Oklahoma Department of Transportation
Planning and Research Division

State Planning and Research Work Program
FFY 2012
(October 1, 2011 to September 30, 2012)

Part 1—Planning
Part 2—Research

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

October 2011

U.S. Department of Transportation
Federal Highway Administration

Oklahoma Division

September 20, 2011

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In Reply Refer To:
HDA-OK

FY 2012 SPR (Part I) Work Program, and
FY 2012 SPR (Part II) Research Program

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PLANNING & RESEARCH
DIVISION

Gary Ridley
Director
Oklahoma Department of Transportation
200 NE 21st Street
Oklahoma City, OK 73105

Dear Mr. Ridley:

The FHWA has reviewed the Fiscal Year 2012 State Planning and Research (SPR) Part I (Planning) and Part II (Research) work Programs and budget for the Oklahoma Department of Transportation (ODOT) as submitted by Mr. John Bowman, Acting Planning and Research Division Engineer, on September 13, 2011. Part I (Planning) contains the metropolitan planning (PL) program funds that were previously approved by the FHWA as part of the FY 2012 Unified Planning Work Programs (UPWP) and budget for Tulsa, Oklahoma City, and Lawton MPOs, as well as the Bi-State (Frontier) MPO planning area.

The proposed FY 2012 SPR work program and budget was developed by ODOT to comply with 23 CFR 420 regarding statewide work programs for transportation planning activities. As required by 23 CFR 420.111, the FY 2012 work program includes the description of work tasks to be accomplished and the estimate of costs associated with each work task. In addition, the work program also provides a summary of federal, state and local funding sources as required under 23 CFR 420.111(b)(1), and funding for the Oklahoma Local Technical Assistance Program (LTAP), administered by the Center for Local Government Technology (CLGT) at Oklahoma State University.

The proposed FY 2012 SPR work program is consistent with 23 CFR 420 Subpart B - 420.207(a), regarding the establishment of a research, development, and technology (RD&T) transfer program funded with federal & state resources, that anticipates and addresses transportation concerns before they become critical problems. Subpart B also requires the research program to develop technology transfer options for sharing the results of research and promoting the use of new technology. SPR Part II (Research) is divided into General Activities, Continuing Research Projects, New Research Projects, Joint ODOT/OTC Interagency Projects, and Pooled Fund Studies. Part II includes a description of research activities expected to be accomplished in FY 2012 and the estimate of costs for each eligible activity. In addition, ODOT

supports a number of national pooled fund studies, including Motorcycle Crash Causation Study, Evaluation of Low Cost Safety Improvements, the Impact of Wide-Base Tires on Pavement Damage, etc.

The proposed work program provides five levels of information for each activity: 1) Purpose and Scope 2) Accomplishments in 2011, 3) Proposed Activities for FY 2012, 4).Financial Information and 5). Contact Information. The financial information is broken down further into: estimated and programmed amounts in FY 2011, and the projected costs for FY 2012.

ODOT has continued to expand the SPR program to address transportation concerns before they become critical problems in Oklahoma and elsewhere. For example, ODOT has agreed to collaborate with the Oklahoma Transportation Center (OTC), a nationally designated University Transportation Center (UTC) composed of researchers at the University of Oklahoma (OU), Oklahoma State University (OSU), and Langston University (LU), to conduct a Motorcycle Safety and Education Program (Task 1405).

We would like to take this opportunity to commend the ODOT Planning and Research Division staff for providing a forum to discuss the draft FY 2012 SPR Work Program and Budget prior to its release to the public. We also commend ODOT for its continuing support of the LTAP program and collaboration with the Oklahoma Transportation Center to conduct the Motorcycle Safety and Education Program.

Thank you for your cooperation in developing the FY 2012 SPR Work Program and budget. Based on our review of the draft document and our discussion with staff during the forum, we hereby approve the FY 2012 Work Program and budget as submitted. If you have questions or comments regarding our review and approval of this work program, please do not hesitate to contact Mr. Isaac N. Akem, Community Planner, at 405-254-3343.

Sincerely,

Elizabeth A. Romero
Planning and Technical Services Team Leader

Introduction

This document describes the Federal Fiscal Year (FFY) 2012 State Planning and Research Work Program for the Oklahoma Department of Transportation (ODOT). This program is prepared and submitted according to provisions of Title 23, United States Code, regulated under 23 CFR Part 420. Part 1 of the work program describes the Planning activities and Part 2, the Research activities. The work program is developed and updated annually in cooperation with the Federal Highway Administration.

Planning activities to be conducted in FFY 2012 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 planning portion of the work program is approximately $11 million.

Research activities for FFY 2012 will include eight new projects and eight continuing projects in addition to five projects jointly shared with the Oklahoma Transportation Center. Some of the focus areas for current research projects include: design/construction/maintenance of infrastructure and safety. In addition, ODOT is participating in 17 national pooled fund projects. Funding for the research program totals nearly $5 million in FFY 2012.

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 2011) and the proposed activities for the upcoming fiscal year (FFY 2012). In addition, the Financials Section shows the amount programmed for the FFY 2011 in the last work program, an estimate of the total funds that will be expended by the end of FFY 2011, and the projected costs for the upcoming fiscal year (FFY 2012).

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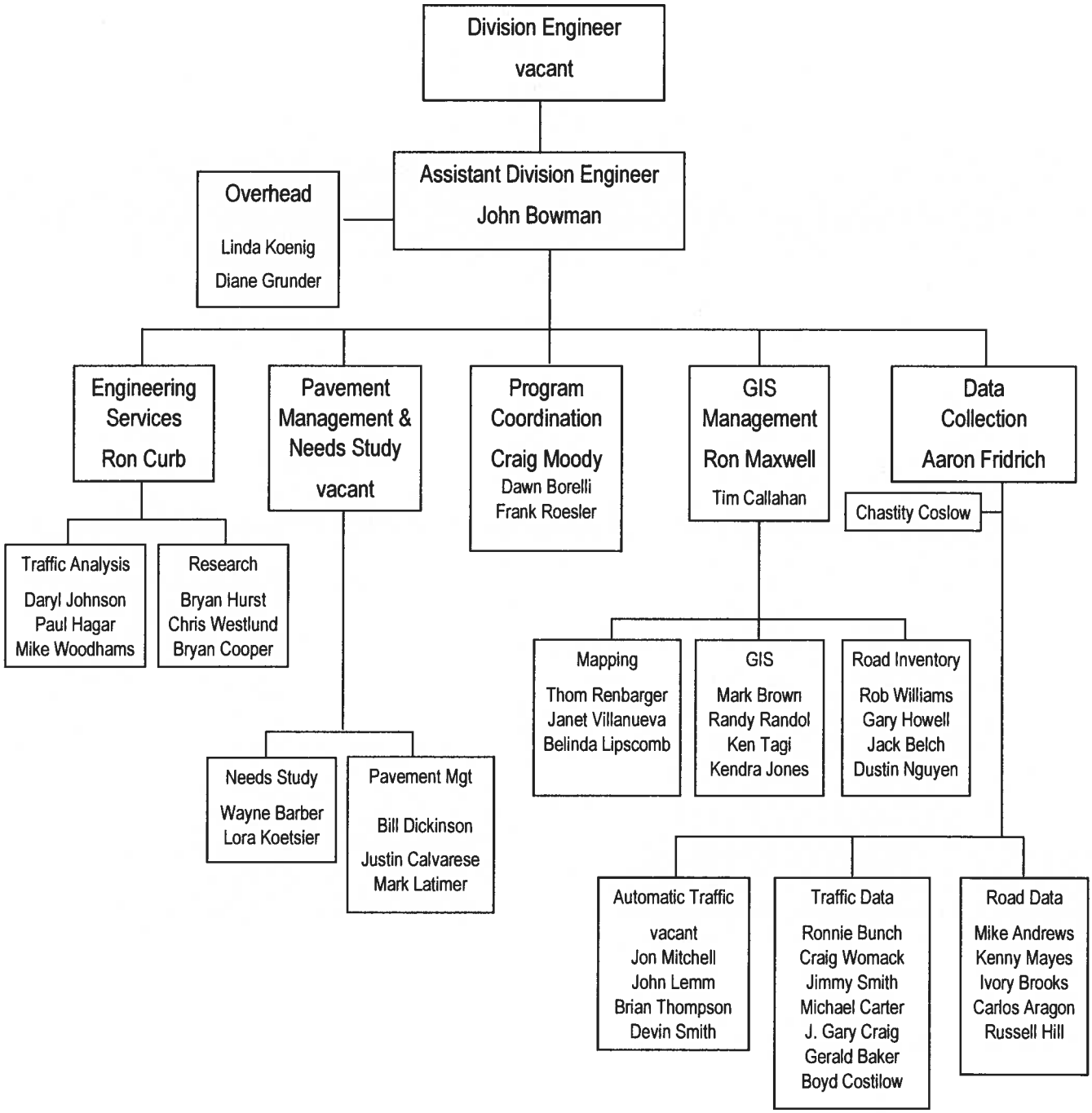
SPR Part 2 Items (continued)

Planning and Research Table of Organization
October 1, 2009



OKLAHOMA DEPARTMENT OF TRANSPORTATION
State Planning & Research (SPR) Financial Summary Sheet
Federal Fiscal Year 2012
Program Period October 1, 2011 through September 30, 2012

SPR Part 1 - Planning, SPRY-0010(53)PL, JP# 01946(57)

A. Estimated Costs

SPR Part 1 - Planning		$8,224,415.00
LTAP (SPR Part 1)		$227,964.00
Metropolitan Planning (PL)		$2,581,395.00
	Total Estimated Costs	***$11,033,774.00***

B. Available Funds

SPR Part 1 Unobligated Balance		$9,633,500.00
PL Funding		$2,117,400.00
Local		$463,995.00
	Total Available Funds	***$12,214,895.00***

C. Proposed Financing

Type	Federal	Ratio	State	Local	Total
SPR	$8,452,379.00	80%	$0.00	$0.00	$8,452,379.00
PL	$2,117,400.00	80%	$0.00	$463,995.00	$2,581,395.00
			Total Proposed Financing		***$11,033,774.00***

SPR Part 2 - Research, SPRY-0010(54)RS, JP# 01946(58)

A. Estimated Costs

SPR Part 2 - Research		$3,421,229.00
	Total Estimated Costs	***$3,421,229.00***

B. Available Federal Funds

SPR Part 2 Unobligated Balance		$2,240,600.00
SPR Part 1 Unobligated Balance (remainder)		$1,181,121.00
	Total Available Funds	***$3,421,721.00***

C. Proposed Financing

Type	Federal	Ratio	State	Local	Total
SPR Part 1 & 2	$3,421,229.00	80%	$0.00	$0.00	$3,421,229.00
			Total Proposed Financing		***$3,421,229.00***

SPR Part 1 & Part 2 Totals

Total SPR Unobligated Balance	$11,874,100.00
Total Other Funds (PL, State, Local)	$2,581,395.00
Total Available Funding	***$14,455,495.00***
Total SPR Part 1 and Part 2 Estimated Costs	***$14,455,003.00***
Total SPR Pooled Fund Commitments	**$1,492,258.00**
Total SPR Research Funding	**$4,913,487.00**
% of SPR Funds for Research	**37%**
Total LTAP ($160,191 Fed LTAP; $179,809 SPR; $48,156 Local)	**$388,155.00**

