OKLAHOMA DEPARTMENT OF TRANSPORTATION

State Planning and Research Work Program
FFY 2015
(October 1, 2014 to September 30, 2015)

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 2014

Introduction

This document describes the Federal Fiscal Year (FFY) 2015 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 (SAPM) activities and Part 2, the Research activities. The work program is developed and updated annually in cooperation with the Federal Highway Administration.

SAPM activities to be conducted in FFY 2015 include data collection/analysis/reporting, mapping, public involvement, and planning coordination/studies. Additional efforts are planned for data collection related to air quality and pavement structural condition. Funding for the SAPM portion of the work program is approximately $10.5 million.

Research activities for FFY 2015 will include four new projects and fourteen 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 was granted to the Southern Plains Transportation Center (SPTC) with a focus on "*Climate-adaptive Freight and Transportation Infrastructure*" as the SPTC theme with complementary goals of: (i) developing comprehensive, cost-effective and immediately implementable solutions to critical infrastructure-related issues facing the transportation system in Region 6 and the nation; and (ii) preparing transportation professionals for leadership roles in professional and research careers in support of the nation's transportation systems. In addition, 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 $3.4 million in FFY 2015.

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 2014) and the proposed activities for the upcoming fiscal year (FFY 2015). In addition, the Financials Section shows the amount programmed for the FFY 2014 in the last work program, an estimate of the total funds that will be expended by the end of FFY 2014, and the projected costs for the upcoming fiscal year (FFY 2015).

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State Planning & Research Program Management
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OKLAHOMA DEPARTMENT OF TRANSPORTATION
State Planning & Research (SPR) Financial Summary Sheet
Federal Fiscal Year 2015
Program Period October 1, 2014 through September 30, 2015

SPR Part 1 - Planning, SPRY-0010(61)PL, JP# 01946(63)

A. Estimated Costs

SPR Part 1 - Planning	$7,309,859.93
LTAP (SPR Part 1)	$230,787.07
Metropolitan Planning (PL)	$3,019,902.00
Total Estimated Costs	***$10,560,549.00***

B. Available Funds

SPR Part 1 Unobligated Balance	$8,014,100.00
PL Funding	$2,516,586.00
Local	$503,316.00
Total Available Funds	***$11,034,002.00***

C. Proposed Financing

Type	Federal	Ratio	State	Local	Total
SPR	$7,540,647.00	80%	$0.00	$0.00	$7,540,647.00
PL	$2,516,586.00	80%	$0.00	$503,316.00	$3,019,902.00
			Total Proposed Financing		***$10,560,549.00***

SPR Part 2 - Research, SPRY-0010(62)RS, JP# 01946(64)

A. Estimated Costs

SPR Part 2 - Research	$3,361,693.00
Total Estimated Costs	***$3,361,693.00***

B. Available Federal Funds

SPR Part 2 Unobligated Balance	$2,888,300.00
SPR Part 1 Unobligated Balance (remainder)	$473,393.00
Total Available Funds	***$3,361,693.00***

C. Proposed Financing

Type	Federal	Ratio	State	Local	Total
SPR Part 1 & 2	$3,361,693.00	80%	$0.00	$0.00	$3,361,693.00
			Total Proposed Financing		***$3,361,693.00***

SPR Part 1 & Part 2 Totals

Total SPR Unobligated Balance	$10,902,400.00
Total Other Funds (PL, State, Local)	$3,019,902.00
Total Available Funding	***$13,922,302.00***
Total SPR Part 1 and Part 2 Estimated Costs	***$13,922,242.00***
Total SPR Pooled Fund Commitments	**$1,194,008.00**
Total SPR Research Funding	**$4,555,701.00**
% of SPR Funds for Research	**33%**
Total LTAP ($175026.93 Fed LTAP; $164,993.07 SPR; $65,794.00 Local)	**$405,814.00**

SPR PART 1 - PLANNING, SPRY-0010(61)PL, JP# 01946(63)
FEDERAL FISCAL YEAR 2015

		2014 SPR	*STATE*	*PL*	*LOCAL*	*TOTAL*
GIS AND DATA MANAGEMENT						
1101	Continuing Inventory Data Studies	$686,000.00	$0.00			$686,000.00
1102	Highway Performance Monitoring System	$100,000.00	$0.00			$100,000.00
1103	Geographical Information Management System for Transportation	$959,000.00	$0.00			$959,000.00
	Total GIS and Data Management	***$1,745,000.00***	***$0.00***			***$1,745,000.00***
MAPPING						
1201	County, City and other Planning Maps	$300,000.00	$0.00			$300,000.00
	Total Mapping	***$300,000.00***	***$0.00***			***$300,000.00***
TRAFFIC AND DATA COLLECTION						
1301	Coverage Count Program	$700,000.00	$0.00			$700,000.00
1302	Permanent Traffic Count Program	$700,000.00	$0.00			$700,000.00
1304	Purchase of Traffic Counting Equipment	$200,000.00	$0.00			$200,000.00
1305	Vehicle Classification Counting Program	$450,000.00	$0.00			$450,000.00
1306	Weigh-in-Motion Program	$450,000.00	$0.00			$450,000.00
1308	Traffic Monitoring System	$200,000.00	$0.00			$200,000.00
1309	Traffic Analysis and Projections	$188,000.00	$0.00			$188,000.00
1310	Skid Studies Program	$160,000.00	$0.00			$160,000.00
	Total Traffic and Data Collection	***$3,048,000.00***	***$0.00***			***$3,048,000.00***
ECONOMIC, SAFETY, AND FISCAL STUDIES						
1404	Safety Planning	$5,000.00	$0.00			$5,000.00
1510	Justification Studies	$20,000.00	$0.00			$20,000.00
	Total Economic, Safety, Fiscal Studies	***$25,000.00***	***$0.00***			***$25,000.00***
SYSTEMS AND PROGRAMS						
1601	Federal-Aid Systems Coordination	$79,000.00	$0.00			$79,000.00
1603	Highway Needs Study	$297,859.93	$0.00			$297,859.93
1604	Pavement Management Systems	$910,000.00	$0.00			$910,000.00
	Total Systems and Programs	***$1,286,859.93***	***$0.00***			***$1,286,859.93***
URBAN / REGIONAL TRANSPORTATION PLANNING						
1700	General Urban Transportation Planning	$20,000.00	$0.00			$20,000.00
1701	Oklahoma City Area Regional Transportation Study (OCARTS)	$20,000.00	$0.00	$1,326,308.00	$265,261.00	$1,611,569.00
1702	Tulsa Metropolitan Area Transportation Study	$20,000.00	$0.00	$969,037.00	$193,807.00	$1,182,844.00
1703	Lawton Metropolitan Area Transportation	$15,000.00	$0.00	$200,241.00	$40,048.00	$255,289.00
1709	Ft. Smith Transportation Study	$15,000.00	$0.00	$21,000.00	$4,200.00	$40,200.00
1710	Substate Planning	$200,000.00	$0.00			$200,000.00
1719	Statewide Transportation Improvement Program (STIP)	$0.00	$0.00	$0.00	$0.00	$0.00
	Total Urban Transportation Planning	***$290,000.00***	***$0.00***	***$2,516,586.00***	***$503,316.00***	***$3,309,902.00***
LONG RANGE PLAN / OTHER PLANNING ACTIVITIES						
1902	Statewide Long Range Transportation	$45,000.00	$0.00			$45,000.00
1903	Intelligent Transportation Systems Planning	$50,000.00	$0.00			$50,000.00
1904	Air Quality Transportation Planning	$100,000.00	$0.00			$100,000.00
1905	Freight Planning	$70,000.00	$0.00			$70,000.00
1906	Rail Planning	$0.00	$0.00			$0.00
1910	Public Involvement & Visualization	$200,000.00	$0.00			$200,000.00
1912	DBE Software Database	$100,000.00				
1913	Bicycle & Pedestrian Planning	$50,000.00				
	Total Long Range Plan and Planning	***$615,000.00***	***$0.00***			***$615,000.00***
	Grand Total SPRY-0010(059)PL	***$7,309,859.93***	***$0.00***	***$2,516,586.00***	***$503,316.00***	***$10,329,761.93***
LOCAL TECHNICAL ASSISTANCE PROGRAM						
					LTAP (Fed)	
1440	Local Technical Assistance Program	$164,993.07	$65,794.00		$175,026.93	$405,814.00
	Total LTAP	***$164,993.07***	***$65,794.00***		***$175,026.93***	***$405,814.00***

1101 Continuing Inventory Data Studies

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

ACCOMPLISHMENTS DURING FFY 2014: Five county inventories were completed and verified with the Board of County Commissioners: (Dewey, Latimer, Major, Murray and Nowata.) Four counties are awaiting verification of results with County Commissioners: (Caddo, Choctaw, Craig and Roger Mills.) Four counties were coded: (Alfalfa, Canadian, Craig, McCurtain) with Coal currently in progress. Geo-location of local roads was 100% completed. Verified and processed all Highway Construction Projects, County Action Reports, Graphical Roadway Network (NLF) and the Reference Point database. The following publications, or reports were completed: 2014 Certification of County Road Mileage, 2014 Oklahoma Statewide Statistics Book, 2014 HPMS Report and Travel Summary Tables. Processed modifications to the functional classification, and urban boundaries due to the 2010 census.

PROPOSED ACTIVITIES FOR FFY 2015: Continue to code and update the Department's Central Database files. Incorporate technological advancements in Data Collection to streamline all field inventory operations. Seven of the following ten counties are scheduled to be inventoried: (Creek, Delaware, Garfield, Grady, Mayes, Okfuskee, Oklahoma, Pittsburg, Stephens and Wagoner.) Six of the following ten counties are scheduled to be coded: (Caddo, Coal, Choctaw, Dewey, Latimer, LeFlore, Major, Murray, Nowata and Roger Mills.) Continue monitoring all County Action Reports, Highway Construction projects and collecting HPMS data items. Use GPS technology to continue to identify traffic count sites within Oklahoma. Compile and publish various State and Federal reports including: 2015 Statewide Mileage Table Book, 2015 Oklahoma Statewide Statistics Book, 2015 Certification of County Road Mileage and 2015 HPMS Mileage and Travel Summary Tables.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014	$775,000	SPR	-0-	STATE
Estimated Cost FFY 2014	$525,000	SPR	-0-	STATE
Projected Cost FFY 2015	$686,000	SPR	-0-	STATE

CONTACT INFORMATION

Ron Maxwell: Transportation 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 in the HPMS Reassessment 2010+ Data Specifications.

ACCOMPLISHMENTS DURING FFY 2014: ODOT continues to modify our existing web based HPMS Console V2 to accommodate changes occurring to the new FHWA HPMS Version 8 software. We added 10 new validation constraints from the previous submittal year. Field Review documents were produce for 30 sample sections with the primary vicinity located around east-southeastern region of Oklahoma. Our overall sample size will increase from 1579 to 1680 sections, we added 101 new samples from the previous year, and are in-line with latest FHWA guidelines. The 2013 HPMS data submittal was completed in a timely manner, delays were caused by data overload issues on the FHWA uploading methods. Continue to enhance an web based pull-down form and or spreadsheet for MPO's, so they can update their required HPMS information which maps their sample locations accordingly utilizing Google Maps and Streetview. We currently have 15 fields that can be updated and linked to our HPMS tables/spreadsheets from this form. We continue to update and verify sample items through field inspection, ODOT Video-Log, Google-Streetview, Bing-StreetSide, etc. Implementation for all Urban Boundaries were completed and submitted the past year based on the 2010 Census.

PROPOSED ACTIVITIES FOR FFY 2015: Primary focus will be updating the functional classifications changes into the system. ODDT will continue to focus on data quality improvement and add more validations cross-checks to the console for submittal. Our Visidata video log along with Google Earth and Streetview 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 strata. 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 FHWA Oklahoma Division. The 2014 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 2014	$100,700	SPR	-0-	STATE
Estimated Cost FFY 2014	$95,000	SPR	-0-	STATE
Projected Cost FFY 2015	$100,000	SPR	-0-	STATE

CONTACT INFORMATION

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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. The maps convey specific topics of interest that require customer input and the use of complex GIS software. GIMS-T staff also supports GIS projects initiated by other OKDOT Divisions. GIS services are offered to OKDOT staff as well as customers outside the Department. An intranet GIS Portal known as (GRIP) is available to anyone having access to the OKDOT network and IE8 or below. An internet application known as GRIPLite is also supported and is made available to the general public, which also requires IE8 or below. The system utilizes aerial photography, global positioning and other sources of data. The efficient use of resources requires a considerable investment in training for GIMS-T staff. Numerous GIS products are created and provided to staff and others. New methods and software are continuously being investigated and tested in order to improve the effectiveness and usability of the Departments applications.

ACCOMPLISHMENTS DURING FFY 2014: The Statewide Transportation Improvement Plan (STIP) maps were completed along with creation of map products for the Long Range Plan. Generated numerous custom maps and KML files. The Rural and Urban Functional Classification Map Books were redesigned and updated. Provided customers with working and final map products. Created and replaced the legacy GRIP and GRIPLite Browser Applications. The new application, OKTAB (Oklahoma Transportation Asset Browser) will support the use of KML, Shapefiles, Open Source & Google API's. Created and updated KML files for various webpages. Continued to be update the network with new data as it becomes available. Continued to create OKIEPRO KML files for DPS in case of a network failure. Provided Traffic Division with intelligent maps depicting road segments with narrow or no shoulders, crash data, and tabular data used in their analysis. Products were provided to assist with the selection of projects to include in the annual re-balance of the 8 Year Work Plan. Created a client side application to view the Departments datasets. Developed temporary website using Google Maps Engine to provide access to OKDOT data until the OKTAB Portal can be implemented. Continued to attend training and workshops.

PROPOSED ACTIVITIES FOR FFY 2015: Continue development of the OKTAB Portal. Create a more efficient method for creating the 8 Year Work Plan and STIP Map products. Continue to provide support to Senior Staff as well as others within the Department in the creation of GIS Map products. Continue to provide MPO's, COG's and Counties with map products to assist them in the adjustment of their Functional Classified Road System. Improve on the design and creation of updated County/Urban Functional Classification Atlases. Coordinate with other ODOT divisions to identify needs and develop solutions that will enable them to efficiently and accurately perform their individual missions. Continue coordination with the Traffic Data section in creating map products. Continue to attend training and workshops. Create and distribute KML files as needed.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014	$795,000	SPR	-0-	STATE
Estimated Cost FFY 2014	$941,000	SPR	-0-	STATE
Projected Cost FFY 2015	$959,000	SPR	-0-	STATE

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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 CADD maps showing the most current, reliable and accurate information for roads, hydrology, street names, city limits and historical boundaries with symbology for man-made culture and natural features utilizing Microstation V8i software. CADD maps are geospatially referenced using aerial photography and topographic maps to match all data to the statewide Oklahoma Coordinate System. The scope also includes the creation of other special purpose planning maps and supporting graphics produced as needed for Strategic Assets & Performance Management Division studies and to facilitate other ODOT personnel with their SPR assignments.

ACCOMPLISHMENTS DURING FY 2014: Twelve counties, eighty two cities and eleven urban maps in **bold** letters were completed using CADD software. Counties completed are listed alphabetically below. Updated counties and cities with the latest 2010 Census populations.

Canadian County:	Calumet, **El Reno**, Geary, **Mustang**, Okarche, **Piedmont**, Union City, **Yukon**
Craig County:	Big Cabin, Bluejacket, Ketchum, **Vinita,** Welch
Custer County:	Arapaho, Butler , **Clinton**, Custer City, Hammon, Thomas, **Weatherford**
Greer County:	Granite, Mangum, Willow
Harmon County:	Gould, Hollis
Jefferson County:	Addington, Cornish, Hastings, Ringling, Ryan, Sugden, Terral, Waurika
McCurtain County:	Broken Bow, Garvin, Haworth, **Idabel**, Millerton, Smithville, Valliant, Wright City
McIntosh County:	Checotah, Eufaula, Hanna, Hichita, Rentiesville, Stidham
Muskogee County:	Boynton, Braggs, Council Hill, Ft. Gibson, Haskell, **Muskogee**, Oktaha, Porum, Summit , Taft, Wainright, Warner, Webbers Falls
Washington County:	**Bartlesville**, Copan, Dewey, Ochelata, Ramona, Vera
Washita County:	Bessie, Burns Flats, Canute, Colony, Cordell, Corn, Dill City, Foss, Rocky, Sentinel
Woods County:	**Alva**, Avard, Capron, Dacoma, Freedom, Waynoka

PROPOSED ACTIVITIES FOR FY 2015: The Cartographic Design Section will continue drawing all county and city maps with improved accuracy in a geospatial format. Four county maps are in progress: Craig, Ellis, Latimer and Love County, with a goal to complete ten or more counties in the coming fiscal year. All city and county maps will have state highway system revisions updated that include realignments, new interchanges, divided highways or multiple lane changes. Individual map design features will be made available to in our database to facilitate their use with other GIS Management Section projects and for other governmental agencies. Printable PDF map files are free to the public from our web site as completed via our main map page at http://www.okladot.state.ok.us/maps/index.htm with page links listed as Oklahoma's General County Roads and Oklahoma's Incorporated City Maps.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2014	$387,300	SPR	-0-	STATE
Estimated Cost FFY 2014	$337,000	SPR	-0-	STATE
Projected Cost FFY 2015	$300,000	SPR	-0-	STATE

CONTACT INFORMATION

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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 2014: Short duration traffic counts were completed on the state highway system, county off-system and small urban system in the 27 counties scheduled for FY 2014. In addition to the normal coverage counts, the Traffic Data Section collected 15 minute interval counts on the Ramp/Frontage Road Count System in Oklahoma and Tulsa Counties. 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 nearing completion and should be up and running later this year.

