Transportation Asset Management Plan

PURPOSE AND SCOPE: To develop a transportation asset management plan (TAMP) for the Oklahoma Department of Transportation. The TAMP is a federal requirement identified in MAP-21 and the FAST Act. The TAMP incorporates many working areas covering target areas of maintenance, construction, financial, inventory, performance data, and programming through the TAMP Steering Committee, the TAMP Working Group, and TAMP Task Forces. The TAMP will meet requirements of the CFR, which was published on October 24, 2016.

PROPOSED ACTIVITIES FOR FFY 2024: Continue to participate in various activities as they are available including meetings, workshops, webinars, conferences and peer exchanges. Keep informed of best practices in asset management and performance management. Implement asset management through action oriented tasks. Monitor the rule making process related to performance measures.

The estimated cost has declined significantly since the TAMP was updated and submitted to FHWA in FFY 2022.

FINANCIALS	**Amount**	**Fund**	**Amount**	**Fund**
Programmed Amount FFY 2023	$20,000	SPR	$0.00	STATE
Estimated Cost FFY 2024	$12,000	SPR	$0.00	STATE

CONTACT INFORMATION:

Laura Chaney, Planning Branch Manager, 405-819-3719

1915 Performance Measures Coordination

PURPOSE AND SCOPE: To coordinate data related to performance measures, metrics (quantifiable indicator of performance), thresholds, and targets. To develop ODOT's State Biennial Performance Report. Performance Measures to be covered in the Biennial Report are described in different Subparts of Title 49 as per the FAST Act. Subpart C concerns Pavement Conditions; Subpart D concerns Bridge Condition; Subpart E concerns System Performance (travel time reliability) of the NHS; Subpart F concerns Freight (Truck) Movement on the Interstate System. Related information for each subpart and related measures, metrics, targets, etc. will be reported annually by the related ODOT "Division Owner", through the Highway Performance Monitoring System (HPMS), the Highway Safety Improvement Program (HSIP), or other processes. Additionally, safety performance data will be reported through the HSIP process.

PROPOSED ACTIVITIES FOR FFY 2024: Continue developing and implementing agency plans for compliance with required performance measures and reporting. Coordinate with subject matter experts on bridge, pavement, travel time reliability, and freight performance measure data collection and preparation. Attend seminars and workshops on performance measures topics and reporting techniques. Continue Speed Data Collection, HERE data, through this item.

FINANCIALS	Amount	Fund	Amount	Fund
Programmed Amount for FFY 2023	$350,000	SPR	$0.00	STATE
Estimated Cost for FFY 2024	$350,000	SPR	$0.00	STATE

CONTACT INFORMATION:

Cody Hamblin, P.E.,Traffic Engineer, 405-227-6425

OKLAHOMA
Transportation

- Research Part 2 SPR Work Plan
- LTAP – Local Technical Assistance Program
- Pooled Funds
- SPTC – UTC Program

SPR Part 2 Financial Summary Sheet

SPR PART 2 - RESEARCH, SPRY-0010(093)RS, JP# 01946(90)

FEDERAL FISCAL YEAR 2024

		SPR	STATE	LOCAL	TOTAL
GENERAL ITEMS					
2100	Transportation Research Board (TRB)	$40,000.00			$40,000.00
2115	Long Term Pavement Performance (LTPP)	$5,000.00			$5,000.00
2120	Technical Assistance - Special Studies	$50,000.00			$50,000.00
2125	Implementation of Technology Transfer	$40,000.00			$40,000.00
2130	General Research Activities	$310,000.00			$310,000.00
2160	Southern Plains Transportation Center (SPTC) UTC	$1,000,000.00			$1,000,000.00
2161	ODOT Transportation Library Management	$219,000.00			$190,000.00
2300	Research Implementation	$100,000.00			$100,000.00
2700	Experimental Product Evaluation Program	$80,000.00			$80,000.00
	Total General Activities	**$1,844,000.00**			**$1,815,000.00**
CONTINUING RESEARCH PROJECTS					
2156	Roadside Vegetation Management Training & Consultation	$199,000.00			$199,000.00
2157	Roadside Vegetation Management Research	$81,000.00			$81,000.00
2286	Compost Filter Socks for Storm Water & Erosion Control in Construction - Phase 2	$106,000.00			$106,000.00
2288	Long Term Perf. and Benefits of Comb. Balanced Mix Des. And Chem. WMA Techn	$63,000.00			$63,000.00
2291	A Fatig. Assmt. Framew. for Steel Brdgs. using Fiber Optic Sens. & Mach. Learning	$105,000.00			$105,000.00
2294	Investigate the Aging Behavior of Asph. Binders at Different Production Stages	$95,000.00			$95,000.00
	Total Continuing Research Projects	**$649,000.00**			**$649,000.00**
NEW RESEARCH PROJECTS					
2295	ODOT Automated Bridge Survey	$125,000.00			$125,000.00
2296	Highway/Rail Intersection Hump or High-Profile Crossings Problems	$128,000.00			$128,000.00
2297	Updating Pavem. ME Climate Module for Efficient Design, Mgmt. of Okla. Pavemts.	$106,000.00			$106,000.00
2298	Incorp. Quality Recycled Asphalt Pavem. into the Balanced Mix Design World	$104,000.00			$104,000.00
	Total New Research Projects	**$463,000.00**			**$463,000.00**
CONTINUING IMPLEMENTATION PROJECTS					
2316	Solving the Riddle of End Regions in PC Beams	$135,000.00			$135,000.00
2317	Effectiv. of Magnesium-Alumino-Liquid-Phosph.-Based Concrete as a Repair Materia	$100,000.00			$100,000.00
	Total Continuing Implementation Projects	**$235,000.00**			**$235,000.00**
NEW IMPLEMENTATION PROJECTS					
	No New Implementation Projects	$0.00			$0.00
	Total New Implementation Projects	**$0.00**			**$0.00**
	JP 01946(90) **Total SPRY-0010(093)RS**	**$3,191,000.00**			**$3,191,000.00**
LTAP Project Number TTY-LTAP (012)TT	**JP# 30001(23)**				
1440	Local Technical Assistance Program	$307,044.00			$307,044.00
	Grand Total with LTAP	**$3,498,044.00**			**$3,498,044.00**
POOLED FUND STUDIES					
	SPR Part 2 Total Pooled Fund Studies	**$1,994,652.00**			**$1,994,652.00**
	TOTAL RESEARCH FUNDING INCLUDING POOLED FUND STUDIES	**$5,492,696.00**			**$5,4,696.00**

SPR POOLED FUND STUDIES

PART A (PART 1) POOLED FUND STUDIES

FFY2024 COMMITMENTS

		SPR	STATE	LOCAL	TOTAL
5000 OK LEAD ITEMS (Management)					
NONE		$0.00			$0.00
Total OK Lead Studies		$0.00			$0.00
5005 OK PARTICIPATING ITEMS (Management)					
NONE		$0.00			$0.00
	SPR Part A Total OK Participating Studies	$0.00			$0.00
	SPR Part A Total Pooled Fund Studies	$0.00			$0.00

FFY2024 ACTIVE AND PAID

TPF-5(398)	Moving Forward with Next Generation Travel Data	TPF-5(456)	Econworks
TPF-5(431)	Enter GIS for Transportation (AEGIST)		

PART B (PART 2) POOLED FUND STUDIES

FFY2024 COMMITMENTS

		SPR	STATE	LOCAL	TOTAL
5000 OK LEAD ITEMS (Management)		$10,000.00			$10,000.00
TPF-5(442)	Transportation Research and Connectivity	$25,000.00			$25,000.00
TPF-5(448)	Integrating Construction Practices and Weather Into Freeze Thaw Specifi	$20,000.00			$20,000.00
	SPR Part B Total OK Lead Studies	**$55,000.00**			**$55,000.00**
5005 OK PARTICIPATING ITEMS (Management)		$12,000.00			$12,000.00
TPF-5(###)	NCHRP	$1,015,652.00			$1,015,652.00
TPF-5(###)	TRB Core Program Services	$160,000.00			$160,000.00
TPF-5(357)	Connecting the DOTs: Implementing ShakeCast Across Multiple State DOTs	$15,000.00			$15,000.00
TPF-5(437)	Tech Transfer Concrete Consortium (FFY20-FFY24)	$12,000.00			$12,000.00
TPF-5(447)	Traffic Control Device (TCD) Consortium (3)	$10,000.00			$10,000.00
TPF-5(451)	Road Usage Charge West	$25,000.00			$25,000.00
TPF-5(465)	Consortium Asphalt Pavement Research	$20,000.00			$20,000.00
TPF-5(478)	Demonstration to Advance New Pavement Tech	$10,000.00			$10,000.00
TPF-5(479)	Clear Roads Winer Highway Ops Phase 3	$25,000.00			$25,000.00
TPF-5 (480)	Building Information Modeling for Infrastructure	$75,000.00			$75,000.00
TPF-5(484)	Protecting Bridge Girders against Over Height Veh	$70,000.00			$70,000.00
Solic# ?/TPF#	Accelerated Performance Testing NCAT	$450,000.00			$450,000.00
Solic#1587	Building Information Modeling (BIM) for Bridges and Structures - Phase II	$25,000.00			$25,000.00
Solic# 1599	Western Transportation Research Consortium	$15,000.00			$15,000.00
	SPR Part B Total OK Participating Studies	**$1,939,652.00**			**$1,939,652.00**
	SPR Part B Total Pooled Fund Studies	**$1,994,652.00**			**$1,994,652.00**

FFY2024 ACTIVE AND PAID

TPF-5(313)	Technology Transfer Concrete Consortium	TPF-5(375)	National Partner MnRoad/NCAT
TPF-5(326)	Develop and Support Trans Performance Mgt	TPF-5(380)	Autonomous Maint Tech
TPF-5(335)	Biennial Asset Mgt Conference	TPF-5(385)	Pavement Structural Evaluation
TPF-5(343)	Roadside Safety MASH Implement	TPF-5(394)	Western Maintwnance Partnership
TPF-5(368)	Performance Engineered Concrete Paving Mix	TPF-5(439)	Tech. Exchange on Managing Pavements
TPF-5(372)	BIM for Bridges and Structures	TPF-5(469)	National Partner NCAT

1440 Local Technical Assistance Program

PURPOSE AND SCOPE: The Local Technical Assistance Program (LTAP) is an education program contracted through Oklahoma State University to provide training and technical assistance to county, municipal, and tribal governments responsible for transportation systems at the local level. This is accomplished by (1) conducting classes and workshops; (2) providing on-site technical assistance; (3) maintaining a library of publications, DVDs and other technology documents; (4) providing information and technical assistance on new and existing technologies; (5) coordinating with faculty and staff at OSU, ODOT, FHWA and industry to provide technical expertise; (6) providing a website; (7) maintaining a database of transportation officials in Oklahoma and nationwide; and (8) Transportation Intern Program (TIP).

PROPOSED ACTIVITIES FOR FFY 2024: Through needs assessment surveys with LTAP customers, the training model has changed from what OKLTAP had deemed needed for their partners and they now provide a list of classes and allow the customer to prioritize their needs in training and then schedule 3-4 classes per quadrant per quarter, averaging 1 training per week and 60 trainings annually; Begin developing a new training resulting in certification for Flaggers; Continue to develop activities to facilitate the implementation of EDC Initiatives; Continue the Roads Scholar Program with a slight modification. Instead of requiring the 8 core classes, students will now take 6 core classes with 2 full day electives from the Core training classes; Participate in ACCO, CODA, OML, NLTAPA and LTAP Region VI meetings; Continue to teach and develop courses in the FHWA focus areas; Continue to serve as the state office of the Oklahoma Chapter of APWA; Continue assisting agencies through the TRIP; Serve on various local and national committees; Provide technical assistance as requested; Continue to provide website, newsletter, books, plans, DVD's, etc. for distribution; Conduct LTAP Advisory Meeting and develop requested activities where possible; Provide program progress reports to ODOT and FHWA.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2023	$307,044	SPR	$86,382	STATE	$150,000	FHWA
Projected Cost FFY 2024	$307,044	SPR	$86,382	STATE	$210,000	FHWA

CONTACT INFORMATION: Bryan Cooper: Transportation Manager, 405-305-1963

2100 Transportation Research Board (TRB) Participation

PURPOSE AND SCOPE: This item covers employee travel expenses and time for up to 4 ODOT ORI personnel to attend the annual TRB meeting to advance technical development of topics and issues required to support the Office if Research and Implementation's work program. Many TRB related activities are either fully covered or discounted as a result of being a TRB Sponsor (see list below). This SPR item may also be used for expenses not covered by TRB, such as employee time, travel to and registrations and/or discounted registrations for TRB related annual technical committee conferences and workshops. This item's funds may not be used for what is already covered in the sponsorship.

PROPOSED ACTIVITIES FOR FFY 2024: A request will be made for up to four (4) ORI staff members to attend the 2025 annual TRB meeting. Other requests may be made for other TRB committee meetings, webinars and workshops.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2023	$20,000	SPR	$0.00	STATE
Projected Cost FFY 2024	$40,000	SPR	$0.00	STATE

CONTACT INFORMATION

ODOT Project Manager: Ron F. Curb PE, CPM, rcurb@odot.org, 405-414-7740

2105 Peer Exchange

PURPOSE AND SCOPE: This item covers activity related to required peer exchange processes outlined in CFR 420. A state DOT is required to host a peer exchange every 3-5 years for the purpose of gaining knowledge that benefits the processes and outcomes of a research program. The peer exchange participants may include other state DOTs, FHWA, other federal agencies, academia, industry, and local and tribal partners. The requirement may be met by a state DOT that participates fully in the exchange. The number of states that can claim “full participation” is limited to four per event. The host state usually pays for all expense of all participants including travel, lodging, and meals,

PROPOSED ACTIVITIES FOR FFY 2024: None. Final report to be submitted through task order 2160-23-02 on or before September 30, 2023.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2023	$9,000	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

ODOT Project Manager: Ron F. Curb PE, CPM, rcurb@odot.org, 405-414-7740

2115 Long Term Pavement Performance (LTPP)

PURPOSE AND SCOPE: The purpose of this project is to maintain LTPP test sites, markings and current status, report maintenance to the new FHWA Contractor Stantec. To assist Stantec with data gathering as necessary and act as the general liaison between Stantec and Oklahoma Transportation. Maintain working knowledge related to SHRP product implementation, act as general liaison between FHWA and Oklahoma Transportation for product implementation activities.

PROPOSED ACTIVITIES FOR FFY 2024: Perform annual site investigations; record observations and report findings; perform inventory of all signs and pavement markings; obtain; arrange for continued testing and monitoring of current SPS and GPS site locations in Oklahoma for FFY 2022. This should be a year that Stantec will perform Data Collections.

NOTE: Oklahoma has nine (9) sites remaining in the study, however it is uncertain how much longer any section will remain in study.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2023	$5,000	SPR	$0.00	STATE
Projected Cost FFY 2024	$5,000	SPR	$0.00	STATE

CONTACT INFORMATION

ODOT Project Manager: Bryan Cooper, CPM, Transportation Manager, 405-305-1963

2120 Technical Assistance Special Studies

PURPOSE AND SCOPE: Provide ongoing technical support or special investigations, mainly in the field, to the Department when a full-scale research project is not warranted or when a quick turnaround is required.

PROPOSED ACTIVITIES FOR FFY 2024: Monitor the Project Bundling Project in Grant County and the construction of 29 GRS bridges; Monitor the construction of the Diverging Diamond Interchange in Tulsa; Continue to monitor the GTR project in Canadian County through the performance of condition surveys, monitor new Balanced Mix Design projects, monitor any new EDC initiative implementations such as new bridge projects that are incorporating Accelerated Bridge Construction (ABC) and Ultra High Performance Concrete (UHPC) Initiatives at 3 locations and the implementation of any of the new initiatives from the recent rollout of EDC-7; continue to serve on the OKTIM Coalition; continue to monitor any SPR Project field activities; continue to provide support for the Department with assistance and equipment in special investigations, storm drain inspections, pavement testing, traffic control and any other activities of services as requested; acquire, calibrate, test and / or compare new equipment or instruments to existing equipment or instruments where necessary.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2023	$25,000	SPR	$0.00	STATE
Projected Cost FFY 2024	$50,000	SPR	$0.00	STATE

CONTACT INFORMATION

Project Manager: Bryan Cooper, Transportation Manager, 405-305-1963

2125 Support of Innovation Initiatives

PURPOSE AND SCOPE: Innovation has become a critical aspect when considering use of funds, regardless of the source. Innovation is a concept that is demanded of and embraced by all working groups of ODOT. Innovation does not necessarily require that a technology is proven, but that it has the reasonable potential to enhance deliverables in the general areas of lives, time, cost, and environment.

This item will provide support to ODOT innovation initiatives being incorporated into ODOT. ODOT ORI employees time may be charged to this item for time and travel expenses for STIC and EDC events.

PROPOSED ACTIVITIES FOR FFY 2024: Continue to monitor the implementation of new Diverging Diamond Projects in Oklahoma, along with any other EDC implementation and report progress to the STIC; Continue support for CAV efforts and Unmanned Aerial Systems in Traffic Collision Investigation; support and monitor a demonstration of Fiber Reinforced Asphalt Concrete project using Aramid fibers; Support and monitor a bridge deck cure and seal project; support and monitor the use of an innovative piece of equipment that will test the concrete water/cement ratio at a project site or in the lab. Maintain a website. Monitor any new STIC Incentive and AID Demonstration Projects that are awarded through the STIC Network in the new FY. Continue to serve on the STIC Standing Committee on Special Initiatives (SCSI).

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2023	$25,000	SPR	$0.00	STATE
Projected Cost FFY 2024	$40,000	SPR	$0.00	STATE

CONTACT INFORMATION

ODOT Project Manager: Teresa A. Stephens, P.E., Research Engineer, 405-415-5825

2130 General Research Activities

PURPOSE AND SCOPE: This activity covers various research activities which are necessary for the operation of a research section but which cannot be accurately included in other projects. Examples of this type of activity include: ODOT ORI employees attending quality task force meetings; writing work plans for emerging research projects which have not been assigned an item number; preparing new and continuing research contracts and contract modifications; research project management; maintaining electronic research project records, i.e., project progress, invoicing, contractual deadlines; reviewing final research reports; meeting with university and private researchers regarding proposed projects; attending industry seminars, conferences, etc.