SPR PART 1 - PLANNING, SPRY-0010(53)PL, JP# 01946(57)
FEDERAL FISCAL YEAR 2012

		SPR	STATE	PL	LOCAL	TOTAL
GIS AND DATA MANAGEMENT						
1101	Continuing Inventory Data Studies	$836,000.00	$0.00			$836,000.00
1102	Highway Performance Monitoring System	$193,000.00	$0.00			$193,000.00
1103	Geographical Information Management System for Transportation	$472,000.00	$0.00			$472,000.00
	Total GIS and Data Management	***$1,501,000.00***	***$0.00***			***$1,501,000.00***
MAPPING						
1201	County, City and other Planning Maps	$314,000.00	$0.00			$314,000.00
	Total Mapping	***$314,000.00***	***$0.00***			***$314,000.00***
TRAFFIC AND DATA COLLECTION						
1301	Coverage Count Program	$780,000.00	$0.00			$780,000.00
1302	Permanent Traffic Count Program	$843,000.00	$0.00			$843,000.00
1304	Purchase of Traffic Counting Equipment	$264,000.00	$0.00			$264,000.00
1305	Vehicle Classification Counting Program	$501,500.00	$0.00			$501,500.00
1306	Weigh-in-Motion Program	$533,500.00	$0.00			$533,500.00
1308	Traffic Monitoring System	$192,000.00	$0.00			$192,000.00
1309	Traffic Analysis and Projections	$130,000.00	$0.00			$130,000.00
1310	Skid Studies Program	$166,500.00	$0.00			$166,500.00
	Total Traffic and Data Collection	***$3,410,500.00***	***$0.00***			***$3,410,500.00***
ECONOMIC, SAFETY, AND FISCAL STUDIES						
1404	Safety Planning	$100,000.00	$0.00			$100,000.00
1405	Motorcycle Safety & Education Program	$400,000.00	$0.00			$400,000.00
1510	Justification Studies	$20,000.00	$0.00			$20,000.00
	Total Economic, Safety, Fiscal Studies	***$520,000.00***	***$0.00***			***$520,000.00***
SYSTEMS AND PROGRAMS						
1601	Federal-Aid Systems Coordination	$93,000.00	$0.00			$93,000.00
1603	Highway Needs Study	$171,243.00	$0.00			$171,243.00
1604	Pavement Management Systems	$950,672.00	$0.00			$950,672.00
	Total Systems and Programs	***$1,214,915.00***	***$0.00***			***$1,214,915.00***
URBAN / REGIONAL TRANSPORTATION PLANNING						
1700	General Urban Transportation Planning	$33,500.00	$0.00			$33,500.00
1701	Oklahoma City Area Regional Transportation Study (OCARTS)	$70,000.00	$0.00	$1,219,474.00	$282,369.00	$1,571,843.00
1702	Tulsa Metropolitan Area Transportation Study	$35,000.00	$0.00	$737,102.00	$147,420.00	$919,522.00
1703	Lawton Metropolitan Area Transportation	$15,000.00	$0.00	$120,000.00	$24,000.00	$159,000.00
1709	Ft. Smith Transportation Study	$7,000.00	$0.00	$40,824.00	$10,206.00	$58,030.00
1710	Substate Planning	$220,000.00	$0.00			$220,000.00
1719	Statewide Transportation Improvement Program (STIP)	$85,000.00	$0.00	$0.00	$0.00	$85,000.00
	Total Urban Transportation Planning	***$465,500.00***	***$0.00***	***$2,117,400.00***	***$463,995.00***	***$3,046,895.00***
LONG RANGE PLAN / OTHER PLANNING ACTIVITIES						
1902	Statewide Long Range Transportation	$0.00	$0.00			$0.00
1903	Intelligent Transportation Systems	$10,000.00	$0.00			$10,000.00
1904	Air Quality Transportation Planning	$100,000.00	$0.00			$100,000.00
1905	Freight Planning	$8,500.00	$0.00			$8,500.00
1906	Rail Planning	$0.00	$0.00			$0.00
1910	Public Involvement & Visualization	$280,000.00	$0.00			$280,000.00
1911	Inventory of Depression Era Structures	$400,000.00	$0.00			$400,000.00
	Total Long Range Plan and Planning	***$798,500.00***	***$0.00***			***$798,500.00***
	Grand Total SPRY-0010(051)PL	***$8,224,415.00***	***$0.00***	***$2,117,400.00***	***$463,995.00***	***$10,805,810.00***
LOCAL TECHNICAL ASSISTANCE PROGRAM						
					LTAP (Fed)	
1440	Local Technical Assistance Program	$179,809.00	$48,155.00		$160,191.00	$388,155.00
	Total LTAP	***$179,809.00***	***$48,155.00***		***$160,191.00***	***$388,155.00***

1101 Continuing Inventory Data Studies

PURPOSE AND SCOPE: To collect, record, and compile data on the physical characteristics for all statewide public roads and streets implementing established road inventory procedures and GPS/GIS technology. Catalogue cultural features used to update the Departments official County Highway Maps. Generate detailed maps used to conduct inventory meetings with County Commissioners pertaining to roadway modifications. Maintain current Oracle Spatial Database tables of inventory data and update the Department's Central Data file. Write SQL procedure definitions necessary to extract needed summary data from the files. Produce and publish various mileage summary tables for the state, federal and public needs. Maintain necessary information for the National Network of Defense and NHS systems. Develop and maintain Control Section numbers and other unique identification systems for all public roads. Produce AVMT figures that will be used to calculate Annual Accident and Fatality Rates.

ACCOMPLISHMENTS DURING FY 2011: The County Road inventory procedures were continued with eight county inventories completed; (Adair, Cimarron, Harmon, Jackson, Jefferson, Tillman and Texas) and three counties (Canadian, LeFlore and McCurtain) are in progress. Seven counties were reassessed and coded; (Beaver, Greer, Kiowa, Love, Pontotoc, Washington, and Washita) and one (Muskogee) is in progress. Approximately 75% of the local road network has been geo-located (GIS). All County Action Reports were verified and processed. All Highway construction projects pertaining to the Department's Highway, Graphical Roadway Network (NLF), Reference Point, and Open to Traffic databases were completed. The following annual publications and reports were completed; 2010 Oklahoma Statewide Statistics Book, 2011 Certification of County Road Mileage, 2011 Statewide Mileage Table Book, and 2011 HPMS mileage, and Travel Summary Tables.

PROPOSED ACTIVITIES FOR FY 2012: An additional 10% of the local road network will be geo-located this year, and is currently in progress. Continue coding and updating the Department's Central Database files. Incorporate on technology advancements in data collecting to insure the process of efficient information. Continue to improve on all procedural inventory operations. Seven of the following ten counties are scheduled to be inventoried; (Choctaw, Custer, Ellis, Latimer, Major, Murray, Nowata, Oklahoma, Pittsburg, and Woods). Six of the following thirteen counties are scheduled to be reassessed and coded; (Adair, Canadian, Choctaw, Cimarron, Jackson, Jefferson, Harmon, Latimer, LeFlore, McCurtain, Muskogee, Tillman, and Texas). Continue monitoring all County Action Reports, and Highway Construction projects. Continue collecting HPMS data items. Continue identifying traffic count sites statewide using GPS technology. Compile and publish various state and federal reports including the 2011 Oklahoma Statewide Statistics Book, 2012 Certification of County Road Mileage, 2012 Control Section Map Book, and 2012 HPMS Mileage and Travel Summary Tables. Keep abreast of the latest technological advances through attendance of seminars, conferences and workshops. Process and update all inventory files/tables for modifications to the functional classification, population codes, urban boundaries, due to the latest 2010 census.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	$810,000	SPR	-0-	STATE
Estimated Cost FFY 2011	$791,000	SPR	-0-	STATE
Projected Cost FFY 2012	$836,000	SPR	-0-	STATE

CONTACT INFORMATION

Ron Maxwell, GIS Management Branch Manager, 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 FY 2011: ODOT continues to work with Consultants to design and renovate the new HPMS data model reflecting the changing needs and requirements as specified in the 2010+ Reassessment Study and the new Data Requirements document. A web based graphical user interface, Oracle stored procedures and C#/ASP code was designed, implemented and tested. The GUI interface is named the HPMS Console Version 2. Sweeping changes were mandated requiring a "ground up" approach. ODOT continues to work closely with FHWA Washington DC in providing testing and feedback on the new web based HPMS software Version 8 which was designed, built, tested and implemented by FHWA for use in the 2010 submittal process. Over 150 validation checks for validity of the data were established. The 2010 HPMS data submittal was completed using the new HPMS Console V2 and the new FHWA HPMS Version 8 software.

PROPOSED ACTIVITIES FOR FY 2012: Primary focus will be implementing the new 2010 Urban boundaries, along with 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 will be used to verify and collect HPMS sample data. A HPMS sample adequacy review will be conducted and additional samples 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. We will continue to work closely with FHWA Washington DC in providing feedback on the HPMS Version 8 web based software. Field review documents will be generated and a HPMS data field review will be conducted in cooperation with FHWA Oklahoma Division. The 2011 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 2011	$190,000	SPR	-0-	STATE
Estimated Cost FFY 2011	$123,000	SPR	-0-	STATE
Projected Cost FFY 2012	$193,000	SPR	-0-	STATE

CONTACT INFORMATION

Ron Maxwell, GIS Management Branch Manager, 405-521-2728

1103 Geographic 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 ODOT Divisions. GIS services are offered to ODOT staff and customers outside the Department. An intranet GIS enterprise-wide portal is available to anyone having access to the ODOT network. The web portal is known as the Geographical Resource Intranet Portal (GRIP). An internet application known as GRIPLite is also supported and is made available to the general public. The efficient use of resources require a considerable investment in training for GIMS-T staff. The system utilizes aerial photography, global positioning data and other sources of data. The data provided includes but is not limited to 8 Year Construction Work Plan, 4 Yr STIP, Road Characteristic Inventory, Highway Needs Study Reports, Construction and Transportation Improvement Programs, Projects under Construction, Crashes and Speed Limits, Pontis Bridge Inventory and Rating Systems, Pavement Management International Roughness Indexes and Structural History, Highway Performance Monitoring System (HPMS), Rail Crossing Inventory, Videolog Inventory, Environmental themes and datasets including the ODOT Storm water layer and Regulated Routes and Outdoor Advertising location data and information.

ACCOMPLISHMENTS DURING FFY 2011: Statewide Transportation Improvement Plan (STIP) maps were completed as well as creation of map products for the 2035 Long Range Plan. Staff generated numerous custom maps such as Bridge Vertical Clearance and Posted Load/Design Load maps used for routing oversize/overweight trucks, a series of maps based on the 2010 Needs Study Report; updates to the Posted Load Bridge Maps, and continued support for the Environmental Programs Division, with detour, wetland maps, and other maps requested by the NEPA Coordinators, biologists, and others. Both the Rural and Urban Functional Classification Map Books continue to be redesigned and updated. The GIS Team continues to develop a foundation for an Environmental business layer in the GRIP browser application as well as for a layer reflecting the Regulated Routes and supporting data for the Outdoor Advertising Branch. A network including all of the grade-separated ramps for Interstate, U.S. and State Highway Systems as well as Climbing Lanes and Frontage Roads continues to be updated with new data as it becomes available. In collaboration with the Traffic Data Section, staff is producing maps of the ramps in order to more accurately locate and retrieve AADT for each ramp segment. Staff continues to provide limited GeoMedia user support on the GMUSERS Schema. Staff is developing a workflow for accurately reproducing the County Maps using features stored within an Oracle Database. Staff continues to work with Bridge Division in creating a method for them to create the annual Red-Green Map and for a Truck Routing Network and Update the Load Bridge Maps as well as those rated at 15 tons or less. Staff is also assisting the Traffic Division by creating maps showing the location of road segments with narrow or no shoulders, along with the crash data associated with those segments, and also supplying them with the tabular data used to create the maps for their use in analysis of the crash data in relation to the roadway shoulder width\type. GIS staff as well as other ODOT personnel has under gone training in HTML, XML and JAVA Script and GeoMedia Professional. Evaluated the usefulness of GeoMedia 3D in the creation of map products, continue to evaluate ArcGIS 10 and the ability to connect natively to an Oracle 10G database.

1103 Geographic Information Management System for Transportation (cont.)

PROPOSED ACTIVITIES FOR FY 2012: Continue maintenance of the Point to Point Mileage LRS and Applications. 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 which facilitate and improve the decision making process within ODOT. Provide all customers with working and finalize map products during the urban boundary revision process due to the latest 2010 Census. Continue working with the consultants on the enhancements to the GRIP family of products, including the continued integration and improvement of the video log, the integration of the OSOW Truck Routing, and Environmental Business Layers into the GRIP products. Using GIS software, continue to improve on the design and creation of updated County/Urban Functional Classification Atlases. In coordination with the ODOT Environmental Programs Division, the Outdoor Advertising Branch and the ODOT Rail Programs Division continue to identify needs and develop solutions that will enable them to efficiently and accurately perform their individual missions. Make use of the training in HTML, XML, and JAVA Script to create an Index of Workflows for the various products and applications created by the GIS Team and have them published to a web enabled document for use by ODOT personnel. Continue the major initiative aimed at CADD integration into the GIS environment. Continue coordination with the Traffic Data section in creating map products to assist in collecting AADT for Ramps. Continue to conduct certified training to personnel in the software products required for the GIMS-T staff to continue to provide efficient and high quality GIS products to customers. Continue to search for and provide certified GIS Training to the GIS Section and others within the GIS Management Branch. Update the oracle database from 10G to 11G. Redesign data loaders for construction work plans for use in data mapping. Begin planning phase for the redesign and enhancement of the GRIP / GRIPLite products to make use of open sources where relevant over the internet. Create and distribute as much ODOT data as possible in KML format for viewing in the Google Earth platform.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	$520,000	SPR	-0-	STATE
Estimated Cost FFY 2011	$465,000	SPR	-0-	STATE
Projected Cost FFY 2012	$472,000	SPR	-0-	STATE

CONTACT INFORMATION

Mark Brown, GIS Management Branch, 405-522-1036

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 current reliable, accurate and legible information for roads, drainage features, street names, city limits, boundaries with symbology indicating man-made culture and features. The scope also includes the creation of other special purpose planning maps and supporting graphics.

ACCOMPLISHMENTS DURING FY 2011: Seven counties and fifty four cities were completed using CADD software from the latest available information. Counties completed were Delaware, Haskell, Murray, Osage, Pottawatomie, Pushmataha and Woodward. The Cartographic Design Section's city and county designs are implemented using Microstation Geographics allowing integration into most G.I.S. databases. Updated all county and city maps to reflect the latest 2010 Census populations.