PROPOSED ACTIVITIES FOR FFY 2015: 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 states highway system, county off-system and small urban system in the 26 counties scheduled for FY 2015. Collect 15 minute interval counts for the new Ramp/Frontage Road Count System. Collect and update GPS coordinates and site characteristics for all traffic count sites on all systems as needed. We will entertain the possibility of initiating a new Short Duration Traffic Count Contract for the collections of traffic counts in the Oklahoma County and Tulsa County area, as well as, any additional counts as we deem necessary. We will be implementing a new enhanced version of the Oklahoma Traffic Count Information System Web Page which 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 2014	$975,000	SPR	-0-	STATE
Estimated Cost FFY 2014	$640,000	SPR	-0-	STATE
Projected Cost FFY 2015	$700,000	SPR	-0-	STATE

CONTACT INFORMATION

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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 23 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. Utilities provided for operational support are maintained for permanent WIM stations through accounts with 3 different electric power companies and 2 different telephone companies.

ACCOMPLISHMENTS DURING FFY 2014: 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 contractors provided enhanced services and expertise particularly in the area of data collection, systems validation, TCIS web page support 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 accomplished during FY 2014 included renovation of thirty-one (31) existing sites (12 WIM and 19 AVC). Conversion of the remaining 11 WIM sites to solar power to reduce energy costs and improve equipment dependability is expected in FY 2014.

PROPOSED ACTIVITIES FOR FFY 2015: 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 2014. Both of these contracts will be sent out for bid in FY 2015. The scope of work to be accomplished in FY 2015 is as follows:

1) Execute schedule maintenance for up to 95 sites.
2) Complete site renovations and repairs to estimated 30 permanent sites.
3) WIM Site calibrations.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014	$890,000	SPR	-0-	STATE
Estimated Cost FFY 2014	$805,000	SPR	-0-	STATE
Projected Cost FFY 2015	$700,000	SPR	-0-	STATE

CONTACT INFORMATION

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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 2014: Equipment purchases executed in FY 2014 continued to support on-going projects in traffic monitoring systems operations in both permanent sites and short-duration count site locations. Specifically, these purchases consisted of 1) traffic counters and traffic count / classifiers for the Permanent Traffic Count Program and the Weigh-in-Motion Program, 2) solar panels and accessories for site power conversion and repair, 3) wireless communications terminals for repair/replacement of wireless communications deployments in support of data collection at the permanent traffic monitoring stations. The Road Data Section executed purchases in support of instruments and hardware required to meet data collection requirements under the HPMS program.

PROPOSED ACTIVITIES FOR FFY 2015: 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 2015. As older, out-dated 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 2014	$265,000	SPR	-0-	STATE
Estimated Cost FFY 2014	$40,000	SPR	-0-	STATE
Projected Cost FFY 2015	$200,000	SPR	-0-	STATE

CONTACT INFORMATION

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

1305 Vehicle Classification Counting Program

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

ACCOMPLISHMENTS DURING FFY 2014: 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 2014 was performed by contract with RDSC for collection of multi-lane urban and rural classification data statewide. During FY 2014, various special studies were 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. The type and scope of these various special studies and the activities to which the data was provided are as follows.

PROPOSED ACTIVITIES FOR FFY 2015: The vehicle classification counting program for FY 2015 will continue to be performed by contract awarded to RDSC. RDSC will be responsible for the collection of all classification data statewide including multi-lane urban, multi-lane rural and all 2-lane highway sites. During FY 2015, 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. We will 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 2014	$620,000	SPR	-0-	STATE
Estimated Cost FFY 2014	$615,000	SPR	-0-	STATE
Projected Cost FFY 2015	$450,000	SPR	-0-	STATE

CONTACT INFORMATION

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

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 23 permanent weigh- in- motion (WIM) data collection sites and 72 Automatic Vehicle Classifier (AVC) sites located throughout the state.

ACCOMPLISHMENTS DURING FFY 2014: The progress made in the TMS Data Collection contract resulted in the collection of monthly data from 72 AVC and 23 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 contractor is improving software to remotely program and configures traffic data recorders. Software improvements are ongoing to monitor "downtime" of wireless sites and also to monitor charge & consumption rates of batteries at the sites. The solar power conversion project has reduced electric utility costs and increased site operational rates, 11 WIM sites remain to be converted to solar and this is expected to be complete by Aug/2014. The contractor is finalizing a new webpage for real time monitoring of WIM sites similar to the existing webpage for AVC sites. The ODOT Traffic Count Information webpage is nearing completion. The site requires final software adjustment before release to the public. The TMS Repair contract provided ongoing, essential repairs/replacements of defective sensors and equipment to maintain operational efficiency.

PROPOSED ACTIVITIES FOR FFY 2015: The TMS Data Collection Contract will focus on: 1) Data collection, 2) development of data validation software using historical data, 3) support services for the digital wireless data communications network, 4) development of software supporting remote programming and configuration of traffic data recorders, 5) development of software allowing for the addition of multiple analog sensors to the communications terminal unit, 6) development of remote monitoring and diagnostics for trouble shooting, and 7) development of a power monitoring system for calculating charging rate and power consumption rate to adjust wireless transmission frequency. 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 sent out for bid in FY 2015.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014	$460,000	SPR	-0-	STATE
Estimated Cost FFY 2014	$430,000	SPR	-0-	STATE
Projected Cost FFY 2015	$450,000	SPR	-0-	STATE

CONTACT INFORMATION

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

1308 Traffic Monitoring System

PURPOSE AND SCOPE: The Oklahoma Traffic Monitoring System (TMS) is a 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. The purpose of 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.

ACCOMPLISHMENTS DURING FFY 2014: The 2012 Oklahoma Traffic Characteristics Report was completed. Annual AADT processing including continuous counter analysis and annualized factor generation was completed for the traffic year 2013. The traffic count data was checked for accuracy along with the correction of count site placement in the Highway Inventory File. 2013 AADT, Peak Hour, Truck estimates, and Forecast AADTs were updated on existing HPMS Sample locations. 2013 Truck counts from contract, state forces, and the Oklahoma Turnpike Authority were also used to update the 2012 NHS Truck System. One third of the counties had truck counts and urban area ramp classification counts taken by contract. State forces counted one third of the counties and the rural ramp system in calendar year 2013. A three year contract to take statewide vehicle classification counts began in 2013. The annual publication of the 2013 AADT Map was completed. The 2012 Oklahoma Traffic Characteristics Report was completed. The new statewide ramp mapping system was developed with GEOMEDIA software. A count site inventory database was created to manage and report collected data. The ramp AADT estimation system, first required in 2010 HPMS Field Manual, was initiated with all ramps scheduled to be counted by state forces and contract (classification counts) in calendar year 2013 and 2014. Robbie Estes has been added to the Traffic Analysis Branch (Oct 2013) for TMS computer support and to manage the RFC and UFC traffic estimation systems. NATMEC 2014 Chicago was attended by two branch personnel.

PROPOSED ACTIVITIES FOR FFY 2015: 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 2014 AADT Map. Develop an estimation system for statewide ramp AADTs. Keep personnel informed of technological advances through attendance of seminars, conferences, and workshops.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014	$305,000	SPR	-0-	STATE
Estimated Cost FFY 2014	$290,000	SPR	-0-	STATE
Projected Cost FFY 2015	$200,000	SPR	-0-	STATE

CONTACT INFORMATION

Daryl G. Johnson, PE: Traffic Data Analyst, 405 522-6376

Mike Woodhams: Transportation Manager, 405- 522-3793

1309 Traffic Analysis and Projections

PURPOSE AND SCOPE: Traffic forecasts provide the basis 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 Design Traffic Projects and Research Projects is to be performed as needed.

ACCOMPLISHMENTS DURING FFY 2014: This traffic design 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 the comprehensive area and regional transportation studies in those cities. Information for urban, rural communities and small cities was prepared utilizing historical data, such as traffic volumes, vehicle use, population trends, special traffic counts and other related traffic information gathered through special studies. Approximately 146 requests for design traffic were completed. Several consultant traffic analyses were overseen, edited, and approved at some level of completion including the US 70 Madill Bypass Study, SH 20 Claremore Realignment Study, US 169 Interchange Design Study, the I-35/I-240 Interchange Arterial Frontages Study, the I-40/I-44 Interchange Design Study, The I-40 MWC One Way Frontage Road Design Study, the I-235 / Harrison OKC Design Study and the I-40 West of I-44 Design Study and the US 70 Kingston Bypass were started. The Oklahoma Vehicle Classification Accuracy Research project was overseen. A new engineer, Matthew Blakeslee was added to the Traffic Analysis Branch on 1-1-14 as an eventual replacement for the ODOT Traffic Analyst Engineer, Daryl Johnson. Engineer in Training, Robert Whisenhunt, began his 3 years of training in the Traffic Analysis Branch on 4-8-14.

PROPOSED ACTIVITIES FOR FFY 2015: Design traffic data will continue to be furnished for cities, counties and to ODOT divisions upon approved requests. Traffic analysis and projections will be completed, as requested for all programmed construction and maintenance projects. Project Planning Reports 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 2014	$182,000	SPR	-0-	STATE
Estimated Cost FFY 2014	$157,000	SPR	-0-	STATE
Projected Cost FFY 2015	$188,000	SPR	-0-	STATE

CONTACT INFORMATION

Daryl Johnson, PE: Traffic Data Analyst, 405 522-6376

Matthew Blakeslee, PE: Traffic Data Analyst, 405 522-6713

1310 Skid Studies Program

PURPOSE AND SCOPE: To assess the 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 2014: The annual test cycle for FY 2014 encompassed pavement friction testing of highways in Divisions 5, 6 & 7, Hwy 69 and all Interstates. This year's testing cycle totals 10,623 miles. Highway mileage with less than adequate skid resistance value registers an average of approximately 8 percent of all pavements tested. FY 2013 annual test cycle was cut short due to a Skid Truck accident and this cycle will be repeated in FY 2014. A new Skid truck & trailer was delivered in the fall of 2013, the vehicle was calibrated prior to delivery. Vehicle testing & operator training on the new operating systems was complete by May of 2014. Skid testing & data collection began in May of 2014 and some software problems & repairs have slowed testing but completion of this year's testing cycle is expected by the fall of 2014.

PROPOSED ACTIVITIES FOR FFY 2015: The FY-2015 test cycle encompasses state, federal and interstate highways totaling approximately 7,366 miles in Division 4 & 8, US 69 and all interstates. Completion is scheduled for the fall of 2015. Calibration of the skid testing equipment is done on a biannual basis and will be scheduled for FY 2015.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014	$175,000	SPR	-0-	STATE
Estimated Cost FFY 2014	$160,000	SPR	-0-	STATE
Projected Cost FFY 2015	$160,000	SPR	-0-	STATE

CONTACT INFORMATION

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

1404 Safety Planning

PURPOSE AND SCOPE: To address transportation safety in the development of the Statewide Long Range Transportation Plan (LRTP) and the Oklahoma Statewide Transportation Improvement Program (STIP). To collaborate with ODOT Traffic Engineering Division in implementation and update of Oklahoma's Strategic Highway Safety Plan in accordance with MAP-21. Provide review of projects and programs to ensure consistency with the LRTP and inclusion in the STIP, as requested.

ACCOMPLISHMENTS DURING FFY 2014: Provided interface to include safety and security considerations in LRTP and STIP. Worked with ODOT Traffic Engineering staff on implementation of the SHSP. Worked with ODOT Traffic Engineering staff on concepts and terminology related to safety performance measures and targets as required through NHTSA and FHWA (in relation for MAP 21).

PROPOSED ACTIVITIES FOR FFY 2015: Address transportation safety and safety performance measures in development of the 2015-2040 Oklahoma LRTP and development and implementation of STIP. ODOT Traffic Engineering Division implementation focus in 2015 includes, but is not limited to: introduction of the Strategic Highway Safety Plan, version 2, safety improvements at high risk curve locations incorporating a pilot program to improve surfaces that will provide more friction and installation of retro-reflective stripes on traffic signal backplates.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014	$50,000	SPR	-0-	STATE
Estimated Cost FFY 2014	$0	SPR	-0-	STATE
Projected Cost FFY 2015	$5,000	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 a training program contracted through Oklahoma State University's Center for Local Government Technology to provide technical maintenance training and assistance to Oklahoma's 77 counties' personnel in the areas of road and bridge construction, repair and maintenance and other transportation related issues. This is accomplished by (1) conducting workshops, seminars and other training opportunities (2) providing on-site technical assistance (3) maintaining a lending library for publications, videotapes, DVDs and other technology resource documents (4) providing information on new and existing technology (5) coordinating with faculty and staff at OSU and ODOT to provide technical expertise and support (6) publishing a quarterly newsletter and (7) maintaining a database of rural, local and state transportation officials and other resources in Oklahoma and nationwide.

ACCOMPLISHMENTS DURING FY 2014: Conducted Right of Way Acquisition class in conjunction with ODOT's Right of Way Division and FHWA; implemented two new classes from Advisory Group; continued the Roads Scholar curriculum in conducting numerous training sessions; developed and conducted new training courses as requested by the LTAP Advisory Board and counties, with emphasis on safety; continued to develop hands on training through cooperation efforts with industry; continued to maintain website, publish various literature, tapes, DVD, etc. for distribution; attended year end meeting with ODOT staff aimed to further improve LTAP program direction and goals; provided program progress reports.

PROPOSED ACTIVITIES FOR FY 2015: Develop activities to facilitate the implementation of FHWA's Every Day Counts initiative; promote the use of Adaptive Signal Control technology and Geo-Synthetic Reinforced Soil technology; conduct classes on Snow and Ice removal; continue the Roads Scholar curriculum in conducting various training sessions; provide Infrastructure Management training; participate in Assoc. of County Commissioner of Oklahoma (ACCO) conferences and County Officer & Deputies Assoc. (CODA) conferences; continue to lead Workforce Development classes; continue to improve and serve as the state office of the Oklahoma Chapter of the American Public Works Assoc. (APWA); continue to build on and improve the Transportation Intern Program developed by the Center for Local Government Technology (CLTG); serve on various local and national committees; attend various conferences including the TRB Annual Conference and the National LTAP Conference; provide technical assistance in all areas; continue to provide website, literature, tapes, DVD's, etc. for distribution; provide program progress reports.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014	$117,168	SPR	$48,156	STATE	$222,832	FHWA
Estimated Cost FFY 2014	$100,000	SPR	$48,000	STATE	$222,000	FHWA
Projected Cost FFY 2015	$164993.07	SPR	$65,794	STATE	$175,026.93	FHWA

CONTACT INFORMATION

Bryan Cooper: Transportation Manager, 405-736-9475

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, bypasses, utility structures, pedestrian structures, etc., for the purpose of determining the economic and engineering feasibility of such proposals.

ACCOMPLISHMENTS DURING FFY 2014: Reviewed consultant studies as needed.

PROPOSED ACTIVITIES FOR FFY 2015: 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 2014	$20,000	SPR	-0-	STATE
Estimated Cost FFY 2014	$2,000	SPR	-0-	STATE
Projected Cost FFY 2015	$20,000	SPR	-0-	STATE

CONTACT INFORMATION

Daryl Johnson, PE: Traffic Data Analyst, 405 522-6376

Matthew Blakeslee, PE: Traffic Data Analyst, 405 522-6713

1601 Federal-aid Systems Coordination

PURPOSE AND SCOPE: The project scope is designed to be responsible for the coordination of the State's Highway System, Federal-aid Highway System, National Highway System and the Functional Classification System. Prepare and coordinate all highway and roadway classification revisions pertaining to these systems. To record, maintain research and provide any documents and historical data relating and pertaining to these systems. To communicate, inform and coordinate with city, county, state and federal officials pertaining to these systems.

ACCOMPLISHMENTS DURING FFY 2014: All highway revisions were approved by the Transportation Commission. Completed the following Functional Classification Systems accordingly (56 counties, 32 small urban, 1 urbanized) and forwarded to FHWA Officials. All online Functional Classification revision forms were processed. All Urban Boundaries were adjusted and completed based on the latest 2010 Census. There were over 8,000 miles driven this year to complete these adjustments to the system.

