OKLAHOMA DEPARTMENT OF TRANSPORTATION

State Planning and Research Work Program
FFY 2017
(October 1, 2016 to September 30, 2017)

Part 1
Strategic Asset and Performance Management

Part 2
Research

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

October 2016

Executive Summary

This document describes the Federal Fiscal Year (FFY) 2017 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 Strategic Asset and Performance Management Division (SAPM) and some Local Government Division activities, and Part 2, the Office of Research and Implementation activities. The work program is developed and updated annually in cooperation with the Federal Highway Administration.

SAPM activities to be conducted in FFY 2017 include data collection/analysis/reporting, mapping, public involvement, and planning coordination/studies. Additional efforts are planned for data collection and pavement structural condition. Funding for the SAPM portion of the work program is approximately $8.7 million.

Local Government activities to be conducted in FFY 2017 include air quality planning, all MPO coordination, regional transportation planning and pedestrian and bicycle planning. Funding for the Local Government portion of the work program is approximately $780,000.00

Research activities for FFY 2017 will include six new projects and fifteen continuing projects. Some of the focus areas for current research projects include: design/construction/maintenance of infrastructure and safety. Over $1 million in federal funds are to be granted to the Southern Plains Transportation Center (SPTC), and one-half million dollars in federal funds will be granted to Oklahoma State University, if selected as the University Transportation Center in the state. Also, ODOT is participating in twenty four national pooled fund projects, one of which, Oklahoma acts as the lead state. Funding for the research program totals approximately $4.5 million in FFY 2017.

The detailed projects for each section are listed by item number and include a description of the purpose and scope of the project, the accomplishments during the current federal fiscal year (FFY 2016) and the proposed activities for the upcoming fiscal year (FFY 2017). In addition, the Financials Section shows the amount programmed for the FFY 2016 in the last work program, an estimate of the total funds that will be expended by the end of FFY 2016, and the projected costs for the upcoming fiscal year (FFY 2017).

State Planning & Research Program Management

October 1, 2016

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Beckie Lyons, CPO, CPM
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Part 1

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State Planning & Research Financial Summary

OKLAHOMA DEPARTMENT OF TRANSPORTATION
State Planning & Research (SPR) Financial Summary Sheet Federal Fiscal Year 2017
Program Period October 1, 2016 through September 30, 2017

SPR Part 1 - Planning, SPRY-0010(68)PL, JP# 01946(67)

A. Estimated Costs

SPR Part 1 - Planning	$	9,562,682.00
LTAP - SPR	$	282,675.00
Total Estimated Costs	**$**	**9,845,357.00**

B. Available Funds

SPR Part 1 Unobligated Balance	$	12,935,000.00
Total Available Funds	**$**	**12,935,000.00**

C. Proposed Financing

Type	Federal	Rate	State	Local		Total
SPR	$9,562,682.00		SMC	$0.00	$	9,562,682.00
Total Proposed Financing JP # 01946(67)					**$**	**9,562,682.00**

SPR Part 2 - Research, SPRY-0010(69)RS, JP# 01946(68)

A. Estimated Costs

SPR Part 2 - Research	**$**	**4,509,473.00**
Total Estimated Cost	**$**	**4,509,473.00**

B. Available Federal Funds

SPR Part 2 Unobligated Balance	**$**	**3,276,200.00**
SPR Part 1 Unobligated Balance (remainder)	**$**	**3,089,643.00**
Total Available Funds	**$**	**6,365,843.00**

C. Proposed Financing

Type	Federal	Ratio	State	Local		Total
SPR Part 1 & 2	$4,509,473	80%	SMC	$0.00		
Total Proposed Financing					**$**	**4,567,462.00**

SPR Part 1 & Part 2 Totals

Total SPR Unobligated Balance	**$**	**16,211,200.00**
Total SPR Part 1 and Part 2 Estimated Costs	**$**	**14,072,155.00**
Total SPR Pooled Fund Commitments	**$**	**1,436,801.00**
Total SPR Research Funding	**$**	**4,509,473.00**
Total SPR Research & Pooled Fund Commitments	**$**	**6,004,263.00**
% of SPR Funds for Research		**32%**

SP&R PART 1 - Planning, SPRY-0010(68)PL, JP# 01946(67)

FEDERAL FISCAL YEAR 2017

		PROGRAMMED				
GIS AND DATA MANAGEMENT		**SP&R**	**State**	**PL**	**Local**	**Total**
1101	Continuing Inventory Data Studies	$685,000.00	$0.00	$0.00	$0.00	$685,000.00
1102	Highway Performance Monitoring System	$102,000.00	$0.00	$0.00	$0.00	$102,000.00
1103	Geographical Information Management System for Transportation	$350,000.00	$0.00	$0.00	$0.00	$1,487,000.00
	TOTAL GIS AND DATA MANAGEMENT	**$1,137,000.00**	**$0.00**	**$0.00**	**$0.00**	**$1,137,000.00**
MAPPING						
1201	County, City and other Planning Maps	$324,500.00	$109,048.00	$0.00	$0.00	
	TOTAL MAPPING	**$324,500.00**	**$109,048.00**	**$0.00**	**$0.00**	**$433,548.00**
TRAFFIC AND DATA COLLECTION						
1301	Coverage Count Program	$700,000.00	$0.00	$0.00	$0.00	$700,000.00
1302	Permanent Traffic County Program	$775,000.00	$0.00	$0.00	$0.00	$775,000.00
1304	Purchase of Traffic County Equipment	$190,000.00	$0.00	$0.00	$0.00	$190,000.00
1305	Vehicle Classification Counting Program	$570,000.00	$0.00	$0.00	$0.00	$570,000.00
1306	Weigh-in-Motion Program	$360,000.00	$0.00	$0.00	$0.00	$360,000.00
1308	Traffic Monitoring System	$360,000.00	$0.00	$0.00	$0.00	$360,000.00
1309	Traffic Analysis and Projections	$183,000.00	$0.00	$0.00	$0.00	$183,000.00
1310	Skid Studies Program	$175,000.00	$0.00	$0.00	$0.00	$175,000.00
	TOTAL TRAFFIC AND DATA COLLECTION	**$3,313,000.00**	**$0.00**	**$0.00**	**$0.00**	**$3,313,000.00**
ECONOMIC, SAFETY, AND FISCAL STUDIES						
1404	Safety Plannining	$3,000.00	$0.00	$0.00	$0.00	$3,000.00
1405	Motorcycle Safety and Education Program	$99,000.00	$0.00	$0.00	$0.00	$99,000.00
1510	Justification Studies	$20,000.00	$0.00	$0.00	$0.00	$20,000.00
	TOTAL ECONOMIC, SAFETY, AND DATA COLLECTION	**$122,000.00**	**$0.00**	**$0.00**	**$0.00**	**$122,000.00**
SYSTEMS AND PROGRAMS						
1601	Federal Aid Systems Coordination	$85,500.00	$0.00	$0.00	$0.00	$85,500.00
1603	Highway Needs Study	$369,000.00	$0.00	$0.00	$0.00	$369,000.00
1604	Pavement Management Systems	$1,130,000.00	$0.00	$0.00	$0.00	$1,130,000.00
	TOTAL SYSTEMS AND PROGRAMS	**$1,584,500.00**	**$0.00**	**$0.00**	**$0.00**	**$1,584,500.00**
URBAN / REGIONAL TRANSPORTATION PLANNING						
1700	General Urban Transportation Planning Activities	$10,000.00	$0.00	$0.00	$0.00	$10,000.00
1701	Oklahoma City Area Regional Transportation Study (OCARTS)	$15,000.00	$0.00	$2,061,220.00	$412,244.00	$2,488,464.00
1702	Tulsa Metropolitan Area Transportation Study	$15,000.00	$0.00	$1,230,000.00	$246,000.00	$1,491,000.00
1703	Lawton Metropolitan Area Transportation Study	$15,000.00	$0.00	$193,136.00	$38,627.00	$246,763.00
1709	Ft.Smith Transportation Study	$10,000.00	$0.00	$36,000.00	$7,200.00	$53,200.00
1710	Regional Transportation Planning	$500,000.00	$0.00	$0.00	$112,500.00	$612,500.00
	TOTAL URBAN TRANSPORTATION PLANNING	**$565,000.00**	**$0.00**	**$3,520,356.00**	**$816,571.00**	**$4,901,927.00**
LONG RANGE PLAN / OTHER PLANNING ACTIVITIES						
1902	Statewide Long Range Transportation	$15,000.00	$0.00	$0.00	$0.00	$15,000.00
1904	Air Quality Transportation Planning	$25,000.00	$0.00	$0.00	$0.00	$25,000.00
1905	Freight Planning	$950,000.00	$0.00	$0.00	$0.00	$950,000.00
1910	Public Involvement & Visualization Techniques	$200,000.00	$0.00	$0.00	$0.00	$200,000.00
1913	Bicycle & Pedestrian Planning	$200,000.00	$0.00	$0.00	$0.00	$200,000.00
1914	Transportation Asset Management Plan	$788,422.00	$0.00	$0.00	$0.00	$788,422.00
1915	Performance Measurement Coordination	$500,000.00	$0.00	$0.00	$0.00	$500,000.00
1916	Oklahoma Archeological Survey GIS Digitization	$276,682.00	$0.00	$0.00	$0.00	$276,682.00
	TOTAL OTHER	**$2,955,104.00**	**$0.00**	**$0.00**	**$0.00**	**$2,955,104.00**
					Local	
	GRAND TOTAL SPRY-0010(69)RS	**$10,001,104.00**	**$109,048.00**	**$3,520,356.00**	**$816,571.00**	**$14,947,079.00**

LTAP Project TTY-LTAP (005) TT

FEDERAL FISCAL YEAR 2017 JP # 30001(16)

LOCAL TECHNICAL ASSISTANCE PROGRAM		**SPR**	**State**	**PL**	**Federal**	**Total**
1440	Local Technical Assistance Program	**$282,675.00**	**$67,325.00**	**$0.00**	**$150,000.00**	**$500,000.00**
	Total With LTAP Cost	**$10,283,779.00**	$176,373.00	$3,520,356.00	$966,571.00	**$15,447,079.00**

1101 Continuing Inventory Data Studies

PURPOSE AND SCOPE: To catalogue physical characteristics of statewide public roads, which are used to update the Department's Oracle Spatial Road Inventory Database. Coordinate with County Commissioners relating to inventory modifications. Publish various mileage reports for federal, state 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.

ACCOMPLISHMENTS DURING FFY 2016: Creek county inventory was completed and verified with the Board of County Commissioners. Thirteen counties are awaiting verification of results with County Commissioners: (Cotton, Delaware, Garfield, Grady, Lincoln, Marshall, Mayes, Okfuskee, Pawnee, Pittsburg, Rogers, Stephens, and Wagoner) and two (Pushmataha and Sequoyah) are in progress. Verified and processed all highway construction projects, Open to Traffic Reports, County Action Reports, Graphical Roadway Network (NLF) revisions and updates to the Reference Point database. The following publications or reports were completed: 2015 Statewide Mileage Table Book, 2016 Certification of County Road Mileage, 2016 HPMS Report and Travel Summary Tables. Completed modifications to the functional classification and urban boundaries due to the 2010 census.

PROPOSED ACTIVITIES FOR FFY 2017: Continue to code and update the Department's Central Database files. Incorporate technological advancements in data collection to streamline field inventory operations. Seven of the following eleven counties are scheduled to be inventoried: (Cherokee, Cleveland, Comanche, Haskell, Hughes, Kingfisher, Noble, Oklahoma, Okmulgee, Osage, and Pottawatomie.) Continue monitoring all County Action Reports, Highway Construction projects and collecting HPMS data items. Use GPS technology to continue to identify roadways within Oklahoma. Compile and publish various state and federal reports including: 2016 Oklahoma Statewide Statistics Book, 2017 Certification of County Road Mileage and 2017 HPMS Mileage and Travel Summary Tables.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2016	$800,000	SPR	-0-	STATE
Estimated Cost FFY 2016	$650,000	SPR	-0-	STATE
Projected Cost FFY 2017	$685,000	SPR	-0-	STATE

CONTACT INFORMATION:

Name: Ron Maxwell, Geographic Information System Manager II, 405-521-2728

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.

ACCOMPLISHMENTS DURING FFY 2016: ODOT continues to update our existing web based HPMS Console V2 to accommodate changes occurring to the new FHWA HPMS Version 8 software. Two new validation constraints from the previous submittal year were added. Field Review documents were produced for 30 sample sections with the primary vicinity located around the southeastern region of the state. Sample adequacy was verified, it is anticipated that 20 to 30 new samples, are in order to meet the latest FHWA guidelines. The 2015 HPMS data submittal was completed in a timely manner. Created new SQL Statements to accommodate submitting IRI for the NHS system by a tenth of mile. Continue to enhance a web based pull-down form and/or spreadsheet for MPO's, and update their required HPMS information which maps sample locations accordingly utilizing Google Maps and Street view. Currently, 15 fields can be updated and linked to our HPMS tables/spreadsheets from this form. Continued to update and verify sample items through field inspection, ODOT Video-Log, Google-Street view, Bing-StreetSide, etc. Participated in numerous webinars pertaining to HPMS, NPMRDS and The FAST Act.

PROPOSED ACTIVITIES FOR FFY 2017: ODOT will continue to focus on data quality HPMS improvement and add more validations cross-checks to the console for a clean submittal. Visidata video log along with Google Earth and Street view will be used to verify and collect HPMS sample data. 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 2016 HPMS data submittal will be transmitted to FHWA using the HPMS Console V2 and the FHWA Version 8 web-based software.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2016	$100,000	SPR	-0-	STATE
Estimated Cost FFY 2016	$93,000	SPR	-0-	STATE
Projected Cost FFY 2017	$102,000	SPR	-0-	STATE

CONTACT INFORMATION:

Ron Maxwell, Transportation Manager II, 405-521-2728

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, global positioning 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.

ACCOMPLISHMENTS DURING FFY 2016: Generated numerous custom maps and KML files, such as 2015-2022 Work Plan maps, County Bridge & County Roadway, and maps for Environmental Programs. Designed and deployed the ODOT Map & Data Portal, which provides the Department and the general public with a wide range of ODOT GIS data on desktop and mobile devices. Provided geospatial data management and visualization services for numerous ODOT divisions. The Control Section and Functional Classification Map Books were redesigned, updated, and automated. Completed OKTAB development. Products were provided to Senior Staff, Division Engineers and others in the selection of projects to be included in the annual re-balance of the 8 Year Work Plan. Attend GIS training and workshops. Developed training material for various GIS products. Conducted several GIS training sessions for various Department employees.

PROPOSED ACTIVITIES FOR FFY 2017: Continue to expand the ODOT Map & Data Portal. Expand upon and continue the Right-of-Way digitization effort to include additional roadways. Continue to create ways to automate creation of the 8 Year Work Plan and 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 the Environmental, Right of Way, Rail Programs, Outdoor Advertising, Facilities Management, Project Management, and Traffic Engineering Division's to identify needs and develop solutions that will enable them to efficiently and accurately perform their individual missions. Continue to utilize training of staff and provide both certified and in house training in the latest GIS software products.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2016	$965,000	SPR	-0-	STATE
Estimated Cost FFY 2016	$500,000	SPR	-0-	STATE
Projected Cost FFY 2017	$350,000	SPR	-0-	STATE

CONTACT INFORMATION:

Jeremy Planteen, GIS Manager I Phone: 405-521-2729

1201 County, City and Other Planning Maps

PURPOSE AND SCOPE: The purpose and scope of the Cartographic Design Section is to produce County and City maps showing the most current, reliable and accurate information for roads, hydrology, street names, and city limits and historical boundaries with symbology for man-made culture and natural features. The CADD maps are implemented using Microstation V8i software allowing integration into most GIS database line work. All county and city maps denote 2010 U.S. Census populations. Individual map design features are available in DGN format to facilitate CADD uses or as reference files for our GIS projects. Hard copies or digital versions are available for other governmental agencies. Full-size printable PDF map files are free to the general public and government agencies via our web site as completed through our maps page at: http://www.okladot.state.ok.us/maps/index.htm. Page links are listed under Oklahoma's General County Roads and Oklahoma's Incorporated City Maps. The scope also includes the creation of other special purpose planning maps and supporting graphics produced as needed for Strategic Asset & Performance Management Division studies and to facilitate other ODOT personnel with their SPR assignments.

ACCOMPLISHMENTS DURING FFY 2016: The following five county Maps were completed: (Choctaw, Major, Murray, Oklahoma and Roger Mills). Overall forty five cities were completed and the larger cities over the population of 1,500 included: (Bethany, Choctaw, Davis, Del City, Edmond, Fairview, Harrah, Hugo, Jones, Midwest City, Nichols Hills, Nicoma Park, Oklahoma City, Spencer, Sulphur, The Village and War Acres).

PROPOSED ACTIVITIES FOR FFY 2017: The Cartographic Design Section will continue drawing all county and city maps with improved accuracy in geospatial format. Five or more counties maps are scheduled to be completed in the coming fiscal year. All city and county maps will have state highway system revisions updated that include any realignments, new interchanges, divided or multilane lane changes or re-designations.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2016	$390,000	SPR	$109,048	STATE
Estimated Cost FFY 2016	$275,000	SPR	$109,048	STATE
Projected Cost FFY 2017	$324,500	SPR	$109,048	STATE

CONTACT INFORMATION:

Janet Villanueva, CADD Specialist V, 405-522-1047

1301 Coverage Count Program

PURPOSE AND SCOPE: To collect traffic data on state 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 populations over 5,000. State highway and interstate locations are counted on a three-year cycle along with the county and city system coverage. 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 system are recorded and retained for office use. Highway traffic maps are published for public distribution.

ACCOMPLISHMENTS DURING FFY 2016: Short duration traffic counts were completed on the state highway system, county off-system and small urban system in 25 counties scheduled for FY 2016. Continuous updating of the GPS coordinates and site characteristics for all traffic count sites on all systems was performed. A project to completely overhaul the Oklahoma Traffic Count Information System Web Page is progressing and nearing completion.

PROPOSED ACTIVITIES FOR FFY 2017: 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 27 counties scheduled for FY 2017. Collect 15 minute interval counts for the Ramp/Frontage Road Count System as requested. Consideration has begun regarding a new Short Duration Traffic Count Contract for the collection of traffic counts in Cleveland County, Comanche County, Oklahoma County and Tulsa County areas, as well as, any additional counts deemed necessary. Implementation of a new enhanced version of the Oklahoma Traffic Count Information System Web Page, this will include enhanced maps, report printing and possibly truck traffic information. 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 2016	$750,000	SPR	-0-	STATE
Estimated Cost FFY 2016	$615,000	SPR	-0-	STATE
Projected Cost FFY 2017	$700,000	SPR	-0-	STATE

CONTACT INFORMATION:

Aaron Fridrich, Transportation Manager II, 405-636-4180 ext. 221

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 72 Automatic Vehicle Classification (AVC) station locations and 24 Weigh-in-Motion (WIM) station locations in Oklahoma. The traffic data obtained 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.