The fifty four following incorporated city maps, listed by county, were drafted using CADD software: (City formatting also uses geospatially referenced aerial photography and topographic maps to match all data to the Oklahoma Coordinate System.)Four urban cities of over 5,000 in 2010 U.S. Census populations are shown in bold letters.): **Delaware County:** Bernice, Colcord, **Grove,** Jay, Kansas, Oaks, West Siloam Springs. **Haskell County:** Keota, Kinta, McCurtain, Stigler, Tamaha, Whitefield. **Murray County:** Davis, Dougherty, Hickory, Scullin, Sulphur. **Osage County:** Avant, Barndall, Burbank, Fairfax, Foraker, Grainola, Hominy, Prue, Osage, Pawhuska, Shidler, Webb City, Wynona. **Pottawatimie County:** Asher, Bethel Acres, Brooksville, Earlsboro, Johnson, Maud, McLoud, Macomb, Pink, St. Louis, **Shawnee, Tecumseh,** Tribbey, Wanette. **Pushmataha County:** Albion, Antlers, Clayton, Rattan. **Woodward County:** Fort Supply, Mooreland, Mutual, Sharon, **Woodward.**

Special map graphics and other graphic projects were produced as needed for Planning & Research Division studies and to facilitate other ODOT personnel's SPR assignments.

PROPOSED ACTIVITIES FOR FY 2012: The Cartographic Design Section will continue drawing all county and city maps in a geospatially referenced format and improved accuracy. Two county maps are in progress: Beckham and Noble, with a goal to complete eight or more counties in the coming year. All maps currently in CADD format will be updated as highway system revisions are completed affecting alignments, interchanges or numbers of lanes. Map design features will be integrated into the Oracle Spatial database to facilitate the use of map features from Cartographic Design to other GIS Management Sections needs and for future use by other governmental agencies.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	$305,000	SPR	-0-	STATE
Estimated Cost FFY 2011	$270,000	SPR	-0-	STATE
Projected Cost FFY 2012	$314,000	SPR	-0-	STATE

CONTACT INFORMATION

Thom Renbarger, Mapping Section, GIS Management Branch, 405-521-2526

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 FY 2011: Short duration traffic counts were completed on the state highway system, county off-system and small urban system in 26 of the 27 counties scheduled for FY 2011. Tulsa County will be counted in FY 2012 using contracted labor. Continuous updating of the GPS coordinates and site characteristics for all traffic count sites on all systems was performed. The Oklahoma Traffic Count Information System Web Page was continuously updated throughout the year.

PROPOSED ACTIVITIES FOR FY 2012: Continue to analyze all road systems for areas where coverage is deficient, establish new count locations as needed and retire locations that are no longer needed. Collect short duration traffic counts on the state highway system, county off-system and small urban system in the 25 counties scheduled for FY 2012. Collect and update GPS coordinates and site characteristics for all traffic count sites on all systems as needed. The Short Duration Traffic Count Contract will be rebid for the collection of Tulsa County and any additional counts as we deem necessary. We will be looking into an agreement for enhanced features to the Oklahoma Traffic Count Information System Web Page which will include enhanced mapping updates and additional truck traffic information, web page maintenance, and support. 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 2011	$790,000	SPR	-0-	STATE
Estimated Cost FFY 2011	$462,500	SPR	-0-	STATE
Projected Cost FFY 2012	$780,000	SPR	-0-	STATE

CONTACT INFORMATION

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

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 70 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 12 different electric power companies and 5 different telephone companies.

ACCOMPLISHMENTS DURING FY 2011: The comprehensive Traffic Monitoring Systems Operations and Maintenance Contract became active in FY 2008 and with it provided enhanced services and expertise particularly in the area of data collection, systems validation and TMS site repair. The TMS site operational rate experienced a marked increase. Additionally, improved systems diagnostics and trend analysis provided by contract data systems experts have resulted in a much needed systems approach towards operations and maintenance support as evident in the detailed construction and renovation project coordination executed during this period. The scope of work accomplished during FY 2011 included renovation of eight (8) existing sites (1 WIM and 7 AVC).

PROPOSED ACTIVITIES FOR FY 2012: The previous comprehensive TMS Operations & Maintenance contract will be converted to two separate contracts. The Traffic Monitoring Systems Construction and Maintenance Contract will addressed in this section will commence with ongoing repair and replacement construction projects identified and planned during FY 2011. The ongoing replacement of 1990's era AC powered WIM Systems with new solar powered iSync Lite WIM systems with new technology will improve site operational rates and reduce or eliminate utility expenses. The scope of work to be accomplished in FY 2012 is as follows:

1) Complete solar and wind power conversion to remaining 21 WIM sites.
2) Complete wireless communications conversion to remaining 21 WIM sites.
3) Execute schedule maintenance for up to 93 sites
4) Complete site renovations and repairs to estimated 20 permanent sites
5) Add two new AVC sites to Proposed OKC Crosstown Expressway

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	$700,000	SPR	-0-	STATE
Estimated Cost FFY 2011	$142,000	SPR	-0-	STATE
Projected Cost FFY 2012	$843,000	SPR	-0-	STATE

CONTACT INFORMATION

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

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 FY 2011: Equipment purchases executed in FY 2011 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 Continuous Count Program, 2) solar panels and accessories for the on-going project for site power conversion, 3) wireless communications terminals for the on-going wireless communications deployment in support of data collection at the permanent traffic monitoring stations.

Additionally, GPS units and accessories were purchased in support of updating the site location description data base from which data is transferred to the Oklahoma Traffic Count Information System Web Page. 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 FY 2012: The proposed construction of new traffic monitoring stations, the conversion to solar power and digital wireless data communications, and the continuing requirement for additional GPS equipment comprises the majority of the expenditure requirement for FY 2012. 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. In FY 2012, the department will experience a significant surge in both solar energy conversion and accelerated deployment of the digital wireless data communication network at 93 permanent sites.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	$265,000	SPR	-0-	STATE
Estimated Cost FFY 2011	$11,000	SPR	-0-	STATE
Projected Cost FFY 2012	$264,000	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 FY 2011: Collected short term vehicle classification data for development of annual average truck volumes. Over 400 new short-term vehicle classification sites where incorporated in to the 3-year collection cycle. All 2-lane highway classification site locations were counted for 24 hours using Automatic Traffic Recorders (ATRs). The vehicle classification counting program for FY 2011 was supplemented with a contract with RDSC for collection of multi-lane urban and rural classification data statewide. During FY 2011, various special studies were conducted providing timely data for traffic engineers, planners and designers in the department's central office division as well as for engineers and managers in the eight field divisions. The type and scope of these various special studies and the activities supported are as follows:

(A) For the Data Collection Branch
- 0 - Turning movements with pedestrian counts
- 12 - (24 hour) Hourly Machine Count
- 0 - (24 hour) Cumulative Machine Count
- 230 - (24 hour) Vehicle Classification Counts

(B) For the Engineering Services Branch
- 11 - Turning movements with pedestrian counts
- 182 - (24 hour) Hourly Machine Counts
- 0 - (24 hour) Cumulative Machine Counts
- 4 - (24 hour) Vehicle Classification Counts

(C) For Traffic Engineering Division and field divisions
- 47 - Turning movements with pedestrian counts
- 195 - (24 hour) Hourly Machine Counts
- 4 - (24 hour) Cumulative Machine Counts
- 20 - (24 hour) Vehicle Classification Counts

(D) For other Divisions
- 0 - Turning movements with pedestrian counts
- 1 - (24 hour) Hourly Machine Counts
- 0 - (24 hour) Cumulative Machine Counts
- 0 - (24 hour) Vehicle Classification Counts

PROPOSED ACTIVITIES FOR FY 2012: The vehicle classification counting program for FY 2012 will be supplemented with a contract for collection of multi-lane urban and rural classification data statewide. Additional classification counts will be conducted in accordance with the annual cycle of designated highway systems and county and city systems programmed for this year. Continue to provide resources to fulfill the requests for various types of traffic studies and produce all reports associated

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	$490,000	SPR	-0-	STATE
Estimated Cost FFY 2011	$440,500	SPR	-0-	STATE
Projected Cost FFY 2012	$501,500	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 70 Automatic Vehicle Classifier (AVC) sites located throughout the state.

ACCOMPLISHMENTS DURING FY 2011: The progress made in this year's effort resulted in the continued use and monitoring of solar power and the digital wireless data communications at all 70 of our existing AVC continuous count traffic monitoring stations. The solar power conversion project has reduced electric utility costs and increased site operational rates. The wireless network conversions have dramatically improved the speed and dependability of traffic data transfers as compared to land line telephone service. The wireless conversions were facilitated through a research study with the University of Oklahoma. The University 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 University also provided a web page which allowed for real time monitoring of Wireless Traffic Monitoring Sites operations and repairs to be made in a timely fashion. The conversion of 12 old WIM 1068 systems to newer iSync Lite systems was completed in FY 2011 and efforts continue to be made to convert these sites to wireless and communicate with the University's developed software for data transfer through the internet.

PROPOSED ACTIVITIES FOR FY 2012: The previous comprehensive TMS Operations & Maintenance contract will be converted to two separate contracts. A "Data Collection, Software Development and Web Page Enhancement" contract addressed in this section will be initiated in FY 2012. The scope of this 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, 7) development of a power monitoring system for calculating charging rate and power consumption rate to adjust wireless transmission frequency and 8) improvements to the existing ODOT Traffic Count Information System Web Page.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	$615,000	SPR	-0-	STATE
Estimated Cost FFY 2011	$165,000	SPR	-0-	STATE
Projected Cost FFY 2012	$533,500	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). The purpose of TMS is to computerize traffic estimation and reporting, including data from public and private non – state government entities.

ACCOMPLISHMENTS DURING FY 2011: Annual processing was completed for the traffic year 2010 and the data was checked for accuracy. The HPMS sample data had trucks estimates updated with 20 year AADT forecasts. Trucks were estimated on the NHS system. The annual publication of the 2010 AADT Map was completed. The work toward updating the TMS mapping system to GeoMedia is approaching completion. This allows a more efficient accounting of all traffic monitoring locations and is a necessary step toward completing the new ramp traffic estimation requirements. One third of the TMS counties were finalized in GeoMedia maps and delivered to Data Collection in early 2011. Over 500 vehicle classification locations have been added to the Oklahoma TMS. One third of the counties had truck counts taken by contract and state forces, beginning the cycle in calendar year 2011.

PROPOSED ACTIVITIES FOR FY 2012: Continue the process of moving the TMS into GeoMedia. 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 2010 AADT Map. Keep informed of technological advances through attendance of seminars, conferences, and workshops.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	$192,000	SPR	-0-	STATE
Estimated Cost FFY 2011	$177,000	SPR	-0-	STATE
Projected Cost FFY 2012	$192,000	SPR	-0-	STATE

CONTACT INFORMATION

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

1309 Traffic Analysis and Projections

PURPOSE AND SCOPE: Traffic forecasts provide the basis for geometric and structural design of new highways and improvement of existing highways. The existing or assigned traffic volumes are projected twenty (20) years into the future for design purposes. Determining 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 (AADT) are prepared for each request of design traffic information.

ACCOMPLISHMENTS DURING FY 2011: Design traffic was furnished to the city and county governments and various divisions within ODOT. Information prepared for the larger population areas was based on 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 123 requests for design traffic were completed. Several consultant traffic analyses were overseen and edited.

PROPOSED ACTIVITIES FOR FY 2012: 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 2011	$130,000	SPR	-0-	STATE
Estimated Cost FFY 2011	$130,000	SPR	-0-	STATE
Projected Cost FFY 2012	$130,000	SPR	-0-	STATE

CONTACT INFORMATION

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

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 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 FY 2011: Calibration of the Pavement Friction System was completed in March, 2011 at the Texas Transportation Institute located at Texas A & M. The annual test cycle for FY 2011 encompassed pavement friction testing of highways in Divisions 4, 8 and all Interstates. The new Pavement Friction (Skid) Testing System purchased in FY 2007 was in its 5th year of use in this year's test cycle and again experienced increased productivity in test miles. This year's testing cycle totaled 7,366.13 miles. The new system's software provides a more efficient and streamlined reporting process. Highway mileage with less than adequate skid resistance value registers an average of approximately 8 percent of all pavements tested.

PROPOSED ACTIVITIES FOR FY 2012: The FY 2012 test cycle encompasses state, federal and interstate highways totaling approximately 10,101.32 miles in Division 1, 2, 3. Testing is done annually on all interstate highways including US-69. Completion is scheduled for the fall of 2012.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	$176,000	SPR	-0-	STATE
Estimated Cost FFY 2011	$173,500	SPR	-0-	STATE
Projected Cost FFY 2012	$166,500	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 and implementation of the Statewide Intermodal Transportation Plan (Long Range Plan) and the Oklahoma Statewide Transportation Improvement Program (STIP). To collaborate with ODOT Traffic Engineering Division in implementation and documentation of Oklahoma's Strategic Highway Safety Plan (SHSP).