PROPOSED ACTIVITIES FOR FFY 2015: The Functional Classification System adjustments will continue this year with the remaining few county revisions to be approved by FHWA. Functional Class revisions within the Tulsa Urbanized Area are being prepared to be sent to ODOT, then to FHWA for their approval. Approximately 7,000 miles will be driven to do necessary on-site reviews of revisions as needed. Functional Classification maps and map books all in the process of being updated that would complete the 2012 Functional Classification System revisions project. Update the Oklahoma's Memorial Highways & Bridges book for 2015.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014	$93,300	SPR	-0-	STATE
Estimated Cost FFY 2014	$98,100	SPR	-0-	STATE
Projected Cost FFY 2015	$79,000	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 publish a Needs Study and Sufficiency Report biennially showing the investment needed to raise the State Highway System to a sufficient rating over a twenty-year period for construction, maintenance, and administration. To maintain a file of geometric deficiencies on the State Highway System. To maintain a construction and maintenance status log of highway projects. To maintain a list of highway segments for potential removal from the State Highway System. To maintain a database indicating sufficiency ratings for roadways and bridges along with suggested improvements and costs.

ACCOMPLISHMENTS DURING FFY 2014: Processed 2013 field data. Updated the geometric data contained in the Needs Study Deficiency database file. Compiled maintenance and construction costs for Needs Study and Sufficiency Report. Compiled data from Department sources. Produced graphs, charts and tables relating to the Needs Study and Sufficiency Report. Updated the Sufficiency Rating Manual and the Needs Study Procedure Manual. Updated highway inventory data for use in the collection of field data. Updated the Field Manual and work sheets. Began field data collection for the upcoming 2015 Needs Study and Sufficiency Report.

PROPOSED ACTIVITIES FOR FFY 2015: Continue field data collection for upcoming 2015 Needs Study and Sufficiency Report. Update highway subsections, inventory and improvement data. Update geometric data contained in the Needs Study Deficiency database file. Process collected field data. Produce graphs, charts and tables for Need Study Report. Compile maintenance and construction costs for Report. Continue assembling the 2015 Needs Study and Sufficiency Rating Report. Update the Sufficiency Rating Manual, Field Division Pavement Preservation Manual and the Needs Study Procedure Manual. Document current processes and evaluated strategies to improve reporting process.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014	$339,000	SPR	-0-	STATE
Estimated Cost FFY 2014	$339,000	SPR	-0-	STATE
Projected Cost FFY 2015	$297,859.93	SPR	-0-	STATE

CONTACT INFORMATION

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

Wayne Barber: Needs Study Program 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. To maintain application software necessary to analyze roadway information for pavement management. To supply data for inclusion in the Highway Performance Monitoring System.

ACCOMPLISHMENTS DURING FFY 2014: Performed Pavement Management System analysis of the National and Statewide Highway Systems in Oklahoma. Updated Pavement Management System analysis software. Provided technical support for the video log software. Initiated a Request for Proposal for pavement condition data collection. Performed data collection on all National Highway System routes , all non-National Highway System routes in Divisions 3, 4, and 8, and Highway Performance Monitoring System non-highway sample sections in Divisions 3, 4, and 8. Kept informed of the latest technological advances and practices by attending the Transportation Research Board 93nd Annual Meeting in Washington, D.C. as well as webinars and workshops.

PROPOSED ACTIVITIES FOR FFY 2015: Perform Pavement Management System analysis of the National and Statewide Highway Systems in Oklahoma. Refine Pavement Management System analysis software by updating performance curves, treatment costs, and triggers. Provide technical support for the video log software. Perform data collection on all National Highway System routes, all non-National Highway System routes in Divisions 1, 2, 5, 6, and 7, and Highway Performance Monitoring System non-highway sample sections in Divisions 1, 2, 5, 6, and 7. Keep informed of the latest technological advances and practices by attending the Transportation Research Board 94th Annual Meeting in Washington, D.C. as well as webinars and workshops. Retain the services of a pavement management consultant. Document current processes and evaluated strategies to improve analysis process.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2014	$1,158,000	SPR	-0-	STATE
Estimated Cost FFY 2014	$1,158,000	SPR	-0-	STATE
Projected Cost FFY 2015	$910,000	SPR	-0-	STATE

CONTACT INFORMATION

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

1700 General Urban Transportation Planning

PURPOSE AND SCOPE: This item includes coordinating with staff members in the Programs and Local Government Divisions in conducting general planning activities which cannot be ascribed to specific transportation studies contained in the unified planning work programs or the SP&R Report. These activities include: 1) coordination between ODOT Central Office and Field Divisions; 2) coordination with and among local, state, and federal officials; 3) dissemination of social and economic data and traffic counts to the public and private sector on request; 4) providing technical assistance on planning and research activities/studies upon request; 5) tracking federal and state legislation and regulations affecting the Department;) keeping abreast of the latest technology advances and federal regulations in transportation planning, ITS, etc. through seminars, workshops and reading materials.

ACCOMPLISHMENTS DURING FFY 2014: Continued coordination with appropriate ODOT staff members and Field Divisions. Provided socioeconomic data, benefit-cost analyses, passenger rail study planning and environmental analysis, and traffic counts upon request, to local and state officials and to citizens. Attended seminars and workshops related to transportation planning and policies in order to maintain, upgrade and develop needed expertise, proficiency and professionalism. Coordinated with local, state and federal officials. Provided assistance at public meetings. Monitored and provided comments on federal and state legislation and regulations affecting the Department. Provided review and comment on Moving Ahead for Progress in the 21st Century (MAP-21) guidance.

PROPOSED ACTIVITIES FOR FFY 2015: Provide coordination with ODOT staff members, Field Division, Local, State and Federal Officials. Disseminate pertinent planning data and information as needed. Provide technical assistance as requested concerning transportation planning and reauthorization of MAP-21. Pursue professional enrichment through attendance at workshops, seminars and conferences.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014	$6,000	SPR	-0-	STATE
Estimated Cost FFY 2014	$21,000	SPR	-0-	STATE
Projected Cost FFY 2015	$20,000	SPR	-0-	STATE

CONTACT INFORMATION

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

1701 Oklahoma City Area Regional Transportation Study

PURPOSE AND SCOPE: To maintain up-to-date socioeconomic and land use data and a viable Long Range Transportation Plan in compliance with the provisions of existing federal regulations and MAP-21 provisions and all applicable transportation planning regulations and requirements for the Tulsa urbanized area.

ACCOMPLISHMENTS DURING FY 2014: Transportation planning for the OCARTS Area was carried out as described in the FY 2014 Unified Planning Work Program (UPWP). Accomplishments during FY 2014 included: preparation and finalization of the FY 2014 UPWP was completed; the FY 2014 Agreement was executed and authorization to expend federal funds effective July 1, 2013 through June 30, 2014 was granted by FHWA; the Transportation Improvement Program (TIP) for FFY 2015-2018 was developed and adopted; continued development of the Regional Transportation Plan, Encompass 2035; continued development and maintenance of the Geospatial Information System to assist member entities and integration with the travel demand model; initiated a Commuter Corridor Study; 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, implementation of bicycle elements of the Regional Transportation Plan.

PROPOSED ACTIVITIES FOR FY 2015: Complete the update of the Regional 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 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 Amount FFY 2014	$55,000	SPR	$1,131,769	PL	$226,353	LOCAL
Estimated Cost FFY 2014	$55,000	SPR	$1,131,769	PL	$226,353	LOCAL
Estimated Cost FFY 2015	$20,000	SPR	$1,326,308	PL	$265,261	LOCAL

CONTACT INFORMATION

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

1702 Tulsa Metropolitan Area Transportation Study

PURPOSE AND SCOPE: To maintain up-to-date socioeconomic and land use data and a viable Long Range Transportation Plan in compliance with the provisions of existing federal regulations and MAP-21 provisions and all applicable transportation planning regulations and requirements for the Tulsa urbanized area.

ACCOMPLISHMENTS DURING FY 2014: Transportation planning for the Tulsa TMA was carried out as described in the FY 2014 Unified Planning Work Program (UPWP). Accomplishments during FY 2014 included: preparation and finalization of the FY 2014 UPWP was completed; the FY 2014 Agreement was executed and authorization to expend federal funds effective July 1, 2013 through June 30, 2014 was granted by FHWA; the Transportation Improvement Program (TIP) for FFY 2015-2018 was developed and adopted; continued development of the Regional Transportation Plan, Connections 2035; assisted member entities and citizens, providing technical assistance in demographic and traffic information and other information related to major transportation projects; initiated a comprehensive update to the Regional Trails Master Plan & developed a bicycle and pedestrian plan for the Tulsa region; continued the coordination of the Ozone Alert! Clean Cities and Green Traveler Alternative programs.

PROPOSED ACTIVITIES FOR FY 2015: Complete the update of the Regional Transportation Plan, Connections 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; 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 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 Amount FFY 2014	$35,000	SPR	$1,004,430	PL	$200,886	LOCAL
Estimated Cost for FFY 2014	$35,000	SPR	$1,004,430	PL	$200,886	LOCAL
Estimated Cost for FFY 2015	$20,000	SPR	$969,037	PL	$193,807	LOCAL

CONTACT INFORMATION

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

1703 Lawton Metropolitan Area Transportation Study

PURPOSE AND SCOPE: To maintain up-to-date socioeconomic and land use data and a viable Long Range Transportation Plan in compliance with the provisions of existing federal regulations and MAP-21 provisions and all applicable transportation planning regulations and requirements for the Lawton Metropolitan area.

ACCOMPLISHMENTS DURING FY 2014: Transportation planning for the Lawton Metropolitan Planning Area was carried out as described in the FY 2014 Unified Planning Work Program (UPWP). Accomplishments during FY 2014 included: development and adoption of the Transportation Improvement Program (TIP) for FFY 2015-2018; published the Annual Listing of Obligated Projects; preparation of the annual transportation planning funding documents; completed a feasibility study for providing transit service to the West Lawton Industrial Area; implemented a feasibility study to provide a freight route to the Lawton Industrial Park from Interstate 44; hired a consultant to provide a travel demand model for use in the development of a Long Range Transportation Plan; developed an 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 FY 2015: As defined in the UPWP, complete the update of the Long Range Transportation Plan to include traffic counts and modeling of the network; update the Land Use Plan; review pedestrian facilities and connectivity to transit along arterials and bus routes; convert to GIS maps data collected on inventory of sidewalks, pedestrian crossings, bus shelters, traffic signalization, traffic counts, accident data, speed limits, and number of miles of street lanes on arterials and collectors; review and update the Public Participation Plan to ensure it is in compliance with MAP-21 requirements; complete the feasibility study to provide a freight route to the Lawton Industrial Park form Interstate 44; manage the contract for the Lawton Metropolitan Bicycle and Pedestrian Plan improvements; finalize the education campaign for bicycle safety; and increase public awareness of air quality through various outreach efforts.

FINANCIALS	**Amount**	**Fund**	**Amount**	**Fund**	**Amount**	**Fund**
Programmed Amount FFY 2014	$15,000	SPR	$225,957	PL	$45,191	LOCAL
Estimated Cost for FFY 2014	$15,000	SPR	$225,957	PL	$45,191	LOCAL
Estimated Cost for FFY 2015	$15,000	SPR	$200,241	PL	$40,048	LOCAL

CONTACT INFORMATION

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

1709 Ft. Smith Transportation Study

PURPOSE AND SCOPE: To maintain up-to-date socioeconomic and land use data and a viable Long Range Transportation Plan in compliance with the provisions of existing federal regulations and MAP-21 provisions and all applicable transportation planning regulations and requirements for the Fort Smith urbanized area.

ACCOMPLISHMENTS DURING FY 2014: Transportation planning for the Frontier Metropolitan Planning Area was carried out as described in the FY 2014 Unified Planning Work Program (UPWP). Accomplishments during FY 2014 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; preliminary development of the Transportation Improvement Program (TIP) for FFY 2016-2019.

PROPOSED ACTIVITIES FOR FY 2015: 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 Amount FFY 2014	$15,000	SPR	$21,000	PL	$4,200	LOCAL
Estimated Cost for FFY 2014	$15,000	SPR	$21,000	PL	$4,200	LOCAL
Estimated Cost for FFY 2015	$15,000	SPR	$21,000	PL	$4,200	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 thru 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 FY 2014: Established three Rural Transportation Planning Organizations (RTPO) to carry out planning in non-metropolitan areas. Implemented a Public Participation Process thru OARC. Transportation planning for the RTPO regions was carried out as described in the FY 2014 Planning Work Program (PWP). Accomplishments during FY 2014 included, preparation of the annual transportation planning funding documents; development and maintenance of the RTPO websites; and implemented a process to develop a Long Range Rural Transportation Plan.

PROPOSED ACTIVITIES FOR FY 2015: 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; development of a simplified travel demand model; and development of a Long Range Rural Transportation Plan for each RTPO.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014	$250,000	SPR	-0-	STATE
Estimated Cost FFY 2014	$250,000	SPR	-0-	STATE
Projected Cost FFY 2015	$200,000	SPR	-0-	STATE

CONTACT INFORMATION

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

1719 Statewide Transportation Improvement Program

PURPOSE AND SCOPE: To develop, administer and revise a financially-constrained federally funded transportation improvement program for the State of Oklahoma in compliance with SAFETEA-LU and in cooperation with the FHWA, FTA, the four Metropolitan Planning Organizations (ACOG, INCOG, LMPO, and Frontier MPO), the Bureau of Indian Affairs, and Tribal Governments.

ACCOMPLISHMENTS DURING FFY 2014: Developed the Statewide Transportation Improvement Program (STIP) for approval and implementation for FFY 2015-2018. Continue the administration of the current STIP using currently approved procedures. Amended the FFY 2014 portion of the STIP based upon revision of the ODOT 8 Year Construction Work Plan.

PROPOSED ACTIVITIES FOR FFY 2015: This program is now being managed by the ODOT Programs Division using an alternate source of funding.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014	$85,000	SPR	-0-	STATE
Estimated Cost FFY 2014	$85,000	SPR	-0-	STATE
Projected Cost FFY 2015	-0-	SPR	-0-	STATE

CONTACT INFORMATION

Sam Adkins: Programs Division, 405-521-2521

1902 Statewide Long Range Transportation Planning

PURPOSE AND SCOPE: The project scope is designed to include completion of the 2015-2040 Oklahoma Long Range Transportation Plan (LRTP) and other associated statewide long range planning activities in accord with federal law.

ACCOMPLISHMENTS DURING FFY 2014: Initiated development of 2015-2040 Oklahoma Long Range Transportation Plan, including development of proposed goals and performance measures, and involvement of the public and advisory committees. Ensured that scope of LRTP meets requirements as outlined in MAP 21. Continued maintenance and implementation of currently adopted 2010-2035 LRTP.

PROPOSED ACTIVITIES FOR FFY 2015: Complete development of 2015-2040 Long Range Plan. Continue monitoring and maintaining 2010-2035 LRTP. Stay apprised of federal rule making regarding statewide Long Range Transportation Planning. NOTE: $250k from FY 15 SPR funds were placed into the LRP budget in Jan 2014 I did not include a recommended budget amount for 2015.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014	$700,000	SPR	-0-	STATE
Estimated Cost FFY 2014	$950,000	SPR	-0-	STATE
Projected Cost FFY 2015	$45,000	SPR	-0-	STATE

CONTACT INFORMATION

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

1903 Intelligent Systems Planning

PURPOSE AND SCOPE: The project scope is designed to Incorporate Intelligent Transportation Programs (ITS) into the transportation planning process in compliance with the provisions of Federal regulations [23 Code of Federal Regulations, Parts 655 and 940, Intelligent Transportation Systems (ITS) Architecture and standards]. Use an ITS integration strategy by defining roles, responsibilities and shared operational strategies to address key policy and operational issues creating and/or updating the conceptual design for ITS within the planning area. Ensure the interoperability and institutional/technical integration of ITS efforts through compliance with ITS Statewide/Regional Architectures and related ITS standards.

ACCOMPLISHMENTS DURING FFY 2014: The Department is utilizing a standing planning contract (EC1406B) with Leidos to update the Statewide ITS Architecture. Research has been conducted to prepare presentation and handout material for an initial strategic approach meeting with ODOT Senior Staff. The primary purpose of this meeting is to determine the benefits of a Statewide ITS Plan and ITS Architecture Update and discuss methods of achieving established goals and objectives.

PROPOSED ACTIVITIES FOR FFY 2015: Update the Statewide ITS Plan, ITS Architecture and Implementation Plan via EC 1406B. Continue to process ITS funded contracts/invoices for the system analysis/design and deployment of Oklahoma's CVISN Program plan projects. Coordinate ITS and other technology based transportation research contracts and activities. Work toward the development of a Real-Time System Management Information Program (RTSMIP) as required by 23 CFR511.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014	$125,000	SPR	-0-	STATE
Estimated Cost FFY 2014	$16,070	SPR	-0-	STATE
Projected Cost FFY 2015	$50,000	SPR	-0-	STATE

CONTACT INFORMATION

Aruna Mathuranayagam, PE: Leidos, 405-607-6185

Randy Lee: Assistant Strategic Asset & Performance Mgmt. Division Engineer, 405-522-1447

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 SAFETEA-LU. 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 FY 2014: 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. 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 FY 2015: Maintain research and participation in air quality/transportation issues, developments, regulations and laws. Assist in providing data for air quality modeling efforts. 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 Amount FFY 2014	$100,000	SPR	-0-	STATE
Estimated Cost FFY 2014	$100,000	SPR	-0-	STATE
Projected Cost FFY 2015	$100,000	SPR	-0-	STATE

CONTACT INFORMATION

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

1905 Freight Planning

PURPOSE AND SCOPE: To coordinate multi and intermodal freight planning and freight analysis with the long range transportation planning process.