ACCOMPLISHMENTS DURING FFY 2016: The Traffic Monitoring Systems (TMS) Operations and Maintenance Services are provided through two contracts, the TMS Data Collection Contract and the TMS Site Repair Contract. The contractor provided enhanced services and expertise, particularly in the area of data collection, systems validation and TMS site repair. The TMS site operational rate experienced a marked increase. Additionally, improved systems diagnostics and trend analysis provided by contract data systems experts have resulted in a much needed systems approach towards operations and maintenance support as evident in the detailed construction and renovation project coordination executed during this period. The scope of work to be accomplished during FY 2016 included renovation of thirty-three (33) existing sites (19 WIM and 14 AVC). Site visits to carry out routine maintenance and equipment testing will be completed at all 96 AVC/WIM sites this year.

PROPOSED ACTIVITIES FOR FFY 2017: The TMS Data Collection Contract will continue to improve data collection efficiency. The TMS Site Repair Contract addressed in this section will commence with ongoing repair and replacement construction projects identified and planned during FY 2016. Both of these contracts will be renewed in FY 2017. The scope of work to be accomplished in FY 2017 is as follows:

1) Execute scheduled maintenance for up to 96 sites.
2) Complete site renovations and repairs to an estimated 30 permanent sites.
3) WIM Site calibrations.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2016	$775,000	SPR	-0-	STATE
Estimated Cost FFY 2016	$745,000	SPR	-0-	STATE
Projected Cost FFY 2017	$775,000	SPR	-0-	STATE

CONTACT INFORMATION:

Aaron Fridrich, Transportation Manager II, 405-736-9466 ext. 224

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.

ACCOMPLISHMENTS DURING FFY 2016: Equipment purchases executed in FY 2016 continued to support on-going projects in traffic monitoring systems operations in both permanent sites and short-duration count site locations.

PROPOSED ACTIVITIES FOR FFY 2017: The proposed construction of new traffic monitoring stations, replacement of old equipment and the continuing requirement for additional GPS equipment comprises the majority of the expenditure requirement for FY 2017. 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.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2016	$190,000	SPR	-0-	STATE
Estimated Cost FFY 2016	$30,000	SPR	-0-	STATE
Projected Cost FFY 2017	$190,000	SPR	-0-	STATE

CONTACT INFORMATION:

Aaron Fridrich, Transportation Manager II, 405-636-4180 ext. 221

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 and bicycle counts.

ACCOMPLISHMENTS DURING FFY 2016: Vehicle classification data collection continued at the short term sites in support of the traffic analyst's effort in the development of updated annual average truck volumes. The vehicle classification counting program for FY 2016 cycle 2 was completed by contract with STS (Southern Traffic Services) for collection of all classification data statewide including multi-lane urban, multi-lane rural and 2-lane highway sites. During FY 2016, special studies were conducted throughout the year providing timely data for traffic engineers, planners and designers in the department's central office divisions as well as for traffic engineers, construction and maintenance managers in the eight field divisions.

PROPOSED ACTIVITIES FOR FFY 2017: The vehicle classification counting program for FY 2017 will be completed by STS (Southern Traffic Services). STS will be collecting cycle 3 classification data statewide including multi-lane urban, multi-lane rural and 2-lane highway sites. During FY 2017, various special studies 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 2016	$550,000	SPR	-0-	STATE
Estimated Cost FFY 2016	$400,000	SPR	-0-	STATE
Projected Cost FFY 2017	$570,000	SPR	-0-	STATE

CONTACT INFORMATION:

Aaron Fridrich, Transportation Manager II, 405-636-4180 ext. 221

1306 Weigh-in-Motion Program

PURPOSE AND SCOPE: To collect and conduct preliminary analysis of data describing vehicle characteristics and vehicle weight trends. The Department uses this data as an intricate part of the traffic monitoring system. These data collection systems provide axle weight factors used in design and pavement management studies and to fulfill FHWA requirements for the Strategic Highway Research Program (SHRP) and the Long Term Pavement Performance (LTPP) program. The Department operates 24 permanent weigh in motion (WIM) data collection sites and 72 Automatic Vehicle Classifier (AVC) sites located throughout the state.

ACCOMPLISHMENTS DURING FFY 2016: The progress made in the TMS Data Collection contract resulted in the collection of monthly data from 72 AVC and 24 WIM sites. The contractor is continuing efforts to develop data validation software using historical data. The contract also provides ongoing support for the digital wireless communication network. The wireless network conversions continue to improve the speed and dependability of traffic data transfers as compared to land line telephone service. The contractor provided traffic data transfers to an IP address on the internet which allowed import into the department's Traffic Operations and Planning Software data base. The contractors are improving software to remotely program and configure traffic data recorders. The solar power conversion project has reduced electric utility costs and increased site operational rates. The TMS Repair contract provided ongoing, essential repairs/replacements of defective sensors and equipment to maintain operational efficiency. The contractor continues to operate the Virtual Weigh Station (WIM 33) at Purcell, Oklahoma.

PROPOSED ACTIVITIES FOR FFY 2017: The TMS Data Collection Contract will focus on data collection, development of data validation software using historical data, support services for the digital wireless data communications network and development of software supporting remote programming and configuration of traffic data recorders. The TMS Site Repair Contract will focus on repair or replacement of sensors and equipment at all AVC and WIM sites and WIM site calibration. Both of these contracts will be renewed for the final year with IRD (International Road Dynamics) in FY 2017. Calibration of all twenty-four (24) WIM sites is planned for the fall of 2016.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2016	$360,000	SPR	-0-	STATE
Estimated Cost FFY 2016	$340,000	SPR	-0-	STATE
Projected Cost FFY 2017	$360,000	SPR	-0-	STATE

CONTACT INFORMATION:

Aaron Fridrich, Transportation Manager II, 405-636-4180 ext. 221

1308 Traffic Monitoring System

PURPOSE AND SCOPE: The purpose of Oklahoma Traffic Monitoring System (TMS) is to manage, estimate, report, and publish traffic data estimates, including data from public and private non state government entities, as specified in the Highway Performance Monitoring System and FHWA's Traffic Monitoring Guide. TMS is comprehensive statewide traffic data gathering, editing, and reporting system created to fulfill the requirements of the Safe, Accountable, Flexible, and Efficient Transportation Equity Act-A Legacy for Users (SAFETEA-LU) and the subsequent MAP–21 and FAST Act legislation.

ACCOMPLISHMENTS DURING FFY 2016: All FHWA Traffic Submittals for 2015 HPMS were completed June 2015. Annual AADT processing including continuous counter analysis and annualized factor generation was completed for the traffic year 2015. Most data processing has been reformatted, warehoused, and automated in the Oracle system. The traffic count data was checked for accuracy along with the correction of count site placement in the Highway Inventory File. 2015 AADT, Peak Hour, Truck estimates, and Forecast AADTs were updated on existing HPMS Sample locations. 2015 Truck counts from contract, state forces, and the Oklahoma Turnpike Authority were also used to update the 2015 NHS Truck System. State forces and contractors counted one third of the counties for highway, county road and city systems in calendar year 2015. A three year contract to take statewide vehicle classification counts was rebid and awarded to Southern Traffic Services. The annual publication of the 2015 AADT Map was completed. The 2014 Oklahoma Traffic Characteristics Report was completed. The new statewide ramp system was partially estimated to 2015 AADTs. A count site inventory database was created to manage and report collected data. The ramp AADT count system, first required in 2010 HPMS Field Manual, was completed in 2014 with all ramps counted by state forces and contract (classification counts). Additional staff has been added to the Traffic Analysis Branch (Oct 2013) for TMS computer support and to manage the RFC and UFC traffic estimation systems. The 2015 AADT updates for the RFC system were completed, along with Tulsa, Enid, and Stillwater UFC 2015 AADT estimates. Additionally Oklahoma City Metro traffic estimates were updated.

PROPOSED ACTIVITIES FOR FFY 2017: The Vehicle Classification Contract will continue monitoring activities. Revise and streamline the process of recording and compiling short term counts and producing seasonal and axle factors for AADT estimation in the HPMS System and 2016 AADT Map, including a change to ARCGIS from GeoMedia. Add software as needed. Continue to develop programming for an automated estimation process for statewide AADTs. Keep personnel informed of technological advances through attendance of seminars, conferences, and workshops.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2016	$360,000	SPR	-0-	STATE
Estimated Cost FFY 2016	$340,000	SPR	-0-	STATE
Projected Cost FFY 2017	$360,000	SPR	-0-	STATE

CONTACT INFORMATION:

Daryl G. Johnson, P.E., 405-522-6376

1309 Traffic Analysis and Projections

PURPOSE AND SCOPE: To provide traffic forecasts for geometric and structural design of new highways, roadway planning functions, roadway maintenance, and improvement of existing highways. The existing or assigned traffic volumes are projected twenty (20) years into the future for design and operational analysis purposes. Design Hourly Volume (DHV) of the Annual Average Daily Traffic (AADT), percent of trucks of the AADT and DHV, and the percent of heavy trucks (of AADT) are prepared for each request of design traffic information. Writing specifications, review and correction, and approval of consultant engineering contract Design Traffic Projects and Research Projects are performed as needed.

ACCOMPLISHMENTS DURING FFY 2016: Design traffic was furnished to the city and county governments, design and environmental consultants and various divisions within ODOT. Information prepared for the larger population areas was based on site specific special traffic counting and regional transportation studies in those cities. Traffic Growth for urban, rural communities and small cities was prepared utilizing a linear regression model using historical data. Forecasts also consider delay/capacity, population trends, employment, and development plans. Approximately 137 requests for design traffic were completed. Several engineering contract consultant traffic analyses were overseen, edited, and approved at some level of completion. The Oklahoma Vehicle Classification Accuracy Research project was completed. A Research project for NPMRDS, speed data, analysis and error identification has been initiated and is underway.

PROPOSED ACTIVITIES FOR FFY 2017: Design traffic data will continue to be furnished for cities, counties and to ODOT divisions upon approved requests. Consultant Design Projects will be overseen thru completion. Traffic analysis and projections will be completed, as requested for all programmed planning, construction and maintenance projects. Performance measurements and other required special studies will be developed. Remain informed of technological advances through attendance of seminars, conferences and workshops.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2016	$155,000	SPR	-0-	STATE
Estimated Cost FFY 2016	$166,000	SPR	-0-	STATE
Projected Cost FFY 2017	$183,000	SPR	-0-	STATE

CONTACT INFORMATION:

Daryl Johnson, P.E., 405-522-6376

1310 Skid Studies Program

PURPOSE AND SCOPE: To assess skid resistance for pavement surfaces of Oklahoma's highway system in accordance with the guidelines of the Highway Safety Improvement Program and ASTM standards. The scope of the program includes scheduled testing of all roadways comprising the National Highway System in a three-year test cycle. This also includes the annual testing of all interstate highways and the Strategic Highway Research Program (SHRP) sites. Conduct special skid resistance testing as requested.

ACCOMPLISHMENTS DURING FFY 2016: The annual test cycle for FY 2016 encompassed pavement friction testing of state, federal and interstate highways in Divisions 2 & 3, US 69 and all Interstates. This year's testing cycle totals 8,204 miles. Skid testing & data collection began in April of 2016 and we have completed between 5%-10% in Division's 2 & 3 for the FY 2016 cycle. Completion of this year's testing cycle is unlikely due to the lack of skid testing personnel. Calibration of the skid testing equipment was completed in June 2016 by Texas A&M Transportation Institute.

PROPOSED ACTIVITIES FOR FFY 2017: The FY-2017 test cycle encompasses state, federal and interstate highways in Division 4 & 6, US 69 and all interstates. Completion of the 2017 cycle by the fall of 2017 will depend upon filling the skid testing positions and training of new operator. Calibration of the skid testing equipment is done on a biannual basis and will be scheduled for FY 2018.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2016	$175,000	SPR	-0-	STATE
Estimated Cost FFY 2016	$165,000	SPR	-0-	STATE
Projected Cost FFY 2017	$175,000	SPR	-0-	STATE

CONTACT INFORMATION:

Aaron Fridrich, Transportation Manager II, 405-636-4180 ext. 221

1404 Safety Planning

PURPOSE AND SCOPE: The project scope is designed to address transportation safety in the implementation of Statewide Long Range Transportation Plan (LRTP) and to ensure compatibility with the Strategic Highway Safety Plan.

ACCOMPLISHMENTS DURING FFY 2016: Provide review of projects and programs to ensure consistency with the LRTP and inclusion in the STIP, as requested. Collaborate with ODOT Traffic Engineering Division in implementation and update of Oklahoma's Strategic Highway Safety Plan in accordance with MAP-21 and the FAST Act.

PROPOSED ACTIVITIES FOR FFY 2017: Provide review of projects and programs to ensure consistency with the LRTP and inclusion in the STIP, as requested. Collaborate with ODOT Traffic Engineering Division in implementation of Oklahoma's Strategic Highway Safety Plan.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2016	$3,000	SPR	-0-	STATE
Estimated Cost FFY 2016	$3,000	SPR	-0-	STATE
Projected Cost FFY 2017	$3,000	SPR	-0-	STATE

CONTACT INFORMATION:

Linda Koenig, Planning and Policy Analyst, 405-522-0171

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 curbing aggressive driving and speeding by motorcycle users. The Oklahoma Highway Patrol, in coordination with the ODOT Traffic Engineering Division's Collision Analysis & Safety Branch, conducts motorcycle safety course as a means of improving motorcycle user safety on the public roadways.

ACCOMPLISHMENTS DURING FFY 2016: The Oklahoma Highway Patrol, in partnership with ODOT, continued implementation of the statewide motorcycle safety and education program. The program included classroom and experiential educational training. An annual report of completed training is given to ODOT each fiscal year.

PROPOSED ACTIVITIES FOR FFY 2017: The Oklahoma Highway Patrol, in partnership with ODOT, will continue implementation of the statewide motorcycle safety and education program. The program will included classroom and experiential educational training; and OHP will provide "before and after" data in geographical areas where programs have been concentrated in an annual report to determine program effectiveness. Variables such as age, type of crash, etc., may be examined.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2016	$72,000	SPR	-0-	STATE
Estimated Cost FFY 2016	$44,930	SPR	-0-	STATE
Projected Cost FFY 2017	$99,000	SPR	-0-	STATE

CONTACT INFORMATION:

Linda Koenig, Planning and Policy Analyst, 405-522-0171

1440 Local Technical Assistance Program

PURPOSE AND SCOPE: The Local Technical Assistance Program (LTAP) is an education program contracted through Oklahoma State University's Center for Local Government Technology (CLGT) to provide training and technical assistance to county, municipal and tribal governments responsible for the planning, maintenance, and construction of transportation systems at the local level. This is accomplished by (1) conducting classes, workshops, conferences, seminars and other training opportunities; (2) providing on-site technical assistance; (3) maintaining a lending library of publications, videotapes, DVDs and other technology resource documents;(4) providing information and technical assistance on new and existing technologies; (5) coordinating with faculty and staff at OSU, ODOT, FHWA and within industry to provide technical expertise and support;(6) providing a website and list-serve; (7) maintaining a database of rural, local and state transportation officials and other resources in Oklahoma and nationwide; and (8) working collaborative with CLGT's Southern Plains Tribal Technical Assistance Program (SPTTAP) and Transportation Intern Program (TIP).

ACCOMPLISHMENTS DURING FY 2016: Conducted 62 training sessions to 1,731 individuals for a total of 17,384 training hours; awarded over 40 Roads Scholar Completion Certificates; conducted the annual LTAP Advisory Meeting and developed and conducted new training courses as requested; conducted training in the FHWA focus areas of Roadway Safety, Worker Safety, Work Zone Safety, Infrastructure Management, and Workforce Development; conducted FHWA Every Day Counts webinars and associated supplementary training; conducted seminars in conjunction with industry professionals on emerging technologies; maintained the LTAP website and list-serve; published various books, plans and DVDs for distribution; served as chapter headquarters for the American Public Works Association Oklahoma chapter, coordinated training activities with CLGT's Southern Plains TTAP; coordinated activities with CLGT's Transportation Intern Program to include those promoting the use of GIS/GPS technologies; attended various association and professional meetings to include the Association of County Commissioners of Oklahoma, County Officers and Deputies Association, Oklahoma Municipal League, National LTAP Association, and LTAP Region VI Meeting.

PROPOSED ACTIVITIES FOR FY 2017: Continue to develop activities to facilitate the implementation of FHWA's Every Day Counts initiative; continue the Roads Scholar curriculum in conducting at least two of each course offering during the fiscal year; participate in Association of County Commissioners of Oklahoma, County Officers and Deputies Association, Oklahoma Municipal League, National LTAP Association and LTAP Region VI meetings and conferences.

PROPOSED ACTIVITIES FOR FY 2017: Continue to teach and develop courses in the FHWA focus areas of Roadway Safety, Worker Safety, Work Zone Safety, Infrastructure Management, and Workforce Development; continue to serve as the state chapter office of APWA continue to implement principals taught in LTAP course through the projects conducted by students assisting agencies through the Transportation Intern Program; serve on various local and national committees; provide technical assistance as requested; continue to provide website, list-serve, books, plans, tapes, DVD's, etc. for distribution; conduct LTAP Advisory Meeting and develop requested activities where possible.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2016	$161,000	SPR	$67,325	STATE	$208,888	FHWA
Estimated Cost FFY 2016	$161,000	SPR	$67,325	STATE	$208,888	FHWA
Projected Cost FFY 2017	$282,675	SPR	$67,325	STATE	$150,000	FHWA

Contact Information:

Bryan Cooper, Transportation Manager I, 405-636-4199

1510 Justification Studies

PURPOSE AND SCOPE: To study the economic, environmental and other effects of design features of roadway improvements such as interchanges, grade separations, by-passes, utility structures, pedestrian structures, etc., for the purpose of determining the economic and engineering feasibility of such proposals.

ACCOMPLISHMENTS DURING FFY 2016: Reviewed consultant studies as needed.

PROPOSED ACTIVITIES FOR FFY 2017: Consultant studies will be overseen as needed. Keep informed of technological advances through attendance of seminars, conferences, and workshops.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2016	$20,000	SPR	-0-	STATE
Estimated Cost FFY 2016	-0-	SPR	-0-	STATE
Projected Cost FFY 2017	$20,000	SPR	-0-	STATE

CONTACT INFORMATION:

Daryl Johnson, P.E., 405-522-6376

1601 Federal-aid Systems Coordination

PURPOSE AND SCOPE: To coordinate the State's Highway System, Federal-aid Highway System and National Highway System, and the Functional Classification System in Oklahoma. Coordinate all highway and roadway classification revisions pertaining to these systems. To record, maintain, research, and provide any documents and historical data relating or pertaining to these systems. To communicate, inform and coordinate with city, county, state and federal officials regarding these systems.

ACCOMPLISHMENTS DURING FFY 2016: Three highway revisions were approved by the Transportation Commission. These revisions were the new US 70 Bypass in Durant, the relocation of SH 3E through Shawnee, and the removal in Weatherford of the I-40 Business and US 54 Stub. The completion of the final revisions to the Functional Classification Systems based on the latest 2010 Census has been recorded except for Tulsa Urbanized Area. The 2015 "Oklahoma's Commemorative Highway & Bridges" book was published.