In addition to routine review of projects and programs in relation to their consistency with the Long Range Plan and inclusion in the STIP, two significant SHSP implementation tasks include: hosting a Highway Safety Peer Exchange, and conducting a collision analysis modeling project. These tasks address multiple SHSP emphasis areas and objectives. Specifically, the emphasis areas of *Lane Departure, Intersection Crashes, and Unsafe Driver Behavior* will be addressed through the Highway Safety Peer Exchange; the objectives *Prioritize and evaluate problem intersections,* and *Minimize chance of crash upon lane departure* will be addressed through the collision analysis modeling project.

The Highway Safety Peer Exchange is designed for sharing innovative countermeasures, highway engineering technological advances, as well as best practices between State DOTs. The collision analysis modeling pilot project is intended to perform a safety study on a rural highway corridor to allow ODOT to evaluate the usefulness of a customized software package to assist in providing decision support analysis for solving road safety problems.

ACCOMPLISHMENTS DURING FY 2011: Worked with ODOT Traffic Engineering staff on implementation of SHSP. Provided interface necessary to include safety and security considerations in Long Range Transportation Plan and STIP. Coordinated with Transportation Safety Institute to set date, location, and program for Peer Exchange to be held in March 2012.

PROPOSED ACTIVITIES FOR FY 2012

The Highway Safety Peer Exchange, hosted in collaboration with the Transportation Safety Institute (TSI), will provide a format for State traffic safety engineers to discuss and learn about traffic safety planning, roadway departures, intersection safety, and human factors in highway safety. This task will be complete in FY 2012.

The Vision Zero Suite software, developed by DiExSys Roadway Safety Systems, will be used to interpret Oklahoma crash data, develop safety performance (mathematical) functions and diagnostic norms pertaining to a selected rural highway corridor. This is a one year project.

Prepare for development of SHSP II as a part of FY 2013 work program.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	$441,000	SPR	-0-	STATE
Estimated Cost FFY 2011	$321,500	SPR	-0-	STATE
Projected Cost FFY 2012	$100,000	SPR	-0-	STATE

CONTACT INFORMATION

Linda Koenig, Transportation Planner, 405-522-0171

1405 Motorcycle Safety & Education Program

PURPOSE AND SCOPE:
The Statewide motorcycle safety and education program seeks to reduce motorcycle crashes that result in fatalities and injuries. The program seeks to curb aggressive driving and speeding by motorcycle users. The Oklahoma Highway Patrol will implement a motorcycle safety course as a means of improving motorcycle user safety on the public roadways.

ACCOMPLISHMENTS DURING FY 2011: The Oklahoma Highway Patrol, in partnership with ODOT, initiated development of course materials and procuring equipment for a statewide motorcycle and safety and education program.

PROPOSED ACTIVITIES FOR FY 2012:
The Oklahoma Highway Patrol, in partnership with ODOT, will continue development and implementation of a statewide motorcycle and safety and education program. The program is designed to improve the skill level of motorcycle operators and increase public awareness of sharing the road between motorcycles and other motor vehicle operators. In 2012, the focus will be on developing public awareness through public service announcements and other outreach efforts, and on increasing safe motorcyclist behavior through preparation and delivery of a statewide Motorcycle Safety Training Course.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	$400,000	SPR	-0-	STATE
Estimated Cost FFY 2011	$400,000	SPR	-0-	STATE
Projected Cost FFY 2012	$400,000	SPR	-0-	STATE

CONTACT INFORMATION

Linda Koenig, Transportation Planner, 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; and (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 2011: Conducted Right of Way Acquisition class in conjunction with ODOT's Right of Way Division and FHWA. Implemented two new classes from Advisory Group, titled Bridge Maintenance and Retro-Reflectivity Management. 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 2012: 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. Classes on other EDC topics such as Safety Edge and Warm Mix asphalt. Conduct classes on Snow and Ice removal, in conjunction with FHWA. Continue the Roads Scholar, Road Safety Audit, Welding Safety, OSHA Forklift, Comprehensive MUTCD, Wildland Fire Training, provide Infrastructure Management training to include Motor Grader Operation, Chip Seal Class, Asphalt operations. 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) in handling daily office functions, organizing and conducting the annual conference and attendance of board meetings; 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 such as the Assoc. of County Commissioners of Okla. Strategic Planning, National LTAP Assoc. Confr. Planning, etc.; attend various conferences including the TRB Annual Confr. and the National LTAP Confr.; 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 2011	$117,168	SPR	$48,156	STATE	$222,832	FHWA
Estimated Cost FFY 2011	$100,000	SPR	$48,000	STATE	$222,000	FHWA
Projected Cost FFY 2012 (Yr 1 of 1)	$179,809	SPR	$48,156	STATE	$160,191	FHWA

CONTACT INFORMATION

Bryan Cooper, Transportation Research Section, 405-736-9475

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 FY 2011: Reviewed consultant studies as needed.

PROPOSED ACTIVITIES FOR FY 2012: 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 2011	$20,000	SPR	-0-	STATE
Estimated Cost FFY 2011	$2,000	SPR	-0-	STATE
Projected Cost FFY 2012	$20,000	SPR	-0-	STATE

CONTACT INFORMATION

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

1601 Federal-Aid Systems Coordination

PURPOSE AND SCOPE: To be responsible for the coordination of the State and United States Highway System, Federal-aid Highway System (includes the Interstate System and National Highway System) and the Functional Classification System. Prepare and coordinate all highway and 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 FY 2011: A total of 9 highway revisions were approved by the Transportation Commission. A total of 12.69 miles of highways were added and 14.30 miles were removed for a grand total of 1.61 highway miles removed from the State Highway System. A total of 2.5 miles was added to the Rural Functional Classification System and 1.07 miles was added to the Urban Routes. *The County Collector System* books were brought up to date and printed as of July, 2010. New forms were designed for revisions to the Functional Classification Systems. These forms were designed to be completed online to help reduced paper cost and filing. Seven of the many highway history questions this office received, required extensive research. The *Oklahoma's Memorial Highways & Bridges* book has been updated, but not published for 2010.

PROPOSED ACTIVITES FOR FY 2012: Continue to coordinate all necessary highway revisions within the State. Do necessary on-site reviews of revisions as needed. The Urban Areas will be adjusted in accordance with the 2010 Census this coming year, along with all Functional Classification System revisions that are impacted from the new boundaries The Rural Functional Classification System will be adjusted as well. Much travel will be needed to complete this task. New classification books for both urban and rural will be published. The *Oklahoma's Memorial Highways & Bridges* book for 2011 will be updated and published.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	$81,000	SPR	-0-	STATE
Estimated Cost FFY 2011	$80,000	SPR	-0-	STATE
Projected Cost FFY 2012	$93,000	SPR	-0-	STATE

CONTACT INFORMATION

Gary Howell, Systems Coordinator, GIS Management Branch, 405-522-1041

1603 Highway Needs Study

PURPOSE AND SCOPE: To estimate the current and future needs of the state highway system using up-to-date software and techniques. To publish a Needs Study and Sufficiency Report biennially showing the physical and financial needs of the state highway system over a twenty-year period for construction, maintenance, and administration. To maintain a geometric deficiency database of the state highway system. To maintain a construction and maintenance status log of highway projects. To develop, maintain, and recommend a report of highway segments for potential removal from the state highway system and its associated cost. To maintain a database indicating sufficiency ratings for roadways and bridges along with recommended improvements and costs.

ACCOMPLISHMENTS FOR FY 2011: Processed data collected from field data. Reformatted Highway Needs Study Program. Ran existing and newly developed data programs. Restructured, published and distributed the 2011 Needs Study and Sufficiency Rating Report, Volumes I & II. Updated and distributed Potential Removals from the State Highway System Report.

PROPOSED DURING FY 2012: Update the Sufficiency Rating Manual and Field Division maintenance study guide. Revise the Needs Study Procedure Manual. Update the state highway subsections, inventory, and improvement data for the Sufficiency file prior to collection of field data. Update geometric data contained in the Deficiency file. Begin field data collection.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	$166,000	SPR	-0-	STATE
Estimated Cost FFY 2011	$215,000	SPR	-0-	STATE
Projected Cost FFY 2012	$171,243	SPR	-0-	STATE

CONTACT INFORMATION

Wayne Barber, Needs Study Program Manager, 405-522-6705

1604 Pavement Management Systems

PURPOSE AND SCOPE: To develop and implement the Department's Pavement Management System (PMS); maintain a computer database of pavement distresses and other roadway characteristics used for the analysis of pavement condition and performance and as an aid to pavement design; maintain application software necessary to analyze roadway information for pavement management; and supply data for inclusion in the Highway Performance Monitoring System (HPMS).

ACCOMPLISHMENTS DURING FY 2011: Performed PMS analysis of the National Highway System in Oklahoma. Provided technical support for the Analysis Tool and the video log software, both in-house and web based. Completed a round of condition data collection and began a new round. Started collecting non-NHS routes including HPMS samples in Divisions 1, 2, 5, 6 and 7. Started collecting IRI only for NHS routes. Continued inventory collection of signs, safety barrier, guardrail and crash attenuators. Completed collection and analysis of network wide GPR, FWD and Core data. Kept informed of the latest technological advances and practices by attending the Southeast Pavement Management Conference.

PROPOSED ACTIVITIES FOR FY 2012: Perform PMS analysis of the Statewide Highway System in Oklahoma. Continue refinement of PMS procedures by updating performance curves, treatment costs, and triggers. Provide technical support for the video log software. Complete inventory collection of signs, safety barrier, guardrail and crash attenuators. Keep informed of the latest technological advances and practices through seminars, conferences, and workshops. Initiate pavement condition data collection on the following:

- All NHS routes in Divisions 1, 2, 5, 6 and 7 and All routes in Divisions 3, 4 and 8
- HPMS non-highway sample sections in Divisions 3, 4 and 8

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	$2,750,000	SPR	-0-	STATE
Estimated Cost FFY 2011	$2,534,200	SPR	-0-	STATE
Projected Cost FFY 2012	$950,672	SPR	-0-	STATE

CONTACT INFORMATION

William Dickinson, Pavement Management Program Manager, 405-522-1448

1700 General Urban Transportation Planning

PURPOSE AND SCOPE: This item includes managing staff members in Planning & Program Coordination and the conduct of those general planning and research activities which cannot be ascribed to specific transportation studies contained in the unified planning work programs or the SPR Report. These activities include; a) coordination with appropriate ODOT staff members and Field Divisions, b) coordination with and among local, state, and federal officials, c) dissemination of social and economic data and traffic counts to the public and private sector on request, d) providing technical assistance on planning and research activities/studies at request, e) tracking federal and state legislation and regulations affecting the Department and f) keeping abreast with the latest technological advances and federal regulations in transportation planning, ITS, etc. through seminars, workshops and reading materials.

ACCOMPLISHMENTS DURING FY 2011: Coordination work was continued with appropriate ODOT staff members and Field Divisions. Socioeconomic data and traffic counts were provided, at request, to local and state officials and to citizens. Staff attended various seminars and workshops related to management, transportation planning, homeland security and policies in order to maintain, upgrade and develop needed expertise, proficiency and professionalism. Assistance related to Planning & Program Coordination functions was provided. Coordination with and among local, state and federal officials was continued. Develop technical brochures on Transit and Highway operations for the State Legislature to disseminate information for legislative policies and laws. Monitor federal and state legislation and regulations affecting the Department.

PROPOSED ACTIVITIES FOR FY 2012: Coordination with appropriate ODOT staff members, Field Divisions and local, state and federal officials will be continued. Special attention will be focused on the statewide and urban planning sections in the federal transportation bill, SAFETEA-LU, and its effects on statewide and urban transportation planning. Dissemination of pertinent planning data and information will be accomplished on request. Technical assistance will be provided on request concerning transportation planning and the SAFETEA-LU legislation. Develop technical brochures on Transit and Highway operations for the State Legislature to disseminate information for legislative policies and laws. Professional enrichment of Planning & Program Coordination members will be pursued through attendance at workshops, seminars and conferences.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	$33,500	SPR	-0-	STATE
Estimated Cost FFY 2011	$33,500	SPR	-0-	STATE
Projected Cost FFY 2012	$33,500	SPR	-0-	STATE

CONTACT INFORMATION

Craig Moody, Transportation Manager II, 405-522-1464

1701 Okla. 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 SAFETEA-LU provisions and all applicable transportation planning regulations and requirements for the Oklahoma City Area Regional Transportation Study (OCARTS) area.