ACCOMPLISHMENTS DURING FFY 2014: Monitored consultant work and production of Oklahoma Freight Study. Commented on proposed federal rules in relation to proposed National Freight Network. Considered impact of freight on network in relation to proposed congestion performance measures for LRTP. Maintained communication with freight rail and freight waterways programs in the state. Assembled Freight Advisory Committee for LRTP.

PROPOSED ACTIVITIES FOR FFY 2015: Continue review of proposed federal regulations for impact on freight in the State of Oklahoma. Work with LRTP consultants to integrate freight into LRTP process. Consider development of Freight Plan including analysis of freight analysis framework, rail and waterways data. Continue meeting with Freight Advisory Committee.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014	$200,000	SPR	-0-	STATE
Estimated Cost FFY 2014	-0-	SPR	-0-	STATE
Projected Cost FFY 2015	$70,000	SPR	-0-	STATE

CONTACT INFORMATION

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

1906 Rail Planning

PURPOSE AND SCOPE: To coordinate rail planning in the state in accordance with the recently approved Oklahoma Statewide Freight and passenger Rail Plan (State Rail Plan) and relevant elements of MAP-21.

ACCOMPLISHMENTS DURING FFY 2014: None

PROPOSED ACTIVITIES FOR FFY 2015: The ODOT Rail Programs Division will continue to complete the Oklahoma City to Tulsa Passenger Rail Study under a separate funding source and will not request funding thru the SP&R for FFY15.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014	$100,000	SPR	-0-	STATE
Estimated Cost FFY 2014	-0-	SPR	-0-	STATE
Projected Cost FFY 2015	-0-	SPR	-0-	STATE

CONTACT INFORMATION

Craig Moody: Rail Programs Division, 405-521-4203

1910 Public Participation and Visualization Techniques

PURPOSE AND SCOPE: The project scope is designed to develop and maintain a Public Participation Plan (PPP) that would encourage 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 2014: The PPP held several Public Meetings this year throughout the state. These meetings included big projects like the I-40 Crosstown Boulevard, the LRTP, and the STIP. These public meetings implemented the use of several Visualization Techniques, including, but not limited to: 3-D Design and Projection, Video, Animation, High-Resolution Graphics, Automated Presentations, and new commenting techniques. The current ODOT Public Involvement web site was updated and improved in several locations.

PROPOSED ACTIVITIES FOR FFY 2015: The PPP will continue to provide Public Involvement for any and all Construction Projects, Planning Projects, Division needs, and Environmental needs. This includes special outreach to non-metropolitan public officials as well as the traditionally underserved and those with limited English proficiency. We currently propose the use of new techniques for public outreach and public involvement to better suit the needs of the project manager as well as the project information. This also includes the development and improvement of our presentation and visualization processes and techniques, alternative venues, a more robust email blast system, and better commenting systems. We also plan to 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. We currently propose to update the PPP

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014	$285,000	SPR	-0-	STATE
Estimated Cost FFY 2014	$285,000	SPR	-0-	STATE
Projected Cost FFY 2015	$200,000	SPR	-0-	STATE

CONTACT INFORMATION

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

1912 DBE Database Software

PURPOSE AND SCOPE: The Oklahoma Department of Transportation (ODOT) is requesting proposals for a software program that is capable of managing various programs within the Civil Rights Division. The desired software program should be a 100 percent web-based solution. The software will need to be an online program that has the capability to store high levels of Federal contract data, track progress on contracts and generate various reports.

ACCOMPLISHMENTS DURING FFY2014: The purchase of Disadvantaged Business (DBE) database software.

PROPOSED ACTIVITIES FOR FFY2015: Manage data collection and verify contract payment information on all Federal contracts. This includes all aspects of a contract. Collect, track, and report DBE participation, goals, and utilization on Federal projects. Maintain software licenses, maintenance, and upgrades.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014	$100,000	SPR	-0-	STATE
Estimated Cost FFY 2014	$100,000	SPR	-0-	STATE
Projected Cost FFY 2015	$100,000	SPR	-0-	STATE

CONTACT INFORMATION

Andy Penney: Civil Rights Project Manager, 405-522-3174

Jenny Chong: Civil Rights Assistant Project Manager, 405-521-2072

Langston Transportation Center: Project Sponsor

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 MAP-21 provisions and all applicable transportation planning regulations and requirements in compliance with the FHWA, FTA, the four Metropolitan Planning Organizations (ACOG, INCOG, LMPO, and Frontier MPO), and non-metropolitan areas.

ACCOMPLISHMENTS DURING FY 2014: New program.

PROPOSED ACTIVITIES FOR FY 2015: Research and participate in bicycle and pedestrian issues, developments, regulations and laws. Develop education materials and resources for Department personnel regarding bicycle and pedestrian transportation. Attend bicycle and pedestrian transportation planning activities of the Lawton, ACOG, and INCOG MPO. Participate in bicycle and pedestrian transportation planning initiatives and educational programs. Enhance staff education through courses, seminars, and conferences.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014	-0-	SPR	-0-	STATE
Estimated Cost FFY 2014	-0-	SPR	-0-	STATE
Projected Cost FFY 2015	$50,000	SPR	-0-	STATE

CONTACT INFORMATION

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

SPR PART 2 - RESEARCH, SPRY-0010(62)RS, JP# 01946(64)
FEDERAL FISCAL YEAR 2015

		SPR	***STATE***	***LOCAL***	***TOTAL***
GENERAL ACTIVITIES					
2100	Transportation Research Board	$10,000.00			$10,000.00
2115	Long Term Pavement Performance	$5,000.00			$5,000.00
2120	Technical Assistance - Special Studies	$80,000.00			$80,000.00
2130	General Research Activity	$372,000.00			$372,000.00
2160-B	Southern Plains Transportation Center	$1,000,168.00			$1,000,168.00
2160-C	Southern Plains Transportation Center - ODOT Transportation Library	$149,803.00			$149,803.00
2300	Research Implementation	$120,000.00			$120,000.00
2700	Experimental Product Evaluation Program	$5,000.00			$5,000.00
	Total General Activities	***$1,741,971.00***			***$1,741,971.00***
ANNUAL RESEARCH PROJECTS					
2156	Roadside Vegetation Management	$165,036.00			$165,036.00
2157	Herbicide Research Program	$59,457.00			$59,457.00
	Total Annual Research Projects	***$224,493.00***			***$224,493.00***
CONTINUING RESEARCH PROJECTS					
2208	Development and Implementation of an MEPDG for Rigid Pavements Ph II	$94,915.00			$94,915.00
2228	Overturning Forces at Bridge Abutments	$52,135.00			$52,135.00
2229	Expected Life of Silanes - Phase 2	$75,259.00			$75,259.00
2243	Recommended Fatigue Test for Oklahoma DOT	$100,000.00			$100,000.00
2252	Develop. Of Inexpensive Vehicle Sensor Node System	$76,220.00			$76,220.00
2253	Investigation of Optimized Graded Concrete for Oklahoma	$100,000.00			$100,000.00
2256	Understanding the Behaviorof Prestressed Concrete Girders	$100,000.00			$100,000.00
2258	Evaluate Densifier-Over-Shotblasting Treatment Performance	$100,000.00			$100,000.00
2261	Selection of Long Lasting Rehab. Treatment Using Life cycle Analysis	$100,000.00			$100,000.00
2262	Feasibility Study of GRS Systems for Bridge Abutments in Oklahoma	$88,680.00			$88,680.00
2263	The Use of On-Board CNG as a Locomotive Fuel - Phase 3	$100,000.00			$100,000.00
2270	Development of an Asphalt Pavement Test Facility at the OSU UAV Facility	$100,000.00			$100,000.00
	Total Continuing Research Projects	***$1,087,209.00***			***$1,087,209.00***
NEW RESEARCH PROJECTS					
2265	Precast Prestressed Concrete Pavement to Abate Settlement Problems	$98,595.00			$98,595.00
2266	The Use of Resistivity Testing for Quality Control of Concrete Mixtures	$92,065.00			$92,065
2268	Use of A Novel controlled Release Surface Curing Agent for Bridge Decks	$91,685.00			$91,685.00
2269	Development of Alternative High Friction Sufaces for Oklahoma (NCAT)	$25,675.00			$25,675.00
	Total New Research Projects	***$308,020.00***			***$308,020.00***
	Grand Total SPRY-0010(62)RS	***$3,361,693.00***			***$3,361,693.00***
POOLED FUND STUDIES					
TPF-5(408)	NCHRP	$661,508.00			$661,508.00
Sol. 1363	Technology Transfer Concrete Consortium	$8,000.00			$8,000.00
Sol. 1372	Strain-based Fatigue Crack Monitoring of Steel Bridges	$25,000.00			$25,000.00
TPF-5(232)	Study of the Impacts of Implements of Husbandry on Bridges	$10,000.00			$10,000.00
TPF-5(267)	Accelerated Performance Testing on the 2015 NCAT Pavement Test Track	$370,000.00			$370,000.00
TPR-5(278)	Real-Time Quality Control Monitoring and Characterization	$75,000.00			$75,000.00
TPF-5(286)	next Generation Concrete Pavement Road Map	$15,000.00			$15,000.00
TPF-5(297)	Improving Specifications to Resist Frost Damage in Modern Concrete	$17,500.00			$17,500.00
TPF-5(303)	2015 Performance Measures Technical Transfer Conference	$12,000.00			$12,000.00
	Total Pooled Fund Projects	***$1,194,008.00***			***$1,194,008.00***
	Total Research Funding	***$4,555,701.00***			***$4,555,701.00***

ENDING RESEARCH PROJECTS

2160	SPTC - Interpretation of In Situ Tests as Affected by Soil Suction	$0.00	$0.00
2160	SPTC - The Effects of Soild Suction on ShallowSlope Stability	$0.00	$0.00
2160	SPTC - Prototype Reinforced Soil Embankment for Reconstruction of US-62 Slope	$0.00	$0.00
2200	Instrumented Pavement Construction - Phase 2	$0.00	$0.00
2208	Development and Implementation of an MEPDG for Rigid Pavements - Phase 2	$0.00	$0.00
2245	Fatigue Performance of Asphalt Pavements Containing RAS and RAP	$0.00	$0.00
2246	Evaluation of Performance of Asphalt Pavements	$0.00	$0.00
2248	reep Copliance and Percent Recovery of Oklahoma Certified Binders	$0.00	$0.00
2249	Black Ice Detection and Road Closure Control System for Oklahoma	$0.00	$0.00
2250	The Study of Vehicle Classification Equipment with Solutions to Improve Accuracy	$0.00	$0.00
2251	3D Laser Imaging for ODOT Intersate Netwrok at Rue 1-mm Resolution	$0.00	$0.00
2252	Development of Inexpensive Vehicle Sensor Node System for Volume - Phase 1	$0.00	$0.00
2254	Energy Dissipation in 30" Broken-Back Culverts Using Laboratory Models	$0.00	$0.00
2255	Regional Economic Impact Study for the McClellan-Kerr Arkansas River	$0.00	$0.00
2257	Understaning A =+ B Bidding Patterns and Policy Implications for ODOT	$0.00	$0.00
2259	Development of a Prototype Geotechnical Report Database	$0.00	$0.00
2260	Shrinkage Induced Deformations in Steel Bridges made Composit	$0.00	$0.00

RECENTLY COMPLETED RESEARCH PROJECTS

2160	SPTC - Investigation of Optimized Graded Concrete for Oklahoma - Phase 1	$0.00	$0.00
2160	SPTC - Evaluation of the Enhanced Integrated Climatic Model	$0.00	$0.00
2235	Distress Modeling for DARWin-ME - Phase 1	$0.00	$0.00
2236	Drying Shrinkage Problems in High PI Subgrade Soils	$0.00	$0.00
2237	Reduction in Storm Water Runoff	$0.00	$0.00
2239	Develop Draft Chip Seal Cover Aggregate Specifications Based on AIMS	$0.00	$0.00
2240	Protable WIM for Pabement Design - Phase 2	$0.00	$0.00
2241	Real-Time Moonitoring of Slope Stability in Eastern Oklahoma	$0.00	$0.00

ACTIVE AND PAID POOLED FUND STUDIES

TPF-5(063)	Improving the Quality of Pavement Profiler Measurement	$0.00	$0.00
TPF-5(099)	Evaluation of Low Cost Safety Improvements	$0.00	$0.00
TPF-5(174)	Construction of Crack-Free Concrete Bridge Decks, Phase 2	$0.00	$0.00
TPF-5(187)	Updating U.S. Precipitation Frequency Estimates for the Midwestern Region	$0.00	$0.00
TPF-5(197)	The Impact of Wide-Based Tires on Pavement Damage	$0.00	$0.00
TPF-5(205)	Impl. of Conc. Pave. Mix. Des. & Analysis (MDA) Track of Conc. Pavement Road	$0.00	$0.00
TPF-5(209)	Support of the Transportation Curriculum Coordination Council	$0.00	$0.00
TPF-5(229)	Characterization of Drainage Layer Properties for MEPDG	$0.00	$0.00
TPF-5(231)	ITS Pooled Fund Program (ENTERPRISE)	$0.00	$0.00
TPF-5(243)	Motorcycle Crash Causation Study	$0.00	$0.00
TPF-5(255)	Highway Safety Manual Implementation	$0.00	$0.00
TPF-5(256)	HY-12 Storm Drain Hydraulic Analysis Program - Phase 2	$0.00	$0.00
TPF-5(267)	Accelerated Performance Testing on the 2012 NCAT Pavement Test Track	$0.00	$0.00
TPF-5(269)	Development of an Improved Design Procedure for Un-bonded Concrete	$0.00	$0.00
TPF-5(275)	2014 Asset Management Conference and Training on Implementation	$0.00	$0.00

PAID AND ENDED IN 2014 POOLED FUND STUDIES

TPF-5(117)	Development of Performance Properties of Ternary Mixes	$0.00	$0.00
TPF-5(145)	Western Maintenance Partnership	$0.00	$0.00
TPF-5(159)	Replaced By Solicitation 1363	$0.00	$0.00
TPF-5(251)	Relative Operational Performance of Geo-synthetics	$0.00	$0.00

2100 Transportation Research Board (TRB) Core Program

PURPOSE AND SCOPE: This item will cover TRB subscription costs, travel expenses and time for ODOT personnel to attend the annual TRB meeting.

ACCOMPLISHMENTS DURING FFY 2014: Attended annual TRB meeting.

PROPOSED ACTIVITIES FOR FFY 2015: Attend annual TRB meeting.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014	$150,000	SPR	-0-	STATE
Estimated Cost FFY 2014	$10,000	SPR	-0-	STATE
Projected Cost FFY 2015	$10,000	SPR	-0-	STATE

CONTACT INFORMATION

Materials and Research Div. Engineer: Reynolds Toney, 405-521-2677

2102 Research Library Services by Langston University

PURPOSE AND SCOPE: Provide the Oklahoma Department of Transportation (ODOT) and customers with an information clearinghouse. The primary goals are to allow for a sound, progressive, flexible library available to ODOT and Oklahoma Transportation Center's university personnel statewide and to keep them informed of recent innovations in transportation technology, methodologies and programs. Aligning with this is the goal of providing proficient systematic searches of all resources when requested. Additional services are aimed at providing ODOT with editing and publishing capabilities to assist the Planning & Research Division in generating and distributing reports and publications.

ACCOMPLISHMENTS DURING FFY 2014: Provided transportation information, services and updates to ODOT and other state universities; continued to develop procedures to enhance services and accessibility; continued to convert and implement the Paradox 10 Database System to the Library of Congress System; reproduced, bound and distributed research reports as required; produced progress reports; submitted FFY 2013 Annual Report; submitted FFY 2014 Annual Report.

PROPOSED ACTIVITIES FOR FFY 2015: End of services.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014 (Yr 1 of 1)	$75,000	SPR	-0-	STATE
Estimated Cost FFY 2014	$74,300	SPR	-0-	STATE
Projected Cost FFY 2015	-0-	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Wilson B. Brewer, Langston University, 405-521-1379

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

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

2103 Transportation Research Day Technical Support Services

PURPOSE AND SCOPE: To provide technical assistance in preparing for and organizing the Oklahoma Department of Transportation (ODOT) & Oklahoma Transportation Center (OkTC) Transportation Research Day program activities.

ACCOMPLISHMENTS DURING FFY 2014: Submitted FFY 2013 Annual Report.