PROPOSED ACTIVITIES FOR FFY 2024: Solicit for new research/implementation ideas for possible FFY 2025 federal funding; Generate and post FFY 2025 RFP's; Generate FFY 2025 research/implementation project agreements and/or agreement modifications; Organize FFY 2025 initiation meetings; Organize FFY 2024 final project meetings; Coordinate and assemble research/implementation teams; Facilitate project implementation plans and direction; Continue to examine research/implementation/task order final reports for required formatting; Continue expert technical review of research/implementation/task order final reports; Prepare Part 2 of the FFY 2025 SPR Work Program.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2023	$250,000	SPR	$0.00	STATE
Projected Cost FFY 2024	$310,000	SPR	$0.00	STATE

CONTACT INFORMATION

SPR2 Program Administrator: Bryan Hurst, Administrative Programs Officer, 405-862-4125

2156 Roadside Vegetation Management (RVM)
Training & Consultation

PURPOSE AND SCOPE: This training and consultation initiative is designed to meet the roadside vegetation management (RVM) needs of ODOT and builds upon the previous years of RVM training offered by Oklahoma State University to ODOT. This service and tasks have been designed based upon knowledge of, and being observant of Federal and State Pesticide Laws and Regulations, communications and feedback from ODOT field and headquarters staff, observing areas of continued consultation needs by networking with RVM industry professionals.

PROPOSED ACTIVITIES FOR FFY 2024: Deliver Annual Pesticide Applicator Certified Training and Continuing Education Applicator Workshops for all ODOT field divisions, and maintain records on all ODOT certified applicators; provide as needed consultation to ODOT office and field personnel; coordinate Herbicide Application and Equipment Calibration Workshops for new employees; assist ODOT in updating the Approved Herbicides and Adjuvants List (AHAL); assist with AHAL contract review; perform survey and review of ODOT field divisions herbicide programs; produce yearly revisions to the Oklahoma Roadside Vegetation Management Guidelines; demonstrate best management practices for roadside weed control and invertebrate habitat protection; attend national conferences; provide monthly reports; FFY 2023 annual reports are pending; prepare and submit FFY 2024 annual reports.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2023	$255,000	SPR	$0.00	STATE
Projected Cost FFY 2024	$199,000	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Dennis Martin, Oklahoma State University, 405-744-5419

Project Sponsor: Taylor Henderson, ODOT Maintenance Division Engineer, 405-521-2557

Project Manager: Wayne Rice, Transportation Manager, jrice@odot.org

2157 Roadside Vegetation Management Research

PURPOSE AND SCOPE: A progressive Roadside Vegetation Management (RVM) program integrates proper vegetation selection, establishment and maintenance. Placing a well-adapted native or introduced species of vegetation on the roadside is the foundation of a successful program but not the end of the required inputs for successful long term roadside beauty and stabilization. The maintenance portion of the RVM program involves a combination of decisions concerning to mow or not mow, specific mowing heights and frequency of mowing, herbicide use or avoidance for weed control in the specific vegetation system at hand. Mowing and herbicide use on roadsides replace fire and herbivore grazing found in rangeland or natural perennial grass ecosystems. Grazing and fire are not considered available management tools in roadside right of way at this time. The roadside vegetation used in Oklahoma not only stabilizes and beautifies the roadside but is also a habitat for many pollinator species. A progressive RVM program should investigate new or experimental products to determine their merit in use in RVM programs and these programs should be evaluated for their roadside vegetation community service in terms of soil stabilization, environmental beautification and ecosystem services including benefit to pollinator species.

PROPOSED ACTIVITIES FOR FFY 2024: Evaluate new and generic herbicide formulations and combinations for integration into existing ODOT roadside and cable barrier vegetation management programs or use in management of wildflower plots, and for inclusion in the Approved Herbicide & Adjuvant List (Task 1); evaluate new or reformulated herbicides and/or drift control products for their compatibility with commonly used ODOT herbicide treatments. (Task 2). Prepare and submit FFY 2024 annual report.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2023	$0.00	SPR	$0.00	STATE
Projected Cost FFY 2024	$81,000	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Dennis Martin, Oklahoma State University, 405-744-5419

Project Sponsor: Taylor Henderson, ODOT Maintenance Division Engineer, 405-521-2557

Project Manager: Wayne Rice, Transportation Manager, jrice@odot.org

2160 Southern Plains Transportation Center (SPTC)

PURPOSE AND SCOPE: The U.S. Department of Transportation (USDOT) has selected the University of Oklahoma (OU) led Southern Plains Transportation Center (SPTC) as the 2023-2027 USDOT Region 6 Regional University of Transportation Center (UTC). Under the umbrella of the Infrastructure Investment and Jobs Act (IIJA), this center brings federal funding of $3 million per year along with $3 million per year in matching funds. The Oklahoma Department of Transportation (ODOT) has pledged $1 million per year in matching funds with the remainder coming from OU and the other partner institutions. With a focus on improving durability and extending the life of infrastructure, the SPTC will leverage the strengths of OU and its partner institutions in transportation engineering, materials, construction, climate, and weather to develop implementable solutions to create climate-resilient infrastructure. It will also catalyze transportation education and workforce development for the Region. The SPTC is a consortium of 11 highly diverse and strong academic institutions: El Paso Community College; Louisiana State University; Louisiana Tech University; Navajo Tech University; Oklahoma State University; Texas A&M University/Texas Transportation Institute; Texas Southern University; University of Arkansas; University of New Mexico; University of Texas at El Paso; and the University of Oklahoma, which serves as the consortium lead.. ODOT's financial support for SPTC activities and operation is important to its success. Under the USDOT statutory research priority D: Improving the Durability and Extending the Life of Transportation Infrastructure, SPTC's work program will focus on Climate and Sustainability and Economic Strength and Global Competitiveness and Safety**.**

PROPOSED ACTIVITIES FOR Year 1: The activities include, but are not limited to, the following: issue RFP; review and select submitted proposals with assistance of the SPTC Advisory Board and others, which are connected to SPTC goals and stakeholders' needs; conduct research which addresses ODOT's needs; pursue workforce development, outreach, leadership, and tech transfer activities, including Oklahoma Transportation Research Day, Oklahoma Transportation Symposium, short courses, workshops, seminars, and webinars, Transportation Leadership Forum, Industry Transportation Day, experiential learning, student competitions, and DEI activities..

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Projected Cost FFY 2024	$1,000,000	SPR	$0.00	STATE

CONTACT INFORMATION

SPTC Director: Musharraf Zaman, 405-325-2626

Chief Innovation Officer: Joni Seymour, 405-425-3679

2160-21-01
OU Task Order Contract Administrative Support

PURPOSE AND SCOPE: To provide support and guidance to task order projects at the University of Oklahoma to Principal Investigators and to the Office of Research and Implementation (ORI) in project management.

PROPOSED ACTIVITIES FOR FFY 2024: Final report submitted. End of task order.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2023	$0.00	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Musharraf Zaman, Ph.D., PE, The Univ. of Oklahoma, 405-401-3096

ODOT Sponsor/Task Order Mgr.: Ron F. Curb PE, CPM, rcurb@odot.org, 405-414-7740

2160-21-04
Data Analytics for the Prediction of DBE Expenditures

PURPOSE AND SCOPE: The objective of this project is to develop a model to track and predict DBE expenditure to ensure contract and agency goal is met per federal fiscal year. The tracking model will monitor DBE expenditure collectively and per contractor. The model processes information automatically obtained from ODOT directory including proposed projects (construction, repairs, etc.), winning bid vendors, and the bi-monthly progress reports to accurately estimate progress toward meeting the annual race conscious and race neutral goal.
Project activities will consist of five main threads: Interface the DBETF software application with ODOT O-database for automatic DBE expenditure imports, Interface the DBETF to ODOT DBE database to automatically update certified DBE vendor list, enhance visualization and reporting tools, develop tools to early predict contractors failing to meet their target DBE expenditures, and modify or add features per ODOT requests. A Software application, namely DBETF, that will run on an individual PC's to automatically import and process data from an ODOT O-database, incorporating many analyses, forecasting, and reporting tools, will be developed to determine ODOT's current DBE goal attainment and forecast the agency's yearly attainment. It will be featured with the following functionalities: Analysis, Forecasting, and Reporting.
Outline of the functionalities are as follows.
Under Analysis, the functions are:

Selected and total DBE Expenditures> per Prime Vendor, Prime Vendor per Contract, Category, Contract Type, County, County on Map, District/Division, Contract, Contract per Items.
Stats Type: Based on DBE Expenditure> Top Prime Vendor, Top Subcontractor, Top Contract Type, Top County, Top Division, Top Contract, Top Item, and Top Category Based on Frequency in Contracts, and DBE Item Expenditure Histogram
DBE Vendor Type> Distribution per State, Distribution per Ok. County, as Prime Vendor, per County, per Prime Contractor

Under Forecasting DBE Payments, the functions are:

Confidence Analysis, Error Analysis, Contract Forecast - per Contract, Contractor Forecast - All, Pay Item Forecast per contract.

Under Reporting, the functions are:

Reports per contractor, per DBE vendor, per item.

PROPOSED ACTIVITIES FOR FFY 2024: Final report submitted. End of task order.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2023	$0.00	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Hazem Refai, The University of Oklahoma, 918-660-3243

ODOT Sponsor: Jennifer Hankins, DBELO, 405-708-1846

ODOT Task Order Mgr.: Ron F. Curb PE, CPM, rcurb@odot.org, 405-414-7740

2160-21-05
Evaluation of High-Performance Thin Overlays for Extended Pavement Life

PURPOSE AND SCOPE: The purpose of this Task Order is to evaluate field performance of two high performing thin overlays with two different surface conditions. The selected mixes may be an S5 or an S6 mix and a TOM-C mix. One surface condition will involve micro-milling while the other will not involve any milling. A layer thickness of 1.25-in. for the S5 mix or 1-in. for the S6 mix may be used. The second mix may be an optimized TOM-C mix with 1-in. layer thickness. An optimized balanced mix design (BMD) with focus on cracking and rutting performance will be used in designing these mixes. Quadrant plots, similar to Figure 1, will be used to identify mixes with optimized performance. Similar to other balanced mix designs, some variance from standard Superpave mix type S5 or S6 may be needed to satisfy all required criteria. It typically involves increasing the binder content to achieve mid-point in quadrant plots. ODOT's rich intermediate layer (RIL) mixes are designed using a similar concept. Also, field performance will be monitored and compared. In addition, life cycle cost analysis will be performed to evaluate cost-benefit aspects.

PROPOSED ACTIVITIES FOR FFY 2024: Final Report submitted. End of Task Order.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2023	$0.00	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Kenneth Hobson, Oklahoma University, 405-323-5669

ODOT Sponsor: Ron Brown, ODOT District 3 Engineer, 580-332-1526

Task Order Manager: Teresa Stephens, Research Engineer, 405-415-5825

2160-22-01
OU Task Order Contract Administrative Support

PURPOSE AND SCOPE: To provide support and guidance to task order projects at the University of Oklahoma to Principal Investigators and to the Office of Research and Implementation (ORI) in project management.

PROPOSED ACTIVITIES FOR FFY 2024: Final Report submitted. End of Task Order.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2023	$0.00	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Musharraf Zaman, Ph.D., PE, The Univ. of Oklahoma, 405-401-3096

ODOT Sponsor/Task Order Mgr.: Ron F. Curb PE, CPM, rcurb@odot.org, 405-414-7740

2160-22-02
Feasibility of Blast Furnace Slag for Stabilizing Sulfate Bearing Soil

PURPOSE AND SCOPE: Blast Furnace Slag by itself or when mixed with Portland cement can improve the strength of sulfate-bearing clay soils without unacceptable swelling behavior. Currently there are no chemicals listed on the OHD L-50 stabilization chart that can be safely used for stabilizing sulfate bearing fine grained soils due to the potential for inducing unwanted swelling behavior. This study will systematically evaluate the feasibility of BFS alone and mixed with other material, as a stabilizer for clayey soil sulfate bearing soil.

PROPOSED ACTIVITIES FOR FFY 2024: Final report submitted. End of task order.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2023	$0.00	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Gerald Miller, The University of Oklahoma, 405-325-4253

ODOT Sponsor: Scott Garland, ODOT Geotechnical Engineer, 405-522-4998

Task Order Manager: Gary Hook, Implementation Engineer, 405-420-2596

2160-22-03

Development of a DIGGS-Compatible Geotechnical Database from Existing Geotechnical Reports

PURPOSE AND SCOPE: The Geotechnical Engineering Branch, Bridge Division, and Roadway Division together possess 50 or more years' worth of geotechnical data. Accessing these data for the purpose of design, analysis, and reporting is time-consuming and difficult because currently they are stored as hard copies, scanned images and digital files (.pdf). Geotechnical properties contained in these reports can be a great resource if they are organized in an easily accessible database. With advances in computing capabilities and software, tools are now available that can help with the data collection, archiving, and map-based retrieval/reporting. Several state DOTs are converting their geotechnical reports into Data Interchange for Geotechnical and Geo-environmental Specialists (DIGGS) format, which utilizes an Extensible Markup Language (XML) structure and labeling convention with elements of Geography Markup Language (GML). Conversion of existing hard copies and PDF reports to DIGGS format will help access, analyze, filter, and report geotechnical information efficiently both time and effort wise. Also, it will help plot and visualize data using web-based GIS tools. Additionally, the proposed database will reduce the need for new soil borings and help save taxpayers money.

PROPOSED ACTIVITIES FOR FFY 2024: Final report submitted. End of task order.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2023	$0.00	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Syed Ali, The University of Oklahoma, 405-325-4253

ODOT Sponsor: Scott Garland, ODOT Geotechnical Branch Manager, 405-522-4998

Task Order Manager: Teresa Stephens, Research Engineer, 405-415-5825

2160-22-04
ODOT Social Network Analysis Toward Critical Process and Procedure Identification and Improvement

PURPOSE AND SCOPE: Since 2018, the Oklahoma Department of Transportation (ODOT) and the Oklahoma Transportation Library (OTL) have been working on developing and implementing a knowledge management (KM) project to increase KM practices agency wide. The project has developed information gathering techniques and drafts of new forms, as well as a sample KM platform to store knowledge using MS Teams. The next stage will involve an organization-wide social network analysis, mapping departments and creating a sociogram network map documenting the flow of information. The resulting network map will identify where key subject matter experts/gatekeepers and knowledge repositories are located to increase efficiency, accessibility, and reuse of information. Additionally, the social network analysis will identify critical processes and procedures, IDing and interviewing division heads, and recording the difference between processes that should happen compared to what processes actually occur.
Conducting a social network analysis documenting accurate flow of information will help identify key holders/repositories of knowledge and information across the agency. This group can be implemented into the KM liaison network developed during the last task order to increase efficiency in flow and accessibility of information. Interviewing division heads will also lead to improved clarity on what processes and procedures are being performed and which should be documented as part of ODOT organizational knowledge.

PROPOSED ACTIVITIES FOR FFY 2024: Final report submitted. End of task order.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2023	$0.00	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Michael Molina, Ph.D., The University of Oklahoma, 405-325-5960

ODOT Task Order Mgr.: Ron F. Curb PE, CPM, rcurb@odot.org, 405-414-7740

2160-22-05
Knowledge Management Awareness and Information Storage/Retrieval

PURPOSE AND SCOPE: Since 2018, the Oklahoma Department of Transportation (ODOT) and the Oklahoma Transportation Library (OTL) have been working on developing and implementing a knowledge management (KM) project to increase KM practices agency wide. The project has developed information gathering techniques and drafts of new forms, as well as a sample KM platform to store knowledge using MS Teams. The next stage will involve conducting a concerted awareness campaign to inform ODOT employees, agency-wide, of KM best-practices to increase efficiency, as well as continuing to survey employees on their ideal method for accessing and using critical information. Specifically, if they are wanting to find information, what methods and repositories do they prefer and currently use? Results from this survey will be used to refine the selection process of a technology platform that can deliver information employees need and meet Guidehouse recommendations to establish “process and performance enterprise-side process documentation catalog, standards, and repository.
A concerted KM awareness campaign will inform ODOT employees of KM best practices, helping them increase operational efficiency. Drafting a survey and recommending a content storage and accessibility platform will also assist in cost savings, reducing the time it takes for employees to locate information.

PROPOSED ACTIVITIES FOR FFY 2024: Final report submitted. End of task order.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2023	$0.00	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Michael Molina, Ph.D., The University of Oklahoma, 405-325-5960

ODOT Task Order Mgr.: Ron F. Curb PE, CPM, rcurb@odot.org, 405-414-7740

2160-22-06

Effect of Compaction During Construction on Stiffness and Drainage Characteristics of Recycled Aggregate Base

PURPOSE AND SCOPE: Use of recycled aggregates in pavement construction is getting increased attention due to cost saving, conservation of natural resources, and environmental benefits. In a recent Task Order (2160-19-03), durability of two recycled aggregates and one commonly used virgin aggregate were investigated through laboratory testing and simulations using the AASHTOWare Pavement ME software. In this complementary Task Order, effect of gradation changes due to construction of aggregate base using recycled aggregates will be investigated with respect to corresponding changes in M_R and hydraulic conductivity. Also, changes in index properties pertaining to shape and texture will be investigated. Use of recycled aggregates from an actual construction site will validate findings of Task Order 2160-19-03 and generate useful data toward developing specifications for recycled aggregates.

PROPOSED ACTIVITIES FOR FFY 2024: Final report submitted. End of task order.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2023	$0.00	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Musharraf Zaman, The University of Oklahoma, 405-325-4682

ODOT Sponsor: Ben Rojas, ODOT Aggregates Branch Manager, 405-522-4987

Task Order Manager: Wayne Rice, Transportation Manager, jrice@odot.org

2160-22-08

Evaluating the Impact of Various Asphalt Rejuvenating Agents on the Performance of Asphalt Binders

PURPOSE AND SCOPE: The use of stiff binders from reclaimed asphalt pavement (RAP) in an asphalt mix can cause premature pavement distresses in the form of fatigue cracking, reflection cracking, low-temperature cracking and accelerated aging. In order to avoid these issues, rejuvenators are often used in asphalt mixes to soften the stiff, oxidized RAP binders. The aim of this Task Order is to evaluate the effect of different rejuvenators on the high and low temperature performance of a commonly used binders. Also, the impact of PAV-aging on the low-temperature performance and Delta Tc (Tc) of rejuvenated binders will be evaluated.

PROPOSED ACTIVITIES FOR FFY 2024: Final report submitted. End of task order.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2023	$0,00	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Kenneth Hobson, P.E., The University of Oklahoma, 405-325-5911

ODOT Sponsor: David Vivanco, P.E., ODOT Asphalt Branch Engineering Mgr., 405-522-4986

ODOT Task Order Manager: Teresa A. Stephens, P.E., Research Engineer, 405-415-5825

2160-22-10
Web-Based Repository of GRS-IBS Projects in the United States

PURPOSE AND SCOPE: This task order will develop a web-based repository of major (and documented) GRS-IBS projects across the U.S. so that ODOT (e.g., Local Government and Bridge Divisions) could access and use as reference for future GRS-IBS projects in Oklahoma. This database will be useful to ODOT in that it will help the agency determine what alternative GRS-abutment designs would be feasible and will likely be successful for a given project relative to its location, site conditions, available budget and other related factors. It will also be useful to other interested parties in Oklahoma and other states (engineers, county commissioners, etc.) who could use data on the size, specifications and performance of earlier GRS bridges that were built with budgets and specifications that are comparable to those of their upcoming projects.