PROPOSED ACTIVITIES FOR FFY 2017: All the Functional Classification System revisions based on the latest 2010 Census will be recorded in the data base. New Urban and Rural Functional Classification System books will be published with all updated revisions made since 2012. Three new Functional Classification Revisions are awaiting FHWA approval. These three revisions are in Mayes and Choctaw Counties, and the OKC urbanized area. On-site reviews of revisions will be conducted as needed. The latest "Oklahoma's Commemorative Highway & Bridges" book will be updated with the year's new commemorative naming.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2016	$85,000	SPR	-0-	STATE
Estimated Cost FFY 2016	$77,000	SPR	-0-	STATE
Projected Cost FFY 2017	$85,500	SPR	-0-	STATE

CONTACT INFORMATION:

Gary R. Howell, Transportation Specialist V, 405-521-3385

1603 Highway Needs Study

PURPOSE AND SCOPE: To estimate the current and future needs of the State Highway System. To produce a statewide annual condition and needs report showing the investment needed to eliminate all poor roadways on the State Highway System over a twenty-year period. To maintain a database indicating ratings for roadways and bridges along with suggested improvements and costs. To produce analyzed data for inclusion in the Highway Performance Monitoring System.

ACCOMPLISHMENTS DURING FFY 2016: Compiled field data for the 2016 Field Division Notebooks. Compile maintenance and construction costs for the statewide annual condition and needs report. Produced a statewide annual condition and needs report showing the investment needed to eliminate all poor roadways on the State Highway System over a twenty-year period. Documented current processes and evaluated strategies to improve reporting process. Produce analyzed data for inclusion in the Highway Performance Monitoring System. Began an Oracle-based history database for further reporting.

PROPOSED ACTIVITIES FOR FFY 2017: Compile field data for the 2017 Field Division Notebooks. Produce a statewide annual condition and needs report showing the investment needed to eliminate all poor roadways on the State Highway System over a twenty-year period. Document current processes, evaluate strategies to improve the reporting process, and replace failed programs. Compile maintenance and construction costs for the statewide annual condition and needs report. Produce the pavement portion of the 2017 Field Division Notebooks. Produce analyzed data for inclusion in the Highway Performance Monitoring System. Finalize Oracle-based reporting.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2016	$369,000	SPR	-0-	STATE
Estimated Cost FFY 2016	$369,000	SPR	-0-	STATE
Projected Cost FFY 2017	$369,000	SPR	-0-	STATE

CONTACT INFORMATION:

Matthew Swift, Pavement Management Engineer, 405-522-5904

Wayne Barber, Pavement Reporting Manager, 405-522-6705

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).

ACCOMPLISHMENTS DURING FFY 2016: Performed Pavement Management System analysis of the National Highway System (NHS) and the State Highway System (SHS) in Oklahoma. Continue implementation of analysis software upgrade. Treatment costs and triggers were updated. Technical support for the video log software was provided. Data collection on all NHS routes, including Turnpike routes on the NHS, and all SHS routes in Divisions 1, 2, 5, 6, and 7 was completed. Attended the Transportation Research Board Annual Meeting in Washington, D.C. as well as webinars and workshops to keep informed of the latest technological advances and practices. Documented current processes and evaluated strategies to improve analysis processes. HPMS reporting was updated in Oracle database. Integration analysis of software for pavement surface and geometric conditions was completed. Historical data analysis was compiled and added into the Pavement Management System.

PROPOSED ACTIVITIES FOR FFY 2017: Perform Pavement Management System analysis of the NHS and SHS in Oklahoma. Continue implementation of analysis software upgrade for deterioration curves, pavement strategies, and project optimization. Provide technical support for the video log software. Perform data collection on all NHS routes and all SHS routes maintained by the Department, as well as all non-highway samples required for HPMS. Keep informed of the latest technological advances and practices by attending webinars and workshops.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2016	$950,000	SPR	-0-	STATE
Estimated Cost FFY 2016	$950,000	SPR	-0-	STATE
Projected Cost FFY 2017	$1,130,000	SPR	-0-	STATE

CONTACT INFORMATION:

Matthew Swift, Pavement Management Engineer, 405-522-5904

Mark Latimer, Pavement Data Collection Manager, 405-522-6719

1700 General Urban Transportation Planning

PURPOSE AND SCOPE: This item includes coordinating with staff in the Strategic Asset & Performance Management and various other ODOT Divisions which cannot be ascribed to specific transportation studies contained in the unified planning work programs or the SPR work program. Provide linkage between transportation planning and project development, environmental review, and other topics as needed.

ACCOMPLISHMENTS DURING FFY 2016: Provided coordination with ODOT Central Office, Field Divisions and local, state and federal officials. Shared pertinent planning data and information as needed. Technical assistance was provided concerning transportation planning and MAP-21 and the FAST Act. Attended workshops, seminars and conferences related to freight and statewide transportation planning.

PROPOSED ACTIVITIES FOR FFY 2017: 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 FAST Act.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2016	$10,000	SPR	-0-	STATE
Estimated Cost FFY 2016	$10,000	SPR	-0-	STATE
Projected Cost FFY 2017	$10,000	SPR	-0-	STATE

CONTACT INFORMATION:

Linda Koenig, Planning and Policy Analyst, 405-522-0171

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).

ACCOMPLISHMENTS DURING FFY 2016: Transportation planning for the OCARTS Area was carried out as described in the FFY 2016 Unified Planning Work Program (UPWP). Accomplishments during FY 2016 included: preparation and finalization of the FY 2017 UPWP was completed; the FY 2016 Agreement was executed and authorization to expend federal funds effective July 1, 2013 through June 30, 2016 was granted by FHWA; the Transportation Improvement Program (TIP) for FFY 2017-2020 was developed and adopted; implemented projects from Encompass 2035; continued development of the Metropolitan Transportation Plan, Encompass 2040, Intermodal Transportation Hub Study, and Commuter Corridor Study; continued development and maintenance of the Geospatial Information System to assist member entities and integration with the travel demand model; continued work with Air Quality by monitoring and evaluating levels and administering a comprehensive public education program; reviewed and analyzed the Congestion Management Process and implemented modified system; completed the development of a comprehensive pedestrian, bicycle plan for the region, and implementation of bicycle elements of the Regional Transportation Plan.

PROPOSED ACTIVITIES FOR FFY 2017: Complete and approve the Metropolitan Transportation Plan, Encompass 2040; data collection and monitoring of social, economic, environmental and transportation system data; Long Range Planning including major streets and highways; Short Range Planning and coordination; Elderly and Disabled Transportation Planning; Congestion Management; complete the Commuter Corridor Study; continue development and maintenance of the Geospatial Information System to assist member entities and regional planning efforts; continue to develop the Intelligent Transportation System; continue work with air quality, ozone reduction and environmental programs; Alternative Transportation Planning including Pedestrian and Bicycle, Public Transit, Human Services Transportation and Passenger Rail; public education planning of the citizen participation and public information, nondiscrimination compliance plan and conducting broad-based public involvement; program administration and implementation.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed for FFY 2016	$10,000	SPR	$ 1,326,308	PL	$ 265,261	LOCAL
Estimated Cost for FFY 2016	$12,000	SPR	$ 1,326,308	PL	$ 265,261	LOCAL
Estimated Cost for FFY 2017	$15,000	SPR	$ 2,061,220	PL	$ 412,244	LOCAL

CONTACT INFORMATION:

Laura Chaney, Transportation Manger I, 405-521-2705

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).

ACCOMPLISHMENTS DURING FFY 2016: Assisted and coordinated the Transportation planning for the Tulsa TMA was carried out as described in the FFY 2016 Unified Planning Work Program (UPWP). Accomplishments during FY 2016 included: preparation and finalization of the FY 2017 UPWP was completed; the FY 2016 Agreement was executed and authorization to expend federal funds effective July 1, 2015 through June 30, 2016 was granted by FHWA; the Transportation Improvement Program (TIP) for FFY 2015-2018 was monitored and maintained; continued data collection and development of the Metropolitan Transportation Plan, Connections 2045; assisted member entities and citizens, providing technical assistance in demographic and traffic information and other information related to major transportation projects; continued the coordination of the Ozone Alert! Clean Cities and Green Traveler Alternative programs.

PROPOSED ACTIVITIES FOR FFY 2017: Complete the update of the Metropolitan Transportation Plan, Connections 2045; data collection and monitoring of social, economic, environmental and transportation system data; Long Range Planning including major streets and highways; Short Range Planning and coordination; Elderly and Disabled Transportation Planning; Congestion Management; complete the Commuter Corridor Study; Development and maintenance of the Geospatial Information System and integration with the travel demand model; continue to assist member entities and citizens, providing technical assistance in demographic and traffic information and other information related to major transportation projects; continue to develop the Intelligent Transportation System; continue work with air quality, ozone reduction and environmental programs; Alternative Transportation Planning including Pedestrian and Bicycle, Public Transit, Human Services Transportation and Passenger Rail; public education planning of the citizen participation and public information, nondiscrimination compliance plan and conducting broad-based public involvement; program administration and implementation.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed for FFY 2016	$10,000	SPR	$ 969,037	PL	$ 193,807	LOCAL
Estimated Cost for FFY 2016	$11,000	SPR	$ 969,037	PL	$ 193,807	LOCAL
Estimated Cost for FFY 2017	$15,000	SPR	$ 1,230,000	PL	$ 246,000	LOCAL

CONTACT INFORMATION:

Laura Chaney, Transportation Manager I, 405-521-2705

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.

ACCOMPLISHMENTS DURING FFY 2016: Assisted and coordinated the planning for the Lawton Metropolitan Planning Area was carried out as described in the FFY 2016 Unified Planning Work Program (UPWP). Accomplishments during FY 2016 included: preparation and finalization of the FY 2017 UPWP was completed; the FY 2016 Agreement was executed and authorization to expend federal funds effective July 1, 2015 through June 30, 2016 was granted by FHWA; published the Annual Listing of Obligated Projects; preparation of the annual transportation planning funding documents; completed the 2040 Metropolitan Transportation Plan; continued work of a feasibility study to provide a freight route to the Lawton Industrial Park from Interstate 44; continued the air quality education program in cooperation with local media and the Lawton Metropolitan Area Air Quality Committee; participated in Transportation Air Quality Work Group meetings; and participated in committee to review transportation enhancement grant applications.

PROPOSED ACTIVITIES FOR FFY 2017: As defined in the UPWP: Analyze pedestrian facilities, assessing safety and condition, and evaluating if compliant with ADA; Identify and prioritize intersections needing actuated signalization; Develop conceptual design for freight route connecting US 62 to the West Industrial Park; Analyze intersections along the freight route to ensure the intersection will accommodate trucks; Identify and designate a hazardous material transport route; Identify streets exceeding Level of Service D using the 2014 traffic counts; Identify priority corridors where access management techniques can improve traffic flow and safety; Research right-of-way widths of all streets and create a map; Update list of non-dedicated streets; If the bus route study recommends changing of bus routes, new routes will need to be evaluated to ensure proper connectivity, new shelter locations will be determined, new bus route maps developed, and location of signage will be determined; Prepare design concept of a multi-modal transportation transfer center and hub; Research grant opportunities for bus transfer center; Continue the public awareness campaign for air quality; and Continue the bicycle safety education campaign.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed for FFY 2016	$10,000	SPR	$ 200,241	PL	$ 40,048	LOCAL
Estimated Cost for FFY 2016	$11,000	SPR	$ 200,241	PL	$ 40,048	LOCAL
Estimated Cost for FFY 2017	$15,000	SPR	$ 193,136	PL	$ 38,627	LOCAL

CONTACT INFORMATION:

Laura Chaney, Transportation Manager I, 405-521-2705

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.

ACCOMPLISHMENTS DURING FFY 2016: Assist and coordinate the transportation planning for the Frontier Metropolitan Planning Area was carried out as described in the FFY 2016 Unified Planning Work Program (UPWP). Accomplishments during FFY 2016 included published the Annual Listing of Obligated Projects; data collection and monitoring of social, economic and transportation system data; preparation of the annual transportation planning funding documents and maintenance and update of the Frontier MPO website; development of the Transportation Improvement Program (TIP) for FFY 2016-2020.

PROPOSED ACTIVITIES FOR FFY 2017: The Oklahoma Department of Transportation will continue coordination with the Frontier Metropolitan Planning Organization and the Arkansas Highway and Transportation Department (AHTD) in maintaining the 3-C planning process in the Fort Smith area. Monitor the transportation planning process for compliance with administrative, financial and legal requirements for maintaining a continuous, cooperative and comprehensive process. Continue staff education, training and attendance at workshops and seminars.

FINANCIALS	**Amount**	**Fund**	**Amount**	**Fund**	**Amount**	**Fund**
Programmed for FFY 2016	$10,000	SPR	$21,000	PL	$4,200	LOCAL
Estimated Cost for FFY 2016	$10,000	SPR	$21,000	PL	$4,200	LOCAL
Estimated Cost for FFY 2017	$10,000	SPR	$36,000	PL	$7,200	LOCAL

CONTACT INFORMATION:

Laura Chaney, Transportation Manager I, 405-521-2705

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 rural transportation 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.

ACCOMPLISHMENTS DURING FFY 2016: Transportation planning for the five pilot Regional Transportation Planning Organization (RTPO) regions was carried out as described in the RTPOs FFY 2016 Planning Work Program (PWP). Accomplishments during FFY 2016 included data collection and monitoring of social, economic and transportation system data, preparation of the annual transportation planning funding documents and maintenance and update of the RTPO websites; SORTPO, NORTPO, and CORTPO completed two counties Regional Long Range Transportation Plans; Grand Gateway RTPO and South Central RTPO performed essential task to establish an RTPO (i.e., establishment of a policy board and development of a Public Participation Process (PPP).

PROPOSED ACTIVITIES FOR FFY 2017: The Oklahoma Department of Transportation will continue coordination with the pilot RTPOs in maintaining the 3-C planning process in non-metropolitan areas. Monitor the transportation planning process for compliance with administrative, financial and legal requirements for maintaining a continuous, cooperative and comprehensive process. Continue staff education, training and attendance at workshops and seminars; data collection and monitoring of social, economic, environmental and transportation system data; development and maintenance of the Geospatial Information System; continued development of other counties Regional Long Range Transportation Plan.

FFY 2017 Pilot RTPOs	**Amount**	**Fund**	**Amount**	**Fund**
Central Oklahoma Economic Development District	$85,000	SPR	$21,250	LOCAL
Grand Gateway Economic Development District	$85,000	SPR	$21,250	LOCAL
Northern Oklahoma Development Authority	$85,000	SPR	$21,250	LOCAL
Southwestern Oklahoma Development Authority & Association of Central Oklahoma Governments	$195,000	SPR	$48,750	LOCAL

	Amount	**Fund**	**Amount**	**Fund**
FINANCIALS				
Programmed Amount for FFY 2016	$310,000	SPR	$0	STATE
Estimated Cost for FFY 2016	$310,000	SPR	$0	STATE
Estimated Cost for FFY 2017	$500,000	SPR	$0	STATE

CONTACT INFORMATION:

Laura Chaney, Transportation Manager I, 405-521-2705

1902 Statewide Long Range Transportation Plan

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.

ACCOMPLISHMENTS DURING FFY 2016: Finalized approval and publication for the 2015-2040 Oklahoma Long Range Transportation Plan, and coordinated with the Metropolitan Planning Organizations (MPOs) and local governments in relation to long range transportation plans. Provided assistance to ODOT project development activities as needed in relation to project consistency with LRTP policies. Provided assistance with reviewing notices of proposed rulemaking (NPRMs) related to the State LRTP.

PROPOSED ACTIVITIES FOR FFY 2017: Continue maintenance and implementation of Long Range Transportation Plan. Continue coordination with MPOs and local governments in relation to long range transportation plans. Review new federal rule making, FAST Act guidance, and pertinent state legislative transportation issues.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2016	$20,000	SPR	-0-	STATE
Estimated Cost FFY 2016	$20,000	SPR	-0-	STATE
Projected Cost FFY 2017	$15,000	SPR	-0-	STATE

CONTACT INFORMATION:

Linda Koenig, Planning Analyst, 405-522-0171

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 latest federal transportation law. Represent the Department in air quality nonattainment and transportation conformity actions. Analyze and comment on air quality nonattainment 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.

ACCOMPLISHMENTS DURING FFY 2016: Participated in the air quality/transportation planning activities of Lawton, Association of Central Oklahoma Governments (ACOG), and Indian Nations Council of Governments (INCOG) Metropolitan Planning Organizations (MPO). Attended air quality meetings with partners at the Federal Highway Administration (FHWA) and Oklahoma Department of Environmental Quality (ODEQ). Researched and maintained resource materials on air quality/transportation issues, and reviewed and commented on MPO air quality education programs. Coordinated the planning process for air quality modeling funding and actions between the states, MPOs, ODOT and the ODEQ. Monitored regulations on National Ambient Air Quality Standards (NAAQS), Climate Change and Greenhouse Gas Emissions.

PROPOSED ACTIVITIES FOR FFY 2017: Continue to research and participate 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. Attend air quality/transportation planning activities of the Lawton, ACOG, and INCOG MPO. Participate in MPO and ODEQ air quality/transportation initiatives, educational programs, and efforts to reduce pollution. Continue partnership with INCOG and ACOG to enhance and extend data collection and modeling outside of the study areas to establish base data for air quality issues in rural/donut areas. Facilitate meetings of the Oklahoma Transportation Air Quality Work Group. Continue staff education through courses, seminars, and conferences.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed FFY 2016	$25,000	SPR	$0	STATE
Estimated Cost FFY 2016	$25,000	SPR	$0	STATE
Projected Cost FFY 2017	$25,000	SPR	$0	STATE

CONTACT INFORMATION:

Laura Chaney, Transportation Manager I, 405-521-2705

1905 Freight Transportation Planning

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

ACCOMPLISHMENTS DURING FFY 2016: Continued review of proposed federal regulations. Monitored federal rules in relation to proposed National Freight Network including national freight program goals. Developed draft state proposal for rural freight connectors. Prepared Freight Brochure explaining freight impact on economic and transportation goals of the state. Assisted with hosting FHWA freight roundtable.

PROPOSED ACTIVITIES FOR FFY 2017: Continue review of federal regulations and the FAST Act. Manage development of State Freight Plan. Continue communication and analysis regarding freight analysis framework (FAF) data, freight congestion, the national performance measures roadway data set, and urban and rural freight transport.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed FFY 2016	$53,000	SPR	$0	STATE
Estimated Cost FFY 2016	$53,000	SPR	$0	STATE
Projected Cost FFY 2017	$950,000	SPR	$0	STATE

CONTACT INFORMATION:

Linda Koenig, Planning and Policy Analyst 405-522-0171

1910 Public Participation and Visualization Techniques

PURPOSE AND SCOPE: Develop and implement Public Participation Plan (PPP) that encourages full public participation in the transportation planning and programming process, including, but not limited to; the Statewide Transportation Improvement Program (STIP), the Long Range Transportation Plan (LRTP), and the National Environmental Policy Act (NEPA) process.

ACCOMPLISHMENTS DURING FFY 2016: Provided Public Involvement for construction projects, planning projects, division needs, and Environmental needs. Conducted special outreach to non-metropolitan public officials as well as those with limited English proficiency. Developed new and improved presentation and visualization processes and techniques. Improved venues, a more robust email blast system, and better commenting systems are being tested. Provided visualization of proposed projects as well as proposed and existing conditions for presentation to the public and other agencies at public and stakeholder meetings.