ACCOMPLISHMENTS DURING FY 2011: Completed work population and employment forecasts to support travel component and analysis of social environmental and economic impacts for Encompass 2035 updated regional traffic count database on monthly basis; continued membership with State Data Center Affiliate program; MPO approved the project selection criteria for Encompass 2035 and a draft plan summary was presented for review and comment and final plan was adopted in April, 2011; adopted STP Procedures for Oklahoma City Urbanized Area funds and criteria and process for evaluation of projects; transit services continued to be provided through three urban and two rural transit systems; continued working with Air Quality Division of ODEQ on monitoring CO and ozone levels; the Transportation Improvement Program (TIP) for FFY 2011-2014 was developed and maintained and amended as necessary; preparation and finalization of the FY 2012 Unified Planning Work Program (UPWP) was completed, the FY 2012 Agreement, executed and authorization, to expend federal funds effective July 1, 2011 through June 30, 2012 was granted by FHWA.

PROPOSED ACTIVITIES FOR FY 2012: Data development and information management; regional transportation planning includes long range planning including major streets and highways, comprehensive and regional transportation plans and coordination; short range planning including the Congestion Management Process, ITS, Safety Management and special studies; program implementation of the TIP, Urbanized Area Surface Transportation Program and project coordination and monitoring; alternative transportation planning including Pedestrian and Bicycle, Public Transit, Human Services Transportation and Passenger Rail; transportation effects of air quality, ozone reduction and environmental programs; public education planning of the public participation process (PPP), nondiscrimination compliance plan and conducting broad-based public involvement activities; program administration and implementation of the FY 2011 Unified Planning Work Program (UPWP) and COTPA Program.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	$70,000	SPR	$1,449,874	PL	$200,000	In-Kind
Estimated Cost FFY 2011	$41,900	SPR	$1,168,222	PL	$200,000	In-Kind
Projected Cost FFY 2012	$70,000	SPR	$1,219,474	PL	$200,000	In-Kind

CONTACT INFORMATION

Dawn Borelli, Program Coordination Branch, 405-521-6433

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 SAFETEA-LU provisions and all applicable transportation planning regulations and requirements for the Tulsa urbanized area.

ACCOMPLISHMENTS DURING FY 2011: Continued development of the Regional Transportation Plan, Connections 2035 including with development of the 2032 Plan; Preparation and finalization of the FY 2012 Unified Planning Work Program (UPWP) was completed. The FY 2012 Agreement, executed and authorization, to expend federal funds effective July 1, 2011 through June 30, 2012 was granted by FHWA. The Transportation Improvement Program (TIP) for FFY 2011-2014 was developed, maintained and amended as necessary. Applications for FFY 2014 STP-UZA program were reviewed and selected for funding. Continued the coordination of the Ozone Alert! Clean Cities and Green Traveler Alternative programs. Reviewed and analyzed the Congestion Management Process and implemented modified system. Assisted in the planning, funding and development of the Bicycle/ Pedestrian Trail system as well as developed a pedestrian master plan for the region.

PROPOSED ACTIVITIES FOR FY 2012: Data collection–develop and maintain socioeconomic data and transportation system data in the region; simulation and forecasting of land use to be incorporated into the 2035 plan, maintain 2032 travel demand model developed for the 2035 Plan, transition to the MOVES mobile emissions model; long range planning includes a maintained valid major street and highway plan, comprehensive plan and transportation coordination, regional transportation plan; short range planning includes the Congestion Management Process to revise document as necessary, ITS, Safety and Incident Management in improving safety in region; project and program implementation of the FFY 2012-2015 TIP, revise projects selected for the FFY 2015 STP-UZA program; alternative transportation planning includes initiation of development of a comprehensive pedestrian, bicycle plan for the region, public transit system and updated financial plan for MTTA, implementation of Coordinated Public Transit—Human Services Transportation Plan, coordination with ODOT on High Speed Passenger Rail implementation and initiation in region; transportation effects includes air quality planning, ozone reduction and environmental programs; public education planning includes revision of the PPP, Nondiscrimination Compliance Plan and initiation of several outreach events; program administration of the transportation and MTTA planning process.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	$27,500	SPR	$723,501	PL	$142,000	Local
Estimated Cost FFY 2011	$27,500	SPR	$723,501	PL	$142,000	Local
Projected Cost FFY 2012	$35,000	SPR	$737,102	PL	$147,420	Local

CONTACT INFORMATION

Dawn Borelli, Program Coordination Branch, 405-521-6433

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 SAFETEA-LU provisions and all applicable transportation planning regulations and requirements for the Lawton Metropolitan Area.

ACCOMPLISHMENTS DURING FY 2011: Transportation Planning for the Lawton Metropolitan Area was carried out as described in the FY 11 Unified Planning Work Program (UPWP). During FY 11 staffing shortages and lack of transportation planning experience by employees of the Lawton Metropolitan Planning Organization (LMPO) postponed numerous projects and required significant hands on assistance and training by the MPO coordinator. Accomplishments during FY 11 included: publish the Annual listing of obligated projects, adoption of the FFY 2012-2015 Transportation Improvement Program (TIP) processing amendments to the FFY 2010-2013 TIP, preparation of the annual transportation planning funding documents and maintenance and update of the LMPO website.

PROPOSED ACTIVITIES FOR FY 2012: Data collection and monitoring of social, economic, environmental and transportation system data. Review and re-affirm the 2030 Long Range Transportation Plan to 2035. Conduct assessment of transit and pedestrian accessibility around element and middle schools. Assist the LMPO in development and adoption of the transportation planning and procedures manual. Review and update the Public Participation Process to address Limited English Proficiency and Title VI. Continue staff education, training and attendance at workshops and seminars. Monitor the transportation planning process for compliance with administrative, financial and legal requirements for maintaining a continuous, cooperative and comprehensive process.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	$29,000	SPR	$75,341	PL	$18,831	Local
Estimated Cost FFY 2011	$29,000	SPR	$75,341	PL	$18,831	Local
Projected Cost FFY 2012	$15,000	SPR	$120,000	PL	$24,000	Local

CONTACT INFORMATION

Craig Moody, Transportation Manager II, 405-521-2705

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 SAFETEA-LU provisions and all applicable transportation planning regulations and requirements for the Fort Smith urbanized area.

ACCOMPLISHMENTS DURING FY 2011: Transportation planning for the Frontier Metropolitan Area was carried out as described in the FY 10 Unified Planning Work Program (UPWP). Accomplishments during FY 10 included: published Annual Listing of Obligated Projects, adopted the FFY 2011-2014 Transportation Improvement Program (TIP), developed and hosted Freight Summit and Freight Roundtable, published the Annual listing of obligated projects, preparation of the annual transportation planning funding documents and maintenance and update of the Frontier MPO website.

PROPOSED ACTIVITIES FOR FY 2012: 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. In coordination with AHTD provide technical assistance in the reorganization of the Frontier MPO. Monitor progress on the update of the Metropolitan Transportation Plan. 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 2011	$17,000	SPR	$35,773	PL	$5,975	Local
Estimated Cost FFY 2011	$17,000	SPR	$35,000	PL	$5,000	Local
Projected Cost FFY 2012	$7,000	SPR	$40,824	PL	$10,206	Local

CONTACT INFORMATION

Craig Moody, Program Coordination Branch Manager, 405-522-1465

1710 Substate 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 FFY 2011: None. New project in FY 2011.

PROPOSED ACTIVITIES FOR FFY 2012: Develop an Oklahoma Rural Transportation Planning Manual. Implement the public participation process thru OARC. Begin the development of long range regional transportation planning.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	$200,0000	SPR	-0-	STATE
Estimated Cost FFY 2011	$6,500	SPR	-0-	STATE
Projected Cost FFY 2012	$220,000	SPR	-0-	STATE

CONTACT INFORMATION

Craig Moody, Program Coordination Branch Manager, 405-522-1465

1719 Statewide Transportation Improvement Program

PURPOSE AND SCOPE: To develop, administer and revise a financially-constrained federally funded transportation construction 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 Bi-State MPO), the Bureau of Indian Affairs, and Tribal Governments.

ACCOMPLISHMENTS DURING FY 2011: Developed the FFY 2011-2014 Statewide Transportation Improvement Program (STIP) for approval and implementation. The FFY 2011 portion was administered through administrative modifications, statewide line items and amendments. All amendments to the STIP and TIPs were in accordance with the federally approved revised *Procedures for Developing and Amending the STIP and TIP.* The Process includes publication of proposed amendments for a minimum of 14 days for review and comment. The public involvement process was completed in accordance with TEA 21 and SAFETEA-LU, regarding publication of project amendments. Revised the Definitions included in the *Procedures for Developing and Amending the STIP and TIP* in coordination with the FHWA, FTA, and MPOs. The STIP webpage was revised to reflect the Amendments and Statewide Line Items which includes the ARRA projects.

The FFY 2011 – 2014 STIP contains an Executive Introduction of the Transportation Commission; Explanation of STIP; Balancing Process including Clarification, Anticipated Revenues and Expenditures; Project Selection and Prioritization including Construction Program Maps by Division and Project Listing by Year; Transit Program including Project listing by Year; MPO TIPs; Indian Reservation Roads TIP; County Improvements for Roads and Bridges (CIRB); Federal Lands Program including Applications; ODOT Certification; Public Involvement Process including the *Procedures for Developing and Amending the STIP and TIP.*

PROPOSED ACTIVITIES FOR FY 2012: Develop the FFY 2013-2016 Statewide Transportation Improvement Program (STIP) for approval and implementation. Continue administration of current STIP using currently approved procedures. Amend the FFY 2012 portion of the current STIP based upon revision of the ODOT 8 Year Construction Work Plan.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	$70,000	SPR	-0-	STATE
Estimated Cost FFY 2011	$87,000	SPR	-0-	STATE
Projected Cost FFY 2012	$85,000	SPR	-0-	STATE

CONTACT INFORMATION

Dawn Borelli, Program Coordination Branch, 405-521-6433

1902 Statewide Long Range Transportation Planning

PURPOSE AND SCOPE: To update the Statewide Intermodal Transportation Plan (SITP) and other associated statewide planning activities in accordance with the provisions of SAFETEA-LU. To conduct and/or participate in the development of plans related to Transportation Improvement Corridors and other corridors/activities identified in the SITP.

ACCOMPLISHMENTS DURING FFY 2011: Worked with consultant for Long Range Plan update. Received products and services provided by Langston University including presentation of socioeconomic and demographic data for the Plan and printing final Plan report. Continued Transit Gaps Study. Initiated work on updating freight flow map with 2010 Freight Analysis Flow (FAF) truck data, waterborne cargo data and railroad waybill data. Maintained email database for public involvement activities. Continued posting new Statewide Plan information on ODOT website. Hosted meetings to receive comment on Draft Plan document and on preliminary findings of Transit Gaps Study. Received approval of final 2010-2035 Long Range Transportation Plan by Oklahoma Transportation Commission in December 2010, and concurrence by Federal Highway Administration in February 2011. Published Final Plan document and Summary Brochure in December 2010, and Technical Supplement in February 2011.

PROPOSED ACTIVITIES FOR FY 2012: Continue with Long Range Plan activities including preparation of Transit Gap Study, 2010 freight flow map, and improvement studies as needed. Continue coordination with MPOs and other local governments in relation to long range transportation plans. Monitor progress of TIGER project implementation, pending application, and future funding opportunities.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	$248,000	SPR	-0-	STATE
Estimated Cost FFY 2011	$37,000	SPR	-0-	STATE
Projected Cost FFY 2012	$0	SPR	-0-	STATE

CONTACT INFORMATION

Linda Koenig, Transportation Planner, 405-522-0171

1903 Intelligent Transportation Systems Planning

PURPOSE AND SCOPE: Incorporate Intelligent Transportation Systems (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 System (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 FY 2011: Oklahoma's CVO Program Plan and Top Level Design for CVISN Core and Expanded Deployment update on hold pending approval to proceed after federal audit hold. No activity on the Oklahoma ITS Plans or Architecture except for Federal Transit's program questionnaire. Approved quarterly CVISN expenditure reports signed and sent to Federal Motor Carrier Safety Administration. No contracts for updates to ITS or CVISN.

PROPOSED ACTIVITIES FOR FY 2012: Update the Statewide ITS Plan, ITS Architecture and Implementation Plan. Continue to process ITS funded contracts / invoices for the systems analysis / design and deployment of Oklahoma's CVISN Program plan projects. Coordinate ITS and other technology based transportation research contracts and activities.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	$25,000	SPR	-0-	STATE
Estimated Cost FFY 2011	$500	SPR	-0-	STATE
Projected Cost FFY 2012	$10,000	SPR	-0-	STATE

CONTACT INFORMATION

Ron F. Curb, Engineering Services Branch Manager, 405-522-3795

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. Analyse and comment on air quality nonattainment and transportation regulations and law. Maintain information flow to and from decision-makers regarding air quality/transportation issues, developments, regulations and laws. Continue staff education, training and attendance at workshops and seminars. Assist the Department to be a progressive participant in reducing the impacts of transportation-related pollution.