FFY22 scheduled work: Survey documented GRS bridge projects and collect related data on bridge location, span, GRS abutment size and construct, superstructure, cost, and any performance issues reported to date; Compile the data in a spreadsheet; Develop a GRS-IBS website which will be hosted at OU; Provide monthly reports; Prepare and submit final report.

PROPOSED ACTIVITIES FOR FFY 2024: Final report submitted. End of task order.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2023	$0.00	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Kianoosh Hatami, The University of Oklahoma, 405-325-3674

Task Order Manager: Wayne Rice, Transportation Manager, jrice@odot.org

2160-22-11
Project-Level Evaluation of Pavement Conditions for Maintenance, Asset and Safety Management, and Pavement Design (OU)

PURPOSE AND SCOPE: This is a joint task order between OSU and OU for project-level evaluation of pavement conditions using a hybrid technology. The work by the OU team is based on data from a recent Task Order (2160-20-06) over 30-lane miles of pavements in Oklahoma. The collected data include specialized GPR data (in cooperation with TTI), fast falling weight deflectometer (FFWD) data, selective coring, and laboratory testing. Deflection values from the FFWD testing were compared selectively with the corresponding values from the traffic speed deflection (TSD) data which were collected as part of a pooled fund study participated by ODOT. This task order also benefits from an OSU study (2400-21-05 Analysis of ODOT's Traffic Speed Deflection Device Data for Pavement Structural Evaluation). This task order will provide insights into using a hybrid technology to address engineering needs of multiple districts at ODOT in maintenance, asset and safety management, and pavement design (3 applications).
FFY22 scheduled work: The OU team will use the modulus (indicator of stiffness) and strain (indicator of fatigue cracking) to calibrate the coefficients used by TSD for estimation of number of cycles to failure (indicator of remaining life) for both asphalt and composite pavements. Traffic load-induced strain at the bottom of asphalt layers – an indicator of fatigue – will be determined mechanistically and used for the aforementioned calibration. The OU work is synced with work to be performed by the OSU team using 0.5-mm 3D laser imaging data for the same 30-lane miles for the 3 applications

PROPOSED ACTIVITIES FOR FFY 2024: Final report submitted. End of task order.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2023	$0.00	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Musharraf Zaman, The University of Oklahoma, 405-401-3096

ODOT Sponsors: Taylor Henderson, ODOT Maintenance Div. Engineer,

405-521-2557 ODOT: Angel Gonzalez, Engineering Manager, 405-437-5688

Task Order Manager: Wayne Rice, Transportation Manager, jrice@odot.org

2160-23-01
OU Task Order Contract Administrative Support

PURPOSE AND SCOPE: To provide support and guidance to task order projects at the University of Oklahoma to Principal Investigators and to the Office of Research and Implementation (ORI) in project management.

PROPOSED ACTIVITIES FOR FFY 2024: None. Final report submission is pending.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2023	$40,000	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Musharraf Zaman, Ph.D., PE, The Univ. of Oklahoma, 405-401-3096

ODOT Sponsor/Task Order Mgr.: Ron F. Curb PE, CPM, rcurb@odot.org, 405-414-7740

2160-23-02
FFY2023 Research Peer Exchange

PURPOSE AND SCOPE: Peer exchange is a practical and effective tool to foster excellence in research and technology (R&T) program management. It provides an opportunity for participants to share best practices and management innovations through an open exchange of ideas, knowledge, and brainstorming. Both staff and management from the home State and a group of invited participants with pertinent expertise and experience exchange information particularly relevant to the home State's R&T program over 2 to 4 days. In this Task Order a 3-day peer exchange event will be organized in close collaboration with ODOT. The findings of the peer exchange will be documented in a written report and submitted to ORI.

Participants must include the Oklahoma Department of Transportation and three other state DOTs, with no more than one DOT seeking first time research peer exchange experience. In addition, one representative each from Southern Plains Transportation Center (SPTC), Federal Highway Administration (FHWA), Transportation Research Board (TRB)/ National Cooperative Highway Research Program (NCHRP), and one University Transportation Center (UTC) other than SPTC will be invited to attend the peer exchange. The details of the agenda will be developed in close collaboration with ODOT and others so to maximize the benefit of this event.
A final report documenting the findings of the peer exchange shall be prepared and presented to ODOT Senior Staff.

PROPOSED ACTIVITIES FOR FFY 2024: None. Final report submission is pending.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2023	$116,000	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Musharraf Zaman, Ph.D., PE, The Univ. of Oklahoma, 405-401-3096,

ODOT Sponsor/Task Order Mgr.: Ron F. Curb PE, CPM, rcurb@odot.org, 405-414-7740

2160-23-03

Modification of AASHTO T 283 for Improved Screening of Asphalt Mixes for Moisture-Induced Damage

PURPOSE AND SCOPE: Oklahoma DOT has seen major problems in using Tensile Strength Ratio (TSR) from the current AASHTO T 283 test for screening of mixes for moisture-induced damage because of significant variability in test results. Stripping Inflection Point (SIP) from Hamburg Wheel Tracking (HWT) has been found to exhibit inconsistent correlations with field performance as well. Recently, ODOT has adopted Indirect Tensile Asphalt Cracking Test (IDEAL-CT) for screening of asphalt mixes for fatigue cracking. Cracking Tolerance Index (CT index) from IDEAL-CT requires specimen with a height of 62 mm. In this Task Order, the current AASHTO T 283 method will be modified to change the specimen height from 95 mm to 62 mm to be consistent with the IDEAL-CT test and used for the characterization of moisture-induced damage in asphalt mixes. The modification will employ the AASHTO T 283 for moisture conditioning of specimens. Moisture Induced Sensitivity Test (MIST) will be used with the modified AASHTO T 283 method for comparison purposes. In addition to TSR, the applicability of indirect tensile strength and CT index as an indicator of moisture-induced damage or stripping potential of asphalt mixes will be evaluated.

PROPOSED ACTIVITIES FOR FFY 2024: None. Final report submission is pending.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2023	$66,000	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Kenneth Hobson, Oklahoma University, 405-323-5669

ODOT Sponsor: David Vivanco, Asphalt Branch Manager, 405-522-4986

Task Order Manager: Wayne Rice, Transportation Manager, jrice@odot.org

2160-23-04
Designing RC Beam Strengthening by Combining FRP Flexural and Shear Strengthening Techniques

PURPOSE AND SCOPE: The Tulsa County US 169 Ramp S-W Over I-244 involved shear strengthening of existing concrete pier cap with CFRP U wrap. The design for such repairs is governed by ACI 440.2R Guide for the Design and Construction of Externally Bonded (EB) FRP Systems for Strengthening Concrete Structures. In practice, to meet shear and flexural demands of RC beams, shear strengthening is combined with flexural strengthening. However, the effect of this combination is only considered additive and reported as independent techniques in ACI. The potential issues associated with rupture of FRP leading to brittle failures is not considered [1]. To ensure designers are aware of the failure modes in this combination and to limit that effect for safety, the development of improved specifications is warranted.

PROPOSED ACTIVITIES FOR FFY 2024: None. Final report submission is pending.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2023	$64,000	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Shreya Vemuganti, University of Oklahoma, 505 323-5669

ODOT Sponsor: Walt Peters, Assist. Bridge Division Engineer, 405-521-2606

Task Order Manager: Gary Hook, Implementation Engineer, 405-420-2596

2160-23-05

ODOT Special Provisions for Enhancement Geotextiles - Phase 2 "Field Installation of Geotextile Products for a Comparative Study"

PURPOSE AND SCOPE: In the first phase of this study, which was concluded in Summer 2021, we identified candidate geotextile (GT) products for roadway reinforcement and subgrade stabilization that could be used as AASHTO Class 1A alternatives in ODOT projects. The final report of that study included selected property values of the shortlisted products and related requirements from several state DOTs.

In this phase of study, we need to obtain and install samples of the shortlisted products in a roadway project for long-term monitoring and performance evaluation in field conditions. The location of the roadway test section will be determined in an early stage of this project.

PROPOSED ACTIVITIES FOR FFY 2024: Final report submitted. End of task order.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2023	$64,000	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Kianoosh Hatami, The University of Oklahoma, 405-325-3674

ODOT Sponsor: Nairi Matevosyan, Materials Division, 405-521-4999

Task Order Manager: Gary Hook, Implementation Engineer, 405-420-2596

2160-23-06
Knowledge Management Awareness Campaign, SharePoint Site Creation, and Codifying Knowledge

PURPOSE AND SCOPE: Since 2018, Oklahoma Transportation (OT) and the Oklahoma Transportation Library (OTL) have been working on developing and implementing a knowledge management (KM) program to increase KM practices agency wide. The project has developed information gathering techniques, a sample KM platform to store knowledge using MS Teams, and a draft knowledge management awareness campaign. The next stage will involve implementing the awareness campaign to inform OT employees of KM best-practices to increase efficiency. The team will also collect KM-related content to store on a newly-created SharePoint site to serve as a model KM platform that can be scaled to other areas (departments, divisions, districts, etc.). Additionally, the team will work with the Office of Innovation and OT senior leadership to help codify knowledge throughout OT. The team will work with departments within OT to help train and promote the use of KM best practices and make KM part of everyday operations. A KM awareness campaign will inform ODOT employees of KM best practices, helping them increase operational efficiency. Gathering KM-related content for storage on a SharePoint site will create a model that can be scaled to fit multiple departmental needs. Codifying knowledge and assisting in KM training methods will help ensure KM best practices become part of daily operations at OT.

PROPOSED ACTIVITIES FOR FFY 2024: None. Final report submission is pending.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2023	$75,000	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Michael Molina, Ph.D., The University of Oklahoma, 405-325-5960

ODOT Sponsor/Task Order Mgr.: Ron F. Curb PE, CPM, rcurb@odot.org, 405-414-7740

2160-23-07

Transportation Taxonomy, Additional Social Network Analyses, Growing the KM Liaison Network, and Workforce Development

PURPOSE AND SCOPE: To build on the successes of the previous knowledge management (KM) task orders, the KM team will research and implement a transportation taxonomy (controlled vocabulary) at Oklahoma Transportation (OT) that will standardize file naming to increase information accessibility. The team will also implement social network analysis (SNA) surveys in various departments at OT, focusing on those at high risk for retirement or attrition. Additionally, the team will grow and maintain the KM liaison network created during the previous task order to build KM awareness and facilitate KM information accessibility across the organization.

By standardizing naming conventions at OT through the use of a transportation taxonomy, information findability and accessibility will be increased, providing gained efficiencies in productivity and standardization. Implementing social network analysis surveys across the agency will help identify critical knowledge before it is lost from employees leaving the agency. Growing and maintaining the KM liaison network will also be critical to ensure that nodes of communication relating to KM are present and up-to-date throughout the agency, ensuring increased access to KM information, improving onboarding of personnel and standardization.

PROPOSED ACTIVITIES FOR FFY 2024: None. Final report submission is pending.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2023	$75,000	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Michael Molina, Ph.D., The University of Oklahoma, 405-325-5960

ODOT Sponsor/Task Order Mgr.: Ron F. Curb PE, CPM, rcurb@odot.org, 405-414-7740

2160-23-08

Develop a Balanced Mix Design (BMD) for Oklahoma Incorporating High RAP and Rejuvenator

PURPOSE AND SCOPE: The proposed Task Order will extend the concept to find the rejuvenator's cracking performance over three periods of laboratory aging, namely short-, intermediate- and long-term aging. The Cracking Tolerance Index (CTindex) from Indirect Tension Asphalt Cracking Test (ASTM D 8225), commonly known as the IDEAL-CT, will be used for the evaluation of cracking performance. In addition, a Balanced Mix Design (BMD) with high amounts of RAP and rejuvenator will be developed as a part of this Task Order. The BMD could be used for the construction of a temporary pavement.

The Task Order will include the following tasks: selection and collection of materials; development of asphalt mix design; sample preparation with different aging conditions; IDEAL-CT testing for cracking performance evaluation; analysis of test data; and recommendations for BMD with high RAP. The first task after collecting materials will be to develop a BMD with high amount of RAP and rejuvenator. An aged binder activation factor was recommended in Task Order 2160-22-08. This factor will be evaluated for the developed BMD. The life expectancy of asphalt mixes based on the cracking performance over various aging intervals will be evaluated.

PROPOSED ACTIVITIES FOR FFY 2024: None. Final report submission is pending.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2023	$53,055	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Kenneth Hobson, The University of Oklahoma, 405-325-5911

ODOT Sponsor: David Vivanco, ODOT Asphalt Branch Engineering Manager, 405-522-4986

Task Order Manager: Teresa Stephens, Research Engineer, 405-415-5825

2161 Management of the ODOT Transportation Library

PURPOSE AND SCOPE: The Oklahoma Department of Transportation (ODOT) wishes to maintain and operate a sound, progressive, and flexible transportation library, which is available to ODOT, local, regional and national users. The goal is to keep ODOT staff and their stakeholders informed of recent developments and innovations in transportation technologies, methodologies and programs. A complementary goal is to increase operational efficiency and reduce cost. The Oklahoma Transportation Library (OTL) seeks to integrate with other transportation libraries nationally while moving toward digital contents and an Internet-based service system.

ODOT is a Core Sponsor of the TRB Program. Sponsor employees receive full online access to all the Transportation Research Records and has access to several databases such as TRID, TRIS, TRT, and RIP. The OTL may not have direct access to electronic copies of NCHRP Syntheses publications, but efforts are being made to change that.

PROPOSED ACTIVITIES FOR FFY 2024: Continue to: store, maintain, and provide access to the collection of transportation materials; refine the OTL collection regarding donated items; develop collection; perform traditional library services; organize internal and external outreach efforts including beneficial webinars, workshops, seminars, and lectures on transportation topics; share resources, abide by NTKN policies, and execute long-term and short-term library expansion and outreach goals; maintain and update OTL's virtual library, LibGuide and website; coordinate report printing, binding and distributing services; catalogue; conduct literature search related services; draft ODOT Research Highlighters (summaries). Provide occasional accessibility checks of final research reports. Provide monthly reports. Submit FFY24 Annual Report. FFY 2022 annual report approved October, 2022. FFY 2023 annual report due September 30, 2023.

EXPECTED DELIVERABLES:

- Task 1.1 Maintain the Collection
- Task 1.2 Refining the Collection
- Task 1.3 Developing the Collection
- Task 2.1 Serve as a Transportation Clearinghouse
- Task 2.2 Conduct Literature Search Related Services
- Task 2.3 Provide Traditional Services
- Task 3.1 Internal Outreach
- Task 3.2 External Outreach
- Task 3.3 Online and Print Outreach
- Task 4.1 Asst. ODOT with Access. of Final Reports
- Task 4.2 Ongoing Task: Coordinate Printing Services
- Task 4.3 OTL Report Preparation

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2023	$183,000	SPR	$0.00	STATE
Projected Cost FFY 2024	$219,000	SPR	$0.00	STATE

CONTACT INFORMATION

Librarian: Michael Molina, Ph.D., Oklahoma Transportation Library, 405-325-5960

ODOT Library Program Mgr.: Ron F. Curb PE, CPM, rcurb@odot.org, 405-414-7740

2279 Probabilistic Approach for the Design of Drilled Shafts Socketed in Weak Rock in Oklahoma

PURPOSE AND SCOPE: The proposed scope of work has been specifically developed to produce rational and defensible methods for design of drilled shafts in weak rock. The scope reflects a comprehensive load test program that will also supplement currently available tests, with the additional benefit of characterizing site-specific foundation variability. Furthermore, it will provide greater confidence in the design methods and resistance factors that will be developed from the proposed work.

Results of this study will provide the basis for quantifying the value of site-specific load testing for design and for implementing future improvements to design and construction that are currently being developed by FHWA.

The primary objective for the proposed work is to develop rational and practical Load and Resistance Factor Design (LRFD) methods for design of drilled shafts in weak rock formations that are common in Oklahoma.

PROPOSED ACTIVITIES FOR FFY 2024: Final report submission is pending.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2023	$0.00	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Erik Loehr, University of Missouri, 573-882-6380

Project Sponsor: Shon Jesse, ODOT Geotechnical Engineer, 405-522-3414

Project Manager: Teresa Stephens, Research Engineer, 405-415-5825

2286 Compost Filter Socks for Storm Water and Erosion Control in Construction - Phase 2
"Paired Catchment Comparison of Erosion Control Devices at Construction Sites"

PURPOSE AND SCOPE: An update to the Standards Specifications for Highway Construction of erosion and sediment control measures through the Storm Water Action Team is ongoing. Part of this update includes reviewing and evaluating new erosion control products like compost filter socks. Direct side-by-side testing of CFS systems in a paired system with silt fence, triangle silt dikes, and straw waddles is needed to be able to select the most effective and cost-effective system for a specific ODOT construction site. This Phase 2 portion of the project examines the longevity and effectiveness of three erosion control options using a paired catchment method for a variety of pertinent field site parameters including soil type, slope, and rainfall intensity. The purpose of paired catchment approach is to factor out variables other than the treatment effect that influenced the reduction of erosion rate over time.

PROPOSED ACTIVITIES FOR FFY 2024: **(Yr. 2 of 2)** Analysis of covariance of erosion variables will be conducted. The analysis allows the removal of variation due to the covariate, which is the independent variable, that may have added the factors of erosion to take effect into the treated catchment as the dependent variable before the introduction of an erosion control device. Finally, results from a paired catchment method will be used to inform the ODOT Storm Water Action Team for development a recommendation matrix for use on ODOT construction sites; provide monthly reports; FFY 2023 annual report is pending; prepare and submit FFY 2024 final report.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2023	$104,000	SPR	$0.00	STATE
Projected Cost FFY 2024	$106,000	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Jason Vogel, The University of Oklahoma, 405-325-2826

Project Sponsor: Joe Brutsche, ODOT Environmental Division Engineer, 405-522-3978

Project Manager: Teresa Stephens, Research Engineer, 405-415-5825

2287 Evaluation of the Expected Life and Recoating of Silane Water Repellant Treatments on Bridge Decks

PURPOSE AND SCOPE: Field evaluations funded by an ODOT task order to evaluate the effectiveness of silane coatings on bridge decks, shows that the silane is not consistently penetrating to the target depth. Further, this material is not resisting water absorption as outlined in the ODOT specifications. Based on discussions with ODOT Materials Division Engineers, the field testing is showing that one in three bridges are failing these tests. This suggests that these coatings are not effective and this puts the long-term performance of the bridge in question. While some results have been obtained with a limited number of bridges, more work is needed to investigate a larger number of bridges and evaluate the current ODOT specification.