PROPOSED ACTIVITIES FOR FFY 2017: Public Involvement will continue for all projects as requested by the responsible division. This includes special outreach to non-metropolitan public officials as well as the traditionally underserved and those with limited English proficiency. Continue to improve presentation and visualization processes and techniques, alternative venues, a more robust email blast system, and better commenting systems. Provide visualization of proposed projects as well as proposed and existing conditions for presentation to the public and other agencies at public and stakeholder meetings for the planning processes.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2016	$200,000	SPR	-0-	STATE
Estimated Cost FFY 2016	$200,000	SPR	-0-	STATE
Projected Cost FFY 2017	$200,000	SPR	-0-	STATE

CONTACT INFORMATION:

Frank V. Roesler III, Transportation Manager I, 405- 521-2350

1913 Bicycle and Pedestrian 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 FAST Act provisions, all applicable transportation planning regulations and requirements in consultation with FHWA, FTA, the four Metropolitan Planning Organizations (ACOG, INCOG, LMPO, and Frontier MPO), and non-metropolitan areas.

ACCOMPLISHMENTS DURING FY 2016: Accomplishments include: Attended seminars and workshops related to bicycle and pedestrian transportation planning and policies in order to maintain, upgrade, and develop needed experience and expertise; attended public meetings to field and answer questions from staff and citizens; monitored state and local legislation regarding bicyclists and pedestrians; participated in the bicycle and pedestrian transportation planning activities of local communities, ACOG, INCOG, LMPO and Frontier MPO; researched bicycle and pedestrian safety, education, and infrastructure; assisted department personnel with bicycle and pedestrian related questions; shared training opportunities, information, and guidance to department and outside personnel; made connections with various outside entities to further bicycle and pedestrian initiatives, education, user safety and awareness; continued the Statewide Bicycle and Pedestrian Advisory committee to further the goals of the program while working closely with Oklahoma MPOs, RTPOs, state departments, and citizens.

PROPOSED ACTIVITIES FOR FY 2017: Research and participate in 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 and educational programs across the State. Finalize and publish the Oklahoma Bicycle map with cooperation from ODOT staff. Collect and maintain data in accordance with the MAP-21 and FAST Act performance measures. Enhance staff knowledge through courses, seminars, trainings, and conferences hosted by FHWA, LTAP, and others.

FINANCIALS	**Amount**	**Fund**	**Amount**	**Fund**
Programmed Amount for FFY 2016	$50,000	SPR	$0	STATE
Estimated Cost for FFY 2016	$50,000	SPR	$0	STATE
Estimated Cost for FFY 2017	$200,000	SPR	$0	STATE

CONTACT INFORMATION:

Laura Chaney, Transportation Manager I, 405-521-2705

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 FASTACT. The TAMP will incorporate many working areas covering target areas of maintenance, construction, financials, inventory, performance data, and programming through the TAMP Steering Committee, the TAMP Working Group, TAMP Task Forces. The TAMP will meet requirements of the CFR, which is still in development.

ACCOMPLISHMENTS DURING FFY 2016: The committees were formalized and approved by ODOT leadership. Monthly meetings were held to establish committee responsibilities through a formalized charter. Hosted the NHI instructed TAMP training course for TAM Committee members and additional invitees. Attended FHWA's TAM expert Task Group Meeting. Published a solicitation for services for the purpose of assisting the ODOT team with the development of the TAMP. Kept informed of best practices in asset management development through attending webinar, State-to-State and National asset management peer exchanges, and the 11th National Asset Management Conference. Published part of the newly developed ODOT TAM web page. Participating in the TPF-5(335), "2016 through 2020 Biennial Asset Management Conference and Training on Implementing Strategies".

PROPOSED ACTIVITIES FOR FFY 2017: Manage the consultant contract for TAMP development to include project scope, work plan, and schedule. Continue to participate in various activities as they are available including meetings, workshops, webinar, conferences and peer exchanges. Monitor the rulemaking process related to asset management performance measures.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2016	$100,000	SPR	-0-	STATE
Estimated Cost FFY 2016	$100,000	SPR	-0-	STATE
Projected Cost FFY 2017	$788,422	SPR	-0-	STATE

CONTACT INFORMATION:

Terri Holley, P.E., TAMP Coordinator, 405-521-2694

1915 Performance Measures Coordination

PURPOSE AND SCOPE: The purpose and scope is to develop, maintain, and update performance, metrics, thresholds, measures, targets, and reporting for ODOT. Performance Measures are required in three of the FHWA required Subparts of Title 49 in the FAST Act (with previous specifications in the MAP-21 authorization bill). Subpart E is Performance of the NHS. Subpart F is Freight Movement on the Interstate System. Subpart G is Traffic Congestion. Each Subpart will require metric and thresholds quantified for each reporting segment of roadway network. To be reported annually and submitted to FHWA by June 15, and included within a 2 and 4 year plan for all Performance Programs.

ACCOMPLISHMENTS DURING FFY 2016: New Item 1915 in FY 2017.

PROPOSED ACTIVITIES FOR FFY 2017: Develop and implement agency plan for compliance with required performance measurement and reporting. Keep informed of technological advances through attendance of seminars, conferences, and workshops.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2016	$0	SPR	-0-	STATE
Estimated Cost FFY 2016	$0	SPR	-0-	STATE
Projected Cost FFY 2017	$500,000	SPR	-0-	STATE

CONTACT INFORMATION:

Randy Lee, P.E., 405-319-3580

1916 OK Archeological Survey (OAS) GIS Digitization

PURPOSE AND SCOPE: The project purpose is to develop a Geographic Information System (GIS) to store and maintain locational data and relational databases that are drawn from the State's archaeological records and develop a secure, password-protected, web-based interface to facilitate access to these records by staff and various constituents. Providing this type of web-based access to the OAS' records will greatly enhance the performance of federal and state agency responsibilities under Section 106 of the National Historic Preservation Act. In order to achieve these goals, several critical objectives will be carried out over the course of the three-year project. These include: 1) the coordinated transfer of OAS' geographical and non-geographical paper records to electronic format through scanning, digitization, and FileMaker Pro database development; 2) the development of procedures and mechanisms to store, maintain, and backup these digital data in a secure fashion; 3) the development of content that may be accessed by the general public; and 4) work with the Center for Spatial Analysis to develop and host the secure, password-protected, web-based GIS project. The resulting secure website will provide access to OAS data on a "sliding scale" depending on the end-user and the need to view restricted information. A total budget of $777,520 is anticipated to be distributed over the course of three programs.

ACCOMPLISHMENTS DURING FFY 2016: New Item 1916 added in FY 2017.

PROPOSED ACTIVITIES FOR FFY 2017: Phase I of this three phase project will include: 1) project preparation; 2) design the project relational data model; 3) implement web-based ArcGIS services; 4) digitize and georeferenced data from OAS' copies of the 7.5-minute USGS topographic quadrangle maps; 5) digitize non-spatial data (e.g., site forms, reports, other relevant documents); and 6) develop public-oriented content for the website.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2016	$0	SPR	-0-	STATE
Estimated Cost FFY 2016	$0	SPR	-0-	STATE
Projected Cost FFY 2017	$276,682	SPR	-0-	STATE

CONTACT INFORMATION:

Principal Investigator: Kary Stackelbeck, Ph.D., 405 325-7211

Project Sponsor/ODOT Lead: Jeremey Planteen, 405-521-2729

SP&R Part II Financial Summary Sheet

SP&R PART 2 - RESEARCH, SPRY-0010(69)RS, JP# 01946(68) FEDERAL FISCAL YEAR 2017					
		SPR	***STATE***	***LOCAL***	***TOTAL***
GENERAL ITEMS					
2100	Transportation Research Board (TRB)	$15,000.00			$15,000.00
2115	Long Term Pavement Performance (LTPP)	$45,000.00			$45,000.00
2120	Technical Assistance - Special Studies	$140,000.00			$140,000.00
2130	General Research Activities	$970,000.00			$970,000.00
2160B	Southern Plains Transportation Center (SPTC) - Regional	$1,000,168.00			$1,000,168.00
2161	ODOT Transportation Library (OTL) Management	$169,745.00			$169,745.00
2400	Oklahoma State University UTC - Tier 1	$500,000.00			$500,000.00
2700	Product Evaluation Program	$10,000.00			$10,000.00
	Total General Activities	**$2,849,913.00**			**$2,849,913.00**
ANNUAL RESEARCH PROJECTS					
2156	Roadside Vegetation Management Training & Consultation	$167,060.00			$167,060.00
2157	Roadside Vegetation Management Research	$59,682.00			$59,682.00
	Total Annual Research Projects	**$226,742.00**			**$226,742.00**
CONTINUING RESEARCH PROJECTS					
2228	Overturning Forces at Bridge Abutments - Phase 3	$51,941.00			$51,941.00
2266	The Use of Resistivity Testing for Quality Control of Concrete Mixtures	$103,558.00			$103,558.00
2268	Use of a Novel Controlled Release Surface Curing Agent for Bridge Decks	$70,824.00			$70,824.00
2272	Perf. of Moisture Barriers to Enhance Pavement Performance Over Swelling Soils	$93,007.00			$93,007.00
2273	Dev. of Guidelines for Selection and Evaluation of Tack Coats in Oklahoma	$84,232.00			$84,232.00
2274	Dev. of Concrete Mixtures to Mitigate Bridge Deck Cracking	$100,000.00			$100,000.00
2275	Dev. of Aggr. Character-Based Prev. Maint. using 3D Laser/AIMS Techn.	$99,223.00			$99,223.00
	Total Continuing Research Projects	**$602,785.00**			**$602,785.00**
NEW RESEARCH PROJECTS					
2276	Eval. of Ultra-High Performance Concrete for Use in Bridge Connections Repair	$80,034.00			$80,034.00
2277	Compilation of ME Design for Rigid and Flexible Pavements in Oklahoma	$100,000.00			$100,000.00
2278	Recycling and Reuse of Materials in Transportation Projects	$99,999.00			$99,999.00
	Total New Research Projects	**$280,033.00**			**$280,033.00**
RESEARCH IMPLEMENTATION PROJECTS					
2300	Interim Research Implementation Projects	$160,819.00			$160,819.00
CONTINUING					
2300(16-01)	National Perf. Mgmt. Res. Data Set (NPMRDS) - Speed Data Valid. for Traff. Perf. Meas.	$90,745.00			$90,745.00
2300(16-02)	Improving the Efficiency and Accuracy of ODOT Temporary Traffic Monitoring System	$70,925.00			$70,925.00
2300(16-04)	Load Test Monitoring of I-235 Bridge Repairs	$2,370.00			$2,370.00
NEW					
2300(17-01)	Implementation: Dev. of Intelligent Vehicle Counting and Classif. Sensor (iVCCS)	$92,863.00			$92,863.00
2300(17-02)	Rehab. for the Bridge Appr. Slab of the Blue River Site	$132,278.00			$132,278.00
	Total Research Implementation Projects	**$550,000.00**			**$550,000.00**
	Grand Total SPRY-0010(69)RS	**$4,509,473.00**			**$4,509,473.00**
	Total Research Funding Including Pooled Fund Studies				**$5,768,483.00**

SP&R Part II Financial Summary Sheet

ENDING RESEARCH PROJECTS		SPR		Total
2208	Development and Implementation of an MEPDG for Rigid Pavements - Phase 3			
2243	Recommended Fatigue Test for Oklahoma DOT			
2252	Develop. of Inexpensive Vehicle Sensor Node System - Phase 3			
2256	Understanding the Behavior of Prestressed Concrete Girders			
2260	Shrinkage Induced Deformations in Steel Bridges - Phase 2			
2262	Feasibility Study of GRS Systems for Bridge Abutments in Oklahoma			
2265	Precast Prestressed Concrete Pavement to Abate Settlement Problems			
2266	The Use of Resistivity Testing for Quality Control of Concrete Mixtures - Phase 1			
RECENTLY COMPLETED RESEARCH PROJECTS				
2228	Overturning Forces at Bridge Abutments - Phase 2			
2229	Expected Life of Silanes - Phase 2			
2252	Develop. of Inexpensive Vehicle Sensor Node System - Phase 2			
2253	Investigation of Optimized Graded Concrete for Oklahoma - Phase 2			
2258	Evaluate Densifier-Over-Shotblasting (DOS) Treatment Performance			
2261	Selection of Long Lasting Rehab. Treatment using Life Cycle Cost Analysis			
2269	Development of Alternative High Friction Surfaces for Oklahoma (NCAT)			
2270	Development of an Asphalt Pavement Test Facility at the OSU UAV Facility			
2271	Comparative Assess. of Current Gross and Axle Truck Weight and Permit Laws in the US			
ENDING RESEARCH IMPLEMENTATION PROJECTS				
2300(16-03)	Okla. Publ. and Tribal Transp. Infra. Empl. Occ. Safe. and Health Train. and Eval. - Phase 1			
POOLED FUND STUDIES				
SOL-1406	Impl. Shakecast Across Multiple State Depts for Rapid Post Earthquake Response	$15,000.00		$15,000.00
TPF-5(267)	Accelerated Performance Testing for the NCAT Pavement Test Track	$360,000.00		$360,000.00
TPF-5(288)	Western Road Usage Charging Consortium	$25,000.00		$25,000.00
TPF-5(312)	Western Maintenance Partnership	$5,000.00		$5,000.00
TPF-5(313)	Technology Transfer Concrete Consortium	$12,000.00		$12,000.00
TPF-5(326)	Develop and Support Transp. Perf. Mgmt. Capacity Development Needs	$10,000.00		$10,000.00
TPF-5(328)	Strain-based Fatigue Crack Monitoring of Steel Bridges	$25,000.00		$25,000.00
TPF-5(335)	Biennial Asset Management Conference and Training	$6,000.00		$6,000.00
TPF-5(342)	TRB Core Program Services	$127,038.00		$127,038.00
TPF-5(343)	Roadside Safety Research for MASH Implementation	$10,000.00		$10,000.00
TPF-5(408)	NCHRP	$663,972.00		$663,972.00
Total Pooled Fund Projects		**$1,259,010.00**		**$1,259,010.00**
ACTIVE AND PAID POOLED FUND STUDIES				
TPF-5(063)	Improving the Quality of Pavement Profiler Measurement			
TPF-5(099)	Evaluation of Low Cost Safety Improvements			
TPF-5(197)	The Impact of Wide-Base Tires on Pavement Damage: A National Study			
TPF-5(209)	Support of the Transportation Curriculum Coordination Council (TCCC)			
TPF-5(231)	ITS Pooled Fund Program (ENTERPRISE)			
TPF-5(255)	Highway Safety Manual Implementation			
TPF-5(267)	Accelerated Performance Testing on the 2012 NCAT Pavement Test Track			
TPF-5(278)	Real-Time Quality Control Monitoring and Characterization of Aggregate Materials			
TPF-5(297)	Improving Specification to Resist Frost Damage in Modern Concrete Mixtures			
TPF-5(269)	Development of an Improved Design Procedure for Un-bonded Concrete Overlays			
PAID AND ENDED IN 2016 POOL FUND STUDIES				
TPF-5(174)	Construction of Crack Free Concrete Bridge Decks, Phase 2			
TPF-5(187)	Updating U.S. Precipitation Frequency Estimates for the Midwestern Region			
TPF-5(159)	Replaced by Solicitation 1363			
TPF-5(229)	Characterization of Drainage Layer Properties for MEPDG			
TPF-5(243)	Motorcycle Crash Causation Study			
TPF-5(256)	HY-12 Storm Drain Hydraulic Analysis Program-Phase Two of Development Efforts			
TPF-5(275)	2014 Asset Management Conference and Trainging on Implementation Strategies			
TPF-5(205)	Implementation of Concrete Pavement Mixture Design and Analysis			

2100 Transportation Research Board (TRB) Core Program

PURPOSE AND SCOPE: This item covers travel expenses and time for ODOT personnel to attend the annual TRB meeting.

ACCOMPLISHMENTS DURING FFY 2016: Attended annual TRB meeting.

PROPOSED ACTIVITIES FOR FFY 2017: Attend annual TRB meeting.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2016	$15,000	SPR	-0-	STATE
Estimated Cost FFY 2016	$15,000	SPR	-0-	STATE
Projected Cost FFY 2017	$15,000	SPR	-0-	STATE

CONTACT INFORMATION:

David Ooten, State Research Engineer, 405-521-2671

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 Southern Region Contract Office (SRCO), assist SRCO with data gathering as necessary, act as general liaison between SRCO and ODOT. Maintain working knowledge related to SHRP product implementation, act as general liaison between FHWA and ODOT for product implementation activities.

ACCOMPLISHMENTS DURING FFY 2016: Conducted pre-construction 3D Laser Imaging data collection of new Warm Mix Asphalt site on SH-66 in Canadian County between Yukon and El Reno; completed construction of new Warm Mix Asphalt site in late October, early November of 2015; installed new pavement markings and ID signs at new site; performed 2nd round of 3D Laser Imaging data collection following new construction; performed annual site investigations, recorded observations, and reported findings; obtained information from the SRCO for specific continued data collection; arranged for continued testing and monitoring of current SPS and GPS site locations in Oklahoma for FY 2017; performed inventory of all signs and pavement markings.

PROPOSED ACTIVITIES FOR FFY 2017: Perform two (2) rounds of 3D Laser Imaging data collection; Facilitate further testing of the new Warm Mix Asphalt experiment; continue to perform annual site investigations, record observations, and report findings; perform inventory of all signs and pavement markings; obtain information from the SRCO for specific continued data collection; arrange for continued testing and monitoring of current SPS and GPS site locations in Oklahoma for FY 2018.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2016	$45,000	SPR	-0-	STATE
Estimated Cost FFY 2016	$45,000	SPR	-0-	STATE
Projected Cost FFY 2017	$45,000	SPR	-0-	STATE

CONTACT INFORMATION:

Bryan Cooper, Transportation Manager I, 405-636-4199

2120 Technical Assistance Special Studies

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

ACCOMPLISHMENTS DURING FFY 2016: Performed pipe inspection adjacent to US-62 in Prague in November 2015; performed 4 pipe inspections on SH-80 in Cherokee County and 1 on US-69 in McIntosh County; continued to collect other still photographs for various in-house and SP&R research projects and monitored Every Day Counts (EDC) related issues such as the High Friction Surface Treatment (HFST) Demonstrations on SH-20 in Mayes County and added another HFST mine chat section on SH-20, there were also 2 bauxite sections added in Oklahoma County; concluded the 3D Crosswalk Study for ODOT's Traffic Division on US-62B, Kiowa County in Snyder; conducted 2-six week sessions of monitoring traffic behavior and recording video and speed.

PROPOSED ACTIVITIES FOR FFY 2017 Observe and monitor performance of the existing HFST site in Mayes County and the new sites on I-40 and I-44 in Oklahoma City, the mine chat site on SH-20 in Mayes County, along with any other EDC initiative implementations; assist Division 4 and Materials Division in monitoring the in-place Density project in Grant Co.; 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 or 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 2016	$140,000	SPR	-0-	STATE
Estimated Cost FFY 2016	$140,000	SPR	-0-	STATE
Projected Cost FFY 2017	$140,000	SPR	-0-	STATE

CONTACT INFORMATION:

Bryan Cooper, Transportation Manager I, 405-636-4199

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: 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.