PROPOSED ACTIVITIES FOR FFY 2015: End of services.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014 (Yr 1 of 1)	$6,393	SPR	-0-	STATE
Estimated Cost FFY 2014	$6,393	SPR	-0-	STATE
Projected Cost FFY 2015	-0-	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Wilson B. Brewer, Langston University, 405-521-1379

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

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

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 2014: Performed annual site investigations, recorded observations, and reported findings; monitoring rehabilitation activities at two locations: A Dowel Bar Retrofit project at site 404160, SH-3, Pontotoc County, Ada, which was begun in April 2014. A Mill and Overlay project at the 4001 sections, US-62, Comanche County, near Cache, should be underway in June 2014. FHWA and LTPP are in the process of taking nominations for new Warm Mix Asphalt experiments. The Oklahoma LTPP Coordinator has been trying to garner support for the establishment of this new experiment.

PROPOSED ACTIVITIES FOR FFY 2015: Replace pavement markings in the two sites that have received rehabilitation. Facilitate any implementation of the new Warm Mix Asphalt experiments. Perform annual site investigation, record observations, and report findings; obtain information from the SRCO for specific continued data collection locations, as well as, sites recently removed from the LTPP study; arrange for continued testing plans and monitoring of current SPS and GPS site locations in Oklahoma in FY 2015.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014	$5,000	SPR	-0-	STATE
Estimated Cost FFY 2014	$5,000	SPR	-0-	STATE
Projected Cost FFY 2015	$5,000	SPR	-0-	STATE

CONTACT INFORMATION

ODOT LTPP Coordinator: Bryan Cooper, 405-736-9475

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 2014: Provided support for the Department with assistance and equipment in special investigations, and other activities where needed. Performed pipe inspections at two Oklahoma City locations: on new I-40 project at the Bricktown Canal and the on-ramp at I-40 and Pennsylvania Avenue. Collected other still photographs for various in-house and SP&R research projects and monitoring Every Day Counts related issues such as the Accelerated Bridge Construction (Slide-In Bridge) on SH-51 over Cottonwood Creek, Creek County and a High Friction Surface Treatment Demonstration on SH-20 in Mayes County. A preliminary study has been conducted for ODOT's Traffic Division on US-62B, Kiowa County, in Snyder, for the installation of a 3D Crosswalk, near the elementary school. Tentative date of the installation is August 4, 2014 and will be monitored for the ensuing 6 -8 weeks. Continued to consult with ODOT staff to address situations where further technical support may be needed.

PROPOSED ACTIVITIES FOR FFY 2015: Continue monitoring and collecting data on the 3D Crosswalk project, if the study continues into FFY 2015. 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 2014	$80,000	SPR	-0-	STATE
Estimated Cost FFY 2014	$5,000	SPR	-0-	STATE
Projected Cost FFY 2015	$80,000	SPR	-0-	STATE

CONTACT INFORMATION

ODOT Field Research Manager: Bryan Cooper, 405-736-9475

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; reviewing research reports; meeting with university and private researchers regarding proposed projects; attending industry seminars, conferences, etc. This item also covers costs of 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, such as, OCAST/IDEA programs for research significant to the Department. This activity would also include routine maintenance of the ODOT Planning & Research internet and intranet websites.

ACCOMPLISHMENTS DURING FFY 2014: Solicited ODOT subject matter experts, Field Division personnel, university and private industry staff for new research ideas and problem statements for possible FFY 2015 research project funding; coordinated and carried out two Research Advisory Committee (RAC) meetings; received and compiled 52 new research problem statements; reviewed 17 new research ideas and/or problem statements for priority ranking; generated and posted 5 FFY 2015 Request for Proposals (RFP's) for research proposal submissions; reviewed 10 new research proposals submitted for possible FFY 2015 project funding; discussed proposed project work with researchers and ODOT subject matter experts; awarded and prepared 12 continuing research contract modifications for FFY 2015; awarded 2 annual research projects for FFY 2015 and prepared research contracts for each; awarded 4 new FFY 2015 research projects and prepared research contracts for each; approved and prepared 9 no cost time extension (NCTE) contract modifications for FFY 2014; organized initiation and final project meetings; performed technical reviews of final research project reports for formatting and ADA compliance; prepared Part 2 of the FFY 2015 SP&R Work Program.

PROPOSED ACTIVITIES FOR FFY 2015: Solicit for new research ideas for possible FFY 2016 research project funding; coordinate two RAC meetings for review of new FFY 2016 research ideas and proposals; generate and post FFY 2016 RFP's; generate FFY 2016 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; make funds available for various research contracts/activities which may not be foreseen while the FFY 2015 SP&R Work Plan and budget is being prepared; prepare Part 2 of the FFY 2016 SP&R Work Program.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2014	$868,663	SPR	-0-	STATE
Estimated Cost FFY 2014	$868,663	SPR	-0-	STATE
Projected Cost FFY 2015	$372,000	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: The objectives of this program are to 1. Conduct yearly herbicide applicator certification schools related to Roadside Vegetation Management (RVM); 2. Collect and maintain accurate records of attendance of both certified and noncertified ODOT personnel; 3. Provide ODOT personnel with technical consultation on an 'as needed' basis; 4. Conduct calibration workshops to train newly hired and/or newly Certified ODOT applicators; 5. Assist ODOT Maintenance and Purchasing personnel in maintaining the Approved Herbicide & Adjuvant List (AHAL); 6. Provide the ODOT Maintenance Division and the State of Oklahoma Department of Central Services (DCS) personnel with technical expertise on herbicides and spray adjuvants.

ACCOMPLISHMENTS DURING FFY 2014: Conducted and completed Annual Pesticide Applicator Certified Training and Continuing Education Applicator Workshops for all ODOT field divisions and maintained records on all ODOT certified applicators; provided consultation to ODOT office and field personnel as needed; conducted Sprayer Equipment inspection and calibration workshops; assisted ODOT in maintaining and producing an updated AHAL; assisted ODOT in Statewide Herbicide Contract review; attended the Oklahoma Vegetation Management Association "National Southern Weeds Science" conference and the "National Roadside Vegetation Management Association" conference and included findings in Certified Training and Continuing Education Applicator Workshops; produced project progress reports; completed and produced 4 FFY 2013 comprehensive research reports; FFY 2014 comprehensive report submissions are pending.

PROPOSED ACTIVITIES FOR FFY 2015: Conduct 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 maintaining the AHAL; assist ODOT in Statewide Herbicide Contract review; attend two (2) national annual conferences; produce project progress reports; produce FFY 2015 comprehensive reports as proposed.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014 (Yr 1 of 1)	$222,167	SPR	-0-	STATE
Estimated Cost FFY 2014	$222,100	SPR	-0-	STATE
Projected Cost FFY 2015 (Yr 1 of 1)	$165,036	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: Luis Malave, ODOT Maintenance Division, 405-521-2557

2157 Herbicide Research Program

PURPOSE AND SCOPE: The objectives of this program are to 1. Evaluate new herbicide active ingredients and new generic formulations of existing active ingredients for potential integration into existing ODOT Roadside Vegetation Management (RVM) programs or inclusion in the Approved Herbicide & Adjuvant List (AHAL); 2. To evaluate new or reformulated herbicides and drift control products for their compatibility with commonly-used ODOT herbicide treatments.

ACCOMPLISHMENTS DURING FFY 2014: Completed evaluations of new and generic herbicide formulations for integration into the ODOT RVM program and implemented findings in winter training workshops, as well as, in the AHAL; completed evaluation of adjuvants and recommended herbicides for tank mix compatibility and included findings into the AHAL; constructed research test plots and completed field experiments, data collection and analysis; conducted semi-annual meeting; produced project progress reports; completed and produced FFY 2013 Annual Report; FFY 2014 Annual Report submission(s) are pending.

PROPOSED ACTIVITIES FOR FFY 2015: Continue to perform evaluations of new and generic herbicide formulations for integration into the ODOT RVM programs and implemented findings in winter training workshops; complete evaluation of adjuvants and recommended herbicides for tank mix compatibility and included findings into the AHAL; pending weather conditions, construct research test plots and complete field experiments, data collection and analysis and collect digital photographs of each plot treatment; produce project progress reports; produce FFY 2015 Annual Reports as proposed.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014 (Yr 1 of 1)	$76,036	SPR	-0-	STATE
Estimated Cost FFY 2014	$76,000	SPR	-0-	STATE
Projected Cost FFY 2015 (Yr 1 of 1)	$59,457	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: Luis Malave, ODOT Maintenance Division, 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 2014: Continued support of the Oklahoma Transportation Center (OkTC) and the Southern Plains Transportation Center (SPTC); participated in board and committee meetings; participated and assisted in proposal review processes; continued to provide ODOT expert review of research reports; coordinated research project meetings; continued to provide ODOT with project progress reports, Annual Reports, as well as, draft and Final Reports for 2 of 5 jointly funded research projects; Final Reports for the remaining 3 research projects are pending.

ODOT has approved no cost time extensions for continued project operations and the completion of the Final Reports.

PROPOSED ACTIVITIES FOR FFY 2015: None.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014	$302,472	SPR	-0-	STATE
Estimated Cost FFY 2014	$302,470	SPR	-0-	STATE
Projected Cost FFY 2015	$-0-	SPR	-0-	STATE

CONTACT INFORMATION

SPTC Director: Musharraf Zaman, 405-325-2626

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

2160(B) Southern Plains Transportation Center (SPTC)

PURPOSE AND SCOPE: 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 2014: Developed an RFP that provides opportunity for the SPTC consortium members and other academic institutions in Region 6 to propose innovative, cost-effective and implementable solutions to pressing transportation and freight infrastructure problems; developed a competitive and objective process for the review of the proposals; initiated the proposal(s) review process; initiated the Transportation Regional Internship Program (TRIP); started the planning of the first Regional Transportation-Climate Summit; began the identification of low cost and effective outreach activities; began the establishment a functional website; prepared an efficient communication method with consortium partners and Stakeholders; submitted progress report to RITA.

PROPOSED ACTIVITIES FOR FFY 2015: Select proposals submitted in response to SPTC's Request for Proposal SPTC 14.2; conduct research through the SPTC Work Program which addresses ODOT's transportation research needs; supply matching funds for other SPTC activities: workforce development, outreach, Center support, experiential learning, workforce symposium, student competition, student internship, communications, and technology transfer.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014	$1,000,168	SPR	-0-	STATE
Estimated Cost FFY 2014	$1,000,168	SPR	-0-	STATE
Projected Cost FFY 2015	$1,000,168	SPR	-0-	STATE

CONTACT INFORMATION

SPTC Director: Musharraf Zaman, 405-325-2626

Director of Capital Programs: John R. Bowman, 405-522-6000

2160(C) Southern Plains Transportation Center (SPTC) 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 and its stakeholders statewide. 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 SPTC intends to assist ODOT with their desire to join the Western Transportation Knowledge Network (WTKN) and initiate a tiered literature searching service. The SPTC aims to create new opportunity for ODOT by offering quality services with the goal of moving the ODOT Library to a new level, including the potential to move towards an increasingly electronic or a virtual library with time.

ACCOMPLISHMENTS DURING FFY 2014: Assisted ODOT and Langston University in the organized boxing and transport of library materials, bookshelves and equipment to the University of Oklahoma; completed the shelving of boxed library materials; provided transportation information, services and updates to ODOT and other state universities where requested and/or necessary; began a new set of procedures to enhance library services and accessibility; prepared processes to convert and implement the Paradox 10 Database System to the Library of Congress System; reproduced, bound and distributed research reports as required; retrieved new publications, reports and various documents from ODOT for Library inclusion when necessary; distributed and delivered documents when requested; produced progress reports; FFY 2014 Annual Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2015: Conduct an audit of past accomplishments of the library in order to establish baselines for measuring future impacts which will be used to track progress as the library moves to a new phase in providing services; join the Western Transportation Knowledge Network (WTKN) of Libraries; coordinate printing of ODOT reports and other pertinent documents with outside vendors of ODOT's choice; use the EOS System to complete the cataloging process; conduct literature and database searches; provide traditional services such as maintaining records and using a tracking system for borrowed materials; form a Library Advisory Committee; produce project progress reports; prepare and submit FFY 2015 Annual Report.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014	$74,984	SPR	-0-	STATE
Estimated Cost FFY 2014	$74,980	SPR	-0-	STATE
Projected Cost FFY 2015	$149,803	SPR	-0-	STATE

CONTACT INFORMATION

SPTC Director: Musharraf Zaman, 405-325-2626

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

2200 Instrumented Pavement Construction - Phase 2

PURPOSE AND SCOPE: Conduct instrumented pavement research to collect and analyze mechanistic-empirical pavement design data on I-35 in McClain County, Oklahoma in an accelerated manner. Field Division 3 will construct an 800' flexible pavement test section. The National Center for Asphalt Technology (NCAT) will purchase equipment and install pavement monitoring instrumentation of test section. The University of Oklahoma (OU) will conduct monitoring and modeling of the test section over a five year period.

ACCOMPLISHMENTS DURING FFY 2014: Continued weekly downloading and processing of traffic data; continued quarterly field testing and processing of data; continue to update rut prediction models and compare predicted and measured ruts; continued to perform distress modeling using MEPDG software; collection of block samples, cores and laboratory testing is pending; performance of forensic investigations through trenching operations is pending; produced project progress reports; submitted FFY 2013 Annual Report; Final Report submission is pending.

ODOT has approved a no cost time extension for continued project operations and the completion of the Final Report.

PROPOSED ACTIVITIES FOR FFY 2015: None.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014 (Yr 2 of 2)	$259,052	SPR	-0-	STATE
Estimated Cost FFY 2014	$259,000	SPR	-0-	STATE
Projected Cost FFY 2015	$-0-	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Musharraf Zaman, University of Oklahoma, 405-325-2626

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

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

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, it would be beneficial for Oklahoma to extend 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 2014: **Phase 2** - Continued to monitor instrumented CRCP pavement section and collect data; continued to compare DARWin-ME predicted performance vs. actual field performance; completed investigations of DARWin-ME adjustments for local calibration factors; completed different curing method investigations of curling and warping impact of concrete pavements; completed Oklahoma pavement mixture characterizations; produced project progress reports; submitted FFY 2013 Annual Report; FFY 2014 Final Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2015: **Phase 3** - Collect Information and select new road sections from the Oklahoma LTPP and PMS databases; determine input strategies; continue to monitor the I-44 road section in Tulsa, OK.; perform local calibration of the MEPDG; produce project progress reports; prepare and submit FFY 2015 Annual Report.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014 (Yr 3 of 3)	$106,702	SPR	-0-	STATE
Estimated Cost FFY 2014	$106,700	SPR	-0-	STATE
Projected Cost FFY 2015 (Yr 1 of 2)	$94,915	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: Jeff Dean, ODOT Pavement Design Engineer, 405-522-0988

2227 Applied Approach Slab Settlement Research, Design/Construction

PURPOSE AND SCOPE: Approach slab settlement is a recurring problem in Oklahoma, resulting in countless repair efforts and utilizing limited labor and dollars. Substantial research has been conducted on the mechanisms involved with bridge approach embankment settlement both nationally and locally. Further research is needed to validate the design and construction procedures currently being used for bridge approach slabs in Oklahoma. An effort is needed to identify lessons learned and the determine ways in which ODOT is not applying state of the practice in design or construction of approach slabs. Proposed research for this project includes performing a thorough literature search in addition to surveying other state DOTs about how they have dealt with bridge approach slab settlement issues and to investigate the problems associated with settling of bridge approach slabs in Oklahoma. With assistance from ODOT personnel, a select number of problem bridge approach slabs will be investigated from design through the construction practices used to complete the approach slab construction. From these findings, the researcher will provide ODOT with the state of practice solutions for mitigating the potential for approach slab settlement problems both in design and construction.

ACCOMPLISHMENTS DURING FFY 2014: Submitted Final Report.