This research is timely and will assist ODOT in making sound investments in the long-term performance of Oklahoma's bridges. As a result of this research a new specification for ODOT structures will be developed. The results of this research have the potential to greatly extend the service life of bridges and therefore save the state of Oklahoma millions of dollars.

PROPOSED ACTIVITIES FOR FFY 2024: None. Final report submission is pending.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2023	$120,000	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Tyler Ley, Oklahoma State University, 405-744-5257

Project Sponsor: Walt Peters, ODOT Assist. Bridge Division Engineer, 405-521-2606

Project Manager: Teresa Stephens, Research Engineer, 405-415-5825

2288 Long Term Performance and Benefits of Combined Balanced Mix Design and Chemical WMA Technology

PURPOSE AND SCOPE: Asphalt mix durability has been a serious concern in Oklahoma for a long period of time. To address this and other issues (such as binder source variability, new binder modification materials, and recycled materials), balanced mix design (BMD) approach is being adopted by many state agencies. Different measures and additives have been tried to make the mixes pass rutting, cracking, and moisture damage requirements. One factor which has not been well investigated is chemical warm mix asphalt (WMA) technology when combined with BMD. Compared to hot mix asphalt (HMA), WMA is produced at the temperature of 275 F or lower. Consequently, significant amount of lighter oil component of asphalt binder is kept in the asphalt mix, which is beneficial to asphalt mix durability. However, combining BMD and chemical WMA technology has not been comprehensively evaluated in either laboratory or field. Thus, it is critical to evaluate the long-term performance and benefits of the combined BMD and chemical WMA technology, considering the potential of substantially extended pavement life with such technology.

PROPOSED ACTIVITIES FOR FFY 2024: Received an FFY 2023 extension through December 31, 2023; Effective dates for FFY 2024 agreement: January 1, 2024 through August 31, 2024. Continue to quantify long-term engineering properties and benefits of asphalt mixtures produced with BMD and chemical WMA technologies and write a special provision/specification for implementation; provide monthly reports; prepare and submit the final report.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2023	$105,000	SPR	$0.00	STATE
Projected Cost FFY 2024	$63,000	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Debakanta (Deb) Mishra, Oklahoma State University, 405-744-3332

Project Sponsor: David Vivanco, Asphalt Branch Manager, 405-522-4986

Project Manager: Bryan Cooper, Transportation Manager, 405-305-1963

2290 Bond Behavior of Epoxy Coated Reinforcement Bars in Non-Proprietary UHPC

PURPOSE AND SCOPE: Develop non-proprietary UHPC mixtures using ODOT specified materials along with comparisons with other non-proprietary UHPC mixtures developed for bridge deck applications. Mixtures will be used to construct pull-out and beam-splice specimens for testing to investigate the effects of bar size and spacing, splice/embedment length, cover, fiber content, compressive strength, and bar coatings, including a new textured coating, on the bond strength between reinforcing bars and non-proprietary UHPC mixtures. A performance-based tension test using a notched specimen will be evaluated to determine applicability for use in design. Test results will be used to develop guidelines for splice design, with special emphasis on using UHPC in closure strips between reinforced concrete members.

PROPOSED ACTIVITIES FOR FFY 2024: None. Final report submission is pending.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2023	$140,000	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: David Darwin, University of Kansas, 785-864-3827

Project Sponsor: Walt Peters, Assist. Bridge Division Engineer, 405-521-2606

Project Manager: Teresa Stephens, Research Engineer: 405-415-5825

2291 A Fatigue Assessment Framework for Steel Bridges using Fiber Optic Sensors and Machine Learning

PURPOSE AND SCOPE: The main goal of the proposed research is to develop a machine learning (ML) assisted structural health monitoring (SHM) approach that employs fiber optic sensors (FOS) to enable (a) the assessment of the fatigue life of steel bridge details and (b) the accurate detection of the presence of damage under normal traffic loading conditions. In more detail, the proposed research aims at:

- Constructing a monitoring system based on FOS to enable accurate strain quantification for efficient fatigue assessment and performance evaluation of steel bridge components. The developed monitoring system will be suitable for long-term field application under aggressive environmental conditions.
- Formulating an approach that utilizes data from the FOS for damage detection in steel bridge components. The approach should detect and localize the damage without requiring detailed finite element modeling of the structure or detailed vehicular loading data. These requirements ensure its applicability for automated damage detection for existing bridges without the need for intensive post-processing data analysis.
- Characterizing the effect of key operational parameters on the efficacy of the damage detection algorithm. These include the effect of loading conditions, temperature variations, type of damage, and boundary conditions.

The proposed project will include the design of an instrumentation system for field application and validating its damage detection capabilities using large-scale laboratory testing.

PROPOSED ACTIVITIES FOR FFY 2024: **(Yr. 3 of 3)** Plan field implementation including selecting a bridge for monitoring, finalizing sensor selection and location, and practicing installation; install the system on the selected bridge and test the performance of the system; monitor the data generated and report the health of the bridge weekly, and estimate the fatigue life of critical details of the monitored bridge; provide monthly reports; FFY 2023 annual report is pending; prepare and submit FFY 2024 final report.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2023	$105,000	SPR	$0.00	STATE
Projected Cost FFY 2024	$105,000	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Mohamed Soliman, Oklahoma State University, 405-744-9777

Project Sponsor: Walt Peters, Assist. Bridge Division Engineer, 405-521-2606

Project Manager: Wayne Rice, Transportation Manager, jrice@odot.org

2292 Innovative Multi-Hazard Resistant Bridge Columns for Accelerated Bridge Construction

PURPOSE AND SCOPE: The Federal Highway Administration (FHWA) and state departments of transportation (DOTs) are actively promoting accelerated bridge construction (ABC) to minimize construction costs and time and to enhance work-zone safety. While several techniques are available to accelerate bridge superstructures, limited techniques are available to accelerate bridge substructures. This proposal focuses on accelerating substructure construction using an innovative multi-hazard resistant bridge column. The column consists of a concrete core sandwiched between an outer fiber-reinforced polymer (FRP) tube and an inner steel tube. Both tubes will act as stay-in-place forms and confine the concrete core. The inner steel tube will be embedded into the footing and will provide flexural and shear reinforcement. The outer FRP tube will protect the concrete and steel materials from corrosion and will provide flexural and shear reinforcement. Both high-strength self-consolidating concrete (SCC) and ultra-high-performance concrete (UHPC) will be investigated for potential use as the concrete core material.

PROPOSED ACTIVITIES FOR FFY 2024: None. Final report submission is pending.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2023	$105,000	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Jeffery Volz, Oklahoma University, 405-301-5922

Project Sponsor: Walt Peters, ODOT Assist. Bridge Division Engineer, 405-521-2606

Project Manager: Gary Hook, Implementation Engineer, 405-420-2596

2294 Investigate the Aging Behavior of Asphalt Binders at Different Production Stages and During the Service Life of the Pavement

PURPOSE AND SCOPE: Asphalt mixtures undergo aging during production, placement, and throughout the service life of the pavement, which affects the pavement performance, and ultimately results in pavement distresses. To improve the asphalt mix design process and extend the pavement life, it is important to evaluate the rate of aging and quantify its impact on the mixture properties. A comprehensive study of asphalt aging includes both a lab and field study of different asphalt mixtures representing a wide range of materials and mix designs in the state of Oklahoma.

PROPOSED ACTIVITIES FOR FFY 2024: **(Yr. 2 of 3)** A Literature review will be performed; Procurement and Installation of the Auto Extraction and Recovery System; Selection and Sampling of Plant-Produced Mixes for Extraction and Recovery; Conduct Extraction and Recovery on Plant-Produced Mixes; Rheological and Chemical Testing of Extracted and Recovered Binders; Long-term Aging of Plant-Produced Mixes involving heating the plant-produced mixes in the oven to simulate long-term aging; asphalt mixes sampled in Task 3 will be reheated in the lab and compacted to produce IDEAL-CT specimens to measure the cracking resistance, and Hamburg-Wheel Tracking (HWT) or IDEAL-RT specimens, as determined based on discussion with ODOT, to measure the rutting resistance; provide monthly reports; prepare and submit FY24 annual report.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2023	$200,000	SPR	$0.00	STATE
Projected Cost FFY 2024	$95,000	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Mohamed Elkashef, Ph.D., P.E. Oklahoma State University 405-744-1149

Project Sponsor: David Vivanco, Asphalt Branch Manager, 405-522-4986

Project Manager: Teresa Stephens, Research Engineer: 405-415-5825

2295 ODOT Automated Bridge Survey

PURPOSE AND SCOPE:
The purpose and scope of this research study will be to: Develop an efficient, non-destructive, and cost-effective procedure to comprehensively evaluate the condition of approach slabs and bridge decks. Provide approach slab and bridge deck evaluations encompassing cracking and IRI data, ensuring a thorough understanding of their performance. Conduct deck surveys to document essential parameters such as crack size and location, spall locations, percentage of patches, and condition of expansion joints. Identify areas requiring maintenance action based on a comprehensive assessment of ride quality, using 2D/3D images, roughness data, and right-of-way images to categorize conditions as Good, Fair, or Poor. Develop a non-destructive and cost-effective approach to determine the actual dynamic impact factor (IM) on both the approach slab and bridge decks based on their condition.

PROPOSED ACTIVITIES FOR FFY 2024: **(Year 1 of 3)**
The proposed research project is expected to have a duration of 36 months, during which several tasks will be carried out. In the initial nine months, the main objective will be to identify suitable bridge sites for experimental testing and data collection (Task 2). The team will work closely with ODOT and consider various bridge characteristics, such as bridge type and span length, to ensure their relevance to the study. During the first year FY24, Literature Review will be completed. Also, during the first year the proposed experimental design of major research activities encompasses several tasks: field data collection, evaluation of bridge IM, approaches, and decks, and development of a fast standard procedure for determining bridge IM will also be completed. The following tasks will also start: gathering basic bridge information, collecting multi-source data, and conducting field measurements of bridge IM, evaluating distress, bumps, IRI, and calculating IM for bridge approaches and decks. First annual report due September 30, 2024.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2023	$0.00	SPR	$0.00	STATE
Projected Cost FFY 2024	$125,000	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Joshua Li, Oklahoma State University, 405-744-6328

Project Sponsor: Walt Peters, ODOT Assist. Bridge Division Engineer, 405-521-260

Project Manager: Gary Hook, Implementation Engineer, 405-420-2596

2296 Highway/Rail Intersection Hump or High-Profile Crossings Problems

PURPOSE AND SCOPE: The proposed project will seek to address hang-up problems that are encountered by low-clearance vehicles on highway-rail grade crossings. The research will determine the extent of these hang-ups and will develop a procedure to identify the suspect crossings through testing and comparisons and will recommend field measurement approaches to obtain 3D ground profiles at railroad crossings. It will identify the vehicle types that are prone to hang-ups due to low-clearances and long wheel bases or overhangs. Computer modeling will be used to assess the ability of design vehicles to safely navigate specific grade crossings and develop design criteria and guidelines for crossing profile alignments, targeting those vehicles with known problems at grade crossings. The Red Rock Corridor will be used as a case study to conduct an analysis of the hang-up potential.

PROPOSED ACTIVITIES FOR FFY 2024: **(Year 1 of 2)** The first year of work will focus on gathering existing information and practices related to hump crossing problems. A procedure will then be developed to identify suspect hump or high-profile highway-rail grade crossings using multiple sources of information. Potential hump crossings will be identified within the Red Rock Corridor for site visits and field measurements. Various data collection techniques will be implemented to accurately measure 3D HRGC profiles, comparing and validating them against ground-truth values. Field protocols for measuring HRGC profiles will also be developed.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2023	$0.00	SPR	$0.00	STATE
Projected Cost FFY 2024	$128,000	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Dr. Joshua Li, Oklahoma State University, 405-332-1557 Project

Sponsor: Jared Schwennesen, ODOT Multimodal Div., Engineer, 405-227-9452

Project Manager: Bryan Cooper, Transportation Manager, 405-305-1963

2297 Updating Pavement ME Climate Module for Efficient Design, Management of Oklahoma Pavements

PURPOSE AND SCOPE: This project will explore the design of climate-resilient pavements utilizing the global climate models (GCMs), and appropriate maintenance and rehabilitation measures will be also be selected. The GCMs will be evaluated and the most relevant models will be selected, and appropriate downscaling techniques that are suitable for the conditions of Oklahoma will be utilized. The selected model(s) will be used for prediction of future climate conditions and generation of synthetic data. The suitability of Oklahoma Mesonet climate data will be evaluated, as well as suitability of extracting historical climate data from other sources, for evaluation and use as a database for predicting distresses in selected pavement sections in Oklahoma. Pavement distresses will be analyzed using projected future climate data. Historical Oklahoma Mesonet data, and data from other sources including existing climate data files, will be used to create virtual weather stations in the current AASHTOWare Pavement ME software. Performance of the virtual weather stations will be analyzed and compared with those from the existing stations. Software simulation results will be analyzed to establish a regionwide climate data source for improved design of pavements in Oklahoma.

PROPOSED ACTIVITIES FOR FFY 2024: **(Year 1 of 2)** Conduct and summarize a comprehensive literature search; evaluate climate models for their appropriateness for Oklahoma; conduct a mechanistic-empirical analysis of pavement structures for four sites across Oklahoma, using projected future climatic input parameters to evaluate pavement performance; provide monthly reports; prepare and submit annual report.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2023	$0.00	SPR	$0.00	STATE
Projected Cost FFY 2024	$106,000	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Rifat Bulut, Oklahoma State University, 405-744-7436

Project Sponsor: Amanda Warren, ODOT Pavement Design Engineer, 405-521-2390

Project Manager: Wayne Rice, Transportation Manager, jrice@odot.org

2298 Incorporating Quality Recycled Asphalt Pavement into the Balanced Mix Design World

PURPOSE AND SCOPE: The Oklahoma Department of Transportation (ODOT) has taken several steps towards the implementation of the balanced mix design (BMD) approach including introducing a BMD provisional specification to be used in pilot projects. The ODOT is also investigating increasing the use of reclaimed asphalt pavement (RAP). The RAP variability, management, testing, and impact on mix properties are all important factors that need to be considered as part of the BMD implementation. This project is part of a long-term plan by the ODOT to implement BMD and to promote asphalt recycling. The overall objective of this study is to assist ODOT in its BMD implementation efforts with emphasis on mixes containing RAP.

PROPOSED ACTIVITIES FOR FFY 2024: **(Year 1 of 3)** A literature review to include a look at what other states are doing in terms of specifying rap managing practices; determine RAP variability in the state by assessing the consistency of stockpiles through identifying as single-source or multi-source when possible; single and multi-source variability piles will be compared; once the variability is determined, different test methods will be used to characterize the RAP. The first annual report is due September 30, 2024.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2023	$0.00	SPR	$0.00	STATE
Projected Cost FFY 2024	$104,000	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Mohamed Elkashef, PhD, PE, Asst. Professor: 405-744-1149

Project Sponsor: David Vivanco, PhD, PE, Asphalt Engineering Manager: 405-522-4983

Project Manager: Teresa Stephens, Research Engineer: 405-415-5825

2300 Research Implementation

PURPOSE AND SCOPE: Implementation is the incorporation of research results into everyday practices of the organization and is a crucial stage in the research process. Research findings from national and regional studies are also considered for implementation. No matter how the research is derived, it is of little importance if it is not implemented. The budget for this item is prepared to support multiple implementation projects and/or various professional services contracts for research projects which fill needs of the Department but were not foreseen when the SPR budget was written, and therefore were not included as separate items. This may include special technical assistance on multiple projects, and providing matching funds for leveraging research program funds resulting in knowledgeable outcomes significant to the Department. Those projects and/or studies identified at SPR Work Program development that are supported by this item are represented in the following pages.

PROPOSED ACTIVITIES FOR FFY 2024: Support implementation project modification needs, mid-year research program needs and general implementation project support activity personnel needs. We have developed two new implementation RFPs to post for 2024 activity. We are currently in the process to determine the cost benefit/saving of projects that have been implemented.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2023	$100,000	SPR	$0.00	STATE
Projected Cost FFY 2024	$100,000	SPR	$0.00	STATE

CONTACT INFORMATION

ODOT Sponsor: Ron F. Curb PE, CPM, rcurb@odot.org, 405-414-7740

Project Manager: Gary Hook, Implementation Engineer, 405-420-2596

2302 Load Test Monitoring of I-235 Bridge Repairs

PURPOSE AND SCOPE: In response to national issues with grouting errors, FHWA has required all of the state DOTs to inspect their post tensioned grouted tendons. Based on these inspections ODOT discovered some issues with the I-235 bridge west of the state capitol. Older methods used during construction of this bridge led to some problems in the post-tensioning ducts. Not until relative recent years have DOTs required the use of thixotropic grouts for post-tensioning. Older grouts did not perform as well as the thixotropic grouts and tended to flow away from the high points leaving only water. Newer designs require additional vents especially at the high points. This project was directed at filling grout voids but stumbled into a few locations that did not have any grout. Due to concerns with section loss of the previously exposed prestressing strands, ODOT restricted permit traffic from travelling over the bridge. However, ODOT calculations show that a posting is not required. The approximate replacement cost for the bridge including the on-ramp is estimated to be $50 million. As such, health monitoring of the bridge is justified. The research team at OSU can help ODOT in the assessment of these repairs by performing an array of nondestructive tests including live load testing, strain monitoring, and acoustic emissions monitoring.

The objective of the project is to assess and monitor the repairs to the regrouted post tensioned tendons in the I-235 bridge. The anticipated benefit of the project is that it will provide insight into the effectiveness of the regrouted tendon repairs and monitor their behavior over time. This knowledge will be valuable in future decisions on safety and maintenance of the monitored bridge members.

PROPOSED ACTIVITIES FOR FFY 2024: Project received a one-year NCE through September 30, 2023 for continued project activities and the submission of the final report. Final report submission is pending.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2023	$0.00	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Robert Emerson, Oklahoma State University, 405-744-5259

Project Sponsor: Walt Peters, ODOT Assist. Bridge Division Engineer, 405-521-2606

Project Manager: Gary Hook, Implementation Engineer, 405-420-2596

2313 Design and Monitoring of Non-Proprietary UHPC Joints of Precast Elements

PURPOSE AND SCOPE: The purpose of this study is to take the results of the 2276 study entitled "Evaluation of Ultra-High-Performance Concrete for Use in Bridge Connections and Repair" and implement and monitor the effects of the UHPC process on various bridge deck joints throughout the state. Deterioration of bridges can often be related to poor performance of longitudinal connections between precast members or transverse deck joints. Ultra-high performance concrete (UHPC) is a cementitious composite with mechanical and durability properties far exceeding those of conventional concrete, which makes it an ideal material for bridge deck joints. UHPC is a relatively expensive material and is most economical when use of a small quantity can have a large impact on overall performance of a structure.