ACCOMPLISHMENTS DURING FFY 2016: Solicited ODOT subject matter experts, Field Division personnel, university and private industry staff for new research ideas and problem statements for possible FFY 2017 research project funding; coordinated and carried out the Research Steering Committee (RSC) meeting; received and compiled 29 new research problem statements; reviewed 12 new research ideas and/or problem statements for priority ranking; generated and posted 3 FFY 2017 Request for Proposals (RFP's) for research proposal submissions; reviewed 12 new research proposals submitted for possible FFY 2017 project funding; discussed proposed project work with researchers and ODOT subject matter experts; approved and prepared 3 no cost time extension (NCTE) contract modification for FFY 2016; awarded and prepared 2 (SPTC) research contracts for FFY 2017; awarded and prepared 2 annual research contracts for FFY 2017; awarded and prepared 8 continuing research contracts for FFY 2017; awarded and prepared 3 new research contracts for FFY 2017; awarded and prepared 3 continuing research implementation contracts for FFY 2017; awarded and prepared 2 new research implementation contracts for FFY 2017; organized initiation and final project meetings; performed technical reviews of final research project reports for formatting and ADA compliance; facilitated project implementation plans and direction; prepared Part 2 of the FFY 2017 SP&R Work Program.

PROPOSED ACTIVITIES FOR FFY 2017: Solicit for new research ideas for possible FFY 2018 research project funding; coordinate RSC meeting for review of new FFY 2018 research ideas and proposals; generate and post FFY 2018 RFP's; generate FFY 2018 research project contracts and contract modifications; organize initiation and final project meetings; coordinate and assemble research implementation task forces and committees; facilitate project implementation plans and direction; continue to perform technical review of final research project reports for required formatting and ADA compliance; prepare Part 2 of the FFY 2018 SP&R Work Program.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2016	$502,764	SPR	-0-	STATE
Estimated Cost FFY 2016	$502,700	SPR	-0-	STATE
Projected Cost FFY 2017	$970,000	SPR	-0-	STATE

CONTACT INFORMATION:

SP&R-2 Program Administrator: Bryan Hurst, 405-522-3794

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 its 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.

ACCOMPLISHMENTS DURING FFY 2016: Conducted and completed Annual Pesticide Applicator Certified Training and Continuing Education Applicator Workshops for all ODOT field divisions and continued to maintain records on all ODOT certified applicators; provided consultation to ODOT office and field personnel when needed; conducted Sprayer Equipment inspection and calibration workshops; assisted ODOT in maintaining and producing an updated Approved Herbicides and Adjuvants List (AHAL); assisted ODOT in Statewide Herbicide Contract review; attended national annual conferences and included findings in Certified Training and Continuing Education Applicator Workshops; produced project progress reports; completed and produced FFY 2015 Annual and Final Reports; FFY 2016 Annual Report submissions are pending.

PROPOSED ACTIVITIES FOR FFY 2017: 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 all ODOT field divisions herbicide program; attend national conferences; produce project progress reports; produce FFY 2017 Annual Research Reports.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2016	$165,762	SPR	-0-	STATE
Estimated Cost FFY 2016	$165,700	SPR	-0-	STATE
Projected Cost FFY 2017	$167,060	SPR	-0-	STATE

CONTACT INFORMATION:

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

SP&R-2 Program Administrator: Bryan Hurst, 405-522-3794

Project Sponsor: Brad Mirth, ODOT Maintenance Division Engineer, 405-521-2557

2157 Herbicide Research Program

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.

ACCOMPLISHMENTS DURING FFY 2016: Continued to perform evaluations of new and generic herbicide formulations and combinations for roadside and cable barrier management and implement findings in winter training workshops; completed evaluation of adjuvants and recommended herbicides for tank mix compatibility and included findings into the AHAL; performed evaluation of herbicide tolerance of new candidate roadside Bermuda grass varieties; constructed research test plots and completed field experiments, data collection and analysis; performed evaluation of select roadside areas containing natural milkweed populations for monarch butterfly utility; produced project progress reports; completed and produced FFY 2015 Annual Report; FFY 2016 Annual Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2017: Continue to perform evaluations of new and generic herbicide formulations and combinations for roadside and cable barrier management and implement findings in winter training workshops; perform evaluation of tank mix compatibility of adjuvants and herbicides and include findings into the AHAL; continue to evaluate herbicide tolerance of new candidate roadside Bermuda grass varieties; continue to explore select roadside areas containing natural milkweed populations for monarch butterfly utility; produce project progress reports; produce FFY 2017 Annual Report.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2016	$59,269	SPR	-0-	STATE
Estimated Cost FFY 2016	$59,200	SPR	-0-	STATE
Projected Cost FFY 2017	$59,682	SPR	-0-	STATE

CONTACT INFORMATION:

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

SP&R-2 Program Administrator: Bryan Hurst, 405-522-3794

Project Sponsor: Brad Mirth, ODOT Maintenance Division Engineer, 405-521-2557

2160 Southern Plains Transportation Center (SPTC)
Joint Project Management

PURPOSE AND SCOPE: The purpose of this item is for the SPTC to coordinate and contract research activities covering various topics in a mix of research projects on behalf of ODOT with provided matching funds to the SPTC.

ACCOMPLISHMENTS DURING FFY 2016: Submitted remaining two (2) Final Reports.

PROPOSED ACTIVITIES FOR FFY 2017: End of joint management projects.

FINANCIALS

	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2016	-0-	SPR	-0-	STATE
Estimated Cost FFY 2016	-0-	SPR	-0-	STATE
Projected Cost FFY 2017	-0-	SPR	-0-	STATE

CONTACT INFORMATION:

SPTC Director: Musharraf Zaman, 405-325-2626

SP&R-2 Program Administrator, Bryan Hurst, 405-522-3794

2160B Southern Plains Transportation Center (SPTC)

PURPOSE AND SCOPE: This item is implemented to provide support and matching funds to the Southern Plains Transportation Center, (SPTC). The Research and Innovative Technology Administration (RITA) of the U.S. Department of Transportation recently announced the results of the competition for the University Transportation Center (UTC) program for FY 2013 and 2014 MAP-21 funds. In that announcement, the Southern Plains Transportation Center (SPTC) was designated as the Region 6 UTC. The SPTC consortium consists of eight academic institutions from Region 6, namely The University of Oklahoma (OU; Consortium Lead), Oklahoma State University (OSU), Langston University (LU), University of Arkansas (UARK), The University of New Mexico (UNM), Louisiana Tech University (LTU), The University of Texas at El Paso (UTEP), and Texas Tech University (TTU). Two international universities will also collaborate with the consortium: Indian Institute of Technology – Bombay, Mumbai, India, and Shandong University, Jinan, China. ODOT played a pivotal role in making the SPTC a reality. In addition to supporting the SPTC Proposal Team in identifying potential research topics that led to selecting "Climate-adaptive freight and transportation infrastructure" as the SPTC theme, ODOT's financial commitment to support key SPTC activities was extremely important to this success. The two complementary goals of the SPTC are: (i) to develop comprehensive, cost-effective and immediately implementable solutions to critical infrastructure-related issues facing the transportation system in Region 6 and the nation; and (ii) to prepare transportation professionals for leadership roles in professional and research careers in support of the nation's transportation systems.

ACCOMPLISHMENTS DURING FFY 2016: SPTC continued to provide literature reviews; selected proposals submitted in response to SPTC's Request for Proposals; conducted research through the SPTC Work Program which addresses ODOT's transportation research needs; continued to supply matching funds for other SPTC activities: workforce development, outreach, center support, experiential learning, workforce symposium, student competition, student internship, communications, and technology transfer; continued to support and lead ODOT GIS Internship Program; submitted FFY 2015 Annual Report; FFY 2016 Annual Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2017: SPTC is competing for a regional university transportation center and if selected, will continue to serve as the regional UTC; continue to provide literature reviews; select proposals submitted in response to SPTC's Request for Proposals; continue to conduct research through the SPTC Work Program which addresses ODOT's transportation research needs; continue to supply matching funds for other SPTC activities: workforce development, outreach, center support, experiential learning, workforce symposium, student competition, student internship, communications, and technology transfer; continue to support and lead ODOT GIS Internship Program; prepare and submit FFY 2017 Annual Report.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2016	$1,000,168	SPR	-0-	STATE
Estimated Cost FFY 2016	$1,000,168	SPR	-0-	STATE
Projected Cost FFY 2017	$1,000,168	SPR	-0-	STATE

CONTACT INFORMATION:

Musharraf Zaman, SPTC Director, 405-325-2626

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 seeks to integrate with other transportation libraries nationally while moving toward digital contents and an Internet-based service system.

ACCOMPLISHMENTS DURING FFY 2016: Conducted resource inventory; integrated with Western Transportation Knowledge Network (WTKN) of Libraries; served as a transportation clearinghouse; coordinated printing, binding and distribution services; provided electronic access to ODOT SP&R research project final reports; continued cataloging process; conducted literature search related services; provided traditional library services; developed an online presence; provided additional services such as pick-up and delivery of library materials; produced project progress reports; submitted FFY 2015 Annual Report. FFY 2016 Annual Report submission is pending. Library staff searches included assisting patrons with collection questions and finding materials within the library and beyond; preparing searches that included lists of topic related titles and/or a compilation of topic related documents; drafting *ODOT Research Highlighter* completed project summaries that are posted on the ODOT SP&R web page.

PROPOSED ACTIVITIES FOR FFY 2017: Continue to conduct resource inventory; continue integration with Western Transportation Knowledge Network (WTKN) of Libraries; continue to serve as a transportation clearinghouse for incoming materials as well as distribute ODOT publications; coordinate printing, binding and distribution services; provide electronic access to ODOT SP&R research project final reports; continue cataloging process; continue to conduct literature search related services; continue to provide traditional library services and additional services such as pick-up and delivery of library materials and other services as required; develop online presence to allow for easily reachable services using LibGuides; assist ODOT with accessibility of final research reports; produce project progress reports; prepare and submit FFY 2017 Annual Report.

This item was formerly reported as item 2160C. As of October 1, 2016, Management of the ODOT Transportation Library is being reported as Item 2161.

FINANCIALS	**AMOUNT**	**FUNDS**	**AMOUNT**	**FUNDS**
Programmed Amount FFY 2016	$178,693	SPR	-0-	STATE
Estimated Cost FFY 2016	$178,600	SPR	-0-	STATE
Projected Cost FFY 2017	$169,745	SPR	-0-	STATE

CONTACT INFORMATION:

Project Contact: Musharraf Zaman,The University of Oklahoma, 405-325-5625

Project Sponsor: Ron Curb, ODOT Research Engineering Manager II, 405-522-3795

2208 Development and Implementation of a Mechanistic and Empirical Pavement Design Guide (MEPDG) for Rigid Pavements - Phase 3

PURPOSE AND SCOPE: The Mechanistic-Empirical Pavement Design Guide (MEPDG) is the new pavement design guide released by the American Association of State Highway and Transportation Officials (AASHTO). AASHTO suggests each state highway agency validates and, if necessary, calibrates the MEPDG design models based on local conditions. ODOT is currently under the process of accepting the MEPDG to replace the 1993 design guide. In the first two phases of this project, a comprehensive research work has been carried out which involved laboratory tests, road section instrumentation and sensitivity analysis. The research revealed valuable information regarding local climate data, concrete material properties, and the performance data of Oklahoma rigid pavements. In view of other states' experience, Oklahoma extended the SP&R 2208 project to a Phase 3 that focuses on the local validation/calibration of the MEPDG for Oklahoma rigid pavements and also addresses the uncertainty in the slab/base friction property. The primary objective of Phase 3 is to validate and calibrate the MEPDG for the design of typical Oklahoma rigid pavements. The secondary objectives of the proposed research are (1) to continue to monitor the field performance of the instrumented road section on I-44 and (2) to investigate the slab/base friction property of typical Oklahoma rigid pavement structures.

ACCOMPLISHMENTS DURING FFY 2016: Continued to determine input strategies; continued to monitor the I-44 road section in Tulsa, OK., performed local calibration of the MEPDG; executed a cost benefit analysis comparing calibrated MEPDG, default MEPDG and the 1993 design guide; developed design examples and a materials database file; produced project progress reports; submitted FFY 2015 Phase 3 Annual Report; Final Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2017: None

FINANCIALS	**AMOUNT**	**FUNDS**	**AMOUNT**	**FUNDS**
Programmed Amount FFY 2016	$96,685	SPR	-0-	STATE
Estimated Cost FFY 2016	$96,600	SPR	-0-	STATE
Projected Cost FFY 2017	-0-	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Xiaoming Yang, Oklahoma State University, 405-744-5257

SP&R-2 Program Administrator: Bryan Hurst, 405-522-3794

Project Sponsor: Kenny Seward, Assist. Materials and Research Div. Engineer, 405-522-4999

2228 Overturning Forces at Bridge Abutments and the Interaction of Horizontal Forces from Adjacent Roadways - Phase 3

PURPOSE AND SCOPE: ODOT has numerous bridges throughout the state where the expansion joints have closed up, roller support bearings tilted, and beams have pushed up against the abutment back wall. Abutments are not performing as expected which has led to frequent and costly repairs that strain limited maintenance budgets. After repairs, some of these bridges experience more movement resulting in further damage. Factors needing further exploration are the thermal expansion of rigid pavements exerting horizontal forces perhaps combining with the embankment forces on the abutments to cause movement of the abutment, premature expansion joint failure, damage to back walls, and tilting of roller bearings. Due to the numerous bridges that are affected by expansion joint failure and the resulting problems caused to the various bridge elements, there is a need to instrument roadways adjacent to bridges, the embankments, and the abutments themselves to monitor and better understand what is taking place. Results of this research could result in modifications to standard abutment details and may influence the way ODOT approaches repair projects. Where Phase 2 addressed additional instrumentation, pre and post-repair monitoring, evaluation and recommendations, Phase 3 will address work related to removing sensors out of the way to accommodate ODOT repairs to the SH-3 north and 19th Street bridges, post repair monitoring of instruments, data analysis and recommendations. Pre- and post-repair monitoring of the instruments will provide ODOT valuable information regarding the repairs carried out at these bridges. This will provide ODOT with an opportunity to monitor the behavior of a bridge before and after repairs to understand the effects of the repairs and therefore perform future repairs effectively. Ultimately, repair guidelines for bridges with similar distresses will be developed based on the results of this study.

ACCOMPLISHMENTS DURING FFY 2016: Continued to monitor all instrumentation; removed and reinstalled instrumentation on SH-3 and 19th Street bridges where necessary; provided input on proposed location of pressure relief joints; monitored instruments before and after pressure relief joints construction; performed data analysis; produced project progress reports; submitted FFY 2015 Phase 2 Annual Report; FFY 2016 Phase 3 Annual Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2017: Continue to monitor all installed instrumentation; continue to perform data analysis to evaluate the effectiveness of pressure relief joints construction; produce project progress reports; prepare and submit Final Report.

FINANCIALS	**AMUNT**	**FUNDS**	**AMOUNT**	**FUNDS**
Programmed Amount FFY 2016	$51,941	SPR	-0-	STATE
Estimated Cost FFY 2016	$51,900	SPR	-0-	STATE
Projected Cost FFY 2017	$51,941	SPR	-0-	STATE

CONTACT INFORMATION:

Principal Investigator: Kanthasamy Muraleetharan, The University of Oklahoma, 405-325-4247

SP&R-2 Program Administrator: Bryan Hurst, 405-522-3794

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

2229 Expected Life of Silane Water Repellant Treatments on Bridge Decks - Phase 2

PURPOSE AND SCOPE: With the ever increasing costs to the maintenance of concrete bridge decks due to corrosion of reinforcing steel from the environment and routine maintenance applications of salt, it is important to have a better understanding of the effectiveness and durability of silane-treated bridge decks. Historically, bridge decks in Oklahoma are treated once at the time of construction. Little is known of the time frame for which silane remains as an effective barrier to prevent the intrusion of corrosive salts into the bridge deck. Through an extensive literature search, survey of state DOT's, and coring and analyzing of bridge deck cores from bridges of various ages, the researcher will determine the life expectancy of a onetime application of silane. ODOT Bridge Division will assist in the selection of bridges to be used in this study. It is expected that an effective duration range can be determined. With these findings it is expected that a routine maintenance practice can be established for the re-treatment of bridge decks based on environment, salt application, regional and age considerations resulting in extended bridge deck life expectancy and lower life cycle costs. As part of Phase 2 the research team plans to continue to answer questions raised in Phase 1 of the testing while investigating a new sealer that ODOT plans on using on several critical bridge structures in high traffic areas. The examination methods established in the previous project will provide a suite of useful tools to evaluate these new products. This research is timely and will help ODOT to make sound investments in the long term performance of their bridges. This research has the potential to greatly extend the service life of these bridges and therefore could likely save the state of Oklahoma millions of dollars.

ACCOMPLISHMENTS DURING FFY 2016: Submitted Final Report.

PROPOSED ACTIVITIES FOR FFY 2017: End of project.

FINANCIALS	**AMUNT**	**FUNDS**	**AMOUNT**	**FUNDS**
Programmed Amount FFY 2016	$-0-	SPR	-0-	STATE
Estimated Cost FFY 2016	$-0-	SPR	-0-	STATE
Projected Cost FFY 2017	$-0-	SPR	-0-	STATE

CONTACT INFORMATION

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

SP&R-2 Program Administrator: Bryan Hurst, 405-522-3794

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

2243 Recommended Fatigue Test for ODOT

PURPOSE AND SCOPE: Fatigue cracking and rutting are two dominant distresses in flexible pavements. The Oklahoma Department of Transportation (ODOT) currently evaluates the rutting potential of asphalt mixes through the Hamburg rut test in accordance to OHD L-55, which is similar to AASHTO T324. However, no standard test procedure is currently available to ODOT for screening of mixes for fatigue resistance, which is extremely important for quality control and quality assurance of flexible pavements. The proposed study will investigate selected test methods and procedures to measure fatigue resistance or fatigue life of different types of asphalt mixes. Mechanistic frameworks, namely dissipated energy, fracture mechanics, and viscoelastic continuum damage, will be utilized to analyze the data, as appropriate. The variability and repeatability of each test method will be evaluated statistically. The results from this study will lead to test methods/protocols and the associated equipment will be recommended that can be used by ODOT for screening of asphalt mixes for their fatigue resistance during the mix design phase.

ACCOMPLISHMENTS DURING FFY 2016: Continued to collect and prepare SGC cylinders from designed mixes; continued to prepare SGC cylinders from field mixes; continued to prepare SCB specimens for fatigue testing; continued to perform AMPT test on all SCB specimens; performed statistical analysis of mechanistic characterization of fatigue between field and laboratory specimens; conducted fatigue test training workshop; produced project progress reports; submitted FFY 2015 Annual Report; Final Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2017: None.

FINANCIALS	**AMUNT**	**FUNDS**	**AMOUNT**	**FUNDS**
Programmed Amount FFY 2016	$74,820	SPR	-0-	STATE
Estimated Cost FFY 2016	$74,800	SPR	-0-	STATE
Projected Cost FFY 2017	-0-	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Musharraf Zaman, The University of Oklahoma, 405-325-5625

SP&R-2 Program Administrator: Bryan Hurst, 405-522-3794

Project Sponsor: Kenneth Hobson, ODOT Bituminous Engineer, 405-521-2677

2252 Development of Inexpensive Vehicle Sensor Node System for Volume, Turn Movement and Collision Avoidance - Phase 3

PURPOSE AND SCOPE: ODOT is responsible for collecting temporary vehicle counts from thousands of various locations throughout the state each year. As a continuance of Phase 2 of this study, the purpose of Phase 3 of this study is to develop and implement a non-intrusive, inexpensive, portable vehicular traffic monitoring system for temporary installment on the surface of highways, roadways, or roadsides. Sensor design is comprised of solid-state electronics for detecting, counting, and classifying vehicles while eliminating inherent limitations of systems fabricated with loops and hoses. Utilization of the proposed design can be extended to improve work zone safety by reducing installation time and providing real-time traffic monitoring. The system can be integrated with other networks, such as inter-vehicle communication and road-to-vehicle communication for enhancing traffic safety control at intersections

ACCOMPLISHMENTS DURING FFY 2016: Performed data collection for vehicle classification system development; developed algorithms for training set normalization and clustering; developed algorithms for feature extraction and dimensionality reduction; developed artificial neural network for vehicle classification; performed testing and optimizing vehicle classification system; developed software algorithms for automated deployment and system auto-configuration; developed a graphical user interface for real time system monitoring and data visualization; developed software code for energy-aware system operation and communication; developed software code for system recovery and over-air firmware upgrade; conducted field-testing and accuracy validation of the overall system; produced project progress reports; submitted FFY 2015 Phase 2 Annual Report; Final Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2017: None.