ACCOMPLISHMENTS DURING FFY 2011: Participated in the air quality/transportation planning activities of the 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. Facilitated meetings of the Oklahoma Transportation Air Quality Work Group (OTAC). 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 modelling 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. Partnered with INCOG to enhance and extend data collection and modelling outside of the study areas to establish base data for air quality issues in rural/donut areas.

PROPOSED ACTIVITIES FOR FFY 2012: Maintain research and participation in air quality/ transportation issues, developments, regulations and laws. Assist in providing data for air quality modelling 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 Memorandum of Agreement and other requirements (transportation conformity) of nonattainment status. 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 modelling outside of the study areas to establish base data for air quality issues in rural/donut areas. Schedule and host OTAC meetings. Continue staff education through courses, seminars, and conferences.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	$45,000	SPR	-0-	STATE
Estimated Cost FFY 2011	$4,500	SPR	-0-	STATE
Projected Cost FFY 2012	$100,000	SPR	-0-	STATE

CONTACT INFORMATION

Craig Moody, Transportation Manager II, 405-522-1465

1905 Freight Planning

PURPOSE AND SCOPE: To coordinate freight planning and freight analysis with the Long Range Transportation Plan, Statewide Transportation Improvement Program (STIP), and project development processes.

ACCOMPLISHMENTS DURING FY 2011: Collaborate with the Statewide Intermodal Transportation Plan and STIP process in addressing freight solutions on the designated transportation improvement corridors identified in the Statewide Plan.

PROPOSED ACTIVITIES FOR FY 2012: Establish a framework and schedule for ongoing freight data collection and analysis to establish gaps between existing freight system conditions and capabilities and projected freight transportation needs for the State. Collaborate with the Statewide Intermodal Transportation Plan and STIP process in addressing freight solutions. Identify and explore funding strategies for freight projects. Coordinate with Engineering Services Branch (Research Section) on implementing a freight component for travel demand models applicable in the State.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	$8,500	SPR	-0-	STATE
Estimated Cost FFY 2011	$500	SPR	-0-	STATE
Projected Cost FFY 2012	$8,500	SPR	-0-	STATE

CONTACT INFORMATION

Craig Moody, Transportation Manager II, 405-522-1465

1906 Rail Planning

PURPOSE AND SCOPE: To coordinate rail planning in the state in accordance with the provisions of SAFETEA-LU and the requirements of the Passenger Rail Investment and Improvement Act of 2008 (PRIIA).

ACCOMPLISHMENTS DURING FFY 2011: Coordinated preparation of the State Rail Plan to include: 1) public involvement; 2) data collection; 3) establish vision, goals, and objectives; 4) profile the rail planning institutional structure in Oklahoma; 4) analyze the freight and passenger rail inventory; 5) evaluate freight and passenger rail system needs and improvements; 6) develop investment program; 7) identify policy and institutional improvements; 8) develop state rail plan document. First round of public meetings completed.

Conducting a study of the feasibility of freight rail improvements from Shawnee to McAlester. The study will look at the cost to rehabilitate the rail line (including cost to borrow the funds), the potential users of the line and the income that could be generated, and the estimated time needed to pay back the funds borrowed for the improvements. Literature review completed and data collection underway.

PROPOSED ACTIVITIES FOR FFY 2012: Finalize the State Rail Plan which includes: 1) public involvement; 2) data collection; 3) establish vision, goals, and objectives; 4) profile the rail planning institutional structure in Oklahoma; 4) analyze the freight and passenger rail inventory; 5) evaluate freight and passenger rail system needs and improvements; 6) develop investment program; 7) identify policy and institutional improvements; 8) develop state rail plan document. Conduct second round of public meetings.

Continue a study of the feasibility of freight rail improvements from Shawnee to McAlester. The study will look at the cost to rehabilitate the rail line (including cost to borrow the funds), the potential users of the line and the income that could be generated, and the estimated time needed to pay back the funds borrowed for the improvements. Complete data collection and begin formulating business plan.

Both items by contract with contract funds established in 2011. Since contracts were fully funded, no additional funds are required for FFY 20112.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	$870,000	SPR	-0-	STATE
Estimated Cost FFY 2011	$850,0000	SPR	-0-	STATE
Projected Cost FFY 2012	$0	SPR	-0-	STATE

CONTACT INFORMATION

Johnson Bridgwater, Rail Programs Division, 405-521-4203

1910 Public Involvement and Visualization Techniques

PURPOSE AND SCOPE: To develop and maintain a Public Participation Plan (PPP) to encourage full public participation in the transportation planning and programming process including the Statewide Transportation Improvement Plan (STIP), the Long Range Plan, and the National Environment Protection Act (NEPA) Process.

ACCOMPLISHMENTS DURING FFY 2011: Held over 40 public meetings statewide. Visualization techniques were implemented utilizing 3-dimensional design, video, and animation and were incorporated into public meetings. A new ODOT Public Involvement web page was developed. Successfully completed the public involvement plan for the updated Long Range Plan and the STIP. Conducted meetings for the Long Range Plan and STIP with special outreach to the traditionally underserved and coordinated with Langston University.

PROPOSED ACTIVITIES FOR FFY 2012: Provide for public involvement for environmental, planning and construction projects. Include special outreach to non-metropolitan public officials, and the traditionally underserved. Develop and improve upon presentation processes and techniques. Provide visualization of proposed projects for the STIP. Provide visualization of existing and proposed conditions for presentation to public and other agencies at public and stakeholders meetings for planning purposes. Update the current PPP.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	$255,000	SPR	-0-	STATE
Estimated Cost FFY 2011	$275,000	SPR	-0-	STATE
Projected Cost FFY 2012	$280,000	SPR	-0-	STATE

CONTACT INFORMATION

Craig Moody, Program Coordination Branch Manager, 405-522-1465

1911 Inventory of Depression Era Structures

PURPOSE AND SCOPE: Executive Order 11593 and Sections 106 and 110 of the National Historic Preservation Act require the identification and evaluation of historic properties that are under agency ownership or jurisdiction. In order to fulfill obligations under these requirements as well as the historic bridge provision under the Highway Bridge Replacement and Rehabilitation Program (23 CFR 650, Subpart D) and the Historic Bridge Program, as defined in 23 USC 144(o), This project will identify and evaluate Depression-era road-related resources in the State of Oklahoma. ODOT has completed two previous studies and NRHP assessments of bridges in the state: *Spans of Time: Oklahoma Historic Highway Bridges* (1993) and its subsequent 2007 re-evaluation and update. These studies focused on the documentation and evaluation of metal truss bridges and concrete and stone arch bridges built in Oklahoma before 1955. The results of the two studies have proven to be useful management tools for ODOT, the Oklahoma State Historic Preservation Office (SHPO), and other federal agencies as references for early planning and mitigation of potential adverse effects to these resources. Depression-era resources have become increasingly significant to the history of Oklahoma and it has become necessary to incorporate them into transportation planning. Preliminary assessments indicate that WPA alone was involved in the construction of 2712 bridges and 50,306 culverts on Oklahoma's highway and county transportation system. The total number of Depression-era work relief resources in the state, however, is unknown.

ACCOMPLISHMENTS DURING FY 2011: None, new project.

PROPOSED ACTIVITIES FOR FY 2012:

1) To inventory Oklahoma's Depression-era bridges and other road-related resources and evaluate their significance under the National Register of Historic Places (NRHP), focusing primarily on resources that are documented to have been constructed as part of a designated Depression-era work-relief program.

2) To use the results of the study to assist ODOT in early planning efforts for federal and state-funded bridge replacement and rehabilitation projects.

3) To use the information provided in the study to allow ODOT to develop a long-term management plan for significant Depression-era road-related resources in the state.

The project will result in an inventory of Depression-era works programs resources throughout the state and recommendations for NRHP eligibility. The project will be authorized under federal aid project number SPRY-0010(056)PL state job piece number 29060(04).

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	$0	SPR	-0-	STATE
Estimated Cost FFY 2011	$0	SPR	-0-	STATE
Projected Cost FFY 2012	$400,000	SPR	-0-	STATE

CONTACT INFORMATION

Dawn Sullivan, Engineering Manager IV, 405-521-2927

SPR PART 2 - RESEARCH, SPRY-0010(54)RS, JP# 01946(58)
FEDERAL FISCAL YEAR 2012

		SPR	STATE	LOCAL	TOTAL
GENERAL ACTIVITIES					
2100	Transportation Research Board	$5,000.00			$5,000.00
2102	Research Library Services	$150,000.00			$150,000.00
2103	Transportation Research Day	$14,865.00			$14,865.00
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	$650,000.00			$650,000.00
2156	Roadside Vegetation Management	$200,997.00			$200,997.00
2157	Herbicide Research Program	$69,349.00			$69,349.00
2160	Oklahoma Transportation Center	$967,564.00			$967,564.00
2700	Experimental Product Evaluation Program	$20,000.00			$20,000.00
	Total General Activities	***$2,162,775.00***			***$2,162,775.00***
CONTINUING RESEARCH PROJECTS					
2200	Instrumented Pavement Construction	$51,544.00			$51,544.00
2218	QC/QA Testing Differences Between HMA and Warm Mix Asphalt	$78,397.00			$78,397.00
2226	Hamburg Rut Tester for Field Control of HMA - "Use of MIST"	$49,034.00			$49,034.00
2227	Applied Approach Slab Settlement Research	$99,558.00			$99,558.00
2228	Overturning Forces at Bridge Abutments	$83,721.00			$83,721.00
2229	Expected Life of Silanes	$98,084.00			$98,084.00
2230	Effect of Y-Cracking on CRCP Performance	$35,276.00			$35,276.00
2231	Stainless Steel Reinforcement as a Replacement for Epoxy Coated Steel	$80,925.00			$80,925.00
	Total Continuing Research Projects	***$576,539.00***			***$576,539.00***
NEW RESEARCH PROJECTS					
2234	Energy Dissipation in Eighteen-Foot Broken-Back Culverts	$99,992.00			$99,992.00
2235	Distress Modeling for DARWin-ME, Phase I	$106,398.00			$106,398.00
2236	Drying Shrinkage Problems in High PI Subgrade Soils	$55,879.00			$55,879.00
2237	Reduction in Storm Water Runoff	$92,541.00			$92,541.00
2238	New Asphalt Mix Design Program for ODOT	$89,995.00			$89,995.00
2239	Develop Draft Chip Seal Cover Aggregate Specifications Based on AIMS	$45,570.00			$45,570.00
2240	Portable WIM for Pavement Design	$103,009.00			$103,009.00
2241	Real-Time Monitoring of Slope Stability in Eastern Oklahoma	$88,531.00			$88,531.00
	Total New Research Projects	***$681,915.00***			***$681,915.00***
	Grand Total SPRY-0010(52)RS	***$3,421,229.00***			***$3,421,229.00***
FFY 2012 JOINT ODOT/OkTC INTERAGENCY AGREEMENT PROJECTS Item 2160					
2160	Investigation of Optimized Graded Concrete for Oklahoma	$85,069.00			
2160	Evaluation of the Enhanced Integrated Climatic Model	$89,999.00			
2160	Interpretation of In Situ Tests as Affected by Soil Suction	$80,000.00			
2160	Prototype Reinforced Soil Embankment for Reconstruction of US-62 Slope	$99,996.00			
2160	The Effects of Soil Suction on Shallow Slope Stability	$112,500.00			
	Total ODOT/OkTC 2160 Projects	***$467,564.00***			
POOLED FUND STUDIES					
TPF-5(408)	NCHRP	$661,508.00			$661,508.00
TPF-5(229)	Char. of Drainage Layer Prop for MEPDG	$30,000.00			$30,000.00
TPF-5(209)	Support of Transp Curriculum Coord Council (TCCC)	$20,000.00			$20,000.00
TPF-5(208)	NCAT	$400,000.00			$400,000.00
TPF-5(205)	Impl of Conc Pave Mix Des & Analysis Track of CP Road Map	$15,000.00			$15,000.00
TPF-5(197)	The Impact of Wide-Base Tires on Pavement Damage: A National Study	$25,000.00			$25,000.00
TPF-5(240)	TRB Core Program	$128,250.00			$128,250.00
TPF-5(159)	Tech Transfer Concrete Consortium	$7,500.00			$7,500.00
TPF-5(251)	Relative Operational Performance of Geosynthetics Used as Subgrade	$15,000.00			$15,000.00
TPF-5(099)	Evaluation of Low Cost Safety Improvements	$30,000.00			$30,000.00
TPF-5(232)	Study of the Impacts of Implements of Husbandry on Bridges	$10,000.00			$10,000.00
TPF-5(231)	ITS Pooled Fund Program (ENTERPRISE)	$40,000.00			$40,000.00
TPF-5(255)	Highway Safety Manual Implementation	$25,000.00			$25,000.00
TPF-5(243)	Motorcycle Crash Causation Study	$50,000.00			$50,000.00
Sol. 1308	Transportation Pooled Fund Program Web-Based Training	$5,000.00			$5,000.00
Sol. 1277	HY-12 Storm Drain Hydraulic Analysis Program - Phase II Dev. Efforts	$10,000.00			$10,000.00
Sol. 1309	Dev. Of Improved Design Guide for Unbonded Conc. Overlays	$20,000.00			$20,000.00
	Total Pooled Fund Projects	***$1,492,258.00***			***$1,492,258.00***
	Total Research Funding	***$4,913,487.00***			***$4,913,487.00***