PROPOSED ACTIVITIES FOR FFY 2024: Final report submitted. End of project.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2023	$0.00	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Royce Floyd, The University of Oklahoma, 405-325-1010

Project Sponsor: Walt Peters, ODOT Assist. Bridge Division Engineer, 405-521-2606

Project Manager: Gary Hook, Implementation Engineer, 405-420-2596

2314 Evaluation and Development of Flood Detection and Prediction System

PURPOSE AND SCOPE: The purpose of this project is to evaluate systems for the rapid detection of flash flooding in problem areas through a weather station platform deployed at an ODOT site and integrate system evaluation in a real-world setting, to develop a prediction model, and to develop a warning system to alert the public of impending flood waters.

PROPOSED ACTIVITIES FOR FFY 2024: Final report submitted. End of project.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2023	$0.00	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Hazem Refai, University of Oklahoma, 405-660-3234

Project Sponsor: Alan Stevenson, Engineering Manager, 405-521-6460

Project Manager: Bryan Cooper, Transportation Manager, 405-305-1963

2315 Adapting ODOT Radar Traffic Monitoring System to Automatically Track Real-Time Traffic Flow

PURPOSE AND SCOPE: The Oklahoma Department of Transportation is in the process of installing 150 radar sites across the State, with most radars deployed on major highways and roadways in the OKC and Tulsa metropolitan areas. The radar units monitor traffic flow and collect information including volume, speed, and vehicle classification. High resolution cameras are installed on the radar and can be configured to take a picture at regular intervals. This project is comprised of three major activities. First is to develop an interface to the radar data to allow real-time sharing of data and pictures with the Intelligent Transportation System group in ODOT Maintenance Division. The system will report speed information as well as pictures. Second is to compare the collected speed data with that obtained from commercial companies. Currently, the State spends large sum of funds to secure annual contract with such companies. Third is to investigate the use of speed data to rapidly detect roadway incidents.

PROPOSED ACTIVITIES FOR FFY 2024: Final report submitted. End of project.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2023	$0.00	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Hazem Refai, University of Oklahoma, 405-660-3234

Project Sponsor: Angel Gonzalez, Engineering Manager, 405-521-2704

Project Manager: Gary Hook, Implementation Engineer, 405-420-2596

2316 Solving the Riddle of End Regions-and Holistically Address the Performance of PC Girder Bridges Including Design, Sustainability and Rating

PURPOSE AND SCOPE: The purpose and goals of this research is to develop designs and methods for PC Bridge Beams that: assure safety and strength of PC Beam Bridges, produce PC breams with end regions that are free or nearly free from cracking in end regions of PC beams, produce beams with controlled and predictable prestress losses, produce PC beams with controlled and predicable cambers, and assure the long-lived serviceability of PC beam bridges.

PROPOSED ACTIVITIES FOR FFY 2024: **(Year 2 of 3)** Perform analytical modeling to evaluate variables in end regions. Perform modeling to examine effects of top strands and modeling to evaluate DF's, IM and service 3. Continue lab testing of concrete and strand end instrumentation. Monitor deflections, temperature and strains. Work on "Best Practices Guide". Provide monthly reports; prepare and submit FFY 2023 annual report.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2023	$130,000	SPR	$0.00	STATE
Projected Cost FFY 2024	$135,000	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Bruce Russell, Oklahoma State University, 405-742-7450

Project Sponsor: Walt Peters, ODOT Assist. Bridge Division Engineer, 405-521-2606

Project Manager: Gary Hook, Implementation Engineer, 405-420-2596

2317 Effectiveness of Magnesium-Alumino-Liquid-Phosphate-Based Concrete as a Repair Material (MALP)

PURPOSE AND SCOPE: The purpose and goals of this research is to address the corrosion performance of conventional reinforcing steel in uncracked and cracked MALP concrete in simulated repairs of Portland cement of both high and low quality. Reinforcing bars will be evaluated in both a clean and passive state and in an activity corroding state. The project will evaluate the ability of MALP concrete to withstand freeze-thaw cycles both as an individual material and in conjunction with Portland cement concrete.

PROPOSED ACTIVITIES FOR FFY 2024: **(Year 2 of 3)** Continue to evaluate corrosion performance of uncorroded and corroded reinforcing steel in cracked and uncracked concrete. Also continue with the evaluation process of the freeze-thaw performance of Phoscrete individually and in conjunction with conventional concrete. Evaluate the shrinkage properties of Phoscrete to minimize crack widths internally and adjacent to sound concrete at a repair site. Provide monthly reports; prepare and submit FFY 2023 annual report.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2023	$97,000	SPR	$0.00	STATE
Projected Cost FFY 2024	$100,000	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: David Darwin, University of Kansas, 785-864-3827

Project Sponsor: Walt Peters, ODOT Assist. Bridge Division Engineer, 405-521-2606

Project Manager: Gary Hook, Implementation Engineer, 405-420-2596

2400 Oklahoma State University Master Agreement for Research and Investigation Services

PURPOSE AND SCOPE: This item was set up to support a task-order based contract for the purpose of providing ODOT the opportunity to address topics and needs that were not brought through the formal annual project selection process and/or were identified outside the formal process. These projects ranged in both scope and financial commitment from simple to complex, but were generally limited to a one-year or less completion cycle. Topics included traditional research topic areas of interest to the Agency, as well as ancillary effort including education, workforce development and technology transfer through, but not limited to, collaboration, leadership training, addressing student retention and diversity, and internship programs.

PROPOSED ACTIVITIES FOR FFY 2024: This item will remain open until all OSU UTC task orders are completed and final reports have been submitted. Continue task order contracting mechanism until all FFY 2023 task orders have been completed.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2023	$500,000	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

UTC Program Admin.: Kelvin Wang, Ph.D., PE, Oklahoma State University, 405-744-5189

ODOT UTC Program Mgr.: Ron F. Curb PE, CPM, rcurb@odot.org, 405-414-7740

2400-21-01
OSU Task Order Contract Administrative Support

PURPOSE AND SCOPE: To provide support and guidance to task order projects at Oklahoma State University to Principal Investigators and to the Office of Research and Implementation (ORI) in project management.

PROPOSED ACTIVITIES FOR FFY 2024: Final report submitted. End of task order.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2023	$0.00	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Kelvin Wang, Ph.D., PE, Oklahoma State University, 405-744-5189

ODOT Sponsor/Task Order Mgr.: Ron F. Curb PE, CPM, rcurb@odot.org, 405-414-7740

2400-21-09
Bridge Approach Evaluation and Management

PURPOSE AND SCOPE: Bridge deck approaches at ODOT were mostly constructed with concrete slabs. Certain approaches were overlaid with thin asphalt mix materials due to settlement after construction. Approach quality directly affects the dynamic impact of truck load on both the approaches themselves, and the user cost of all vehicles. This task order will use current ODOT inspection process and the AASHTO Manual of Bridge Evaluation (2018) as guides to evaluate selected number of bridges on I-35 in District 4 using the OSU sub-mm 3D laser imaging technology, and provide recommendations to ODOT in both data collection and management of approaches in the future.

PROPOSED ACTIVITIES FOR FFY 2024: Final report submitted. End of task order.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2023	$0.00	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Kelvin Wang, Oklahoma State University, 405-744-5189

ODOT Sponsor: Walt Peters, Asst. Bridge Engineer, 405-521-2606

Task Order Manager: Gary Hook, Implementation Engineer, 405-420-2596

2400-21-11
Data Preparation for Implementing Pavement ME Design in Oklahoma

PURPOSE AND SCOPE: ODOT owns rich data sources that are valuable for the Pavement ME Design, including the county level Mesonet climatic data, a large amount of subgrade/base sampling and testing data, a comprehensive traffic data collection program with hundreds of permanent traffic counters (71 AVC, 21 WIM, and 150 new radar-based units), and extensive testing of surface pavement materials. This task order will utilize these state-specific data sets to prepare the critical inputs for the implementation of ME Design at ODOT, and develop an AASHTOWARE Pavement ME Design Implementation Guide for Oklahoma.

PROPOSED ACTIVITIES FOR FFY 2024: Final report submitted. End of task order.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2023	$0.00	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Joshua Li, Oklahoma State University, 405-744-6328

ODOT Sponsor: Amanda Warren, ODOT Pavement Design Engineer, 405-521-2390

Task Order Manager: Gary Hook, Implementation Engineer, 405-420-2596

2400-22-01
OSU Task Order Contract Administrative Support

PURPOSE AND SCOPE: To provide support and guidance to task order projects at Oklahoma State University to Principal Investigators and to the Office of Research and Implementation (ORI) in project management.

PROPOSED ACTIVITIES FOR FFY 2024: Final report submitted. End of task order.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2023	$0.00	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Kelvin Wang, Ph.D., PE, Oklahoma State University, 405-744-5189

ODOT Sponsor/Task Order Mgr.: Ron F. Curb PE, CPM, rcurb@odot.org, 405-414-7740

2400-22-02
Civil Engineering Education Outreach: Transportation Infrastructure Activities

PURPOSE AND SCOPE: Includes activities aimed at K-12 students, incoming engineering freshmen at Oklahoma State University, as well as practicing professionals. Though targeted toward a wide range of audiences, all of the activities share the purpose of informing the broader public about transportation infrastructure.

PROPOSED ACTIVITIES FOR FFY 2024: Final report submitted. End of task order.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2023	$0.00	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Robert Emerson, Ph.D., PE, Oklahoma State University, 405-334-1439

ODOT Sponsor/Task Order Mgr.: Ron F. Curb PE, CPM, rcurb@odot.org, 405-414-7740

2400-22-03

Evaluation of a Continuous Reinforced Concrete Pavement and the Design of a Bonded Overlay

PURPOSE AND SCOPE: There are 29 lane miles of continuous reinforced concrete pavement on I-35 between SE 15th and SE 89th in Oklahoma City that are showing signs of deterioration because the steel is placed in the wrong location. This task order will provide assistance in documenting the steel location, suggesting repair areas, and also suggesting the mixture design for the overlay. As part of this effort, the following deliverables will be composed:

- A GPR survey of the region completed by Infrasense, Inc.
- Suggested areas for the overlay.
- Suggested overlay mixture design.

PROPOSED ACTIVITIES FOR FFY 2024: Final report submitted. End of Task Order.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2023	$0.00	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Tyler Ley, Oklahoma State University, 405-744-5257

ODOT Sponsor: Trenton January, Field District Engineer (Dist. 4), 580-336-7340

Task Order Manager: Teresa Stephens, Engineering Manager, 405-415-5825

2400-22-04

Quality Control and Assurance Guide for Maintenance Equipment Fleet Management Data

PURPOSE AND SCOPE: The Oklahoma Department of Transportation (ODOT) has collected maintenance equipment fleet management data, including equipment inventory, fueling records, maintenance and repair records, and equipment operation logs, for decades. To keep its equipment operating in cost-effective and productive conditions, this data has been traditionally used as the basis for establishing equipment "rental rates" that have been used as a crucial instrument to track and adjust depreciable equipment budget. However, all of these data-driven decisions hinge on the quality of the equipment management data. The ODOT's current equipment data management practices have not implemented a quality control and quality assurance (QA/QC) process. As a result, the poor-quality data can compromise the Division's ability to make accurate forecasts and economic decisions. Therefore, a data quality control and assurance process will be developed through this proposed task order.

PROPOSED ACTIVITIES FOR FFY 2024: Final report submitted. End of task order.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2023	$0.00	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Yongwei Shan, Oklahoma State University, 580-744-7073

ODOT Sponsor: Alex Calvillo, ODOT Asst. Div. Eng. for Operations and Maint., 405-521-2557

Task Order Manager: Wayne Rice, Transportation Manager, jrice@odot.org

2400-22-05
Incremental Creep for Cracking at Low Temperature (ICCL)

PURPOSE AND SCOPE: The Oklahoma Transportation Materials Division currently uses a test called the Bending Beam Rheometer (BBR) that is labor intensive and time consuming, taking about 2 days to complete. There is now a device called the Dynamic Shear Rheometer (DSR) that is portable and takes about 5 minutes to complete. The new test can be performed in the field, rather than the lab. It is a surrogate test to determine the continuous low temperature performance grade.

PROPOSED ACTIVITIES FOR FFY 2024: Final report submitted. End of task order.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2023	$0.00	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Mohamed Elkashef, Oklahoma State University, 405-744-1149

ODOT Sponsor: David Vivanco, Asphalt Branch Manager, 405-522-4986

Task Order Manager: Bryan Cooper, Transportation Manager, 405-305-1963

2400-22-06

Load Testing and Structural Monitoring of SH 4 and SH 11 Bridges in Canadian and Kay Cos.

PURPOSE AND SCOPE: In prior research work, Bridges in Kay County (SH 11) and Canadian County (SH 4) were instrumented during construction (SH 4, 2020) and rehabilitation (SH 11, 2019). Under a FY 2021 Task Order, SH 4 Bridge is being load tested and monitored. Work remains to evaluate the performance of the PC Bridge Girders in SH 4, and to evaluate the response to load of the SH 11 bridge. This FY22 Task Order will perform Static Load and Moving Load Tests on SH 11 Bridge in Kay County, continue monitoring both bridges for temperatures, strains and accelerations, and evaluate relative performance of PC Bridge Girders on SH 4 Bridge through crack mapping and Finite Element Analysis.

Assess and make recommendations for load distribution factors, impact factors, reinforcement details in end regions, the use of mild reinforcement at midspan and other factors that affect the performance of ODOT Bridges.

PROPOSED ACTIVITIES FOR FFY 2024: Final report submitted. End of task order.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2023	$0.00	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Bruce Russell, Oklahoma State University, 405-742-7450

ODOT Sponsor: Walt Peters, Asst. Bridge Engineer, 405-521-2606

Task Order Manager: Gary Hook, Implementation Engineer, 405-420-2596

2400-22-08
On Demand Support of ODOTR Skid Program

PURPOSE AND SCOPE: Perform on demand support to the ODOT skid program. The base cost is estimated to be $5,000 per on-demand service per daily trip, for most work. If the data collection of one service requires multiple days, the PI should report to ODOT in advance. For each additional workday, the extra cost is estimated to be $2,500, plus lodging and per diem for the testing crews. The UNIVERSITY will charge the DEPARTMENT per the number of services completed during the year according to the above estimated costs. Any unused or surplus funds in the task order will be used to support the identification of the most hazardous hotspots and wet weather crash locations, which frequently occur on surfaces with inadequate pavement friction.

PROPOSED ACTIVITIES FOR FFY 2024: Final report submitted. End of task order.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2023	$0.00	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Joshua Li, Oklahoma State University, 405-744-6328 ODOT

Sponsor: Angel Gonzalez, Engineering Manager, 405-437-5688

Task Order Manager: Gary Hook, Implementation Engineer, 405-420-2596

2400-22-09

Project-Level Evaluation of Pavement Conditions for Maintenance, Asset and Safety Management, and Pavement Design (OSU)

PURPOSE AND SCOPE: This is a joint task order between OU and OSU. The descriptions and deliverables are only for the OSU portion of work on applying a hybrid technology for project-level evaluation of pavement conditions including GPR data, TSD and FWD-based deflection data, and sub-mm 3D laser imaging data for surface condition, roughness, and safety over 30-lane miles of pavements in Oklahoma. This task order for OSU will provide insights into using sub-mm 3D laser imaging technologies and other equipment at OSU to address engineering needs of multiple districts at ODOT in maintenance, asset and safety management, and pavement design (three application areas). The OSU team will also assist the OU team in understanding the GPR and defection data sets on the same pavement sections so that a comprehensive evaluation can be conducted on the pavement sections.

FFY22 scheduled work: In this Task Order the OSU team will use OSU 3D laser imaging and relevant equipment to survey the same 30-mile pavement sections as the OU team did for GPS and deflection surveys for both asphalt and composite pavements for the three applications (maintenance, asset and safety, and design).

PROPOSED ACTIVITIES FOR FFY 2024: Final report submitted. End of task order.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2023	$0.00	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Kelvin Wang, Oklahoma State University, 580-744-5188 ODOT Sponsors:

Taylor Henderson, ODOT Maintenance Div. Engineer, 405-521-2557

Angel Gonzalez, Engineering Manager, 405-437-5688

Task Order Manager: Wayne Rice, Transportation Manager, jrice@odot.org

2400-23-01
OSU Task Order Contract Administrative Support

PURPOSE AND SCOPE: To provide support and guidance to task order projects at Oklahoma State University to Principal Investigators and to the Office of Research and Implementation (ORI) in project management.

PROPOSED ACTIVITIES FOR FFY 2024: None. Final report submission is pending.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2023	$40,000	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Kelvin Wang, Ph.D., PE, Oklahoma State University, 405-744-5189

ODOT Sponsor/Task Order Mgr.: Ron F. Curb PE, CPM, rcurb@odot.org, 405-414-7740

2400-23-02
Benchmarking Oklahoma Asphalt Mixtures for Cracking Performance

PURPOSE AND SCOPE: The Oklahoma Department of Transportation (ODOT), like many other state DOTs, has moved towards the implementation of Balanced Mix Design (BMD) approaches, where asphalt mix design is not only based on volumetric parameters, but also on performance-related thresholds. The BMD implementation process in Oklahoma has involved the selection of appropriate performance tests that would screen the asphalt mixtures based on their rutting and cracking performance. The cracking test selected for implementation by ODOT is the IDEAL-CT test, which is an indirect tensile strength test that does not require specialized specimen preparation.

PROPOSED ACTIVITIES FOR FFY 2024: Received an FFY 2023 extension through December 31, 2023; Final report submission is pending.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2023	$80,000	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Deb Mishra, Oklahoma State University, 405-744-6328

ODOT Sponsor: David Vivanco, Asphalt Branch Manager, 405-522-4986

Task Order Manager: Gary Hook, Implementation Engineer, 405-420-2596

2400-23-03

Use of Continuous Pavement Deflection Data for Network-Level Structural Condition Assessment of Oklahoma Highways

PURPOSE AND SCOPE: The Oklahoma Department of Transportation (ODOT) has solely relied on pavement functional data for maintenance and rehabilitation decisions, with localized Falling Weight Deflectometer (FWD) testing for project-level designs. Although the FWD is a reliable tool for pavement structural evaluation, its main disadvantage concerns traffic control requirements. Moreover, the FWD provides a spot-based measurement, meaning the tests can be performed at certain points along the pavement surface. Traffic Speed Deflection Devices (TSDDs) that measure surface deflection at traffic speeds have recently gained a significant popularity among pavement researchers/engineers as well as state highway agencies. TSDDs, provide a rapid and continuous "picture" of the pavement condition, thereby, significantly enhancing the amount of information available related to the pavement condition as compared to FWDs. This project will analyze the TSDD data being collected by ODOT as a part of Transportation Pooled Fund Project TPF-5(385) and identify different approaches to integrate the data into ODOT's pavement management decisions in terms of structural design of rehabilitated sections.