FINANCIALS	**AMOUNT**	**FUNDS**	**AMOUNT**	**FUNDS**
Programmed Amount FFY 2016	$87,966	SPR	-0-	STATE
Estimated Cost FFY 2016	$87,900	SPR	-0-	STATE
Projected Cost FFY 2017	-0-	SPR	-0-	STATE

CONTACT INFORMATION

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

SP&R-2 Program Administrator: Bryan Hurst, 405-522-3794

Project Sponsor: Aaron Fridrich, Transportation Manager II, 405-736-9466

2253 Investigation of Optimized Graded Concrete for Oklahoma - Phase 2

PURPOSE AND SCOPE: Oklahoma has started to implement “optimized graded concrete”. These concrete mixtures are designed to use less cement, and proportionately more aggregate with a more optimized and continuous distribution of aggregate sizes. This allows a concrete mixture to achieve increased workability and strength through using less mortar (sand, cement and water). Cement is the most expensive ingredient in concrete, the largest contributor to the carbon footprint, and can also lead to increased cracking through shrinkage. Both the initial cost and long term performance of concrete would benefit from the reduction of cement content in concrete mixtures. The primary focus of this research will be to investigate the interplay between gradation and mortar content in a concrete mixture and how that impacts the necessary performance requirements for structural concrete: workability, strength, and durability. In addition the research team will also be available to work with any contractors that are implementing optimized graded concrete in the field. This is an important step in the validation of the research completed in the laboratory and is essential to the implementation of this new approach. Finally, the team will work with ODOT to create a new specification that will help implement optimized graded concrete for structural concrete in the state of Oklahoma.

ACCOMPLISHMENTS DURING FFY 2016: Submitted Final Report.

PROPOSED ACTIVITIES FOR FFY 2017: End of project.

FINANCIALS	**AMOUNT**	**FUNDS**	**AMOUNT**	**FUNDS**
Programmed Amount FFY 2016	-0-	SPR	-0-	STATE
Estimated Cost FFY 2016	-0-	SPR	-0-	STATE
Projected Cost FFY 2017	-0-	SPR	-0-	STATE

CONTACT INFORMATION

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

SP&R-2 Program Administrator: Bryan Hurst, 405-522-3794

Project Sponsor: Kenny Seward, Assistant Materials Division Engineer, 405-522-4999

2256 Understanding the Behavior of Pre-stressed Concrete Girders after Years of Service

PURPOSE AND SCOPE: The proposed project consists of a comprehensive study including both testing and analysis of two real-world AASHTO Type II girders to be obtained during replacement of the I-244 bridge over the Arkansas River in Tulsa after about 47 years in service. It also includes detailed study of composite action in the form of testing the real-world girders and a scaled composite bridge section. This research will provide critical supplemental information to and improve upon previous research focused on the shear capacity of one real-world girder sponsored by ODOT at the University of Oklahoma and answer numerous questions concerning bridge girders put into service during the same time period. It will provide detailed information concerning composite behavior of pre-stressed girder bridges critical to shear. It also has the potential to provide opportunities for a significant quantity of additional research during the process of determining shear capacity and studying pre-stress transfer. The results of this research would be used to evaluate the condition and safety of pre-stressed concrete girders designed for shear using the quarter-point rule described in the AASHTO Standard Specifications (AASHTO 1973) in comparison to the current AASHTO LRFD Specifications (AASHTO 2004). Additionally, improved procedures for using nondestructive methods to determine condition of in-service structural members would be recommended.

ACCOMPLISHMENTS DURING FFY 2016: Continued to perform analysis of composite action, stresses, strains and shear obtained from load testing; continued literature searches on bond transfer, airy stress function and dynamics; continued to perform other inverse analysis; continued construction of scaled composite section and perform testing; continued to perform numerical analysis; produce project progress reports; submitted FFY 2015 Annual Report; Final Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2017: None.

FINANCIALS	**AMOUNT**	**FUNDS**	**AMOUNT**	**FUNDS**
Programmed Amount FFY 2016	$99,996	SPR	-0-	STATE
Estimated Cost FFY 2016	$99,996	SPR	-0-	STATE
Projected Cost FFY 2017	-0-	SPR	-0-	STATE

CONTACT INFORMATION

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

SP&R-2 Program Administrator: Bryan Hurst, 405-522-3794

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

2258 Evaluate Densifier-Over-Shot blasting (DOS) Treatment Performance for Pavements and Bridge Decks

PURPOSE AND SCOPE: With increased demands on aging infrastructure, rapidly increasing truck traffic, and shrinking budgets, transportation agencies are continually being asked to "do more with less" in maintaining pavements and bridges. The proposed research provides a method for combining chemical treatment (densifier) and shot blasting, called Densifier-Over-Shot blasting (DOS), to economically harden the aggregates of concrete and asphalt pavements and bridge decks. The proposed DOS method will make surfaces safer and more durable, reduce maintenance costs and increase service life of pavements and bridge decks. The proposed study will have the following major benefits: (i) specifications of the required characteristics of DOS; (ii) identification of polishing tendency of aggregates that are available in each ODOT division; and (iii) documentation of effective construction practice and Inspector's guide.

ACCOMPLISHMENTS DURING FFY 2016: ODOT has approved a project extension to complete proposed work activities and the submission of the final report.

PROPOSED ACTIVITIES FOR FFY 2017: None.

FINANCIALS	**AMOUNT**	**FUNDS**	**AMOUNT**	**FUNDS**
Programmed Amount FFY 2016	-0-	SPR	-0-	STATE
Estimated Cost FFY 2016	-0-	SPR	-0-	STATE
Projected Cost FFY 2017	-0-	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Dominique Pittenger, The University of Oklahoma, 405-325-4536

SP&R-2 Program Administrator: Bryan Hurst, 405-522-3794

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

2260 Shrinkage Induced Deformations in Steel Bridges Made Composite with Concrete Deck Slabs – Phase 2

PURPOSE AND SCOPE: Phase 2 research will build upon the Phase 1 research. The goals of Phase 2 research are to further investigate the phenomena of concrete shrinkage and other volume changes, and to assess their effects on deflections in steel bridges made composite with concrete decks. In Phase 2 the research team will investigate the effects of temperature changes on overall bridge deflections and material deformations. Phase 2 research objectives include identifying the likely causes for excessive or unpredicted deflections in steel girder bridges made composite with concrete deck slabs; developing design and construction methods that will mitigate future problems associated with excessive or unexpected deflections in ODOT bridges; and, assessing the effects of bracing formwork and concrete screeds and assessing their importance in maintaining ride quality for ODOT bridges.

ACCOMPLISHMENTS DURING FFY 2016: Continued literature review; continued forensic investigation of bridges; continued to monitor and test full-sized prototype bridge; continued laboratory testing on concrete materials; continued field instrumentation and monitoring; identified likely causes for excessive or unpredicted deflections; continued the development of design and construction methods for ODOT bridges; produced project progress reports; submitted FFY 2015 Phase 2 Annual Report; Final Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2017: None.

FINANCIALS	**AMOUNT**	**FUNDS**	**AMOUNT**	**FUNDS**
Programmed Amount FFY 2016	$100,000	SPR	-0-	STATE
Estimated Cost FFY 2016	$100,000	SPR	-0-	STATE
Projected Cost FFY 2017	-0-	SPR	-0-	STATE

CONTACT INFORMATION

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

SP&R-2 Program Administrator: Bryan Hurst, 405-522-3794

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

2261 Selection of Long Lasting Rehabilitation Treatment using Life Cycle Lost Analysis and Present Serviceability Rating

PURPOSE AND SCOPE: The desire for a more comprehensive assessment of pavement performance, reinforced by the emphasis on cost, is the purpose of the proposed research. Preserving the current pavement network has become one of the top priorities for many highway agencies including Oklahoma Department of Transportation (ODOT). There are many pavements on important routes that have exceeded their design lives and are in need of cost effective and sustainable rehabilitation. A well-planned preservation approach helps agencies like ODOT to determine the needs for enhancement of the system's functional ability with a multi-year maintenance and rehabilitation (M&R) treatment programs. It also helps the agency optimize the allocations of annual investment in pavement rehabilitation programs at network and project levels. Therefore the researchers and practitioners from two universities (Texas A&M University (TAMU) and Arizona State University (ASU)) team up to develop an innovative methodology that can be used by ODOT for determining the most cost-effective and long-lasting treatment alternatives. The objective of this research study is to develop an engineering decision tool that facilitates the selection of maintenance and rehabilitation activities and their timing for different types of high-volume asphalt pavement roads in the state of Oklahoma. This analysis tool will use historical data, materials characterization and performance testing, deterioration modeling and life-cycle cost analysis to establish and select the maintenance and rehabilitation program.

ACCOMPLISHMENTS DURING FFY 2016: Submitted Final Report.

PROPOSED ACTIVITIES FOR FFY 2017: End of project.

FINANCIALS	**AMOUNT**	**FUNDS**	**AMOUNT**	**FUNDS**
Programmed Amount FFY 2016	-0-	SPR	-0-	STATE
Estimated Cost FFY 2016	-0-	SPR	-0-	STATE
Projected Cost FFY 2017	-0-	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Maryam Sakhaeifar, Texas A&M University, 979-845-9961

SP&R-2 Program Administrator: Bryan Hurst, 405-522-3794

Project Sponsor: Jeff Dean, ODOT Pavement Design Engineer, 405-522-0988

2262 Feasibility Study of GRS Systems for Bridge Abutments in Oklahoma

PURPOSE AND SCOPE: The primary objective of the proposed project is to carry out a feasibility study to identify the types of bridge projects that would be suitable candidates for the use of Geosynthetic Reinforced Soil (GRS) bridge abutments in Oklahoma. The research team will review the state of the art and practice on the GRS technology and develop guidelines for its adoption and implementation in Oklahoma. The primary focus of this study will be on bridges that are built on the low-volume and rural roads (i.e., off the National Highway System, NHS), which can directly and immediately benefit from a viable and speedy bridge construction technology involving recycled girders and bridge abutment construction materials that are produced locally. However, the research team will explore the circumstances in which GRS abutments could also be adopted for bridges on major roads and highways across the state, (i.e., on-NHS system bridges). The Principal Investigators in collaboration with ODOT and FHWA-OK engineers, will provide an assessment of the results of the study which will include expected benefits and actions needed for successful implementation of the study to meet ODOT goals and those of other state transportation agencies.

ACCOMPLISHMENTS DURING FFY 2016: Continued literature review; monitored the performance of the pilot GRS bridge abutments during and after construction; continued laboratory and field tests on backfill, subgrade soils and geosynthetic reinforcement; continued reduction and analysis of data; produced project progress reports; submitted FFY 2015 Annual Report; Final Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2017: None.

FINANCIALS	**AMOUNT**	**FUNDS**	**AMOUNT**	**FUNDS**
Programmed Amount FFY 2016	$89,190	SPR	-0-	STATE
Estimated Cost FFY 2016	$89,100	SPR	-0-	STATE
Projected Cost FFY 2017	-0-	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Kianoosh Hatami, The University of Oklahoma, 405-325-5911

SP&R-2 Program Administrator: Bryan Hurst, 405-522-3794

Project Sponsor: Shannon Sheffert, ODOT Local Government Division Engineer, 405-521-2553

2263 Use of On-Board Compressed Natural Gas (CNG) as a Locomotive Fuel - Phase 3

PURPOSE AND SCOPE: To design/ test/ certify/ study an alternative locomotive fueling system based on the use of CNG. The project scope will focus on addressing all of the necessary safety concerns and any and all statutory requirements at the State and Federal levels, while also addressing the testing and study of the entire fueling system from CNG fuel source to fueling infrastructure, down to the actual on-board system to be installed on the locomotive.

ACCOMPLISHMENTS DURING FFY 2016: The ODOT Rail Programs Manager terminated this study on April 19, 2016.

PROPOSED ACTIVITIES FOR FFY 2017: End of Project.

FINANCIALS	**AMOUNT**	**FUNDS**	**AMOUNT**	**FUNDS**
Programmed Amount FFY 2016	-0-	SPR	-0-	STATE
Estimated Cost FFY 2016	-0-	SPR	-0-	STATE
Projected Cost FFY 2017	-0-	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Les Olsen, Strategic Development Consulting

SP&R-2 Program Administrator: Bryan Hurst, 405-522-3794

Project Sponsor: Craig Moody, Rail Programs Division Manager, 405-522-1465

2265 Precast Pre-stressed Concrete Pavement to Abate Settlement Problems Under Bridge Approach Slabs

PURPOSE AND SCOPE: The problems encountered in bridge approach embankments have often been found to be due to settlement caused by poor compaction of the soil behind the abutments, expansion of the soil behind the abutment or settlement of the soft soil underlying the embankment. Failure of bridge deck approach slabs have also been due to shoving from the adjacent pavement structure causing slope failure of the surrounding fill areas. Malfunctions associated with transition joints between the slab and the adjacent structure are also a major concern. Although several measures have been attempted, some more extreme than others, the settlement problem seems to persist. Three objectives are identified for this project:
1. The development of construction specifications and design guidelines for the use of Precast Pre-tensioned Concrete Pavement (PPCP) approach slabs; 2. The development of construction specifications and design guidelines for the use of soil columns and similar technologies to strengthen and reinforcement approach slab fills and embankments; 3. The development of guidelines to monitor and maintain PPC pavements as approach slab structures. Guidelines for PPCP approach slabs will address the details of design including slab thickness, joint stiffness, subbase strength, required pre-stressing and thickness, and joint sealant requirements among other aspects of the design. Guidelines for soil columns and similar technologies will consider the characteristics of the fill materials, such as moisture, density, size distribution, type and other pertinent properties in which to make them less susceptible to consolidation will be addressed.

ACCOMPLISHMENTS DURING FFY 2016: Continued to formulate a PPCP design process for approach slabs; continued to formulate a design process for soil columns and similar technologies; continued the development of design guidelines and specifications; produced project progress reports; submitted FFY 2015 Annual Report; Final Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2017: None.

FINANCIALS	AMOUNT	FUNDS	AMOUNT	FUNDS
Programmed Amount FFY 2016	$99,955	SPR	-0-	STATE
Estimated Cost FFY 2016	$99,900	SPR	-0-	STATE
Projected Cost FFY 2017	-0-	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Dan Zollinger, Texas A&M Transportation Institute, 979-845-9918

SP&R-2 Program Administrator: Bryan Hurst, 405-522-3794

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

2266 The Use of Resistivity Testing for Quality Control of Concrete Mixtures Phase 2

PURPOSE AND SCOPE: The objective of Phase 1 of this project was to investigate the potential of resistivity testing in assessing the performance of typical concrete mixtures used in bridge and pavement infrastructure in Oklahoma. The sensitivity and reliability of the method with Oklahoma materials was investigated in order to formulate new guidelines and specification(s) that would allow ODOT to produce high quality concrete. The study evaluated the use of resistivity to evaluate field structures and indicated promise to make great changes to the quality and long term performance of Oklahoma concrete. Based on Phase 1 research activities, in Phase 2, a systematic approach using resistivity testing for Classes A and AA concrete mixture design compliance control during construction will be developed. Additionally, a temperature correction factor to rectify results of resistivity measurements taken outside of the test method's recommended temperature range will be developed. Within the devised experimental plan, an extensive trial study within ODOT residencies will be conducted. This will help with the validation process of the resistivity method developed and the implementation process within the residencies. Finally, an alternative method will be recommended in the event a sample fails to meet the specification. This aids in evaluating the adequacy of the material constructed onsite. As such, an alternative secondary resistivity testing procedure, in case of failed material compliance test, will be investigated. The results of this study will aid in devising a strategy for easy implementation of the resistivity method within material quality control and compliance activities.

ACCOMPLISHMENTS DURING FFY 2016: Phase 1 - Continued literature review; continued investigation on applicability of standard procedures for typical Oklahoma concrete mixtures; continued investigation on other possible applications of resistivity testing to complement onsite quality control measures; prepared guidelines and specifications for implementing resistivity testing; executed training workshop; produced project progress reports; submitted FFY 2015 Annual Report; ODOT has approved Phase 2 of this study to begin in FFY 2017. FFY 2016 Annual Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2017: Phase 2 - Perform an experimental parametric investigation to model time-resistivity behavior of typical ODOT Class A and Class AA concrete mixtures; establish a time-dependent resistivity model to identify the water-to-cement ratio of mixtures and the type of cementitious materials present; evaluate the efficacy of the resistivity model and its application to compliance control of mixture design; perform an experimental parametric investigation to model temperature-resistivity behavior of typical ODOT Class A and Class AA concrete mixtures; establish a temperature correction factor compatible with the developed resistivity method for compliance control; produce project progress reports; prepare and submit FFY 2017 Annual Report.

FINANCIALS	**AMOUNT**	**FUNDS**	**AMOUNT**	**FUNDS**
Programmed Amount FFY 2016	$89,908	SPR	-0-	STATE
Estimated Cost FFY 2016	$89,900	SPR	-0-	STATE
Projected Cost FFY 2017	$103,558	SPR	-0-	STATE

CONTACT INFORMATION:
Principal Investigator: Julie Hartell, Oklahoma State University, 405-744-5222
Project Sponsor: Kenny Seward, Assistant Materials Division Engineer, 405-522-4999
SP&R-2 Program Administrator: Bryan Hurst, 405-522-3794

2268 Use of a Novel Controlled Release Surface Curing Agent for Bridge Decks

PURPOSE AND SCOPE: The durability of concrete bridge decks is critical to the satisfactory long term performance of the Oklahoma highway infrastructure system. It is currently required in Oklahoma to place wet burlap or blankets within 10 minutes of strike off of the concrete surface. The job of these materials is to minimize moisture loss, promote hydration, reduce permeability, increase strength gain, and minimize cracking. Current wet curing techniques are labor intensive, logistically challenging, and quite costly. Also the placement of these materials too early can cause unwanted deformations or damage in the surface of the concrete that may nullify any benefits from the curing. The objective of the project is to use a novel curing technique that can be rapidly applied to the surface of the fresh concrete and not cause deformations in the concrete surface. This material should show equal or better curing performance then typical wet curing methods and be sustainable and safe for the environment. The specific objectives for this project include:

1. Develop a field application method for the novel curing material
2. Develop specifications for the quality control and usage of the novel curing material
3. Work with contractors in Oklahoma to implement this technology in the field and evaluate the effectiveness

ACCOMPLISHMENTS DURING FFY 2016: Continued to conduct laboratory studies to evaluate current ODOT curing specifications; continued the usage of novel curing materials in the field and performed effectiveness evaluations; continued to perform field application methods; continued the development of new curing specifications; applied Fiber Cure on an Oklahoma bridge deck in Kiowa County and began effectiveness evaluations; produced project progress reports; submitted FFY 2015 Annual Report; FFY 2016 Annual Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2017: Continue to conduct laboratory studies to evaluate current ODOT curing specifications; continue the usage of novel curing materials in the field and perform effectiveness evaluations; produce project progress reports; prepare and submit FFY 2017 Annual Report.