RECENTLY COMPLETED OR ENDING RESEARCH PROJECTS			
2207	Validation and Refinement of Chemical Stabilization Procedures for	$0.00	$0.00
2208	Development and Implementation of an MEPDG for Rigid Pavements	$0.00	$0.00
2209	Development of a Flexible Pavement Database for Local Calibration of the	$0.00	$0.00
2210	Calcium-Based Stabilizer Induced Heave in Oklahoma Sulfate-Bearing	$0.00	$0.00
2211	Modeling of 85th Percentile Speed for Rural Highways for Enhanced	$0.00	$0.00
2214	Use of MSE Technology to Stabilize Highway Embankments and Slopes in	$0.00	$0.00
2215	Tube Suction Test for Evaluating Durability of Cementitiously Stabilized	$0.00	$0.00
2217	Development of Best Practices Program for a Collaboration of Minority	$0.00	$0.00
2219	Evaluation of the Effectiveness of ODOT's Cable Barrier Program	$0.00	$0.00
2220	Development of ODOT Guidelines for use of Geogrids in Aggregate Bases	$0.00	$0.00
2221	Analysis of Aggregates and Binders Used for the ODOT Chip Seal	$0.00	$0.00
2222	Performance of Ultra-Thin Whitetopping (UTW) in Oklahoma	$0.00	$0.00
2223	Test Methods for Use of Recycled Asphalt Pavement in Asphalt Mixes	$0.00	$0.00
2224	Energy Harvesting on Highway Bridges	$0.00	$0.00
2225	Correlation of Fully-Softened Shear Strength of Clay Soil with Index	$0.00	$0.00
2232	Next Generation Smart Barrel System for Workzone Safety Enhancement	$0.00	$0.00
2233	Rail Diesel Car Demonstration	$0.00	$0.00
ACTIVE AND PAID POOLED FUND STUDIES			
TPF-5(184)	Investigation of Highway Asset Inventory and Data Collection Methods	$0.00	$0.00
TPF-5(174)	Construction of Crack-Free Bridge Decks, Phase II	$0.00	$0.00
TPF-5(145)	Western Maintenance Partnership	$0.00	$0.00
TPF-5(117)	Development of Performance Properties of Ternary Mixes	$0.00	$0.00
TPF-5(063)	Improving the Quality of Pavement Profiler Measurement	$0.00	$0.00
TPF-5(036)	Transportation Asset Management Research Program	$0.00	$0.00

2100 Transportation Research Board

PURPOSE AND SCOPE: This project will only cover travel expenses and time for ODOT personnel to attend the annual TRB meeting. The TRB subscription costs are covered under a pooled fund study.

ACCOMPLISHMENTS DURING FFY 2011: Attended TRB annual meeting.

PROPOSED ACTIVITIES FOR FFY 2012: Attend TRB annual meeting.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	$5,000	SPR	-0-	STATE
Estimated Cost FFY 2011	-0-	SPR	-0-	STATE
Projected Cost FFY 2012	$5,000	SPR	-0-	STATE

CONTACT INFORMATION

ODOT Planning and Research Div. Engineer: 405-522-1447

2102 Research Library Services

PURPOSE AND SCOPE: To provide the Oklahoma Department of Transportation (ODOT) and customers with an information clearinghouse. The primary goals are to provide 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 2011: Provided transportation information, services and updates to ODOT and other state universities; developed procedures to enhance services and accessibility to Transportation Library resources by ODOT and Oklahoma Transportation Center's university personnel; began converting and implementing the Paradox 10 Database System to the Library of Congress System; began report reproduction, binding and distribution; retrieved new publications, reports and various documents from ODOT for Library inclusion; distributed and delivered documents as requested; produced progress reports.

PROPOSED ACTIVITIES FOR FFY 2012: Continue to contract with Langston University (LU) to provide current information, publications, articles, services and updates to ODOT, other state universities and transportation industry entities; maintain data base of pertinent resources for each information category; perform literature and information searches both electronically and manually as requested; coordinate and distribute research information, executive summaries, surveys, reports and journals to ODOT personnel; maintain records and track borrowed materials; conduct data entry in the Paradox system and/or Library of Congress system of publications; retrieve and deliver research materials between ODOT and LU; continue to convert the Paradox system to a Library of Congress system; perform report reproduction, binding and distribution as documents become available; produce progress reports.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011 (Yr 1 of 1)	$163,527	SPR	-0-	STATE
Estimated Cost FFY 2011	$163,527	SPR	-0-	STATE
Projected Cost FFY 2012 (Yr 1 of 1)	$150,000	SPR	-0-	STATE

CONTACT INFORMATION

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

ODOT SPR Part 2 Contract Administrator: Bryan Hurst, 405-522-3794

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 (OTC) Transportation Research Day event activities.

ACCOMPLISHMENTS DURING FFY 2011: Generated FY-2011 ODOT/OTC Transportation Research Day agenda/itinerary; assisted ODOT and OTC in planning, preparations & organization of events and materials; solicited for project presentation speakers; solicited for and organized lobby poster presentations; generated and submitted a list of event attendees for future Transportation Research Day invitations and problem statement/ideas solicitation; secured and presented dvd videos and still photograph cd's of the event; began preparations for the FFY 2012 Transportation Research Day event to be held October, 2011; produced progress reports.

PROPOSED ACTIVITIES FOR FFY 2012: Continue to work with OTC, OU, OSU and ODOT to develop the FFY 2012 ODOT/OTC Transportation Research Day program; reserve ODOT facilities for presentations, poster presentation exhibits and catered lunch; arrange for presenters and speakers by furnishing formal invitations; prepare sign in sheets and name tags; register event participants and attendees; coordinate with OTC and university personnel for breakfast and refreshments for event attendees; coordinate with OTC and university personnel for a catered lunch; arrange for rental, delivery, set-up and pick-up of table and chairs; secure and submit dvd videotaping and still photography cd's of the event; submit FFY 2012 Transportation Research Day program, list of attendees speakers and poster presenters; collect and compile a list of problem statements/ideas for potential ODOT research projects for FFY 2013; begin preparations for FFY 2013 Transportation Research Day to be held October 2012; produce progress reports.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011 (Yr 1 of 1)	$18,875	SPR	-0-	STATE
Estimated Cost FFY 2011	$18,875	SPR	-0-	STATE
Projected Cost FFY 2012 (Yr 1 of 1)	$14,865	SPR	-0-	STATE

CONTACT INFORMATION

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

ODOT SPR Part 2 Contract Administrator: Bryan Hurst, 405-522-3794

2115 Long Term Pavement Performance

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 2011: Performed annual site investigation observations and reported findings.

PROPOSED ACTIVITIES FOR FFY 2012: Perform annual site investigation 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 during spring 2012.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	$5,000	SPR	-0-	STATE
Estimated Cost FFY 2011	$5,000	SPR	-0-	STATE
Projected Cost FFY 2012	$5,000	SPR	-0-	STATE

CONTACT INFORMATION

ODOT Field Research Manager: 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 2011: Provided support for the Department with assistance and equipment in special investigations, and other activities when needed; performed bridge deck coring operations for SP&R item number 2229; performed 3 storm drain pipe inspections for ODOT Division I along I-40; investigated voids under bridge approach slabs on SH-112 bridge in Poteau, LeFlore County; collected still photographs for various in-house and SP&R research projects; continued to consult with ODOT staff to address situations where further technical support may be needed.

PROPOSED ACTIVITIES FOR FFY 2012: Continue to provide support for the Department with assistance and equipment in special investigations, storm drain inspections, bridge deck testing, 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 2011	$55,000	SPR	-0-	STATE
Estimated Cost FFY 2011	$55,000	SPR	-0-	STATE
Projected Cost FFY 2012	$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 when the work plan is written; 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 SPR budget was written and therefore were not included as separate items. This may include special technical assistance on multiple projects, and providing matching funds for leveraging research program funds, 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 2011: Solicited ODOT subject matter experts, Field Division personnel and university staff for new research ideas and problem statements for possible FFY 2012 research project funding; coordinated and carried out two Research Advisory Committee (RAC) meetings; received and compiled 41 new research problem statements; reviewed 16 new research ideas and/or problem statements for priority ranking; generated and posted 12 FFY 2012 Request for Proposals (RFP's) for research proposal submissions; reviewed 20 new research proposals submitted for possible FFY 2012 project funding; discussed proposed project work with researchers and ODOT subject matter experts; awarded 3 general activities research projects for FFY 2012 and generated project agreements for each; awarded 3 requests for 1 year project extensions and generated project agreement modifications for each; awarded 6 continuing research projects for FFY 2012 and generated project agreement modifications for each; awarded 8 new FFY 2012 research projects and generated project agreements for each; awarded 5 new research projects for FFY 2012 in cooperation with OkTC and generated 1 ODOT/OkTC joint interagency agreement for this mix of research projects; organized initiation, semi-annual and final project meetings concerning all SP&R projects; performed technical reviews of Annual and Final SP&R project reports for formatting and ADA compliance; prepared the FFY 2012 SP&R Program Part 2 work plan.

PROPOSED ACTIVITIES FOR FFY 2012: Solicit for new research ideas for possible FFY 2013 research project funding; coordinate two RAC meetings for review of new FFY 2013 research ideas and proposals; generate FFY 2013 RFP's; generate FFY 2013 research project agreements and modifications; organize initiation, semi-annual and final project meetings; continue to perform technical review of Annual and Final reports for required formatting and ADA compliance; make funds available for various research contracts/activities which were not foreseen when the SP&R budget was written; prepare the FFY 2013 SP&R Program Part 2 work plan.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	$390,000	SPR	-0-	STATE
Estimated Cost FFY 2011	$390,000	SPR	-0-	STATE
Projected Cost FFY 2012	$350,000	SPR	-0-	STATE

CONTACT INFORMATION

ODOT SPR Part 2 Contract Administrator: Bryan Hurst, 405-522-3794

2156 Roadside Vegetation Management
Training & Consultation Program

PURPOSE AND SCOPE: The objectives of this program are as follows: 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 2011: 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; collected digital photographs of implementation demonstration plots; attended the Oklahoma Vegetation Management Association "National Southern Weeds Science" meeting and the "National Roadside Vegetation Management Association" meeting; produced project progress reports; 5 Final comprehensive report submissions are pending.

The PI has requested a 3 month No Cost Time Extension to complete 2 of the comprehensive reports mentioned above. These particular reports will be due on or before March 31, 2012.

PROPOSED ACTIVITIES FOR FFY 2012: 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; complete Herbicide Application and Equipment Calibration Workshops for new employees; assist ODOT in maintaining the AHAL; assist ODOT in Statewide Herbicide Contract review; produce project progress reports; produce 5 comprehensive reports as proposed.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011 (Yr 1 of 1)	$193,707	SPR	-0-	STATE
Estimated Cost FFY 2011	$193,000	SPR	-0-	STATE
Projected Cost FFY 2012 (Yr 1 of 1)	$200,997	SPR	-0-	STATE

CONTACT INFORMATION

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

ODOT SPR Part 2 Contract 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 as follows: 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 2011: Completed evaluations of new and generic herbicide formulations for integration into the ODOT RVM programs and implemented findings in winter CEU 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; collected digital photographs of each plot treatment; conducted semi-annual meeting; produced project progress reports; completed and produced 2 comprehensive reports as proposed.

PROPOSED ACTIVITIES FOR FFY 2012: Continue to perform evaluations of new and generic herbicide formulations for integration into the ODOT RVM) programs and implemented findings in winter CEU Training Workshops; complete evaluation of adjuvants and recommended herbicides for tank mix compatibility and included findings into the AHAL; construct research test plots and complete field experiments, data collection and analysis and collect digital photographs of each plot treatment; execute a Summer Roadside Research Van Tour, weather permitting; produce project progress reports; complete and produce 2 comprehensive reports as proposed.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011 (Yr 1 of 1)	$66,619	SPR	-0-	STATE
Estimated Cost FFY 2011	$66,000	SPR	-0-	STATE
Projected Cost FFY 2012 (Yr 1 of 1)	$69,349	SPR	-0-	STATE

CONTACT INFORMATION

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

ODOT SPR Part 2 Contract Administrator: Bryan Hurst, 405-522-3794

Project Sponsor: Luis Malave, ODOT Maintenance Division, 405-521-2557

2160 Oklahoma Transportation Center

PURPOSE AND SCOPE: The Oklahoma Transportation Center (OkTC) is a nationally-designated University Transportation Center (UTC) composed of researchers at the University of Oklahoma, (OU) Oklahoma State University, (OSU) and Langston University (LU). Research personnel in this organization have expertise and experience covering a wide range of transportation-related topics. The purpose of this item is to coordinate and contract research activities covering various topics on behalf of ODOT and to provide matching funds to OkTC.