PROPOSED ACTIVITIES FOR FFY 2024: Received an FFY 2023 extension through December 31, 2023; Final report submission is pending.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2023	$60,000	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Deb Mishra, Oklahoma State University, 405-744-6328

ODOT Sponsor: Angel Gonzalez, Engineering Manager, 405-437-5688

Task Order Manager: Gary Hook, Implementation Engineer, 405-420-2596

2400-23-04
Field Performance of Novel Asphalt Material Technologies

PURPOSE AND SCOPE: The objective is to monitor the field conditions of the pavement sections using novel asphalt materials and evaluate their performance as compared to that of the control sections. Oklahoma Transportation has implemented several asphalt technologies, such as Balanced Mix Design (BMD), Ground Tire Rubber (GTR), Warm Mix Asphalt (WMA) with RAP, perpetual pavements with Rich Bottom Layer (RBL), High Friction Surface Treatment (HFST), and Open Graded Friction Courses (OGFC). Most of these sections are 5-10 years old and showing various levels of surface deterioration and cracking. These sections generally have counterpart control sections using conventional mixes, which provides an excellent testbed so that field performance can be evaluated.

PROPOSED ACTIVITIES FOR FFY 2024: Received an FFY 2023 extension through December 31, 2023; Final report submission is pending.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2023	$0.00	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Joshua Li, Oklahoma State University, 405-744-6328

ODOT Sponsor: David Vivanco, Asphalt Branch Manager, 405-522-4986

Task Order Manager: Bryan Cooper, Transportation Manager, 405-305-1963

2400-23-05
Civil Engineering Education Outreach: Transportation Infrastructure Activities

PURPOSE AND SCOPE: This task order requests ODOT funding for a year-long outreach program. The proposed program includes activities aimed at K-12 students, incoming engineering freshmen at Oklahoma State University, as well as practicing professionals. Though targeted toward a wide range of audiences, all of the activities share the purpose of informing the broader public about transportation infrastructure.

PROPOSED ACTIVITIES FOR FFY 2024: None. Final report submission is pending.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2023	$70,000	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Robert Emerson, Ph.D., PE, Oklahoma State University, 405-334-1439

ODOT Sponsor/Task Order Mgr: Ron F. Curb PE, CPM, rcurb@odot.org, 405-414-7740

2400-23-06
Performance Evaluation of Bridge Approach Slabs and Joints through Inertial, Sub-mm 3D, and Visual Methods

PURPOSE AND SCOPE: Approach slabs and joints on ODOT mainline bridges receive specific maintenance and rehabilitation measures due to settlement and dynamic impact from truck loading. Examples of repair activity include the use of deep-injection technique, backfill for voids, mud jacking, and overlays of pavement approaches to mitigate settlement. The task order is to use state-of-the-art OSU equipment in longitudinal profiling, sub-mm 3D laser imaging, and ultra-high resolution color imaging method to inspect approaches and joints for both identification of problems and field performance evaluation of existing repair techniques. The data collection is non-intrusive and does not require traffic control.

PROPOSED ACTIVITIES FOR FFY 2024: None. Final report submission is pending.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2023	$95,000	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Kelvin Wang, Oklahoma State University, 405-744-5189

ODOT Sponsor: Walt Peters, Asst. Bridge Engineer, 405-521-2606

Task Order Manager: Teresa Stephens, Research Engineer, 405-415-5825

2400-23-07

Structural Monitoring of SH 4 and SH 11 Bridges in Canadian and Kay Counties; and Explore DF's and IM through Analyses

PURPOSE AND SCOPE: In prior research work, Bridges in Kay Co. (SH 11) and Canadian Co. (SH 4) were instrumented during construction (SH 4, 2020) and rehabilitation (SH 11, 2019). Under a FFY 2021 Task Order # 2400-21-02, SH 4 Bridge was load tested and monitored. Under a FFY 2022 Task Order # 2400-22-06, crack mapping was performed on SH 4 and Load Testing was performed on SH 11. This FY23 Task Order will:

a) Continue monitoring both bridges for temperatures, strains, and accelerations.
b) Continue to assess and make recommendations for (i) load distribution factors and ii) impact factors through the use of FEA and other analysis techniques. Consider the grillage method or other approximate techniques.
c) Make recommendations for (i) load distribution factors and (ii) impact factors related to both DESIGN and RATING.
d) Assess strand bond quality for various prestressing strands

Evaluate the impact of varying bond quality on the design and performance of PC Girder bridges.

PROPOSED ACTIVITIES FOR FFY 2024: This task order was approved for an extension through December 31, 2023. Final report submission is pending.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2023	$70,000	SPR	$0.00	STATE
Projected Cost FFY 2024	$0.00	SPR	$0.00	STATE

CONTACT INFORMATION

Principal Investigator: Bruce W. Russell, Oklahoma State University, 405-742-7450

ODOT Sponsor: Walt Peters, Asst. Bridge Engineer, 405-521-2606

Task Order Manager: Gary Hook, Implementation Engineer, 405-420-2596

2700 Experimental Product Evaluation Program

PURPOSE AND SCOPE: This project was established to provide ODOT with a means of providing for the (experimental) use, monitoring, evaluation and implementation of products for highway and bridge construction where the products do not meet current ODOT standards and specifications, or have not yet been approved for identified qualified product lists.

PROPOSED ACTIVITIES FOR FFY 2024: Continue working with ODOT Divisions regarding experimental product information, use, trials, results, and modifications to standards for product use in construction and maintenance. Track experimental products through ODOT implementation.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2023	$80,000	SPR	$0.00	STATE
Projected Cost FFY 2024	$80,000	SPR	$0.00	STATE

CONTACT INFORMATION

Project Manager: Gary Hook, Implementation Engineer, 405-420-2596

TPF-5 (313) Technology Transfer Concrete Consortium

PURPOSE AND SCOPE:
Increasingly, state departments of transportation (DOTs) are challenged to design and build longer life concrete pavements that result in a higher level of user satisfaction for the public. One of the strategies for achieving longer life pavements is to use innovative materials and construction optimization technologies and practices. In order to foster new technologies and practices, experts from state DOTs, Federal Highway Administration (FHWA), academia and industry must collaborate to identify and examine new concrete pavement research initiatives. The purpose of this pooled fund project is to identify, support, facilitate and fund concrete research and technology transfer initiatives.

OBJECTIVES:
The objectives of this study are to, identify needed research projects ,develop pooled fund initiatives, provide a forum for technology exchange between participants, develop and fund technology transfer materials, provide on-going communication of research needs faced by state agencies to the FHWA, industry, and CP Tech Center, provide guidance on priorities for the Next Gen CP Road Map, provide assistance as requested by the Next Gen CP Road Map Executive Committee on other select tracks as needed, provide technical leadership for the national initiative to develop performance engineered concrete mixes.

PARTNERS: AL, CA, CO, FHWA, FL, GA, IA, ID, IL, IN, KS, KY, LA, MA, MI, MN, MO, MT, NC, ND, NE, NV, NY, OH, OK, OR, PA, RI, SC, SD, TN, TX, UT, WA, WI, WV

OKLAHOMA INVOLVEMENT:
Provide monthly data as requested, attend quarterly virtual meetings and attend the yearly meeting on this pooled fund study.

Study Period	2016	2017	2018	2019
State Contribution ($)	12,000	12,000	12,000	16,000

ESTIMATED COMPLETION DATE: This study was completed in May 2022.

POINTS OF CONTACT:
Lead: Kyle Clute, 515-239-1646
ODOT: Nairi Matevosyan, 405-522-4999
FHWA: Mike Praul, 207-512-4917

TPF-5 (326) Develop and Support Transportation Performance Management Capacity Development Needs for State DOTs

PURPOSE AND SCOPE:
Moving Ahead for Progress in the 21st Century (MAP-21) establishes a broad performance-based approach to the Federal Highway Program. MAP-21 identifies seven performance areas in which the US DOT, in consultation with their stakeholders, will develop performance measures. Under MAP-21, State Transportation Agencies (STAs), Metropolitan Planning Organizations (MPOs), and public transit providers are required to develop strategies and targets for each of the performance measures established by USDOT. The focus of this pooled-fund project will be to determine and support participating State's, MPO's, and Public Transportation providers Transportation Performance Management (TPM) Capacity Development needs.

OBJECTIVES:
This pooled fund project will focus on research, assess training and educational needs of contributing members, develop and deliver training, and facilitate the sharing and retention of performance management best practices.

Funding will be used to:

- Identify Gaps in TPM Knowledge, Skills and Abilities—Conduct a needs analysis for learning and capacity development of contributing members resulting in a short and long-term capacity building roadmap;
- Develop and Deliver Learning and Capacity Development Resources—Develop training and educational material to meet the gaps identified in the knowledge, skills and abilities;
- Establish a TPM Information Clearinghouse—The TPM Information Clearinghouse will be used to showcase PM best practices, foster collaboration, and serve as a repository for PM resources; and
- Support Knowledge Transfer Among Pooled Fund States

PARTNERS:
AL, AR, AZ, CA, CO, CT, DE, FHWA, GDOT, HI, IA, IL, KS, KY, LA, MDOT SHA, MI, MN, MO, MS, ND, NHDOT, NJ, NV, Oahu MPO, OH, OK, PA, RI, SD, TN, TX, UT, VT, WA, WI, WV

OKLAHOMA INVOLVEMENT:
Participate in monthly/quarterly conference calls; Oklahoma is a voting member of this study.

Study Period	2016	2017	2018	2019	2020	2021	2022	2023
State Contribution ($)	10,000	10,000	10,000	27,000	27,000	27,000	27,000	27,000

ESTIMATED COMPLETION DATE: December 2023

POINTS OF CONTACT:
Lead: Lori Fisette, 401-222-6940
ODOT: Angel Gonzalez, 405-522-5904
FHWA: Michael Nesbitt, 202-366-1179

TPF-5 (335) 2016 through 2020 Biennial Asset Management Conference and Training on Implementation Strategies

PURPOSE AND SCOPE:
Section 1203 of the MAP-21 stipulates USDOT to promulgate performance measures in the areas of the National Highway Performance Program (NHPP), Highway Safety Improvement Program (HSIP), the Congestion Mitigation and Air Quality Improvement Program (CMAQ), and the National Freight Movement (Freight) within 18 months after the date of enactment of the MAP-21. State Department of Transportation's are tasked with developing performance measures plans, which include asset management plans. The focus of this pooled fund project will be in the area of the NHPP.

OBJECTIVES:
1. Provide communication and information sharing among member states. Discuss research needs and provide research ideas to TRB.
2. Provide a technology and knowledge exchange forum to enhance the practical knowledge of member states concerning asset management implementation.
3. Enhance the working knowledge of the asset management community.

SCOPE OF WORK:
The Iowa DOT) will serve as lead state for this Pooled Fund project. The principal tasks are:

1. Coordinate a Technical Advisory Committee meeting (i.e., workshop or webinar) for member states to learn and review issues associated with implementation of asset management. Member states share best practices and strategies for overcoming certain challenges.
2. Coordinate an annual survey of state DOT asset management practices to help states evaluate their asset management status. Support development of content for the conference and training activities.
3. Provide a Biennial Asset Management Conference for member states to exchange information on the challenges to asset management implementation.
4. Training – Post wrap-up "Implementation Strategies" webinar for partner states. Deliverables will include quarterly report updates and survey results as well as a webinar and a final summary report following each conference.

PARTNERS:
AR, CA, CO, CT, IA, IL, LA, MI, MN. MS, NC, ND, NJ, NV, OH, OK, TX, UT, VA, WI

OKLAHOMA INVOLVEMENT:
Attend annual conference; member of the conference planning committee.

Study Period	2016	2017	2018	2019	2020	2021	2022
State Contribution ($)	12,000	6,000	6,000	6,000	6,000		

ESTIMATED COMPLETION DATE: December 2023

POINTS OF CONTACT:
Lead: Brian Worrel, 515-239-1471
ODOT:
FHWA: Stephen Gaj, 201-366-1336

TPF-5 (357) Implement Shakecast across Multiple State Departments for Rapid Post Earthquake Response

PURPOSE AND SCOPE:
When an earthquake occurs, the U. S. Geological Survey (USGS) ShakeMap portrays the extent of potentially damaging shaking. As a freely-available, post-earthquake situational awareness application, the ShakeCast system automatically:

- retrieves earthquake shaking data from USGS ShakeMap
- analyzes shaking intensity data against users' facilities (e.g., bridges, buildings, roads) sends notifications of potential impacts
- generates maps and other web-based products for emergency managers and responders

The recently released ShakeCast V3 system utilizes State's existing NBI databases to implement shaking-based inspection priority and impact assessments. ShakeCast is particularly suitable for earthquake planning and response purposes by Departments of Transportation (DOTs).

OBJECTIVES:
Since major earthquakes cross state borders, bringing this technology to all states with seismic hazards is a long-term goal. The project will provide a mechanism to actively engage representatives from state DOTs with the common interests in implementing and expanding the application of ShakeCast technologies to improve emergency response capabilities.

The project is comprised of two primary focus areas:

(1) Provide support for participating DOTs to deploy operational ShakeCast systems.
(2) Develop, modify, and customize ShakeCast features to the meet the needs of the state DOTs.

Once project representatives meet at the start of the project, annual meetings will be convened to update the participating agency representatives on the status of the project and to provide a forum for information sharing, training, and feedback. This collaborative effort will bring participating DOTs into full ShakeCast operation for post-earthquake assessment of state and local bridge inventories.

PARTNERS:
CA, ID, MO, MS, OK, OR, SC, TX, UT, WA

OKLAHOMA INVOLVEMENT:
Attended the yearly meeting in California, participate in quarterly meetings and provide data input.

Study Period	2016	2017	2018	2019	2022	2023	2024
State Contribution ($)	15,000	15,000	15,000	15,000	30,000	15,000	15,000

ESTIMATED COMPLETION DATE: September 2024

POINTS OF CONTACT:
Lead: Sharon Yen, 916-227-7174
ODOT: Walt Peters, 405-521-2606
FHWA: Jerry Shen, 202-366-4619

TPF-5 (372) Building Information Modeling (BIM) for Bridges and Structures

PURPOSE AND SCOPE:
Building information modeling (BIM) has been widely used in the commercial sector and vertical construction to manage projects from conception through design, fabrication, construction and for future maintenance. Following the conclusion of the NCHRP study and after extensive discussions, T-19 identified a path forward for BIM implementation. The initiative involved the following key decisions:

- Identity: The initiative is being named BIM for Bridges and Structures, as it encompasses the goal of this endeavor without potentially violating trademark rights.
- Governance and Stewardship Framework: The roadmap involves the identification of a governance structure. The selected model will be overseen by T-19 with collaboration with AASHTO Technical Joint Committee on Electronic Standards, FHWA, and various stakeholders.
- Data Exchange Schema: Multiple schemas for the governance structure of BIM for Bridges and Structures were discussed, with the decision being made to develop an MVD (Model View Definition) compliant with IFC (Industry Foundation Classes) data models. Some consideration was given to OpenBridge model, with the biggest benefit being more control of the governance model.
- Funding Mechanism for Support: FHWA and pooled fund study.

OBJECTIVES:
The pooled fund project will provide the primary funding mechanism for AASHTO SCOBS T-19 to perform the duties of governance and stewardship of BIM for Bridges and Structures**.**

PARTNERS:
CA, DE, FHWA, FL, IL, IA, KS, MI, NC, MS, NJ, NY, NC, OH, OK, PA, TX, UT, VM, WI

OKLAHOMA INVOLVEMENT:
Oklahoma provides data input for the studies; participate in quarterly meetings via conference call; attend annual meetings.

Study Period	2021	2022	2023
State Contribution ($)	20,000	20,000	20,000

ESTIMATED COMPLETION DATE: January 31, 2024, Phase 2 of this study is currently listed under solicitation 1587.

POINTS OF CONTACT:
Lead: Khyle Clute, (515) 239-1646
ODOT: Walt Peters, (405) 521-2606
FHWA: Brian Kozy, (202) 493-0341

TPF-5 (375) National Partnership to Determine the Life Extending Benefit Curves of Pavement Preservation Techniques Phase 2

PURPOSE AND SCOPE:
This second phase (2019-2024) will be used to continue to monitor and analyze data from the low and high volume pavement preservation sections built both in Alabama and Minnesota since many of the test sections were built in 2016 and not had enough time to show what rate of deterioration they will have. MnDOT will lead this portion of the pooled fund study and will again partner with NCAT but now they will be the subcontractor doing the data collection in Alabama and the majority of the data analysis. Activities that are expected include: Continue Data Collection of each of the test sections both in Alabama and Minnesota utilizing common methods and equipment between all four locations.

OBJECTIVES:
MnROAD and NCAT are seeking organizations to join the partnership for the second phase of research efforts. Main objectives include: 1. Determining the life cycle cost of various pavement preservation alternatives in a highly controlled experiment that will provide state Departments of Transportation (DOTs) with the financial foundation to begin to build a decision tree for their own maintenance program 2. Develop quality assurance QA field testing protocols to correlate construction practices with long term performance of pavement preservation techniques. 3. Technology transfer - Answering practical questions posed by research sponsors through formal (i.e., reports & technical papers) & informal technology transfer on how these life extending benefits can be best utilized in each state.

PARTNERS:
CA, AL, AR, CO, FHWA, GA, IL, KS, KY, MI, MN, MO, MS, NC, NY, OK, PA, SC, TN, TX, WI, WV

OKLAHOMA INVOLVEMENT:
Attended the yearly meeting, participate in quarterly meetings and provide data input.

Study Period	2018	2019	2020
State Contribution ($)	50,000	50,000	50,000

ESTIMATED COMPLETION DATE: December 31, 2023

POINTS OF CONTACT:
Lead: Ben Worel, 763-381-2130
ODOT: David Vivanco, 405-522-4983
FHWA: Jack Jernigan, 202-493-3363

TPF-5 (380) Autonomous Maintenance Technology (AMT)

PURPOSE AND SCOPE:
Reducing hazard to roadway workers and achieving a safer working environment for both CDOT employees and the public remains a key and critical strategic priority for CDOT. The advent of new technologies in the form of autonomous and connected vehicles presents a path for using technical advances to potentially reduce or eliminate threat to employees and maintaining public safety, with initial demonstration conducted with CDOT's Autonomous Truck Mounted Attenuator/Impact Protection Vehicle. CDOT believes that this technology presents considerable potential to remove workers from risk, and the expansion of this technology both inside and outside of Colorado would be of benefit and therefore interest of the department. CDOT's trial implementation and testing program for the ATMA/AIPV has generated interest and questions from other DOTs, motivating the need to develop a cooperative arrangement and agreement to spread and further research autonomy in maintenance applications. This effort aims to address these challenges by forming a coalition of transportation related groups with interest in autonomous maintenance technology research, and create a pooled fund to provide a single source of funding for unified research efforts that will benefit all contributing parties. This will allow for larger and more significant research projects to be undertaken and will lead to an overall cost savings by consolidating many different DOTs' research efforts in the same field.