FINANCIALS	AMOUNT	FUNDS	AMOUNT	FUNDS
Programmed Amount FFY 2016	$94,378	SPR	-0-	STATE
Estimated Cost FFY 2016	$94,300	SPR	-0-	STATE
Projected Cost FFY 2017	$70,824	SPR	-0-	STATE

CONTACT INFORMATION:

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

SP&R-2 Program Administrator: Bryan Hurst, 405-522-3794

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

2269 Development of Alternative High Friction Surfaces for Oklahoma

PURPOSE AND SCOPE: Oklahoma DOT would like to explore alternative surface mixtures that can provide acceptable high friction performance in critical safety locations. Pavement surface friction is measured by skid resistance (aggregate micro-texture) and surface texture (mixture macro-texture). Pavement surface mixtures are routinely dense-graded asphalt, stone matrix asphalt (SMA) or porous friction course (OGFC). The key components of this study are aggregate type and size, binder type and application, and mixture type. Since there is no standard value for pavement friction, the study will use results from Oklahoma sections on the NCAT Test Track as a point of reference to compare the measurements from the study. This study will provide an objective measure of friction performance for four alternative surfaces that OK DOT can review and determine if the alternative surfaces provide an acceptable level of high friction. The objectives are to develop asphalt mixtures for high friction surface (HFS) locations with regionally available aggregates and appropriate asphalt binders as alternatives to standard HFS using resin binder and calcined bauxite aggregate, and, to identify a more conventional asphalt mixture that can be placed as a 0.75-inch thin surface lift and maintain acceptable high friction characteristics.

ACCOMPLISHMENTS DURING FFY 2016: Submitted Final Report.

PROPOSED ACTIVITIES FOR FFY 2017: End of project.

FINANCIALS	**AMOUNT**	**FUNDS**	**AMOUNT**	**FUNDS**
Programmed Amount FFY 2016	-0-	SPR	-0-	STATE
Estimated Cost FFY 2016	-0-	SPR	-0-	STATE
Projected Cost FFY 2017	-0-	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Michael Heitzman, Auburn University (NCAT), 334-844-7309

SP&R-2 Program Administrator: Bryan Hurst, 405-522-3794

Project Sponsor: Kenneth Hobson, ODOT Bituminous Engineer, 405-521-2677

2270 Development of an Asphalt Pavement Test Facility at the OSU Unmanned Aerial Vehicle (UAV) Facility

PURPOSE AND SCOPE: The objective of this study is to assist in the construction of the UAV runway to develop a pavement that can be used as a test facility for evaluation of pavement materials including, but not limited to, plant-mixed warm and hot mix asphalt pavements, high RAP and RAS mixes, asphalt surface treatments, pavement preservation treatments, 100% RAP cold mixes and aggregate bases with surface treatments. These mixtures would need to be incorporated into the planned expansion of the facility or placed as an overlay or surface treatment on the planned existing surface. It would be difficult to load the facility to typical highway conditions; therefore, the facility would be best suited for measurement of environmental effects. At the completion of the construction, ODOT would have a facility available through OSU to test and evaluate surface treatments, surface mixes, including high RAP and RAS mixtures, and pavement preservation treatments for a variety of applications.

ACCOMPLISHMENTS DURING FFY 2016: Monitored runway expansion construction; completed measurements of material properties; performed non-destructive FWD testing; collected cores; performed dynamic modulus; performed friction testing; performed various laboratory testing and analysis; prepared quarterly progress reports.

Due to continued runway expansion delays, ODOT has approved a no cost time extension from October 1, 2016 through December 31, 2016 to complete proposed work activities and the completion of the final report.

PROPOSED ACTIVITIES FOR FFY 2017: None.

FINANCIALS	**AMUNT**	**FUNDS**	**AMOUNT**	**FUNDS**
Programmed Amount FFY 2016	$-0-	SPR	-0-	STATE
Estimated Cost FFY 2016	$-0-	SPR	-0-	STATE
Projected Cost FFY 2017	$-0-	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Stephen Cross, Oklahoma State University, 405-744-7200

SP&R-2 Program Administrator: Bryan Hurst, 405-522-3794

Project Sponsor: Kenneth Hobson, ODOT Bituminous Engineer, 405-521-2677

2271 Comparative Assessment of the Current Gross and Axle Truck Weight and Truck Permitting Laws in the United States

PURPOSE AND SCOPE: The Governor of Oklahoma signed Senate Bill 638 that raises the legal truck weight limits under certain conditions. Under the law, and by annual purchase of a permit, the gross weight limit on the non-interstate highway system is increased by nominally five percent (5%) and individual axle weight limit is increased eight percent (8%). The ODOT Senior Staff requires information regarding the impact of the increase in legal load limits on the Highway Infrastructure. Chief among their concerns are the impact of increased truck weight limits on the existing highway infrastructure, and what the costs to new projects, rehabilitation projects, and maintenance will be. There are also questions about what policies are in force in the contiguous United States with particular emphasis on the states adjacent to Oklahoma. The proposed investigation will respond to the needs of the ODOT Senior Staff by providing key answers to these concerns.

ACCOMPLISHMENTS DURING FFY 2016: Submitted Interim Report A; submitted Interim Report B; submitted Executive Summary; submitted presentation materials; produced project progress reports; submitted Final Report.

PROPOSED ACTIVITIES FOR FFY 2017: End of study.

FINANCIALS	**AMUNT**	**FUNDS**	**AMOUNT**	**FUNDS**
Programmed Amount FFY 2016	$-0-	SPR	-0-	STATE
Estimated Cost FFY 2016	$-0-	SPR	-0-	STATE
Projected Cost FFY 2017	$-0-	SPR	-0-	STATE

CONTACT INFORMATION

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

SP&R-2 Program Administrator: Bryan Hurst, 405-522-3794

Director of Capital Programs: Dawn R. Sullivan, 405-522-6000

2272 Performance of Moisture Barriers to Enhance Pavement Performance over Swelling Soils

PURPOSE AND SCOPE: The Oklahoma Department of Transportation has invested significant amounts of money on several projects to construct low-permeability barriers to prevent moisture changes in swelling soils beneath pavements. However, there has been relatively little post-construction monitoring of these sites to assess the performance and cost-effectiveness of the moisture barriers and associated pavements. Given the high material cost and additional construction cost associated with installing moisture barriers, there is a need to assess performance relative to reductions in moisture infiltration into swelling subgrades. Given the current state-of-the-art knowledge in this field, there is a need for laboratory soil testing, field monitoring, and numerical modeling of the problem. This research will assess the performance of moisture barriers, determine whether these are cost-effective solutions for pavement design over swelling soils, and develop recommendations for enhancing the design of moisture barriers.

ACCOMPLISHMENTS DURING FFY 2016: Started literature review; initiated site identification and selection of potential test sites and began background information collection; planning and coordination for subsurface investigations; purchased test site instrumentation; instrumentation installation and monitoring is pending; surveys of pavements is pending; collection of historical weather data is pending; laboratory soils testing is pending; produced project progress reports; FFY 2016 Annual Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2017: Continue to perform pavement surveys; continue to monitor instrumentation; continue to collect historical weather data; continue to perform laboratory soil testing; conduct numerical modeling of moisture movement and soil shrinkage and swelling volume change; produce project progress reports; prepare and submit FFY 2017 Annual Report.

FINANCIALS	AMOUNT	FUNDS	AMOUNT	FUNDS
Programmed Amount FFY 2016	$89,812	SPR	-0-	STATE
Estimated Cost FFY 2016	$89,800	SPR	-0-	STATE
Projected Cost FFY 2017	$93,007	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Rifat Bulut, Oklahoma State University, 405-744-5189

SP&R-2 Program Administrator: Bryan Hurst, 405-522-3794

Project Sponsor: Christopher Clarke, ODOT Geotechnical Engineer, 405-522-4994

2273 Development of Guidelines for Selection and Evaluation of Tack Coats in Oklahoma

PURPOSE AND SCOPE: Flexible pavements are typically constructed by compacting asphalt mixes in multiple layers. It is important that the pavement structure behave as one system, rather than multiple independent layers. Inadequate interlayer bond leads to distresses such as half-moon-shaped cracks, delamination (de-bonding), followed by longitudinal wheel path cracking, potholes, fatigue cracks, slippage, and rutting. The quality and integrity of the bond between the asphalt layers, especially the bond between the existing road surface and an overlay is crucial to pavement performance and durability. In order to improve the interlayer bonding of asphalt pavements, tack coat is used frequently. Tack coat involves application of a thin layer of liquid asphalt to promote bonding between the existing pavement and the new layer or between two lifts and provide a waterproofing barrier. This study will aid ODOT in improving its current practice of selection of tack coat type and application rate. The results from this study will be used to develop recommendations and development of quality control measures for tack coats for enhanced performance. Such measures will benefit ODOT by reducing pavement maintenance costs by minimizing tack coat-related failures of pavements.

ACCOMPLISHMENTS DURING FFY 2016: Started literature review; started identification and selection of materials, i.e., tack coats, asphalt mix and field cores; began laboratory samples preparation for various testing techniques; began laboratory performance testing; began simulated long-term oven aging and surface wearing; began various samples conditioning; started determination of super pave PG and rheological properties of tack residues, i.e., DSR and BBR testing; began test data analysis; began the development of a database on tack coat performance evaluated in the laboratory; produced project progress reports; FFY 2016 Annual Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2017: Continue to identify and select materials, i.e., tack coats, asphalt mix and field cores; continue to prepare laboratory samples for various testing techniques; continue laboratory performance testing; continue simulated long-term oven aging and surface wearing; continue various samples conditioning; continued determination of super pave PG and rheological properties of tack residues, i.e., DSR and BBR testing; continue analysis of test data; continue database development; produce project progress reports; prepare and submit Final Report.

FINANCIALS	**AMOUNT**	**FUNDS**	**AMOUNT**	**FUNDS**
Programmed Amount FFY 2016	$82,087	SPR	-0-	STATE
Estimated Cost FFY 2016	$82,000	SPR	-0-	STATE
Projected Cost FFY 2017	$84,232	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Rouzbeh Ghabchi, The University of Oklahoma, 405-325-2626

SP&R-2 Program Administrator: Bryan Hurst, 405-522-3794

Project Sponsor: Kenneth Hobson, ODOT Bituminous Engineer, 405-521-2677

2274 Development of Concrete Mixtures to Mitigate Bridge Deck Cracking, Validated Using 3D Bridge Deck Surface Evaluations

PURPOSE AND SCOPE: Cracking in concrete is a significant threat to the long term durability of a bridge deck. These cracks allow outside chemicals direct access to the reinforcing steel within the bridge. These outside chemicals can then cause corrosion, which will in turn cause more cracking and will again lead to penetration of more outside chemicals. In addition to corrosion, these cracks can cause or exacerbate many other deterioration mechanisms, including freeze thaw, alkali-silica reaction, and sulfate attack. Cracking of concrete can cause a vicious cycle that can quickly shorten the life of a bridge. The goals of this project are to use a number of different technologies to help reduce cracking in Oklahoma bridges with economical and practical solutions. It is anticipated that this research will help bring crack-resistant concrete to Oklahoma bridges. This research will not only be completed in the laboratory, but will also be implemented and then evaluated in the field. Furthermore, a specification will be developed that will help ODOT to implement these technologies on their bridges.

ACCOMPLISHMENTS DURING FFY 2016: Hosted an expert bridge deck cracking technologies workshop; began laboratory evaluation into the investigation of fresh, hardened and durability performance of concrete mixtures; produced project progress reports; FFY 2016 Annual Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2017: Continue laboratory evaluation of fresh, hardened and durability performance of concrete mixtures; begin bridge deck construction to utilize multiple concrete mixtures to cast separate spans; produce project progress reports; prepare and submit FFY 2017 Annual Report.

FINANCIALS	AMOUNT	FUNDS	AMOUNT	FUNDS
Programmed Amount FFY 2016	$99,997	SPR	-0-	STATE
Estimated Cost FFY 2016	$99,900	SPR	-0-	STATE
Projected Cost FFY 2017	$100,000	SPR	-0-	STATE

CONTACT INFORMATION

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

SP&R-2 Program Administrator: Bryan Hurst, 405-522-3794

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

2275 Development of Aggregate Characteristics-Based Preventive Maintenance Treatments Using 3D Laser Imaging and Aggregate Imaging Technology for Optimized Skid Resistance of Pavements

PURPOSE AND SCOPE: Skid resistance of pavements plays a significant role in road safety as the friction between tire and pavement surface is a critical contributing factor in reducing potential crashes. The skid resistance of a pavement surface has been related to two main properties of the pavement: micro-texture and macrotexture. Micro-texture is mainly dependent on aggregate shape, angularity and texture, while macrotexture is a function of asphalt mix properties, compaction method, and aggregate gradation. Many studies in recent years, such as NCHRP 4-30A and NCHRP 4-34 projects, have focused on evaluating and developing comprehensive test methods to measure aggregate shape, texture and angularity. However, none of these studies has clearly established any relationships between the aggregate properties and the ultimate pavement performance. The most recent developments in 3D laser imaging technology will be used to collect 3D pavement surface texture data at highway speed at 1 mm accuracy. The project also uses several other state-of-the-art laboratory and field data collection instruments, including the Aggregate Imaging System (AIMS) and a portable 3D surface analyzer to collect ultrahigh resolution aggregate morphological characteristics data, including shape, angularity, and surface texture related index properties. Moreover, pavement skid resistance data will be collected using a skid trailer, grip tester, and dynamic friction tester. This study presents a detailed analysis of aggregate characteristics and its relationship to skid resistance of pavements. An understanding of the relation of the aggregate physical properties and implementing the recommended aggregate selection procedure will result in an immediate improvement in pavement performance, especially for pavement safety.

ACCOMPLISHMENTS DURING FFY 2016: Started literature review; began development of laboratory and field experimental design based on commonly used aggregate sources and preventive maintenance treatments; started various laboratory testing techniques; began several types of field data collection; began data analysis; produced project progress reports; FFY 2016 Annual Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2017: Continue literature review; continue to perform data analysis; perform pavement preservation life cycle cost analysis; conduct ODOT engineer training; produce project progress reports; prepare and submit Final Report.

FINANCIALS	AMOUNT	FUNDS	AMOUNT	FUNDS
Programmed Amount FFY 2016	$99,904	SPR	-0-	STATE
Estimated Cost FFY 2016	$99,000	SPR	-0-	STATE
Projected Cost FFY 2017	$99,223	SPR	-0-	STATE

CONTACT INFORMATION

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

SP&R-2 Program Administrator: Bryan Hurst, 405-522-3794

Project Sponsor: Kenny Seward, Assistant Materials Division Engineer, 405-522-4999

2276 Evaluation of Ultra-High Performance Concrete for Use in Bridge Connections and Repair

PURPOSE AND SCOPE: Deterioration of bridges can often be related to poor performance of longitudinal connections between concrete members or transverse deck joints. Impacts from traffic and pressure buildup at joints due to expansion joints filled with debris can lead to physical deterioration at the joints. Ultra-high performance concrete (UHPC) has great potential for application in bridge connections and rehabilitation in Oklahoma. It has the potential to be used as a durable replacement/repair material for the areas immediately adjacent to expansion joints or as a connection material to make simply supported precast members continuous for live load, among many other possible applications. The project will consist of evaluating available proprietary UHPC materials and mix designs made with local materials for applicability to bridge joint installation and repair in Oklahoma. Mix designs will be developed using local materials and several methods of obtaining optimal particle packing density. Mixing methods utilizing typically available concrete mixers will be examined to determine required mixing procedures. The work will be combined with information available in the literature to produce draft specifications for UHPC materials, mixing methods, placing methods, and quality control in Oklahoma. Development of specifications guiding the use of locally available constituents in UHPC and for quality control will allow implementation of UHPC in many applications.

ACCOMPLISHMENTS DURING FFY 2016: New project.

PROPOSED ACTIVITIES FOR FFY 2017: Perform evaluation of appropriate materials for use in UHPC connections; evaluate current mixing and placement methods; develop specifications for UHPC materials; prepare training materials and present training seminar; perform laboratory-scale slab joint testing; remove and replace 2 damaged bridge joints using UHPC; monitor joint performance; conduct cost analysis between UHPC and other methods typically used by ODOT; Produce project progress reports; prepare and submit FFY 2017 Annual Report.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUNDS
Programmed Amount FFY 2016	-0-	SPR	-0-	STATE
Estimated Cost FFY 2016	-0-	SPR	-0-	STATE
Projected Cost FFY 2017	$80,034	SPR	-0-	STATE

CONTACT INFORMATION

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

SP&R-2 Program Administrator: Bryan Hurst, 405-522-3794

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

2277 Compilation of Local Studies and Regional Calibration of Pavement ME Design for Rigid and Flexible Pavements in Oklahoma

PURPOSE AND SCOPE: The proposed project focuses on the calibration and implementation of Pavement ME Design for applications in Oklahoma. ODOT has funded several research projects in the past that make the pursuit of the proposed study possible and timely. The data collected from numerous LTPP sites shall also be included. These projects have generated a significant amount of data inputs that are required in a successful Pavement ME Design. The primary objective for the proposed project is to compile information gathered from past studies, supplement as needed, and provide a suitable implementation of the calibration of the Pavement ME Design relative to Oklahoma, divided into two regions (west and east) – and to adjust the distress model coefficients, if necessary, for better prediction of pavement distresses for Oklahoma roadways. The primary product of the proposed study is a locally-calibrated Mechanistic-Empirical Pavement Design Guide (MEPDG) suitable for use in both routine design and special pavement studies in Oklahoma.

ACCOMPLISHMENTS DURING FFY 2016: New project.

PROPOSED ACTIVITIES FOR FFY 2017: Begin literature review; start LTPP data extraction and evaluation; identify test sections and begin sampling/data collection; begin laboratory testing and material characterization analysis; begin to compare ME pavement distress predictions w/LTPP distress data; begin the development of deterioration models; begin recommendations of regional calibration coefficients and determine adequacy of modified models; begin the elimination of bias and reducing the standard error of the estimate; begin the development of a local calibration and implementation guideline; begin the development of a calibration catalog for calibration plan; produce a procedures manual; develop a practitioners guideline; produce project progress reports; prepare and submit FFY 2017 Annual Report.