PROPOSED ACTIVITIES FOR FFY 2015: End of project.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014	-0-	SPR	-0-	STATE
Estimated Cost FFY 2014	-0-	SPR	-0-	STATE
Projected Cost FFY 2015	-0-	SPR	-0-	STATE

CONTACT INFORMATION

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

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

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

2228 Overturning Forces at Bridge Abutments and the Interaction of Horizontal Forces from Adjacent Roadways - Phase 2

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 backwall. 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 (e.g. roller bearing failure, abutments rotated, beam ends with lack of clearance to the backwall) 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. Phase 2 will address additional instrumentation for the SH-3 North Bridge, pre- and post-repair monitoring of the instruments, evaluation of the results, and recommendations. This will provide ODOT with a rare 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 2014: Installed inclinometer in the west approach embankment and monitored; installed strain gages and thermistors on the west side of the north bridge and monitored; installed tiltmeters and monitored; provided input to ODOT Bridge division personnel on repairs to the SH-3 north bridge; started pre and post repair monitoring of instrumentation; produced project progress reports; submitted FFY 2013 Annual Report; FFY 2014 Annual Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2015: Continue monitoring all installed instrumentation before and after repairs; analyze the results and evaluate the effectiveness of the repairs to the SH-3 North Bridge; provide analyses, conclusions, and recommendations in the final report; produce project progress reports; prepare and submit Final Report.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014 (Yr 1 of 2)	$80,263	SPR	-0-	STATE
Estimated Cost FFY 2014	$80,260	SPR	-0-	STATE
Projected Cost FFY 2015 (Yr 2 of 2)	$52,135	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Kanthasamy Muraleetharan, 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 the PI 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 2014: Investigated a new coating system by which a silane treatment is applied first, followed by a subsequent epoxy based flood coat covered in sand; increased inspections of additional In-Service silane coated bridge decks; investigated the service life of long-lasting silane coatings in greater detail; produced project progress reports; FFY 2014 Annual Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2015: Complete investigation of new silane treatment coating system; continue heightened inspections of additional In-Service silane coated bridge decks; proceed with and complete investigations of long-lasting silane coatings service life; produce project progress reports; prepare and submit Final Report.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014 (Yr 1 of 2)	$73,323	SPR	-0-	STATE
Estimated Cost FFY 2014	$73,300	SPR	-0-	STATE
Projected Cost FFY 2015 (Yr 2 of 2)	$75,259	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

2231 Stainless Steel Reinforcement as a Replacement for Epoxy Coated Steel in Bridge Decks

PURPOSE AND SCOPE: Corrosion of reinforcing steel is a primary cause of bridge deck deterioration. Epoxy coatings have been used since the 1980s to protect reinforcing steel from penetration of de-icing salts and anti-icing chemicals and delay the onset of corrosion. However, epoxy coatings are imperfect and defects allow intrusion of corrosive salts and chemicals. Stainless steel reinforcing has emerged as one alternative to epoxy coated steel but it is substantially more expensive. Little is known about the time to corrosion for stainless steel reinforcing as compared to epoxy coated reinforcing. Research is also needed to quantify the costs and benefits of using stainless steel reinforcement as a replacement for epoxy coated steel in conventional bridge construction. This study will compare the basic performance of stainless steel, epoxy coated, and other commonly used bridge deck reinforcing steels. The researcher will perform a thorough life cycle cost analysis of stainless steel reinforcement and identify when it is cost effective to use in bridge construction. The study will also document the construction of a specific bridge using stainless steel deck reinforcement.

ACCOMPLISHMENTS DURING FFY 2014: Submitted Final Report.

PROPOSED ACTIVITIES FOR FFY 2015: End of project.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014	-0-	SPR	-0-	STATE
Estimated Cost FFY 2014	-0-	SPR	-0-	STATE
Projected Cost FFY 2015	-0-	SPR	-0-	STATE

CONTACT INFORMATION

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

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

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

2235 Distress Modeling for DARWin-ME - Phase 1

PURPOSE AND SCOPE: The objective of this study will be to investigate data needs for distress models in the new DARWin-ME, based on past ODOT research work, to establish a workflow in using local level data sets on cracking, rutting, and roughness for DARWin-ME prediction models, and to assist ODOT in implementing DARWin-ME in the next decade as part of ODOT long-term plan in studying and deploying DARWin-ME in a production environment. The PI will provide an assessment of the results of this study which should include expected benefits and action needed for successful implementation, draft specifications, if applicable, with final recommended implementation activities, methods or schedules to meet ODOT goals. Specifically, toward the end of the research, the research team shall provide four day training to ODOT pavement design staff on DARWin-ME basics, data inputs, model calibrations, and sample runs of pavement design and analysis. Results of this research would result in documentation and technical procedure on using ODOT historical distress and roughness data bases for DARWin-ME implementation. This step is critical in ODOT's effort to use the next-generation design software for pavement engineering in Oklahoma.

ACCOMPLISHMENTS DURING FFY 2014: Submitted Final Report.

PROPOSED ACTIVITIES FOR FFY 2015: End of project.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014	-0-	SPR	-0-	STATE
Estimated Cost FFY 2014	-0-	SPR	-0-	STATE
Projected Cost FFY 2015	-0-	SPR	-0-	STATE

CONTACT INFORMATION

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

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

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

2236 Drying Shrinkage Problems in High PI Subgrade Soils

PURPOSE AND SCOPE: Longitudinal cracking in pavements due to drying shrinkage of high PI subgrade clays has been a major problem in Oklahoma. These cracks occur close to the shoulder of the pavement where the climate plays a significant role in terms of changes in water content (suction). This research project will evaluate the current Enhanced Integrated Climatic Model (EICM) of the Mechanistic-Empirical Pavement Design Guide (MEPDG) for analyzing the moisture regimes underneath the pavement. The formations and network of the shrinkage cracks will be investigated in the light of unsaturated soil mechanics. The study will include laboratory soil testing, field forensic investigation of problem sites, and modeling. The research will lead to practical analyses and recommendations for design of pavements on potentially shrinking clay soils.

ACCOMPLISHMENTS DURING FFY 2014: Submitted Final Report.

PROPOSED ACTIVITIES FOR FFY 2015: End of project.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014	-0-	SPR	-0-	STATE
Estimated Cost FFY 2014	-0	SPR	-0-	STATE
Projected Cost FFY 2015	-0-	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

2237 Reduction in Storm Water Runoff

PURPOSE AND SCOPE: The proposed Storm water Rules recently passed by the US EPA are expected to mandate construction sites to meet a numeric standard for turbidity in storm water runoff from rainfall events less than a 2-year, 24-hour storm. Due to the high clay content in many Oklahoma soils, most construction sites in Oklahoma, including highway construction sites, will almost assuredly be required to employ chemical addition to induce flocculation to decrease their runoff turbidity to the required level. The proposed project address this problem by continued development and demonstration of a system for turbidity control at highway construction sites in Oklahoma that is effective, predictable, and practical. Because of the high clay content of many Oklahoma soils, construction sites will most likely not be able to reach the new US EPA turbidity standard without the use of this type of system. Results of this project will lead to the implementation of this new technology that will result in compliance with the new US EPA Construction Effluent Limitation Guidelines (ELG) for turbidity. This has the potential to result in fewer penalties and fines for construction activities. In addition, this technology allows construction activities to meet the Clean Water Act requirements and protect our valuable water resources.

ACCOMPLISHMENTS DURING FFY 2014: Submitted Final Report.

PROPOSED ACTIVITIES FOR FFY 2015: End of project.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014	-0-	SPR	-0-	STATE
Estimated Cost FFY 2014	-0-	SPR	-0-	STATE
Projected Cost FFY 2015	-0-	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Jason Vogel, Oklahoma State University, 405-744-7532

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

Project Sponsor: Michelle Dolan, ODOT Environmental Storm Water Manager, 405-521-6771

2239 Develop Draft Chip Seal Cover Aggregate Specifications Based on AIMS Test Results

PURPOSE AND SCOPE: The proposed study seeks to improve ODOT chip seal design and performance through introducing new criteria for the selection of cover aggregate and binder. These criteria exploit the recent technological advances in the characterization of aggregate shape and texture as well as aggregate-binder compatibility in a creative way. The proposed work will include aggregate index properties obtained from the Aggregate Imaging System (AIMS) and performance-based uniformity coefficients (PUC) in tweaking ODOT chip seal cover aggregate specifications and the surface free energy (compatibility ratio) approach in evaluating the aggregate-binder compatibility. Moreover, the chip seal construction practice followed by different ODOT Maintenance Divisions will be documented and the best practice will be identified. The proposed study involves both laboratory testing and construction and performance evaluation of chip seal test sections and has three objectives: 1. To evaluate the shape and texture-related index properties, as well as durability, of commonly used cover aggregates in chip seal programs in Oklahoma, and provide a methodology for inclusion as a metric in future chip seal specifications; 2. To quantify how well the newly developed performance-based uniformity coefficient (PUC) correlate with chip seal performance in Oklahoma, and if it should be incorporated into state chip seal specifications; 3. To generate aggregate-binder compatibility data, based on the surface free energy (compatibility ratio) approach, for commonly used aggregates and asphalt emulsion binders in Oklahoma, which will be a useful resource for ODOT maintenance divisions.

ACCOMPLISHMENTS DURING FFY 2014: Submitted Final Report.

PROPOSED ACTIVITIES FOR FFY 2015: End of project.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014	-0-	SPR	-0-	STATE
Estimated Cost FFY 2014	-0-	SPR	-0-	STATE
Projected Cost FFY 2015	-0-	SPR	-0-	STATE

CONTACT INFORMATION

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

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

Project Sponsor: Scott Seiter, ODOT Assist Materials Division Engineer, 405-521-2677

2240 Portable Weigh-In-Motion (WIM) for Pavement Design - Phase 2

PURPOSE AND SCOPE: Keeping the public's roads, highways and bridges in good condition is not only vital to safety, economical productivity and success, but also necessary to save billions of dollars used for road repair and replacement each year. Road deterioration depends on many factors: road characteristics (pavement materials and thickness); weather conditions (temperature cycles and precipitation); and dynamic interaction between vehicle and road (speed, suspension characteristics, and surface roughness), in addition to loads distinguished by axles spacing, tire pressure, and weight per axle. Of these, vehicle axle weight proves to be the factor that most extremely increases road wear. Therefore, both appropriately weighted and overweight trucks are chiefly responsible for the rapid deterioration of roads. Reducing the average weight of truck axles would substantially reduce the rate of pavement wear. Analyzing historical WIM data collected by ODOT to aid in the improvement of pavement design, and collecting weight data at strategic temporary sites using the OTC funded portable system could accomplish this.

ACCOMPLISHMENTS DURING FFY 2014: Submitted Draft Final Report.

PROPOSED ACTIVITIES FOR FFY 2015: End of project.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014	-0-	SPR	-0-	STATE
Estimated Cost FFY 2014	-0-	SPR	-0-	STATE
Projected Cost FFY 2015	-0-	SPR	-0-	STATE

CONTACT INFORMATION

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

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

Project Sponsor: Daryl Johnson, ODOT Traffic Analyst Engineer, 405-52-6376

2241 Real-Time Monitoring of Slope Stability in Eastern Oklahoma

PURPOSE AND SCOPE: This research project is focused on landslides occurring in the eastern portion of Oklahoma with the idea that this research will be continued to encompass all of Oklahoma, as landslides occur in almost every division of the state. Even with well-established slope stability codes (i.e., Corps of Engineers EM 1110-2-1902 and Federal Highway Administration FHWA-SA-94-005), there is currently a lack of technical understanding about why certain soil deposits and road cuts fail at commonly used slope geometries. Several roadway embankments and road cuts in Oklahoma failed in the past few years for various reasons, rendering many miles of high vehicle traffic roadways inoperable or severely impaired for months, years or in some cases, permanently. The goals of this research project are to assist the state in understanding, recognizing, and addressing landslide prone areas by creating a functional landslide hazard map that may be used by ODOT and others when building and maintaining infrastructure to predict and prevent future transportation corridor blockages.

ACCOMPLISHMENTS DURING FFY 2014: Submitted Final Report.

PROPOSED ACTIVITIES FOR FFY 2015: End of project.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014	-0-	SPR	-0-	STATE
Estimated Cost FFY 2014	-0-	SPR	-0-	STATE
Projected Cost FFY 2015	-0-	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Amy Cerato, University of Oklahoma, 405-325-5625

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

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

2243 Recommended Fatigue Test for ODOT

PURPOSE AND SCOPE: Fatigue cracking and rutting are two dominant distresses in flexible pavements. 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 2014: Continued literature review; continued modified and unmodified asphalt mix selection(s) and laboratory testing, including various fatigue testing; prepared cylindrical samples of asphalt mixes; continued analysis of data using mechanistic framework for laboratory testing; continued to compare test results and rank asphalt mixes; performed analysis of repeatability and variability of selected test methods; proposed test methods for screening mixes for fatigue; recommended appropriate equipment purchase for ODOT; produced project progress reports; submitted FFY 2013 Annual Report; FFY 2014 Annual Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2015: Continue literature review; select, collect and perform laboratory testing of WMA from plant with chemical additive; continue laboratory testing of asphalt mixes; continue to prepare cylindrical samples for testing and analysis; continue analysis of data using mechanistic framework for laboratory testing; continue to compare test results and rank asphalt mixes; continue to perform analysis of repeatability and variability of selected test methods; perform comparison of equipment test results; develop test protocol and method for equipment purchased for ODOT; conduct fatigue test training workshop; produce project progress reports; prepare and submit Final Report.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014 (Yr 2 of 3)	$225,778	SPR	-0-	STATE
Estimated Cost FFY 2014	$225,700	SPR	-0-	STATE
Projected Cost FFY 2015 (Yr 3 of 3)	$100,000	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Musharraf Zaman, 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

2245 Fatigue Performance of Asphalt Pavements Containing RAS and RAP

PURPOSE AND SCOPE: Recycled asphalt shingles (RAS) and reclaimed asphalt pavements (RAP) are increasingly used in hot mix asphalt (HMA) for environmental, economic and other reasons. Although previous studies have shown improved resistance to rutting and moisture damage, contradictory results have been reported on fatigue life and thermal cracking of pavements constructed with mixes containing RAS and RAP. Several states have specifications for design of mixes containing RAS and RAP, but such specifications are not yet developed by the Oklahoma Department of Transportation (ODOT). The proposed study seeks to evaluate the fatigue performance of HMA mixes containing RAS and RAP. The primary objectives of this study are: (i) to generate laboratory data on fatigue performance or fatigue life of HMA mixes containing RAS and RAP in Oklahoma; and (ii) to make recommendations on guidelines/special provisions for the design of HMA containing RAS and RAP.

ACCOMPLISHMENTS DURING FFY 2014: Continued literature review; continued to collect bulk materials and samples; continued tests on collected materials; continued volumetric mix designs; prepared new cylindrical and beam samples; continued various laboratory performance tests; performed analysis of test data; continued to compare fatigue and low temperature cracking performance; continued to perform analysis of repeatability and variability of selected test methods; suggested recommendations for guidelines for incorporation of RAS and RAP in HMA; outreach and technology transfer workshop is pending; produced project progress reports; submitted FFY 2013 Annual Report; Final Report submission is pending.

ODOT has approved a no cost time extension for continued project operations and the completion of the Final Report.

PROPOSED ACTIVITIES FOR FFY 2015: None.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014 (Yr 2 of 2)	$107,832	SPR	-0-	STATE
Estimated Cost FFY 2014	$107,800	SPR	-0-	STATE
Projected Cost FFY 2015	-0-	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Musharraf Zaman, 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

2246 Evaluation of Performance of Asphalt Pavements Constructed Using Intelligent Compaction Techniques

PURPOSE AND SCOPE: Improving the quality of asphalt pavements during construction can greatly enhance performance and longevity. Lack of adequate tools to determine the quality of compaction of the entire pavement in a non-destructive manner is a leading factor in the early deterioration of pavements. Tools that can estimate the quality in real-time can help avoid over/under-compaction during the construction process. Improved quality of the roads can minimize rutting, cracking and other forms of pavement distresses, while improving long-term performance of the pavement. Several original equipment manufacturers (OEMs) have proposed Intelligent Compaction (IC) as a means of achieving uniformity in the compaction of soil subgrades and asphalt pavements. Over the past nine years, the lead researchers of this proposal have developed the Intelligent Asphalt Compaction Analyzer (IACA) technology to estimate the density and stiffness (dynamic modulus, $|E^*|$) of an asphalt pavement during its construction. The technology has been extended to estimate the resilient modulus (M_R) of stabilized subgrades that form the base of asphalt pavements. Improvement in the quality obtained through the use of IACA during the construction of asphalt pavements, as well as the stabilized subgrades that form the base of these pavements, will be demonstrated and compared to conventional construction practices under this study.

ACCOMPLISHMENTS DURING FFY 2014: Selected site to demonstrate the use of IACA technology during compaction; collected bulk samples and perform laboratory testing and soil characterization; performed 500lb load cell testing on bulk samples; calibrated and performed field demonstration of IACA; performed evaluations of constructed pavement sections; performed compaction quality analysis; documented findings and results of the demonstration; produced project progress reports; submitted FFY 2013 Annual Report; Final Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2015: None.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014 (Yr 2 of 2)	$119,417	SPR	-0-	STATE
Estimated Cost FFY 2014	$119,400	SPR	-0-	STATE
Projected Cost FFY 2015	-0-	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Sesh Commuri, University of Oklahoma, 405-325-4302

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

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

2247 Energy Dissipation in Twelve-Foot Broken-Back Culverts Using Laboratory Models

PURPOSE AND SCOPE: To develop a methodology to analyze broken-back culverts in Oklahoma such that the energy is mostly dissipated within the culverts or downstream of the culverts in order to minimize the degradation downstream. This project will study dissipation efficiency and appurtenances design for 12 foot drop using laboratory scale modeling techniques that may result in effective energy dissipation and consequently minimize scour downstream of broken-back culverts, thus, reducing construction and rehabilitation costs of culverts in Oklahoma.

ACCOMPLISHMENTS DURING FFY 2014: Submitted Final Report.