OBJECTIVES:
The mission of this study is to support and promote collaborative research efforts in the field of autonomous technologies in work zone applications, with the goal of improving the safety, efficiency and quality of work efforts, along with providing better solutions and valuable lessons learned for the integration of new technologies to further these goals. The participation of many transportation related agencies in this study furthers the cooperation in this industry, leading to improved future development of beneficial technologies and improved sharing of information and lessons learned. This is intended to further safety, efficiency, and quality of work done in this field for all relevant agencies.

PARTNERS:
VA, AL, CA, CO, IL, IN, KS, MI, MN, MO, ND, NV, OH, OK, TX, WA

OKLAHOMA INVOLVEMENT:
Develop technology findings for ODOT needs; incorporate appropriate findings into construction and maintenance safety programs.

Study Period	2019	2020	2021
State Contribution ($)	25,000	25,000	25,000

ESTIMATED COMPLETION DATE: March 2025

POINTS OF CONTACT:
Lead: David Reeves, 303-757-9518
ODOT: Alan Stevenson, 405-919-6573
FHWA: Todd Peterson, 202-366-1988

TPF-5 (385) Pavement Structure Evaluation with Traffic Speed Deflection Devices (TSDD)

PURPOSE AND SCOPE:
This work plan will be developed based on the priorities indicted by the consortium participants, during the kick-off meeting. It is anticipated that the details and scope of the objectives will be further defined to reflect the concerns of the consortium participants. However, it is proposed that the project will include the following tasks: (i) Develop a list of available devices and their characteristics. This will include details about the number of devices currently in operation and what type of data they collect. (ii) Develop data collection guidelines and specifications for agencies. This will include reviewing best practices from around the world and will be coordinated with service providers to ensure proposed guidelines can be implemented. (iii) Develop guidelines on how to incorporate pavement structural condition data into agency network-level pavement business processes. This will include defining what structural indices to use, and investigating how the structural condition data can complement currently

OBJECTIVES:
The objective of the proposed pooled-fund project is to establish a research consortium focused on providing participating agencies guidelines on how to specify collection and use data collected with TSDDs for network- and project-level (if feasible) pavement management applications. Specific tasks within this multi-year program will be developed in cooperation with the consortium participants. In addition, the consortium will also provide participating agencies with a mechanism to conduct pilot demonstration testing in their respective networks.

PARTNERS:
Louisiana Transportation Research Center, AR, CA, CO, FHWA, GA, ID, IL, IN, KS, KY, LA, MI, MN, MO, MS, MT, NC, NM, NV, OK, PA, SC, TN, TX, VA, VT, WI

OKLAHOMA INVOLVEMENT:
Attended the yearly meeting, participate in quarterly meetings and provide data input.

Study Period	2019	2020	2021
State Contribution ($)	45,000	45,000	45,000

ESTIMATED COMPLETION DATE: October 31, 2023

POINTS OF CONTACT:
Lead: Bill Kelsh, 434-293-1934
ODOT: Angel Gonzales, 405-437-5688
FHWA: Nadarajah Sivaneswaran, 202-493-3147

TPF-5 (394) Western Maintenance Partnership – Phase 3

PURPOSE AND SCOPE:
In the 1980's the Rocky Mountain Maintenance Tour established a highly effective forum for the exchange of information, techniques, policies and strategies for the maintenance of the Highway System. Since that time the role of Maintenance as a critical element in the overall management of the State Highway infrastructure has increased. Most Maintenance managers have been completely replaced since the ending of the Rocky Mountain Maintenance Tour. The primary focus has also shifted from new construction and major rehabilitation to more attention to infrastructure preservation and asset management via cost effective maintenance. Reactive maintenance alone is not adequate to overcome the challenges of rapid deterioration of roads, considering aging of the infrastructure and growing economic constraints. The Western Maintenance Partnership (WMP) previously ran from 2006-2014 as TPF-5(145), and from 2015-2019 as TPF-5(312). This 5-year continuation of the WMP will pool the efforts of the participating agencies to provide a focused look at Maintenance, and will partner with WASHTO states to share experiences, innovations, expertise and solutions to the complex management of highway assets. Maintenance issues include policies, practices, specifications, field investigations, applied research, materials, and training. It is expected that a roundtable and sharing of field experience via hands on demonstration of features will be key elements of the annual meetings.

OBJECTIVES:
The purpose of the Western Maintenance Partnership (WMP) continuation is to provide a partnering forum for promoting effective maintenance strategies through the following objectives: - Provide travel reimbursement funds for an annual meeting (WASHTO Committee on Maintenance) and a multi-day annual workshop/scan tour, for discussion and exchange of information and knowledge about each state's maintenance program. - Provide a means to define, support and share technology of mutual interest. - Provide funds for formal training presentations during the annual workshop. - Provide funds for management support of WMP. - Provide funds for special studies, investigations, research and training.

PARTNERS:
CA, ID, MT, NV, OK, SD, TX, UT, WA

OKLAHOMA INVOLVEMENT:
Attended the yearly meeting in California, participate in quarterly meetings and provide data input.

Study Period	2023
State Contribution ($)	$15,000

ESTIMATED COMPLETION DATE: June 30, 2024

POINTS OF CONTACT:
Lead: David Stevens, (801) 589-8340
ODOT: Alex Calvillo, (405) 521-2557
FHWA: Russell Robertson, (801) 955-3512

TPF-5 (431) Applications of Enterprise GIS for Transportation, Guidance for a National Transportation Framework

PURPOSE AND SCOPE:
Perform self-assessment of existing data policies to determine if they support data quality and sharing. Identify common needs for state and local government transportation agencies responsible for data collection. Define the role of LRS in data collection and establish core requirements for LRS. Establish guidelines for transportation mapping practices.

OBJECTIVES:
This pooled fund study project will assist the state DOT's and local governments to create enterprise GIS data management systems based on data governance best practices that support collaboration through shared business rules and standards. The goal is to have a single roadway dataset that meets the needs of multiple groups. The first phase of this project will be to develop guidance to be named, a document that will guide the DOTs to one geospatial standard.

PARTNERS: AZ, CA, FHWA, FL, GA, ID, MA, NC, NM, OH, OK, PA, TN, WA, ND

OKLAHOMA INVOLVEMENT:
ODOT will be providing data throughout the study as requested and attend the quarterly virtual meeting, and annual meetings as required.

Study Period	2020	2021
State Contribution ($)	50,000	50,000

ESTIMATED COMPLETION DATE: December 2024

POINTS OF CONTACT:
Lead: Noel Alcala, 614-466-2848
ODOT: Sam Coldiron, 405-522-1066
FHWA/Lead: Joseph Hausman, 202-366-9629

TPF-5 (437) Technology Transfer Concrete Consortium (TTCC) (FY20–FY24)

PURPOSE AND SCOPE:
Increasingly, state departments of transportation (DOTs) are challenged to design and build longer life concrete pavements that result in a higher level of user satisfaction for the public. Collaboration between experts from state DOTs, Federal Highway Administration (FHWA), academia and industry are important for identifying and examining new concrete pavement research initiatives. Pooled fund activities and budgets are discussed at the semi-annual meetings. Partners often present proposals for minor research, synthesis studies, and/or training for discussion and voting at the semi-annual meetings. NCC members may propose needed research and/or training, however they may not vote on how to utilize the federal pooled funds. Occasionally e-mail discussions and votes are warranted.

OBJECTIVES:
The Iowa DOT, through the National Concrete Pavement Technology Center (CP Tech Center) at Iowa State University, will serve as the lead state, handling all administrative duties associated with the project. The CP Tech Center will also serve as the lead research institution for the project.

Efforts for the TTCC include these examples:

> Maintain the TTCC pooled fund listserv and website with current activities and deliverables, Guide the development of technology transfer materials (tech brief summaries and training materials), Contribute to a technology transfer newsletter for the CP Road Map project website, Publish electronic quarterly reports following lead state guidelines, Submit a final report to participants that documents the results of the entire project

The TTCC has designed this study to foster new technologies and practices by identifying, supporting, facilitating and funding concrete research and technology transfer initiatives. The TTCC is open to any state agency desiring to be a part of new developments in concrete.

PARTNERS:
AL, CA, CO, FL, GA, IA, ID, IL, IN, KS, KY, MA, MI, MN, MO, MT, NC, ND, NE, NV, NY, OH, OK, OR, PA, SC, TN, TX, UT, WA, WI, WV, WY

OKLAHOMA INVOLVEMENT:
Oklahoma provides data input for the studies; participates in quarterly meetings via conference call; attends annual meetings.

Study Period		2020	2021	2022	2023	2024	2023
State Contribution ($)		12,000	12,000	12,000	12,000	12,000	12,000

ESTIMATED COMPLETION DATE: August 2025

POINTS OF CONTACT:
Lead: Khyle Clute, 515-239-1646
ODOT: Nairi Matevosyan, 405-521-4999
FHWA: Mike Praul, 207-512-4917

TPF-5 (439) Technology Exchange on Managing Pavements

PURPOSE AND SCOPE:
The Iowa Department of Transportation (Iowa DOT) will serve as lead state for the execution of this Pooled Fund project. Iowa State University's Center for Transportation Research and Education (CTRE) will facilitate the administrative duties associated with the project. The main task to be accomplished includes the following: Learning Session/TAC meeting – Coordinate a workshop Technical Advisory Committee meeting for member states to learn and review issues associated with implementation of pavement management. Since member states may be at different stages of implementation, this is an opportunity to share best practices and strategies for overcoming certain challenges. This meeting may be planned as a separate webinar or may be held in conjunction with the conference. 11th International Conference on Managing Pavement Assets (ICMPA11) – Provides a venue for the member states to exchange information on the challenges to pavement management development and implementation.

OBJECTIVES:
Provide communication and information sharing regarding pavement management practices and innovation among member states. Discuss research needs and provide research ideas to TRB. Provide a technology and knowledge exchange forum to enhance the practical knowledge of member states concerning pavement management implementation and how to support asset management activities. Enhance the working knowledge of the pavement management community.

PARTNERS: CA, CT, IA, ID, IL, KS, MS, ND, NM, OK, TX

OKLAHOMA INVOLVEMENT: Provide input through the in-person meetings, through sharing ideas in pavement design and research, providing problem statements to the group.

Study Period	2020
State Contribution ($)	12,500

ESTIMATED COMPLETION DATE: October 31, 2023

POINTS OF CONTACT:
Lead: Khyle Clute, 515-239-1646
ODOT: Amanda Warren, 405-521-2602
FHWA: Nazhat Aboobaker

TPF-5 (442) Transportation Research and Connectivity

PURPOSE AND SCOPE:
The primary goal is to enhance the services which transportation libraries provide through the development of new procedures and technologies for transportation research findability and connectivity. The work plan will be developed based on recommendations by members of the pooled fund study.

OBJECTIVES:
To support coordinated development of transportation libraries as well as research organizations without dedicated libraries. The noted objectives will be accomplished through member activities and partnerships with professional groups such as the Transportation Research Board (TRB) Library and Information Science for Transportation Committee (LIST), the Special Libraries Association (SLA) Transportation Division, and the National Transportation Knowledge Network (NTKN). Completed projects will be stored permanently at the NTKN and the National Transportation Library (NTL) for public use and will be completed within the three-year span of the pooled fund study.
The specific objectives are: 1.Develop a toolkit of recommendations and best practices for transportation research organizations that do not have a transportation librarian.2.Partner with the NTKN to analyze effectiveness of lib-guides, identify gaps in coverage, and survey the needs of DOTs.3.Develop a white paper analyzing the current condition of transportation information infrastructure, including review of pertinent knowledge management resources.4.Develop a cooperative digitization project among members, in partnership with the NTL, to convert copies of older materials to digital formats, as well as providing ADA compliance support for digital documents.5.Enhance communication between group members.

PARTNERS:
Northwestern University Transportation Library, Maggie Sacco Curcio, MLS, AZ, CA, ID, IL, MO, NC, NJ, NV, NY, OK, OR, TX, UT, WI, WY

Primary funding will be provided via transfers from other states.

OKLAHOMA INVOLVEMENT:
ODOT has contracted with the Board of Regents of The University of Oklahoma to lead this study. The contractor will continue to facilitate monthly/quarterly conference calls and annual in-person meetings as scheduled. A subcontractor, CTC & Associates, Inc., is handling selected tasks.

Study Period	2020	2021	2022	2024	2025
State Contribution ($)	25,000	25,000	25,000	25,000	25,000

ESTIMATED COMPLETION DATE: February 2025
POINTS OF CONTACT:
Lead: Ron Curb, 405-414-7740
ODOT: Ron Curb, 405-414-7740
FHWA: Richard Meininger, 202-493-3191

TPF-5 (447) Traffic Control Device (TCD) Consortium

PURPOSE AND SCOPE:
The following are examples of issues that have been and will be addressed by the TCD PFS: pavement markings for speed reduction, signing and marking for roundabouts and alternative intersections, pedestrian countdown signals, colors for Electronic Toll Collection (ETC) only tollbooth lanes, evaluation of new and existing symbol signs, alternative flashing patterns, diagrammatic and overhead arrow per lane guide signs, lane reduction signing and marking, sign conspicuity.

OBJECTIVES:
The objective of this pool fund is to assemble a consortium composed of State Departments of Transportation; additional interested entities or organizations; County, regional, and/or local transportation agencies; and FHWA program offices to meet national and state needs in support of the MUTCD. Activities of the consortium include:

a) Identify human factors, safety, and operational issues related to TCDs;
b) Select new and existing TCDs for evaluation;
c) Initiate and monitor research projects;
d) Disseminate results; and
e) Facilitate collaboration and information sharing among members.

PARTNERS:
NJ, AL, AZ, CO, CT, DE, FL, GA, IA, ID, IL, KS, KY, MA, MD, MI, MO, MS, MT, NC, NE, NH, NJ, NY, OR, PA, SC, TN, TX, WI

OKLAHOMA INVOLVEMENT:
Provide required monthly data, attend quarterly virtual meetings, attend any in-person meeting.

Study Period	2024	2025
State Contribution ($)	10,000	10,000

ESTIMATED COMPLETION DATE: February 12, 2025

POINTS OF CONTACT:
Lead: Laura Mero, 202-493-3377
ODOT: Cody Hamblin, 405-820-1895
FHWA: Laura Mero, 202-493-3377

TPF-5 (448) Integrating Construction Practices and Weather into Freeze Thaw Specifications

PURPOSE AND SCOPE:
Current design practices for freeze thaw durability are not based on actual weather conditions and are instead based on artificial conditions created in ASTM C 666 testing of concrete. While these conditions seem to have been conservative, a better answer could be obtained if there was more information about how concrete wetted and dried in different environments. This research will use a novel way to measure this by combining low-cost data loggers to measure the moisture and temperature changes in a concrete sent to a number of different environments. This information will be combined with new models that account for the rate that concrete reaches a critical degree of saturation.

OBJECTIVES:
The ultimate goal of this work is to build on previous research efforts to produce improved specifications and advance existing test methods; while, improve the underlying understanding of freeze thaw damage. This work will specifically focus on construction practices and the impact of weather. Quantify how different weather conditions impact the freeze thaw performance of concrete with low-cost data loggers. Investigate the freeze thaw performance of existing structures in different climates with different air void qualities. Expand the freeze thaw model to a larger range of mixtures to see if the trends still hold. Better understand the damage propagation after critical saturation is reached. Develop freeze thaw specifications based on concrete quality, air void system, and local weather conditions.

PARTNERS:
CA, CO, IA, ID, IL, KS, MN, MO, ND, NE, NY, OK, PA, WI, FHWA

OKLAHOMA INVOLVEMENT:
Provide test data to the lead team as requested, visit lab as requested, attend virtual meeting and provide input for quarterly and yearly reports.

Study Period	2020	2021	2022	2024	2025
State Contribution ($)	20,000	20,000	20,000	20,000	20,000

ESTIMATED COMPLETION DATE: January 2025

POINTS OF CONTACT:
Lead: Ron Curb, 405-414-7740
ODOT: Kenny Seward, 405-522-4999
FHWA: Ahmad Ardani 202-493-3422

TPF-5 (451) Road Usage Charge (RUC) America

PURPOSE AND SCOPE:
RUC West is a voluntary coalition of state DOTs and provincial Ministries of Transport that are committee to collaborative research and development of a potential new funding method that would collect a road usage charge (RUC) based on actual road usage. Subject to available Transportation Pooled Fund resources and separate funding from consortium members the work plan will undertake select topics, research projects and activities that relate to RUC.

OBJECTIVES:
Explore the technical and operational feasibility of a multi-jurisdictional road usage charge system. Investigate public and key decision maker criteria for acceptance and share experience and lessons learned to foster positive outcomes. Develop standards and protocols for how road use charges could best be collected and remitted among the various jurisdictions. Develop preliminary operational concepts for how a multi-jurisdictional road usage charge system could be administered. Develop a model for regional cooperation and interoperability that can be used in the Western region and potentially across North America. Engage the automotive manufacturing and technology sector to encourage the ability for mileage reporting to occur in conjunction with other products and services the sector provides in the marketplace. Share knowledge to maximize the preparedness for and efficiency of policy and program development for road usage charging among the members.

PARTNERS:
AK, AZ, CA, CO, HI, ID, KS, MT, ND, NE, NM, NV, OK, OR, TX, UT, WA, WY

OKLAHOMA INVOLVEMENT:
Oklahoma provides data input for the studies; participates in quarterly meetings via conference call; attends annual meetings.

Study Period	2021	2024	2025	2026
State Contribution ($)	25,000	25,000	25,000	25,000

ESTIMATED COMPLETION DATE: September 2027

POINTS OF CONTACT:
Lead: Randal Thomas, 971-240-7094
ODOT: Dawn Sullivan, 405-521-4768

TPF-5 (456) EconWorks - Improved Economic Insight

PURPOSE AND SCOPE:
The scope of work to operate, maintain and improve the EconWorks website over a five-year period (2019 to 2024) includes the following:
• Host the website and ensure EconWorks tools are operational for all users.
• Provide technical assistance to users utilizing the EconWorks website and tools.
• Develop and add new case studies for inclusions into the EconWorks database.
• Provide webinars and other outreach efforts to ensure all target audiences understand the benefits of EconWorks and are kept up to date on user tips.
• Provide oversight and management of the Econ-Works website. Provide for ongoing support of the site after the termination of the pooled fund study.

OBJECTIVES:
The focus of this pooled fund project will be to support transportation planners with a better understanding of the economic impact of transportation projects by continuing the overall operation, maintenance and improvement to the EconWorks website, and completing and adding additional case studies to provide more robust economic analysis.

PARTNERS:
AR, CT, GA, IL, KS, MA, MN, ND, NE, NJ, OK, OR, SC, TN, TX, VA, WI

OKLAHOMA INVOLVEMENT:
Oklahoma provides data input for the studies; participates in quarterly meetings via conference call; attends annual meetings.