FINANCIALS	**AMOUNT**	**FUNDS**	**AMOUNT**	**FUNDS**
Programmed Amount FFY 2016	-0-	SPR	-0-	STATE
Estimated Cost FFY 2016	-0-	SPR	-0-	STATE
Projected Cost FFY 2017	$100,000	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Maryam Sakhaeifar, Texas A&M University, 979-845-9961

SP&R-2 Program Administrator: Bryan Hurst, 405-522-3794

Project Sponsor: Josh Randell, ODOT Pavement Design Engineer, 405-521-2390

2278 Recycling and Reuse of Materials in Transportation Projects-Current Status and Potential Opportunities Including Evaluation of RCA Concrete Pavements along an Oklahoma Interstate Highway

PURPOSE AND SCOPE: There are widespread benefits of using recycled and reusable waste materials in construction, especially in transportation projects. ODOT is conducting several technical studies to develop some specification and/or methodology incorporating recycled materials. But technical solutions will not be sufficient unless business consideration of the private sector within the state can be better understood and included in the decision making process. This proposed research project will develop strategies for increasing the use of recycled materials in ODOT transportation construction projects after bringing all the stakeholder perspectives in the decision making. It will be based on available recycled wastes in Oklahoma and neighboring states KS, TX and AR. The second objective of the proposed study is to evaluate the long-term performance of Portland cement concrete pavement (PCCP) constructed with recycled concrete aggregate (RCA). A final report will synthesize the results of the recycled materials' availability evaluation and offer insight into the long-term performance of RCA concrete pavements in Oklahoma. Implementation of this information includes knowledge of materials currently available for use and the development of a construction specification(s) to further define the nature and benefits of recycling materials within a construction contract. Developing strategies for technical and business means will assist ODOT to use more recycled and reusable materials in construction and maintenance of transportation projects which ultimately protect and enhance human and natural environment by providing safe, economical and efficient transportation systems in Oklahoma.

ACCOMPLISHMENTS DURING FFY 2016: New project.

PROPOSED ACTIVITIES FOR FFY 2017: Conduct a detailed literature review and examine current industry practice; identify and interview experienced industry professionals concerning reuse and recycling; begin collection and characterization of recycled materials; begin the formation of an Industry Focus Group to develop strategies to improve the use of recycled materials; review project construction documents; perform a detailed visual survey of the two ODOT RCA pavement sections; produce project progress reports; prepare and submit FFY 2017 Annual Report.

FINANCIALS	**AMOUNT**	**FUNDS**	**AMOUNT**	**FUNDS**
Programmed Amount FFY 2016	-0-	SPR	-0-	STATE
Estimated Cost FFY 2016	-0-	SPR	-0-	STATE
Projected Cost FFY 2017	$99,999	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Anal Mukhopadhyay, Texas A&M University, 979-458-44618

SP&R-2 Program Administrator: Bryan Hurst, 405-522-3794

Project Sponsor: Josh Randell, ODOT Pavement Design Engineer, 405-521-2390

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 SP&R 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 SP&R Work Program development that are supported by this item are represented in the following pages and are shown with the designation "2300(YR-##)" as the SP&R item number assignment. This item is the funding mechanism for all research implementation projects/studies which are reported in the following pages.

ACCOMPLISHMENTS DURING FFY 2016: 40 Road Runner 3 traffic counters and 3 IPADs were purchased and programed to receive date from the Road Runner instrument during FFY 2015. During FFY 2016 this project will be implemented by selecting a county near Tulsa and using the Road Runner in place of the current instruments; data will be validated and data time collection savings will be calculated; continue data collection on the Expected Life of Saline's implementation; worked with the ODOT Bridge Division to identify a bridge deck replacement where Stainless Steel Reinforcement bar can be used; implemented a study where speed traffic data will be collected; documented the ODOT implementation process with the state of Oklahoma through the research manual.

PROPOSED ACTIVITIES FOR FFY 2017: Research Implementation projects/studies that have not yet been identified, once approved for federal funding, will be reported as separate research implementation items and will be assigned sequential SP&R item numbers.

FINANCIALS	**AMOUNT**	**FUNDS**	**AMOUNT**	**FUNDS**
Programmed Amount FFY 2016	$548,059	SPR	-0-	STATE
Estimated Cost FFY 2016	$548,000	SPR	-0-	STATE
Projected Cost FFY 2017	$160,819	SPR	-0-	STATE

CONTACT INFORMATION

Project Contact: Gary Hook, Implementation Engineer, 405-522-1042

2300(16-01) National Performance Management Research Data Set (NPMRDS) - Speed Data Validation for Traffic Performance Measurement

PURPOSE AND SCOPE: Urban traffic congestion is common and the cause for loss of productivity (due to trip delays) and higher risk to passenger safety (due to increased time in the automobile), not to mention an increase in fuel consumption, pollution, and vehicle wear. The fiduciary effect is a tremendous burden for citizens and states alike. As ODOT seeks ways to alleviate these ill effects, the proposed project aspires to improve performance measurements in an effort to manage current roadway assets, improve traffic flow, and reduce road congestion. The research team will develop “Big data analytics” algorithms to organize and analyze very large sets of travel time data to discover hidden patterns and useful information undetected in large dataset, and identify and remove speed data outliers. Successful development of the proposed models will commence a new method of traffic flow characterization based on “big data analytics”. The developed models will eliminate inaccurate speed measurements in the NPMRDS data and provide ODOT data analysts with proper tools to differentiate free flow from congestions and incorporate speed data into the ODOT traffic performance monitoring system.

ACCOMPLISHMENTS DURING FFY 2016: Developed user interface to NPMRDS data; processed NPMRDS raw unfiltered speed data; developed algorithms to examine the NPMRDS data with GIS framework; developed algorithms to examine NPMRDS travel time anomalies; developed filtering rules to remove speed data outliers from the processed NPMRDS dataset; began the development and validation of model/data reliability; examined AVC/WIM volume/speed data against NPMRDS; began the determination of performance measures of highway traffic; developed ODOT speed database schema; processed Interstate and Non Interstation Highways speed data and store in the speed database; produced project progress reports; FFY 2016 Annual Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2017: Continue to determine performance measures of highway traffic; process the entire National Highway System (NHS) and store in the speed database; examine speed data integration/processing methods by neighboring states; investigate the availability of suitable and accurate commercial software for ODOT use; investigate RITIS interactive map and data tree and the necessary steps to become a participating user; produce project progress reports; prepare and submit Final Report.

FINANCIALS	AMOUNT	FUNDS	AMOUNT	FUNDS
Programmed Amount FFY 2016	$93,215	SPR	-0-	STATE
Estimated Cost FFY 2016	$93,200	SPR	-0-	STATE
Projected Cost FFY 2017	$90,745	SPR	-0-	STATE

CONTACT INFORMATION

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

SP&R-2 Program Administrator: Bryan Hurst, 405-522-3794

Project Contact: Gary Hook, Implementation Engineer, 405-522-1042

2300(16-02) Improving the Efficiency and Accuracy of ODOT Temporary Traffic Monitoring System

PURPOSE AND SCOPE: For many years ODOT has used an exclusively manual process to collect and enter temporary vehicle data (e.g., vehicle count, site information, device used, collection date and time, ODOT operator, and other vital data) into a computer database. This process is slow and inefficient. The outcome of this project intends to replace manual data handling with machine handling, eliminating the potential of data recording and/or entry errors and improving data collection/entry efficiency. This implementation proposal aims to accomplish several objectives with an overall goal to demonstrate possible advantages achieved using vehicle classification Road Runner 3 (RR3) designed by Diamond Traffic Inc. and the Temporary Count Management System (TCMS) developed by Innovative Traffic Systems & Solutions (ITSS), LLC. Successful development of the proposed Temporary classification management system will 1) improve the accuracy and quality of the collected data by minimizing manual handling of the data; 2) data validation check by constructing site specific models based on historical available data; 3) data entry into the OTCIS database for future analysis; 4) make data available immediately after collection by wirelessly transmitting data over a cellular provider network; and 5) improve the efficiency of temporary data collection method by automating many of its processes.

ACCOMPLISHMENTS DURING FFY 2016: Conducted various field tests; upgraded RR3 firmware and installed TCMS mobile app; set up and configure temporary count management system (TCMS); developed system performance parameters; developed a data collection method/process; collected vehicle count, speed, and axle-spacing data; developed axle-spacing to vehicle classification software; performed data accuracy analysis; developed software tools for progress monitoring; developed software tools for automatic data processing and database entry; integrated TCMS and OTCIS database; started OTCIS database maintenance; started ODOT personnel training; produced project progress reports; FFY 2016 Annual Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2017: Continue to conduct various field tests; continue OTCIS Data Base Maintenance; continue to train ODOT personnel; produce project progress reports; prepare and submit Final Report.

FINANCIALS	**AMOUNT**	**FUNDS**	**AMOUNT**	**FUNDS**
Programmed Amount FFY 2016	$85,409	SPR	-0-	STATE
Estimated Cost FFY 2016	$85,400	SPR	-0-	STATE
Projected Cost FFY 2017	$70,925	SPR	-0-	STATE

CONTACT INFORMATION

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

SP&R-2 Program Administrator: Bryan Hurst, 405-522-3794

Project Contact: Gary Hook, Implementation Engineer, 405-522-1042

2300(16-03) Oklahoma Public and Tribal Transportation Infrastructure Employee Occupational Safety and Health Training and Evaluation

PURPOSE AND SCOPE: Workplace injuries and fatalities impact personnel, organizations and the general public. Workers are impacted both emotionally and financially by the incident. Organizations are impacted financially in both tangible and in-tangible ways. Co-workers of the personnel injured or killed can also be personally impacted by the incident. The general public is impacted through costs from the insurance industries and tax liability, so emphasizing worker safety, evaluating methods to provide training and the impacts of training are all critical components in developing an effective program to combat these issues. This project proposes to continue a program meant to reduce the frequency and severity of public sector highway worker incidents; including those in similar capacities with Tribal Nations. The goal will be to combine both research and implementation to identify areas of emphasis while delivering needed training in which data can be collected for these workers. The objective of the project will be to use a nationally accepted OSHA 10 Hour Construction Industry curriculum which has been modified to reflect issues faced by public sector highway workers to provide both training and evaluation for continued improvement and performance measurement.

ACCOMPLISHMENTS DURING FFY 2016: Completed a brief collection of state specific incident information; updated basic training program with audience specific topics; created slide notes and key topic handout for participants; prepared PDF versions of key topics available to participants; provided 16 training events with data collection; summarized collected data; proposed future phases based on Phase 1 results; produced project progress reports; Final Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2017: None.

FINANCIALS	**AMOUNT**	**FUNDS**	**AMOUNT**	**FUNDS**
Programmed Amount FFY 2016	$89,472	SPR	-0-	STATE
Estimated Cost FFY 2016	$89,400	SPR	-0-	STATE
Projected Cost FFY 2017	-0-	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Doug Wright, Oklahoma State University, 405-744-6049

SP&R-2 Program Administrator: Bryan Hurst, 405-522-3794

Project Contact: Gary Hook, Implementation Engineer, 405-522-1042

2300(16-04) 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 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 DOT's 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. There were three locations where the grout voids were compounded by moisture leaking into the joints resulting in section loss to the restressing strands. ODOT Bridge Division hired a company (Gibson and Associates) to inspect the post tensioning ducts, develop a plan, and implement repairs. Gibson and Associates hired VSL to fill the grout voids in the ducts. Due to concerns with section loss of the previously exposed restressing 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 is assisting ODOT 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 re-grouted 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 re-grouted 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.

ACCOMPLISHMENTS DURING FFY 2016: Developed a load testing protocol for areas of concern; initial load test is pending; comprehensive report on initial load tests is pending; FFY 2016 Annual Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2017: Conduct non-load-test monitoring and inspections of the repaired locations; produce project progress reports; prepare and submit FFY 2017 Annual Report.

FINANCIALS	AMOUNT	FUNDS	AMOUNT	FUNDS
Programmed Amount FFY 2016	$47,106	SPR	-0-	STATE
Estimated Cost FFY 2016	$47,100	SPR	-0-	STATE
Projected Cost FFY 2017	$2,370	SPR	-0-	STATE

CONTACT INFORMATION

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

SP&R-2 Program Administrator: Bryan Hurst, 405-522-3794

Project Contact: Gary Hook, Implementation Engineer, 405-522-1042

2300(17-01) Implementation: Development of Intelligent Vehicle Counting and Classification Sensor (iVCCS)

PURPOSE AND SCOPE: Traffic monitoring is an integral part of any transportation system network. Providing reliable, real-time traffic surveillance is crucial for such 21st century systems. Timely data facilitates instantaneous decision-making; maximizes existing transportation infrastructure capacity; and improves roadway efficiency, making transportation systems safe, efficient, and more reliable for the anticipated rapidly approaching era of smart cities. Vehicle-counting and classification data play a vital role in designing roadways and bridges; predicting freight; scheduling maintenance operations for resurfacing, reconditioning, and reconstruction of pavement; planning traffic; developing weight enforcement strategies; and analyzing road safety and environmental impact, among a number of other purposes. The proposed research aims at developing and implementing a novel intelligent wireless sensor for vehicle counting and classification which integrates state-of-the-art embedded wireless sensor networks (WSN) and smart sensors (i.e., magnetometer and accelerometer) for implementation of various traffic monitoring applications. Successful development of the proposed wireless sensor node—aimed at accurate vehicle detection, counting, and classifications—will commence a new method of temporary traffic data collection. The new system will eliminate the cumbersome installation and utilization of hoses, thus, improve the quality of collected data and increase the efficiency of temporary data collection. Furthermore, minor hardware and software modifications will ensure the development of a system that will improve work zone safety by monitoring real-time traffic on roadways as vehicles approach work zones.

ACCOMPLISHMENTS DURING FFY 2016: New project.

PROPOSED ACTIVITIES FOR FFY 2017: Implement hardware and software adjustments; implement final sensor node (iVCCS hardware) prototype; implement and transfer developed algorithms into the finalized iVCCS prototype; validate system functions and optimize performance; investigate more robust aluminum alloy sensor enclosure; develop user-friendly software analysis tool with graphical user interface (GUI) to analyze raw data collected using iVCCS; develop a Webserver on ODOT cloud; produce project progress reports; prepare and submit Final Report.

FINANCIALS	AMOUNT	FUNDS	AMOUNT	FUNDS
Programmed Amount FFY 2016	-0-	SPR	-0-	STATE
Estimated Cost FFY 2016	-0-	SPR	-0-	STATE
Projected Cost FFY 2017	$92,863	SPR	-0-	STATE

CONTACT INFORMATION

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

SP&R-2 Program Administrator: Bryan Hurst, 405-522-3794

Project Contact: Gary Hook, Implementation Engineer, 405-522-1042

2300(17-02) Rehabilitation for the Bridge Approach Slab of the Blue River Site Using Precast Concrete Pavement

PURPOSE AND SCOPE: Field observations performed at the Blue River site on US-70 in Bryan County revealed that serious settlement issues have occurred at the junction between the bridge approach slabs (BAS) and the oncoming lanes of asphalt pavement. Other concerning problems worth noting; site grading concentrated runoff flows at the PCC/AC transition; longitudinal cracking; deteriorated joint sealant; differential settlement discovered at the connection between the BAS structure and the attached wing walls; water stains found at the face of the abutment wall. The research team decided to perform rehabilitation for the distressed BAS and asphalt pavement section based on, and following, the design guideline developed for recently completed research project SP&R Item Number 2265, “Precast Pre-stressed Concrete Pavement to Abate Settlement Problems under Bridge Approach Slabs.”
The performance of the proposed design solutions through field instrumentation and monitoring will be evaluated which will help to further reassess and modify the design guideline. The research team will perform instrumentation and data collection for the BAS structure for analyzing the performance of the structure. A final report containing detailed information of the construction and evaluation of the performance of the structure will be presented at the end of the project.

ACCOMPLISHMENTS DURING FFY 2016: New project.

PROPOSED ACTIVITIES FOR FFY 2017: Finalize design details; develop design drawings; instrument and fabricate precast concrete slabs; perform slab curing and controlled storage; rehabilitate the BAS based on proposed solution; perform field instrumentation; produce project progress reports; prepare and submit Final Report.

FINANCIALS	**AMOUNT**	**FUNDS**	**AMOUNT**	**FUNDS**
Programmed Amount FFY 2016	-0-	SPR	-0-	STATE
Estimated Cost FFY 2016	-0-	SPR	-0-	STATE
Projected Cost FFY 2017	$132,278	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Dan Zollinger, Texas A&M Transportation Institute, 979-845-9918

SP&R-2 Program Administrator: Bryan Hurst, 405-522-3794

Project Contact: Gary Hook, Implementation Engineer, 405-522-1042

2400 Oklahoma State University Tier 1 University Transportation Center

PURPOSE AND SCOPE: This item will support the proposed Tier 1 University Transportation Center (UTC) submitted by Oklahoma State University (OSU) addressing the following topics in the FAST Act Priority Area D: Improving the durability and extending the life of transportation infrastructure; promoting safety; and preserving the existing transportation system. The OSU Tier 1 UTC will engage the following institutions: Oklahoma State University, the University of Oklahoma, Langston University (Oklahoma), Pennsylvania State University, and the University of North Carolina-Charlotte. A two-level research approach is to be undertaken to address the topic areas: Level 1 projects will last 5 years and generally consist of two phases; Level 2 projects will last 2 or less years. In addition to research, other efforts will be supported including education and workforce development and technology transfer through, but not limited to, collaboration, leadership training, addressing student retention and diversity, and internship programs.

ACCOMPLISHMENTS DURING FFY 2016: New item.

PROPOSED ACTIVITIES FOR FFY 2017: If selected, the OSU Tier 1 UTC will initiate four Level 1 projects and six Level 2 projects, in accordance with the proposal. Topics include, but are not limited to, automated performance surveys for bridges and pavements, recycling of asphalt materials, construction management for highway pavements, and mitigation of flooding damage to highway and bridge structures. Additionally, efforts including technical seminars, establishing co-op programs between partner institutions, and outreach activity implementation to primary and secondary schools will be undertaken to address student and industry development goals.

FINANCIALS	AMOUNT	FUNDS	AMOUNT	FUNDS
Programmed Amount FFY 2016	-0-	SPR	-0-	STATE
Estimated Cost FFY 2016	-0-	SPR	-0-	STATE
Projected Cost FFY 2017	$500,000	SPR	-0-	STATE

CONTACT INFORMATION

OSU Tier 1 UTC Director: Kelvin Wang, 580-744-5206

Director of Capital Programs: Dawn R. Sullivan, 405-52-6000

2700 New and Equal Product and 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.

ACCOMPLISHMENTS DURING FFY 2016: Maintained records of new products where manufacturers made presentations or provided literature; Ultra Fuse submitted their tack coat product to the ODOT Materials Division which was approved for implementation and was applied on a county road in Carter County near Ardmore and, on SH-3 in McCurtain County near Broken Bow; continued to monitor these locations for performance; during the past year, 25 new product submissions were logged; provided product information to, and consulted with, applicable ODOT division subject matter experts on new product evaluations; continued to organize product meetings and presentations; continued to consult with product vendors, representatives and firms.

PROPOSED ACTIVITIES FOR FFY 2017: Continue to maintain records on products submitted to ODOT; continue to meet with vendor representatives; circulate product literature; provide information to applicable ODOT division subject matter experts; coordinate and facilitate product meetings and presentations for new product evaluation forms; conduct and monitor product performance evaluations; continue the collection of monthly photographic records for current and new product applications as they are implemented.

FINANCIALS	**AMOUNT**	**FUNDS**	**AMOUNT**	**FUNDS**
Programmed Amount FFY 2016	$45,000	SPR	-0-	STATE
Estimated Cost FFY 2016	$45,000	SPR	-0-	STATE
Projected Cost FFY 2017	$10,000	SPR	-0-	STATE

CONTACT INFORMATION

Transportation Specialist: Lora Koetsier, 405-521-3954

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