PROPOSED ACTIVITIES FOR FFY 2015: End of project.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014	-0-	SPR	-0-	STATE
Estimated Cost FFY 2014	-0-	SPR	-0-	STATE
Projected Cost FFY 2015	-0-	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Avdhesh Tyagi, Oklahoma State University, 405-744-9307

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

Project Sponsor: Bob Rusch, ODOT Bridge Division Engineer, 405-521-2606

2248 Creep Compliance and Percent Recovery of Oklahoma Certified Binders Using the Multiple Stress Creep Recovery (MSCR) Method

PURPOSE AND SCOPE: To enhance the durability and strength of asphalt concrete (AC) pavements in order to sustain high traffic volume, coupled with heavier loads and extreme weather conditions, asphalt industries in the United States and around the world are increasingly using polymer-modified binders. The recently released Multi Stress Creep Recovery (MSCR) test (AASHTO TP 70) on short-term aged binders can better relate the predicted laboratory-based high temperature properties of asphalt binders (virgin and recovered) to actual rutting performance of in-service pavements. The objectives of this research are: (1) to evaluate the creep compliance and percent recovery of various asphalt binders used by the Oklahoma Department of Transportation (ODOT); and (2) to determine the feasibility of the adoption of the MSCR test by ODOT. If recommended, specific guidelines (MSCR letter grade and acceptable minimum percentage of elastic recovery) will be developed for use by ODOT. Furthermore, this study will evaluate binders recovered from reclaimed asphalt pavement (RAP) materials and assess the presence of polymer through the percent recovery of the MSCR test method.

ACCOMPLISHMENTS DURING FFY 2014: Continued literature search; continued selection of binders and sources; continued to recover binders from RAP using Rotary Evaporator Method; continued MSCR testing and Superpave grading; evaluated how climatic data can be used to select MSCR grades; developed a MSCR database; developed MSCR% Recovery Guideline, non-recoverable compliance for polymer modified binders; continued to generate statistical analysis of MSCR data; produced project progress reports; submitted FFY 2013 Annual Report; Final Report submission is pending.

ODOT has approved a no cost time extension for continued project operations and the completion of the Final Report.

PROPOSED ACTIVITIES FOR FFY 2015: None.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014 (Yr 2 of 2)	$99,285	SPR	-0-	STATE
Estimated Cost FFY 2014	$99,200	SPR	-0-	STATE
Projected Cost FFY 2015	-0-	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Musharraf Zaman, 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

2249 Black Ice Detection and Road Closure Control System for Oklahoma

PURPOSE AND SCOPE: Black ice is a thin coating of glazed ice on roadways or other transportation surfaces and has a similar appearance of a wet black pavement road. Black ice often forms during calm weather and is highly transparent and thus difficult to see. Black ice usually forms at night or early morning, first on bridges and overpasses, then on the roads as temperatures continue to drop. Black ice is especially hazardous and is a factor in many auto accidents, some of which are deadly, each year in Oklahoma and many other states. Unfortunately, the current static road-side warning signs (such as “Ice May Form on Bridge”) simply do not draw enough attention from drivers. Objectives of this study include, 1) the development of a decision support system (DSS) to predict and detect black ice formation and pin point dangerous road sections, 2) the development of an Oklahoma Black Ice Database and Black Ice Risk Index Prediction and 3) the development of a functionally competent and economically feasible sensing system for black-ice detection by using arrays of MEMS temperature and humidity sensors, together with existing road monitoring cameras.

ACCOMPLISHMENTS DURING FFY 2014: Continued to perform literature search; proceeded with black ice risk index prediction; completed GIS database for ice emergencies; developed GIS-based user interface; completed the development of low-cost ice detection sensor system; completed the development of sensing and remote warning system; produced project progress reports; submitted FFY 2013 Annual Report; Final Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2015: None.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014 (Yr 2 of 2)	$112,997	SPR	-0-	STATE
Estimated Cost FFY 2014	$112,900	SPR	-0-	STATE
Projected Cost FFY 2015	-0-	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Tieming Liu, Oklahoma State University, 405-744-9871

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

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

2250 The Study of Vehicle Classification Equipment with Solutions to Improve Accuracy in Oklahoma - Phase 2

PURPOSE AND SCOPE: The Federal Highway Administration (FHWA) and Oklahoma Department of Transportation (ODOT) are unremittingly interested in ever-evolving vehicle classification systems. More accurate systems are essential for suitable roadway design and to ensure adequate capacity, surface durability, and commuter safety for all motorists. Proper Vehicle Classification is essential for proper roadway planning and design. Phase 2 of this study extensively examines vehicle misclassification made by ODOT AVC and WIM statewide systems and attempts to determine the causes for such errors. Among other benefits, the results of Phase 2 include improved vehicle classification, accurate traffic flows and vehicle type distribution data, enhanced roadway design and reduced construction costs and optimal algorithm (e.g., axle spacing) for statewide AVC and WIM deployments.

ACCOMPLISHMENTS DURING FFY 2014: Developed ground truth system based on continuous video recording; investigated optimal vehicle classification algorithm (e.g., axle spacing); processed video recording against classification AVC and WIM data; performed statistical analyses and modeling of the classification data; produced project progress reports; submitted FFY 2013 Annual Report; Final Report submission is pending.

ODOT has approved a no cost time extension for continued project operations and the completion of the Final Report.

PROPOSED ACTIVITIES FOR FFY 2015: None.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014 (Yr 1 of 1)	$88,875	SPR	-0-	STATE
Estimated Cost FFY 2014	$88,800	SPR	-0-	STATE
Projected Cost FFY 2015	-0-	SPR	-0-	STATE

CONTACT INFORMATION

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

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

Project Sponsor: Daryl Johnson, ODOT Traffic Analyst Engineer, 405-522-6376

2251 3D Laser Imaging for ODOT Interstate Network at True 1-mm Resolution

PURPOSE AND SCOPE: Pavement data collection technologies have improved gradually in the last few decades. Particularly after steady investments in pavement profile measurements since the 1980's, roughness, rutting, and macro-texture data can be inexpensively obtained at acceptable accuracy levels. Due to sensor and computing limitations and inadequate research funding, the hardware and software necessary to automatically obtain pavement cracking and other distress data at acceptable precision and bias levels have not been realized. With 3D image data representing actual pavement surface at full-lane coverage, it is possible to create a true representation of pavement surface at 1mm resolution which in turn can be used as input data for various condition evaluations and safety analysis. Results of this research would result in documentation and technical procedure on using the collected 3D pavement data of an ODOT network and the provided analysis software programs. Pavement management at ODOT will have a virtual tool to examine pavement surface characteristics through the provided software solutions to fulfill both data needs at network level and project level.

ACCOMPLISHMENTS DURING FFY 2014: Continued to generate solutions for automated condition survey; continued to prepare software solutions to identify pavement surface safety problems; conducted and completed data analysis of flexible and rigid pavements using 3D surface data; produced project progress reports; submitted FFY 2013 Annual Report; Final Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2015: None.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014 (Yr 2 of 2)	$117,003	SPR	-0-	STATE
Estimated Cost FFY 2014	$117,000	SPR	-0-	STATE
Projected Cost FFY 2015	-0-	SPR	-0-	STATE

CONTACT INFORMATION

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

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

Project Sponsor: Matthew Swift, ODOT Pavement Management Engineer, 405-522-5904

2252 Development of Inexpensive Vehicle Sensor Node System for Volume, Turn Movement and Collision Avoidance - Phase 2

PURPOSE AND SCOPE: The Oklahoma Department of Transportation (ODOT), not unlike DOTs in other states, is responsible for collecting temporary vehicle counts from thousands of various locations throughout the state each year. The primary device currently in use for collecting temporary vehicle count information employs one (or two) pneumatic tube(s) (hoses) placed on the road surface. Algorithms are implemented to count passing vehicles. When two tubes are used, vehicle classification is possible. The purpose is to develop the hardware and software of a road-based wireless sensor node for temporary traffic data collection. This system will replace the antiquated pneumatic tube devices currently in use. The goal of the proposed project is to develop an integrated system of sensors, communication systems, and an algorithm to support temporary site deployments for collecting traffic information, including accurate vehicle count and classification.

ACCOMPLISHMENTS DURING FFY 2014: **Phase 1** - Developed software algorithms to configure one vehicle node for vehicle count; developed communication protocol to maximize sensor node operational longevity; developed algorithms to perform sensor node auto calibration; developed algorithms for deployment automation and self-configuration of sensor nodes; fabricated 32 sensor nodes and two base stations to instrument an intersection with four lanes in each direction; performed field-testing of the overall system on at least one intersection; validated the operability and accuracy of the system and its viability for preventing collisions at intersections; produced project progress reports; FFY 2014 Annual Report submission is pending. ODOT has approved a no cost time extension for continued project operations and the completion of the FFY 2014 Annual Report.

PROPOSED ACTIVITIES FOR FFY 2015: **Phase 2 -** Develop embedded software code to collect vehicle magnetic signature; conduct testing of the developed system (hardware-software) for various implementation; Develop Matlab codes for offline vehicle signatures data analysis; Develop software code for real-time vehicle volume detection; Develop software code for real-time vehicle speed calculation and length estimation; Develop software code for real-time vehicle class identification; Incorporate multiple magnetometer chips and developing diversity algorithms; Develop software code for weather condition sensing; Conduct real field-testing and accuracy validation of the overall developed system; Finalize and fabricate the final system including the enclosure; produce project progress reports; prepare and submit Final Report.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014 (Yr 1 of 1)	$102,021	SPR	-0-	STATE
Estimated Cost FFY 2014	$102,000	SPR	-0-	STATE
Projected Cost FFY 2015 (Yr 1 of 1)	$76,220	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Hazem Refai, 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 2014: Started literature review; began developing tests to evaluate the constructability of optimized graded concrete; performed laboratory testing to determine aggregate gradations; monitored contractor use of optimized graded concrete for ODOT; produced project progress reports; FFY 2014 Annual Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2015: Continue to develop test methods to evaluate the constructability of optimized graded concrete; continue laboratory testing to determine aggregate gradations; continue to monitor contractor use and implementation of optimized graded concrete for ODOT; create a new and easily implementable concrete gradation specification for ODOT; produce project progress reports; prepare and submit Final Report

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014 (Yr 1 of 2)	$105,835	SPR	-0-	STATE
Estimated Cost FFY 2014	$105,800	SPR	-0-	STATE
Projected Cost FFY 2015 (Yr 2 of 2)	$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: Kenny Seward, ODOT Structural Materials Engineer, 405-522-4999

2254 Energy Dissipation in 30-Foot Broken-Back Culverts Using Laboratory Models

PURPOSE AND SCOPE: To develop a methodology to analyze broken-back culverts in Oklahoma such that the energy is mostly dissipated within the culverts or downstream of the culverts in order to minimize the degradation downstream. This project will study dissipation efficiency and appurtenances design for 30 foot drop using laboratory scale modeling techniques that may result in effective energy dissipation and consequently minimize scour downstream of broken-back culverts, thus, reducing construction and rehabilitation costs of culverts in Oklahoma.

ACCOMPLISHMENTS DURING FFY 2014: Constructed a laboratory scale model for 150 feet long, two barrels of 10 X 10 feet and a broken-back culvert with vertical drop of 30 feet and conducted a detailed review of literature; simulated different flow conditions for 0.8, 1.0 and 1.2 times the hydraulic head in the scale model; evaluated the energy dissipation between upstream and downstream ends of the broken-back culvert with sills and/or friction blocks of different sizes and shapes; refined the sill design for easy drainage of water from the broken-back culvert; observed, in physical experiments, the efficiency of hydraulic jump with and without friction blocks between upstream and downstream ends of the culvert and the location of hydraulic jump from the toe of the drop in the culvert; produced project progress reports; Final Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2015: None.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014 (Yr 1 of 1)	$94,802	SPR	-0-	STATE
Estimated Cost FFY 2014	$94,800	SPR	-0-	STATE
Projected Cost FFY 2015	-0-	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Avdhesh Tyagi, Oklahoma State University, 405-744-9307

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

Project Sponsor: Bob Rusch, ODOT Bridge Division Engineer, 405-521-2606

2255 Regional Economic Impact Study for the McClellan-Kerr Arkansas River Navigation System (MKARNS)

PURPOSE AND SCOPE: With the growing backlog of critical maintenance and the decreased funding of Federal appropriations, it is imperative to maintain the infrastructure designed to move freight through the McClellan-Kerr Arkansas River Navigation System (MKARNS) for waterborne commerce, as well as provide hydropower generation, recreation, water supply, fish and wildlife and flood risk management for the State of Oklahoma. Among other objectives, the main objective of this study is to identify, evaluate, and measure—as comprehensively as possible—the full extent of regional economic benefits/impacts that are expected to accrue to the citizens of Oklahoma and Arkansas, as well as, other significantly affected areas of the country (e.g., the States of Kansas and Missouri) from operational activities of the MKARNS (waterborne commerce, hydropower, water supply, flood control, game and wildlife management, and recreation). The results of this project will lead to the implementation of a "state-of-the-art" regional economic impact assessment tool (the MKARNS-MRVIO Calculator) that can evaluate regional economic impacts due to all types of water resource investments (i.e., navigation, flood control, recreation, etc.) and is tailored especially for the MKARNS and its regional economies. The "Calculator" will be designed and the user guides will be written for use by non-economic experts within the Oklahoma Department of Transportation (ODOT). It is expected that the MKARNS-MRVIO Calculator will be able to be used by ODOT personnel responsible for the development of water resources in the State of Oklahoma

ACCOMPLISHMENTS DURING FFY 2014: Performed literature search; constructed and compiled a MKARNS-MRIO model; generated MKARNS-RNWRIP/MRVIO spreadsheet calculator; completed regional economic development analyses of MKARNS Water resources investment scenarios; produced project progress reports; Final Report submission is pending.

ODOT has approved a no cost time extension for continued project operations and the completion of the Final Report.

PROPOSED ACTIVITIES FOR FFY 2015: None.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2014 (Yr 1 of 1)	$60,188	SPR	-0-	STATE
Estimated Cost FFY 2014	$60,100	SPR	-0-	STATE
Projected Cost FFY 2015	-0-	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Dennis Robinson, University of Arkansas, 501-569-8519

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

Project Sponsor: Deidre Smith, ODOT Waterways Branch Manager, 918-270-5804

2256 Understanding the Behavior of Prestressed 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 prestressed 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 prestress transfer. The results of this research would be used to evaluate the condition and safety of prestressed 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 2014: Transported 2 prestressed concrete girders to the Fears lab; prepared and load tested 1 girder with no deck slab included; performed analysis of composite action, stresses, strains and shear obtained from load testing; performed literature searches on bond transfer, airy stress function and dynamics; extracted nonlinear backbone; performed other inverse analysis; performed transfer bond parameter analysis; started numerical analysis preparations; produced project progress reports; FFY 2014 Annual Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2015: Prepare and load test remaining girder; perform analysis of composite action, stresses, strains and shear obtained from load testing; perform literature searches on bond transfer, airy stress function and dynamics; extract nonlinear backbone; perform other inverse analysis; perform transfer bond parameter analysis; continue numerical analysis; construct and perform testing of scaled composite section; produce project progress reports; prepare and submit FFY 215 Annual Report.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014 (Yr 1 of 3)	$127,339	SPR	-0-	STATE
Estimated Cost FFY 2014	$127,300	SPR	-0-	STATE
Projected Cost FFY 2015 (Yr 2 of 3)	$100,000	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Royce Floyd, 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

2257 Understanding A+B Bidding Patterns and Policy Implications for ODOT Project Lettings

PURPOSE AND SCOPE: A key challenge for Departments of Transportation around the country is to keep the cost of construction low while ensuring that projects will be completed in a timely manner. Those goals can often be conflicting. The purpose of this research project is to investigate the empirical relationship between project cost and project duration to offer recommendations to the Department of Transportation on the optimal use of time incentives in the procurement process. We will utilize program evaluation techniques to assess the performance of "incentive/disincentive" (I/D) and A+B auctions in comparison to the standard contracting low bid practice. Using our statistical knowledge and information on alternative contracting methods adopted by ODOT and other state Departments of Transportation, we will conduct economic evaluation of contracting practices.