Study Period	2020	2021	2022	2023	2024
State Contribution ($)	20,000	(=4,000>	Per yr.>	Pre-Paid through>	2024)

ESTIMATED COMPLETION DATE: August 2024

POINTS OF CONTACT:
Lead: Sunny Farmahan, sunny.farmahan@ardot.gov
ODOT: Laura Chaney, 405-521-2705
FHWA: Nazhat Aboobaker, nazhat.aboobaker@fhwa.dot.gov

TPF-5 (465) Consortium for Asphalt Pavement Research and Implementation (CAPRI)

PURPOSE AND SCOPE: To continue fostering the development of new technologies and practices, this pooled fund study will identify and address national priority research and implementation needs for asphalt pavements that state DOTs face today and in the future. The goals of CAPRI are to, provide technical guidance on current and evolving specifications for asphalt materials, develop asphalt pavement research needs, conduct small-scale studies to address knowledge gaps or explore new topics, foster the implementation of practical research findings to help improve the performance, sustainability, value, and safety of asphalt pavements.

OBJECTIVES: The objectives of CAPRI are to, provide technical guidance on current and evolving specifications for asphalt materials, develop asphalt pavement research needs, conduct small-scale studies to address knowledge gaps or explore new topics, foster the implementation of practical research findings to help improve the performance, stainability, value, and safety of asphalt pavements. As a consortium of all asphalt pavement stakeholders, CAPRI will be a key resource to the AASHTO Committee on Materials and Pavements, state DOTs, FHWA, and industry.

SCOPE OF WORK: Activities related to the above goals will be developed through semi-annual meetings rotated among participating organizations. CAPRI meetings will serve as a forum to facilitate knowledge sharing among participants. Outcomes of CAPRI meetings will include technical guidance articles on high profile issues, and research need statements (RNSs) organized into a new National Asphalt Research Roadmap (NARR) that will be made public through a website managed and maintained by NCAT.

PARTNERS:
AL, CO, FL, GA, IA, ID, IN, KY, MO, MS, NC, NY, OH, OK, PA, SC, TN, TX, WI

OKLAHOMA INVOLVEMENT: Provide input to the CAPRI through the in-person meetings, through sharing ideas in asphalt pavement design and research, and/or presenting problem statements to the partners.

Study Period	2022	2023	2024	2025
State Contribution ($)	10,000	10,000	10,000	10,000

ESTIMATED COMPLETION DATE: October 2025

POINTS OF CONTACT:
Lead: Virgil Clifton, 334-353-6944
ODOT: David Vivanco, 405-923-5897
FHWA: David Mensching, 206-336-1286

TPF-5 (469) Accelerated Performance Testing on the 2021 NCAT Pavement Test Track with MnROAD Research Partnership

PURPOSE AND SCOPE:

The scope of work for the pooled fund project will include:

- Hauling materials to the project from offsite locations.
- Rebuilding sections in accordance with sponsors' directives via competitively bid subcontracts administered by NCAT.
- Installing both environmental and response instrumentation in new experimental sections.
- Operating a 5-truck heavy triple-trailer fleet in order to apply accelerated truck traffic on the NCAT test oval following the completion of construction. Human drivers operate NCAT vehicles in order to best induce representative vehicle wander.
- Safely measuring field performance (e.g., rutting, roughness, texture, cracking, deflection, friction, etc.) on a regular basis.
- Pavement response will also be measured on a routine basis.
- Conducting laboratory testing to quantify basic material and mix performance**,** which will serve as the basis of performance model development**.**

OBJECTIVES:

The primary objectives of the pooled fund project described herein will be:

- Constructing experimental pavements on the existing 1.7-mile NCAT test oval and the MnROAD mainline bypass that are representative of in-service roadways on the open transportation infrastructure
- Applying accelerated performance truck traffic after construction for the duration of the 3-year research cycle
- Assessing/comparing the functional and structural field performance of trafficked sections on a regular basis via surface and subsurface measures
- Validating/calibrating new and existing methodologies for analysis and design using pavement surface condition, pavement load response, precise traffic and environmental logging, and cumulative damage
- Correlating field results with laboratory data for both mix and structural performance
- Answering practical questions posed by research sponsors through formal (i.e., reports and technical papers) and informal (e.g., one-on-one responses to sponsor inquiries) technology transfer. For example, can pavement thickness be reduced as a result of the addition of premium mix additives, and if so, does the thickness reduction offset the additional cost of construction?

PARTNERS:

VA, AL, FHWA, FL, GA, KY, MS, NC, NY, OK, SC, TN, TX

OKLAHOMA INVOLVEMENT:

Oklahoma had sections and support from 2018-2020 for the following areas: N9, S1, the Preservation Group, and the Cracking Group under TPF-5(374) and (375). From 2021 thru 2023 Oklahoma will sponsor the following sections: N9, S1 and N8 (NCAT, but not MnROAD).

Study Period	2021	2022	2023
State Contribution ($)	466,667	416,667	416,666

ESTIMATED COMPLETION DATE: January 31, 2024

POINTS OF CONTACT:

Lead: Virgil Clifton, 334-353-6944
ODOT: David Vivanco, 405-521-2677
FHWA: Derek Nener-Plante, 202-763-4017

TPF-5 (478) Demonstration to Advance New Pavement Technologies Pooled Fund

PURPOSE AND SCOPE: FHWA will collaborate with the Technical Advisory Committee (TAC) and the contributing State DOTs to define the parameters of each of their state's demonstration project. The FHWA contribution will be used to provide up to $250,000, up to 100 hours of technical assistance, and resources for developing case study reports and videos for each selected demonstration project. The amount of support that will be contributed to each project will vary and ultimately be decided by the TAC. Additionally, FHWA will host a website for publishing case studies and other relevant project documents, as well as peer exchanges for showcasing lessons learned and best practices from the projects. Each state DOT will be expected to participate in pooled fund meeting opportunities and actively collaborate with other states and FHWA to advance these initiatives. The state DOT will complete a report documenting the initiative and outcomes of selected state DOT demonstration projects by using a standard reporting template provided by FHWA.

OBJECTIVES: This pooled fund seeks to support and showcase the implementation of innovative pavement technologies, products, and processes by State DOTs by leveraging of Federal investments with State DOT partnerships.

PARTNERS:
AZ, CO, GA, HI, IA, ID, IL, MO, MS, OK, PA, TX, WI

OKLAHOMA INVOLVEMENT:
Oklahoma will provide data for this study, they will also provide a project for the pool fund study, attend meetings as requested.

Study Period	2022	2023	2024	2025	2026
State Contributions ($)	10,000	10,000	10,000	10,000	10,000

ESTIMATED COMPLETION DATE: September 2025

POINTS OF CONTACT:
Lead: Sharon Snead, 202-366-1553
ODOT: David Vivanco, 405-522-4986
FHWA: Sharon Snead, 202-366-1553

TPF-5 (479) Clear Roads Winter Highway Operations Phase 3

PURPOSE AND SCOPE:
The Clear Roads pooled fund project began in 2004 with four members and a focus on real world testing of winter maintenance materials, methods, and equipment. During its twelve years of funding and overseeing research projects, the pooled fund has grown to include thirty-six member states funding three to ten research projects annually. Clear Roads' latest projects and partnership initiatives have included a strong emphasis on implementation and technology transfer through an enhanced online presence and the use of web-based tools – such as the Accumulated Winter Season Severity Index (AWSSI) and the Weather Event Reconstruction and Analysis Tool - to more effectively share research results and successful practices among agencies. Clear Roads has taken steps to become a national resource for winter maintenance professionals by assuming leadership of the Qualified Products List from the Pacific Northwest Snowfighters, creating the Winter Preparedness Website

OBJECTIVES:
Objectives of the new phase of the Clear Roads pooled fund project will include: • Conduct structured field testing and evaluation across a range of winter conditions and different highway maintenance organizational structures to assess the practical effectiveness, ease of use, optimum application rates, barriers to use, durability, safety, environmental impact, and cost-effectiveness of innovative materials, equipment, and methods for improved winter highway maintenance.

PARTNERS:
AK, AZ, CA, CO, CT, DE, IA, ID, IL, IN, KS, KY, MA, MD, ME, MI, MN, MO, MT, ND, NE, NH, NJ, NV, NY, OH, OK, OR, PA, RI, SD, TX, UT, VA, VT, WI, WV, WY

OKLAHOMA INVOLVEMENT:
ODOT will use the results of this study to enhance planning and programming input parameters in support of the Agency's construction and maintenance programs.

Study Period	2023	2024	2025	2026
State Contribution ($)	25,000	25,000	25,000	25,000

ESTIMATED COMPLETION DATE: September 2026

POINTS OF CONTACT:
Lead: Nicole Westadt, 651-366-4270
ODOT: Alex Calvillo, 405-521-2557
FHWA: Daniel Jenkins, 202-366-1067

TPF-5 (480) Building Information Modeling (BIM) For Infrastructure

PURPOSE AND SCOPE:
The activities that advance both short-term and medium-term goals of the BIM National Strategic Work Plan will be prioritized and carried out by the pooled fund participants. Meetings will serve as a forum to facilitate knowledge sharing among participants. Proposed activities include: • Develop BIM foundational use cases and workflows. Highlight more effective digital exchange of information (e.g. survey to design, design to construction, construction to asset management, etc.). This kind of exchange will increase collaboration and automation, reduce duplication of effort and avoid errors. • Establish BIM Processes (e.g. Develop contract model language to guide BIM procurements.) • Identify and Execute Capacity-Building Activities (e.g. Establish project selection criteria for BIM implementation; Identify project types and use cases for early pilot projects phase). • Enhance Skills and Collaboration (e.g. Establish workforce training curriculum to set expectations about required BIM qualifications.

OBJECTIVES:
The pooled fund serves as the mechanism for stakeholders to work collaboratively to advance BIM for Infrastructure. This will involve building off the foundational work that was charted out in the BIM National Strategic Work Plan, with emphasis on increasing coordination and awareness of BIM technologies and activities. This pooled fund will coordinate with efforts of TPF-5(372) focusing on BIM for Bridges and Structures.

PARTNERS:
AZ, CA, CT, FL, GA, IA, IL, IN, KY, MI, MN, MS, MT, NE, NY, OK, PA, SC, TX, UT, WI

OKLAHOMA INVOLVEMENT:
Provide required monthly data, attend quarterly virtual meetings, attend any in-person meeting.

Study Period	2024	2025
State Contribution ($)	75,000	75,000

ESTIMATED COMPLETION DATE: December 31, 2027
POINTS OF CONTACT:
Lead: Khyle Clute, 515-239-1646
ODOT: Katie Brown, 405-521-6489
FHWA: Katherine Petros, 202-493-3154

TPF-5 (484) Develop Countermeasure Strategies for Protecting Bridge Girders against Over-Height Vehicles Impact

PURPOSE AND SCOPE:
The innovative steel beam/honeycomb protective system is anticipated to dissipate a large portion of the energy from the colliding truck by crushing/deforming the honeycombs. The effectiveness of this device has been investigated recently by large-scale testing in collaboration with the researchers at Hunan University, where over-height impact was simulated through a drop hammer system. With the success of the large-scale testing program, the actual field installation of full-scale model is deemed necessary to validate its effectiveness to protect existing bridge structures. In particular, this project aims at the following: design of the full-scale testing program and selection of bridge site for the field installation; custom construction and installation of the full-scale model of the prototype attaching to the existing facial girder of the selected structure; full scale testing and evaluation of the system with actual over-height truck impact on site.

OBJECTIVES:
This project will carry out in two phases which include the following eleven (11) main tasks: 1. Develop an over-height impact program for outdoor full scale testing including site & vehicles selection and logistics. 2. Investigate the protection system extensively through numerical simulations on different impact scenarios. 3. Design an effective installation of the proposed protective system including supporting systems, connections, the protective system and means for easy replacement of damaged components.4. Design the entire setup for full-scale prototype testing including the girders to be impacted or a system supporting girder to be impacted that can represent the behavior of an actual bridge through numerical simulations. 5. Prepare and publish the Phase I report including outcomes of the tasks carried out in this phase.6. Conduct full-scale prototype testing to demonstrate the effectiveness of the proposed protective system. 7. Perform parametric studies on the impact performance of the protection devices installed on the prestressed /steel girders. 8. Develop a design method for proportioning the protective system to achieve a specific performance (performance-based approach). 9. Develop design examples and templates to illustrate the design of the protective system for different impact scenarios. 10. Develop new design guidelines for fascia girder to resist the impact loads due to over-height heavy vehicles without protection system. 11. Prepare and publish the final report including findings and outcomes of all the tasks completed in this project.

PARTNERS:
VA, AK, FHWA, LA, NJ, NY, OK

OKLAHOMA INVOLVEMENT:
Oklahoma will provide input data as requested and will attend either in person or virtually the quarterly and yearly meetings.

Study Period	2022	2023	2024
State Contribution ($)	70,000	70,000	70,000

ESTIMATED COMPLETION DATE: September 2024

POINTS OF CONTACT:
Lead: Vincent Chiarito, 202-366-4621
ODOT: Matt Casillas, 405-521-2606
FHWA: Waider Wong, 410-215-8778

TPF-5 (###) Accelerated Performance Testing on the 2024 NCAT Pavement Test Track with MnROAD Research Partnership

PURPOSE AND SCOPE:
The scope of work for the pooled fund project will include:

1. Hauling materials to the project from offsite locations.
2. Rebuilding sections in accordance with sponsors' directives via competitively bid subcontracts administered by NCAT.
3. Installing both environmental and response instrumentation in new experimental sections.
4. Operating a 5-truck heavy triple-trailer fleet in order to apply accelerated truck traffic on the NCAT test oval following the completion of construction. Human drivers operate NCAT vehicles in order to best induce representative vehicle wander.
5. Safely measuring field performance (e.g., rutting, roughness, texture, cracking, deflection, friction, etc.) on a regular basis. Pavement response will also be measured on a routine basis.
6. Conducting laboratory testing to quantify basic material and mix performance**,** which will serve as the basis of performance model development**.**

OBJECTIVES:
The primary objectives of the pooled fund project described herein will be: Constructing experimental pavements on the existing 1.7-mile NCAT test oval and the MnROAD mainline bypass that are representative of in-service roadways on the open transportation infrastructure; Applying accelerated performance truck traffic after construction for the duration of the 3-year research cycle; Assessing/comparing the functional and structural field performance of trafficked sections on a regular basis via surface and subsurface measures; Validating/calibrating new and existing methodologies for analysis and design using pavement surface condition, pavement load response, precise traffic and environmental logging, and cumulative damage; Correlating field results with laboratory data for both mix and structural performance; and Answering practical questions posed by research sponsors through formal (i.e., reports and technical papers) and informal (e.g., one-on-one responses to sponsor inquiries) technology transfer. For example, can pavement thickness be reduced as a result of the addition of premium mix additives, and if so, does the thickness reduction offset the additional cost of construction?

PARTNERS:
VA, AL, FHWA, FL, GA, KY, MS, NC, NY, OK, SC, TN, TX

OKLAHOMA INVOLVEMENT:
Oklahoma had sections and support from 2018-2020 for the following areas: N9, S1, the Preservation Group, and the Cracking Group under TPF-5(374) and (375). From 2021 thru 2023 Oklahoma will sponsor the following sections: N9, S1 and N8 (NCAT, but not MnROAD).

Study Period	2024	2025	2026
State Contribution ($)	450,000	450,000	450,000

ESTIMATED COMPLETION DATE: January 31, 2026

POINTS OF CONTACT:
Lead: Virgil Clifton, 334-353-6944
ODOT: David Vivanco, 405-521-2677
FHWA: Derek Nener-Plante, 202-763-4017

SOL 1587 Building Information Modeling (BIM) for Structures – Phase 2

PURPOSE AND SCOPE:
This study will continue and build on the TPF-5(372) study. Building information modeling (BIM) has been widely used in the commercial sector and vertical construction to manage projects from conception through design, fabrication, construction and for future maintenance. Following the conclusion of the NCHRP study and after extensive discussions, T-19 identified a path forward for BIM implementation. The initiative involved the following key decisions:

- Identity: The initiative is being named BIM for Bridges and Structures, as it encompasses the goal of this endeavor without potentially violating trademark rights.
- Governance and Stewardship Framework: The roadmap involves the identification of a governance structure. The selected model will be overseen by T-19 with collaboration with AASHTO Technical Joint Committee on Electronic Standards, FHWA, and various stakeholders.
- Data Exchange Schema: Multiple schemas for the governance structure of BIM for Bridges and Structures were discussed, with the decision being made to develop an MVD (Model View Definition) compliant with IFC (Industry Foundation Classes) data models. Some consideration was given to OpenBridge model, with the biggest benefit being more control of the governance model.
- Funding Mechanism for Support: FHWA and pooled fund study.

OBJECTIVES:
The pooled fund project will provide the primary funding mechanism for AASHTO SCOBS T-19 to perform the duties of governance and stewardship of BIM for Bridges and Structures**.**

PARTNERS:
This Solicitation is currently open for members.

OKLAHOMA INVOLVEMENT:
Oklahoma will provide data input for the studies; participate in quarterly meetings via conference call; attend annual meetings

Study Period	2024	2025	2026	2027	2028
State Contribution ($)	25,000	25,000	25,000	25,000	25,000

ESTIMATED COMPLETION DATE: December 31, 2028

POINTS OF CONTACT:
Lead: Khyle Clute, 515-239-1646
ODOT: Justin Hernandez, 405-521-2606
FHWA: Thomas Saad, 708-283-3521

Solicitation 1599, Western Transportation Research Consortium

PURPOSE AND SCOPE:
The purpose is to pool the financial, professional, and academic resources of the region to develop improved methods of dealing with common problems in the planning, design, construction, maintenance, management and operation of transportation systems. The consortium will gather DOT research and innovation professionals, virtually or in-person, to prioritize transportation needs and allocate resources. It will also address high priority transportation research topics of common interest to RAC IV states. The lead state will manage contracted services and adhere to the consortium charter.

OBJECTIVES:
The purpose is to pool the financial, professional, and academic resources of the region to develop improved methods of dealing with common problems in the planning, design, construction, maintenance, management and operation of transportation systems. State DOTs will identify priority topics that they hold in common and for which expertise exists in the region. Potential focus areas can include: Research implementation, freight issues, highway infrastructure issues, transportation funding, transportation innovation.

PARTNERS:
Ut, Ok

OKLAHOMA INVOLVEMENT:
Oklahoma will provide data input for the studies; participate in quarterly meetings via conference call; attend annual meetings.

Study Period	2024	2025	2026
State Contribution ($)	15,000	15,000	15,000

ESTIMATED COMPLETION DATE: September 30, 2027

POINTS OF CONTACT:
Lead: David Stevens, (801) 633-0359
ODOT: Teresa Stephens, (405) 415-5825