ACCOMPLISHMENTS DURING FFY 2014: Assembled and completed the database using methodologies employed in a previous research project; prepared the database for statistical analysis; performed database empirical analysis; tabulated variables and calculated summary statistics; compared graph relationships; executed econometric analysis, formally testing hypotheses about the determinants of project length and project cost, using different empirical strategies appropriate for each specific hypothesis; produced project progress reports; Final Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2015: None.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014 (Yr 1 of 1)	$60,046	SPR	-0-	STATE
Estimated Cost FFY 2014	$60,000	SPR	-0-	STATE
Projected Cost FFY 2015	-0-	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Georgia Kosmopoulou, University of Oklahoma, 405-325-3083

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

Project Sponsor: Brian Schmitt, ODOT Office Engineer, 405-521-2625

2258 Evaluate Densifier-Over-Shotblasting (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 shotblasting, called Densifier-Over-Shotblasting (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 2014: Performed literature review; identified commonly-used aggregate sources and mix designs, including those used in pavements and bridge decks, and collected samples from each; conducted aggregate testing; conducted 2 types of accelerated polishing tests; characterized chemically-treated and non-treated aggregates; analyzed and reported laboratory test data; produced project progress reports; FFY 2014 Annual Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2015: Continue literature review; continue aggregate testing; continue accelerated polishing testing; continue characterization of chemically-treated and non-treated aggregates; continue to analyze and report laboratory test data; select pavement/bridge deck test section(s); construct and characterize test sections; conduct performance testing; analyze test section data; prepare draft specification of chemical treatment over shotblasting along with an inspector field guide; produce project progress reports; prepare and submit Final Report.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014 (Yr 1 of 2)	$117,932	SPR	-0-	STATE
Estimated Cost FFY 2014	$117,900	SPR	-0-	STATE
Projected Cost FFY 2015 (Yr 2 of 2)	$100,000	SPR	-0-	STATE

CONTACT INFORMATION

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

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

Project Sponsor: Caleb Riemer, ODOT Purcell Resident Engineer, 405-527-5569

2259 Development of a Prototype Geotechnical Report Database

PURPOSE AND SCOPE: Historical ODOT geotechnical reports are a valuable resource of information which includes borehole data, laboratory and field test data, construction and maintenance records, etc. A proper use of these data will help the design decision-making and bring significant cost saving for future ODOT projects. The current practice of geotechnical data storage is cumbersome to access by users. The ODOT geotechnical branch has been scanning and storing project reports in portable document format (PDF) since 2007, however, the process of scanning and cataloging is time consuming and labor intensive. There is an urgent need to develop a new system to allow easy data archiving and instant data access by searching the key information of projects (e.g., location, project number, etc.). The primary objective of the current proposal is to develop a proof-of-concept geotechnical report database that best fit the current need of the ODOT geotechnical branch. As a minimum, the system will feature data stemming from (1) in-house archived files, (2) in-house files currently being recorded in a quasi-automated recall-system, and (3) data provided to the department via contract services. The Department will save time and costs associated with efforts to locate archived geotechnical information. Improved record keeping and accuracy in maintaining accounts of geotechnical work previously completed will prove a cost savings while decreasing redundancy in efforts. Further, the end user will be given the alternatives of Mapping and Querying geotechnical information in a fashion that is most valuable to their own task(s)

ACCOMPLISHMENTS DURING FFY 2014: Performed literature search; investigated the current practice in other state DOTs; visited ODOT offices to learn more about the in-house resource, work procedure, and software development standards of ODOT divisions; designed geotechnical report database and ascertained its capabilities; developed a prototype ODOT geotechnical information database; produced project progress reports; project demonstration and final adjustments are pending; user manual preparation and delivery is pending; Final Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2015: None.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014 (Yr 1 of 1)	$85,366	SPR	-0-	STATE
Estimated Cost FFY 2014	$85,300	SPR	-0-	STATE
Projected Cost FFY 2015	-0-	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Xiaoming Yang, Oklahoma State University, 405-744-5223

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

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

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

PURPOSE AND SCOPE: Concrete bridge decks are typically cast upon steel or precast concrete girders. The new concrete begins to change volume which can be caused by increased or decreased temperature, and by the natural drying shrinkage of concrete. It has been suggested that the excessive deflections are caused by drying shrinkage of concrete. Newly cast concrete will shrink. When new concrete is cast atop steel girders, the shrinkage of the concrete can cause the composite beam to deflect downward. These downward deflections were attributed, in part, to concrete shrinkage. However, shrinkage is only one consideration. Other considerations can include errors in design, errors in the computation of estimated deflections, or unexpected deformations of the forms, framing systems and/or screed rails that support the bridge decks during casting. All of these factors and perhaps more should be considered in a complete and thorough investigation. This research will investigate bridges constructed in Oklahoma where concrete decks are cast atop steel girders. The research team will specifically look at bridges that have experienced problems with excessive deflection and/or poor ride quality. The proposed research will investigate the shrinkage characteristics of concrete, examine analytically the likely effects of shrinkage on composite steel girder bridges, examine experimentally the system of concrete and steel bridge beams, perform field investigations of existing bridges, and develop rationale for the cause of excessive deflections. The work plan will provide reasonable and practical solutions that can help to mitigate excessive deflections and poor ride quality.

ACCOMPLISHMENTS DURING FFY 2014: Continued literature search; began forensic investigations of known bridges; started laboratory testing on 2 concrete mixtures; began construction of a computational model to perform sensitivity analysis in bridge deflections, concrete and steel strains, and concrete and steel stresses; began identification of bridge deck shrinkage causes; began development of new construction method recommendations; produced project progress reports; Final Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2015: None.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014 (Yr 1 of 1)	$70,584	SPR	-0-	STATE
Estimated Cost FFY 2014	$20,000	SPR	-0-	STATE
Projected Cost FFY 2015	-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 Cost Analysis and Pavement 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 2014: Performed literature search; conducted review of current ODOT procedures; identified pavement groups and test sections; conducted and analyzed various field and laboratory tests; developed and constructed deterioration models; began the development of a database catalog for future calibration plan; produced project progress reports; FFY 2014 Annual Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2015: Continue literature review; continue to conduct and analyze various field and laboratory tests; continue to develop and construct deterioration models; continue development of database catalog; based on task findings, investigate the preliminary set of feasible rehabilitation treatments; produce project progress reports; prepare and submit Final Report.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014 (Yr 1 of 2)	$121,527	SPR	-0-	STATE
Estimated Cost FFY 2014	$121,500	SPR	-0-	STATE
Projected Cost FFY 2015 (Yr 2 of 2)	$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: 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 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 (PIs), 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 the ODOT goals and those of other state transportation agencies.

ACCOMPLISHMENTS DURING FFY 2014: Started literature review including survey and documentation of existing and planned GRS bridge abutment projects in Oklahoma and other states across the U.S.; participated in the selection and planning for the construction of pilot GRS bridge abutments in Oklahoma; developed and validated a numerical simulation tool for the analysis and design of the selected GRS bridge abutments; began laboratory and field tests on the backfill, subgrade soils and the geosynthetic reinforcement; began reduction and analysis of data; produced project progress reports; FFY 2014 Annual Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2015: Continue literature review; continue to participate and assist with the selection and planning for the construction of pilot GRS bridge abutments in Oklahoma; continue laboratory and field tests on the backfill, subgrade soils and the geosynthetic reinforcement; continue reduction and analysis of data; produce project progress reports; prepare and submit Final Report.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014 (Yr 1 of 3)	$85,088	SPR	-0-	STATE
Estimated Cost FFY 2014	$85,088	SPR	-0-	STATE
Projected Cost FFY 2015 (Yr 2 of 3)	$88,680	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Kianoosh Hatami, 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 2014: **Phase 1** – Prepared and submitted project progress reports; FFY 2013 Annual Report submission is pending.

ODOT participation was not part of the Phase 2 proposed portion of this study.

PROPOSED ACTIVITIES FOR FFY 2015: **Phase 3** - Analyze collected operating data to establish any operating differences between the pair of locomotives and then compare that summary analysis to Farm Rail standard locomotive operating records; perform economic analysis focusing on the cost of locomotive fuel - both diesel and CNG, the maintenance cost difference between the locomotives, the cost to Farm Rail in the difference in unscheduled maintenance – both labor and non-availability, and the incidentals supporting locomotive engine operation, i.e., engine coolant, lube oil, air and lube oil filters, etc.; compare conversion data using estimated production cost used in the Phase I analysis; produce project progress reports; prepare and submit Final Report.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2014	-0-	SPR	-0-	STATE
Estimated Cost FFY 2014	-0-	SPR	-0-	STATE
Projected Cost FFY 2015 (Yr 1 of 1)	$100,000	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 Prestressed 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 and 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 prestressing 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 2014: New project.

PROPOSED ACTIVITIES FOR FFY 2015: Perform subbase and soil characterization and validation scheme for embankment materials; formulate a PPCP design process for approach slabs; formulate a design process for soil columns and similar technologies; begin the development of design guidelines and specifications; produce project progress reports; prepare and submit FFY 2015 Annual Report.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014	-0-	SPR	-0-	STATE
Estimated Cost FFY 2014	-0-	SPR	-0-	STATE
Projected Cost FFY 2015 (Yr 1 of 2)	$98,595	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

PURPOSE AND SCOPE: The durability of concrete is widely recognized to be controlled by the ingress of water and aggressive chemicals. One way to promote long term durability of concrete is to produce a material with a low permeability so that these outside fluids cannot rapidly ingress into the concrete. The challenge has been that permeability was not measured or specified by engineers because there was not a good way to measure it. This has recently changed with the widespread introduction of the resistivity meters which are used to measure the flow of electrons through concrete. This work will aim to develop specifications for Oklahoma, standardizing sample conditioning, and focusing on further investigation of the use of resistivity for concrete in field structures. The objective of this project is 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 will be investigated in order to formulate new guidelines and specification that would allow ODOT to produce high quality concrete. These specifications could be used to approve and accept concrete mixtures. Strength would no longer be the only value that is used to accept a concrete mixture and instead a measurement of permeability could be included. This study will evaluate the use of resistivity to evaluate field structures. This research shows promise to make great changes to the quality and long term performance of Oklahoma concrete by using this simple by utilitarian testing method.

ACCOMPLISHMENTS DURING FFY 2014: New project.

PROPOSED ACTIVITIES FOR FFY 2015: Perform literature review; begin investigation on applicability of standard procedures for typical Oklahoma concrete mixtures; begin investigation on other possible applications of resistivity testing to complement onsite quality control measures; produce project progress reports; prepare and submit FFY 2015 Annual Report.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014	-0-	SPR	-0-	STATE
Estimated Cost FFY 2014	-0-	SPR	-0-	STATE
Projected Cost FFY 2015 (Yr 1 of 2)	$92,065	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Julie Hartell, Oklahoma State University, 405-744-5222

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

Project Sponsor: Kenny Seward, ODOT Structural Materials Engineer, 405-522-4999

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 2014: New project.

PROPOSED ACTIVITIES FOR FFY 2015: Perform literature review; conduct laboratory study to evaluate current ODOT curing specifications; perform field application methods of FiberCure on a laboratory constructed concrete slab; develop new curing specifications; implement the usage of FiberCure on an Oklahoma bridge deck and evaluate the effectiveness; produce project progress reports; prepare and submit FFY 2015 Annual Report.

FINANCIALS	**AMOUNT**	**FUND**	**AMOUNT**	**FUND**
Programmed Amount FFY 2014	-0-	SPR	-0-	STATE
Estimated Cost FFY 2014	-0-	SPR	-0-	STATE
Projected Cost FFY 2015 (Yr 1 of 4)	$91,685	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 2014: New project.

PROPOSED ACTIVITIES FOR FFY 2015: Collect available friction data and select aggregates; select surface mixture types; prepare mixtures and treated slabs for testing; condition and test the surfaces with the TWPD, DFT and CTM; compare the friction performance of the tested surfaces and report the findings; prepare slabs for testing; measure the effectiveness of the tack coats; compare the bond strength of the tested surfaces and applications; produce project progress reports; prepare and submit Final Report.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014	-0-	SPR	-0-	STATE
Estimated Cost FFY 2014	-0-	SPR	-0-	STATE
Projected Cost FFY 2015 (Yr 1 of 1)	$25,675	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 Arial 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 2014: Monitored runway construction; began baseline pavement measurements; began material property measurements; started preliminary planned runway expansion; prepared quarterly progress reports.

PROPOSED ACTIVITIES FOR FFY 2015: Continue baseline pavement measurements; continue to monitor runway expansion construction; continue measurements of material properties; prepare quarterly progress reports; submit Final Report.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014 (Yr 1 of 2)	$250,000	SPR	-0-	STATE
Estimated Cost FFY 2014	$250,000	SPR	-0-	STATE
Projected Cost FFY 2015 (Yr 2 of 2)	$100,000	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

2300 Research Implementation

PURPOSE AND SCOPE: Implementation is a crucial stage in the research process. Implementation is the incorporation of research results into everyday practices of the organization. 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.

ACCOMPLISHMENTS DURING FFY 2014: Continued with implementation of FFY 2012 research projects 2232 and 2234; assembled implementation committees for selected FFY 2013 recently completed projects. Conducted the first senior staff implementation meeting on June 19, 2014 and presented the following seven projects for their implementation consideration: Collection of Short Duration Traffic Counts using Wireless Communication, Expected Life of Silanes, Stainless Steel Reinforcement in Bridge decks, Black Ice Detection Control Systems, Next Generation Smart Barrel Systems, Change Orders and Lessons Learned, and Post Earthquake Bridge Inspection Methodologies. The first three projects listed got group support for implementation. One question remains after the meeting when do we stop using implementation dollars and start using maintenance dollars for the projects. Currently working with the project sponsors within ODOT to determine the cost of implementation of the three projects, and projected time frame for implementation.

PROPOSED ACTIVITIES FOR FFY 2015: Continue with the implementation of the three implementation projects from FY14. Document the ODOT implementation process with the State of Oklahoma, through the research manual. Solicit future implementation projects for FY16.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014	$250,000	SPR	-0-	STATE
Estimated Cost FFY 2014	$20,000	SPR	-0-	STATE
Projected Cost FFY 2015	$120,000	SPR	-0-	STATE

CONTACT INFORMATION

ODOT Research Engineer: Gary Hook, 405-522-1042

2700 Experimental 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 2014: Maintained records of new products where manufacturers provided literature or made presentations; provided product information to and consulted with applicable ODOT division subject matter experts on new product evaluations; organized product meetings and presentations; consulted with product vendors, representatives and firms; installed six different types of Erosion Control Blankets, submitted by US Erosion Control. The blankets were installed on September 29 and 30, 2014, on a slope on a project on US-412, Woodward County, 3 miles west of the Major County line. Monitoring of the site will be completed one year from the date of installation. A tack coat product, UltraFuse, was also submitted to ODOT Materials Division and applied in November 2014. The project locations are on SH-3, McCurtain County near Broken Bow and on a county road in Carter County, near Ardmore. The Research Branch is monitoring and keeping statistics for this product.

PROPOSED ACTIVITIES FOR FFY 2015: Complete the Final Report on the Erosion Control Blankets submitted by US Erosion Control. Continue to monitor the UltraFuse sites, compile the statistics and begin the final report at the end of the one year monitoring period. Continue to maintain records on products submitted to ODOT; meet with vendor representatives; circulate product literature and provide information to applicable ODOT division subject matter experts; coordinate product meetings and presentations for new product evaluation forms received; continue to conduct product performance evaluations and monitoring; continue collection of monthly photographic records for current and new product applications as they are implemented.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014	$20,000	SPR	-0-	STATE
Estimated Cost FFY 2014	$5,000	SPR	-0-	STATE
Projected Cost FFY 2015	$5,000	SPR	-0-	STATE

CONTACT INFORMATION

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TPF-5(297) Improving Specifications to Resist Frost Damage in Modern Concrete Mixtures (previously Solicitation 1338)

PURPOSE AND SCOPE: This is a pooled fund study with the lead agency contact of ODOT. Concrete can be damaged when it is (1) sufficiently wet and (2) exposed temperature cycles that enable freezing and thawing. This study will be a thirty six month study. The goal of this research is to produce improved specifications, and test methods; while improving the understanding of the underlying mechanisms of frost damage. There are four objectives of this study, (1) determine the necessary properties of the air-void system to provide satisfactory frost durability in laboratory and field concretes with different combinations of admixtures, cements, and mixing temperatures in salt environments, (2) determine the accuracy of a simple field test method that measures air void system quality with field and laboratory concrete, (3) determine the critical combinations of absorption and the critical degree of saturation on the frost durability in accelerated laboratory testing in the presence of deicer salts, (4) establish new test methods and specifications for fresh and hardened concrete to determine frost durability and field performance.

ACCOMPLISHMENTS DURING FFY 2014: On January 10, 2014, Oklahoma Department of Transportation accepted the role of lead state. The state and federal commitments received as of June 23, 2014 totaled $590,000. Of this amount, $265,500 has been transferred to Oklahoma. Oklahoma State University was contracted to complete this study in collaboration with Purdue University. A kickoff webinar meeting was held June 16, 2014. The plan for creation of AASHTO test method and specification was presented to Materials subcommittee. Literature review and testing matrix development was initiated. Validation of the Super Air Meter (SAM) is 10% complete. Purdue University initiated testing on degree of saturation.

PROPOSED ACTIVITIES FOR FFY 2015: Continue literature review and development of the testing matrix, sample preparation and validation of the super air meter. Possible other activities would include use of x-ray tomography of air voids and frost damage and ASTM C 666.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2014	$111,859	Pool	-0-	Pool
Estimated Cost FFY 2014	$111,800	Pool	-0-	Pool
Projected Cost FFY 2015	$120,709	Pool	-0-	Pool
Projected Cost FFY 2016	$122,432	Pool	-0-	Pool

CONTACT INFORMATION

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