ACCOMPLISHMENTS DURING FFY 2011: Contributed $50,000.00 towards OkTC matching funds; participated in board and committee meetings; coordinated ODOT expert review of reports; assisted select reviewers and participated in proposal review processes; held brainstorming session to solicit and rank research topics for OkTC "pull" projects; served as co-sponsor for the Broken Back Culverts project.

PROPOSED ACTIVITIES FOR FFY 2012: Continue support of OkTC; begin a mix of 5 transportation research projects through a joint ODOT/OSU interagency agreement where OSU acts as fiscal agent for OkTC; continue to participate in board and committee meetings; assist select reviewers and oversee proposal review process; provide ODOT expert review of research reports; participate in initial, semi-annual and final project meetings; provide new list of ranked topics for OkTC "pull" project solicitation; OkTC to provide ODOT with project progress reports, Annual Reports, as well as, Draft and Final Reports (if any) for all jointly funded projects.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	$50,000	SPR	-0-	STATE
Estimated Cost FFY 2011	$50,000	SPR	-0-	STATE
Projected Cost FFY 2012	$967,564	SPR	-0-	STATE

CONTACT INFORMATION

OkTC Executive Director: Tony Dark, 918-527-3275

ODOT Contact: Planning & Research Division Engineer, 405-522-1447

2188 Vegetative Rehabilitation of Highway Cut Slopes

PURPOSE AND SCOPE: The purpose of this project is to develop improved vegetation specifications to be used on relatively steep slopes. Areas of moderate to severe erosion are occurring on highway rights of way in Eastern Oklahoma. Silt resulting from this erosion is filling ditch bottoms causing drainage problems. The answer to these recurring problems is to vegetate the erosive areas so that the soil remains on the slope and out of the drainage system. This is intended to be a five-year research project during which time, soil amendments, plant species, planting methods, planting dates, planting rates, mulches, mulch rates and application methods which demonstrate the most success will be identified. These will then be incorporated into improved vegetation specifications.

ACCOMPLISHMENTS DURING FFY 2011: Maintained photo records for both US-59 and SH-128 slopes; hydro-seeded and mulched the SH-128 sod study slope in the fall of 2010; organized continuing project meeting in January 2011; provided recommendations for ODOT mowing procedures for US -59 slopes; conducted semi-annual meeting in June 2011 to discuss project accomplishments, current work being performed and final project activities; produced project progress reports; submitted FFY 2010 Annual Report; Final Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2012: None.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011 (Yr 5 of 5)	$50,000	SPR	-0-	STATE
Estimated Cost FFY 2011	$50,000	SPR	-0-	STATE
Projected Cost FFY 2012	-0-	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Randy King, USDA/NCRS, 479-675-5182

ODOT SPR Part 2 Contract Administrator: Bryan Hurst, 405-522-3794

Project Sponsor: Vincent G. Reidenbach, Geotechnical Engineer, 405-522-4998

2200 Instrumented Pavement Construction

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 2011: Continued to monitor instrumentation and perform necessary site repairs as needed; collected and downloaded field data; continued to execute data analysis and modeling efforts; conducted regular interval Falling Weight Deflectometer (FWD) field testing; performed regular interval Dip Stick rut depth measurement; ODOT and OU discussed project findings so as to maximize project benefits; produced project progress reports; submitted FFY 2010 Annual Report.

Because the scope of the research involves trying to model rutting and fatigue cracking in regards to traffic loading and stresses, and because the test section on I-35 near Purcell, OK. has held up better than anticipated with little to no fatigue cracking and only low to moderate rutting, the PI has requested a 1 year project extension to continue to collect needed data that would yield a better model for the pavement section.

FFY 2011 Annual Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2012: Continue weekly visual observation and data collection to detect any possible changes in asphalt strain gauge readings that might be an indicator of fatigue crack initiation; perform comparison of observed and predicted fatigue behavior, in case of fatigue cracking; run prediction and measurement of rut values for increased ESALs; capture increased rutting during the summer months of 2012; observe rut profile and contribution of different layers to rutting from trenching; monitor pavement distress including formation of pot holes that are likely with additional freeze-thaw cycles in winter 2012, particularly near/along the longitudinal joint between the driving lane and the shoulder; document five-year data and field performance of the test section; produce project progress reports; prepare and submit Final Report.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011 (Yr 5 of 5)	$55,834	SPR	-0-	STATE
Estimated Cost FFY 2011	$55,800	SPR	-0-	STATE
Projected Cost FFY 2012 (Yr 1 of 1)	$51,544	SPR	-0-	STATE

CONTACT INFORMATION

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

ODOT SPR Part 2 Contract Administrator: Bryan Hurst, 405-522-3794

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

2207 Validation and Refinement of Chemical Stabilization Procedures for Pavement Subgrade Soils in Oklahoma

PURPOSE AND SCOPE: The goal of this research project is to assist the state in validating and improving the recommendations of OHD L-50 "Soil Stabilization Mix Design Procedure." The proposed research will primarily focus on AASHTO Soil Group Classifications falling under the fine-grained soil category (i.e. A-4 to A-7). It is expected that the results of testing on fine-grained soils may be intuitively extended to address variability found in fines of the A-2 soil class. Granular soils in the A-1 category and fine sandy soils of the A-3 category are not included in this proposal. In addition to the exclusions mentioned above, soils containing appreciable levels of sulfate will be excluded as these soils are not recommended for stabilization using calcium-based chemical additives. Note: a current research project at OU, funded through OTC, is focused on determining threshold levels of soluble sulfates that cause adverse behavior in chemically treated Oklahoma soils. Soils used in the currently proposed research will be subjected to soluble sulfate testing and current research on sulfate soils will help to guide the selection of suitable soil candidates for the proposed research.

ACCOMPLISHMENTS DURING FFY 2011: Completed and produced Volume I (of II) Final Reports. Volume II Final Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2012: None.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	-0-	SPR	-0-	STATE
Estimated Cost FFY 2011	-0-	SPR	-0-	STATE
Projected Cost FFY 2012	-0-	SPR	-0-	STATE

CONTACT INFORMATION

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

ODOT SPR Part 2 Contract 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

PURPOSE AND SCOPE: To utilize representative materials, construction methods and weather values and realistic material inputs that are typical of those used in ODOT to improve the MEPDG in an effort to improve the economy, durability and performance of rigid pavements in Oklahoma. Furthermore, results from this research study will produce several new tools that will assist ODOT to design and specify a high quality and economical concrete pavement.

ACCOMPLISHMENTS DURING FFY 2011: Examined several different curing methods and techniques for effectiveness to provide relative humidity profile for rigid pavement construction; discussed possible curing methods with contractors and ODOT personnel to identify acceptable alternatives to a wet mat cure; initiated plans to construct a full scale test sections of a CRCP pavement on an ODOT pavement project to provide a bench mark for the equivalency of the different curing methods to a wet mat cure in which real world cost and schedule data can also be obtained; provided regional input parameters that can be used in the MEPDG based on different areas of the state of Oklahoma for the design of rigid; produced project progress reports; submitted FFY 2010 Annual Report; Final Report submission is pending.

The PI has requested a 3 month No Cost Time Extension for the ability to include results of the pavement instrumentation study in the draft and Final Reports.

PROPOSED ACTIVITIES FOR FFY 2012: None.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011 (Yr 3 of 3)	$92,317	SPR	-0-	STATE
Estimated Cost FFY 2011	$92,300	SPR	-0-	STATE
Projected Cost FFY 2012	-0-	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Tyler Ley, Oklahoma State University, 405-744-9307

ODOT SPR Part 2 Contract Administrator: Bryan Hurst, 405-522-3794

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

2209 Development of a Flexible Pavement Database for Local Calibration of the MEPDG

PURPOSE AND SCOPE: To develop a flexible pavement database and to populate this database with data required for calibration of the new Mechanistic Empirical Pavement Design Guide (MEPDG) design criteria. Results from this project are expected to provide pavement design professionals with appropriate tools and a better understanding of how the new MEPDG will allow for optimization of materials, evaluate and incorporate new materials into designs, and evaluate the impacts of anticipated heavier loads and new axle configurations on pavement performance in Oklahoma.

ACCOMPLISHMENTS DURING FFY 2011: Completed and produced 2 Final Reports.

PROPOSED ACTIVITIES FOR FFY 2012: End of project.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	-0-	SPR	-0-	STATE
Estimated Cost FFY 2011	-0-	SPR	-0-	STATE
Projected Cost FFY 2012	-0-	SPR	-0-	STATE

CONTACT INFORMATION

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

ODOT SPR Part 2 Contract Administrator: Bryan Hurst, 405-522-3794

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

2210 Calcium-Based Stabilizer Induced Heave in Oklahoma Sulfate-Bearing Soils

PURPOSE AND SCOPE: To reveal the physical, mineralogical, electrical and chemical characteristics of Oklahoma soils that is vulnerable to adverse sulfate reactions due to calcium-based stabilizers and to develop a methodology for assessing this threat. To evaluate ODOT's current method of soil-sulfate testing to determine the most accurate and repeatable soil sulfate test methodology possible.

ACCOMPLISHMENTS DURING FFY 2011: Completed and produced Final Report.

PROPOSED ACTIVITIES FOR FFY 2012: End of project.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	-0-	SPR	-0-	STATE
Estimated Cost FFY 2011	-0-	SPR	-0-	STATE
Projected Cost FFY 2012	-0-	SPR	-0-	STATE

CONTACT INFORMATION

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

ODOT SPR Part 2 Contract Administrator: Bryan Hurst, 405-522-3794

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

2211 Modeling of 85TH Percentile Speed for Rural Highways for Enhanced Traffic Safety

PURPOSE AND SCOPE: To develop a Neural Network (NN) model based on appropriate pavement, traffic and environmental data such as pavement width, type and width of shoulder, topography, weather, roadside development, and accident experience as an effective tool for the Oklahoma Department of Transportation (ODOT) in determining the 85th percentile speed on two-lane rural highways in Oklahoma. With this research, the model is expected to be useful in enhancing traffic safety and reducing accidents and fatalities resulting from improper posting of speed limits on rural highways in the state of Oklahoma.

ACCOMPLISHMENTS DURING FFY 2011: Completed and produced Final Report.

PROPOSED ACTIVITIES FOR FFY 2012: End of project.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	-0-	SPR	-0-	STATE
Estimated Cost FFY 2011	-0-	SPR	-0-	STATE
Projected Cost FFY 2012	-0-	SPR	-0-	STATE

CONTACT INFORMATION

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

ODOT SPR Part 2 Contract Administrator: Bryan Hurst, 405-522-3794

Project Sponsor: Harold Smart, ODOT Traffic Engineer, 405-521-2861

2213 Quantifying the Costs and Benefits of Pavement Retexturing as a Pavement Preservation Tool

PURPOSE AND SCOPE: To build on research done in Australia and New Zealand (Austroads 2005) by conducting a long-term study of various methods to restore pavement skid resistance by retexturing the existing surface with either a surface treatment, chemical treatment, or a mechanical process and furnish ODOT with the technical engineering data for each treatment coupled with an economic analysis of the costs and benefits associated with each treatment. This will furnish ODOT pavement managers the required information to make rational engineering decisions based on physical and financial data for the use of potential pavement preservation tools, evaluated under the same conditions over the same period by an impartial investigator. Researchers expect to produce a guidebook for use by ODOT pavement managers that represents a pavement preservation "toolbox" of available tools to restore both skid resistance and pavement macrotexture. The cost index and life cycle cost analyses will furnish ODOT personnel with the financial information to enable them to make an informed business decision as to the value added by each alternative in the trial. This project will produce a product that potentially can achieve an immediate impact on the safety of Oklahoma roads and highways.

ACCOMPLISHMENTS DURING FFY 2011: ODOT funding obligation ended on September 30, 2010. FFY 2011 project operations funded thru OkTC; submitted FFY 2010 Annual Report; OkTC produced project progress reports to ODOT; OkTC provided Final Report.

PROPOSED ACTIVITIES FOR FFY 2012: End of project.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	-0-	SPR	-0-	STATE
Estimated Cost FFY 2011	-0-	SPR	-0-	STATE
Projected Cost FFY 2012	-0-	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Douglas Gransberg, University of Oklahoma, 405-325-4278

ODOT SPR Part 2 Contract Administrator: Bryan Hurst, 405-522-3794

Project Sponsor: Caleb Riemer, Wewoka Resident Engineer, 405-257-3325

2214 Use of MSE Technology to Stabilize Highway Embankments and Slopes In Oklahoma

PURPOSE AND SCOPE: To determine a moisture reduction factor (MRF) to account for the influence of soil moisture content on pullout resistance of soil-geotextile interfaces in reinforced soil. This study will be part of a long-term research that is aimed at developing a better understanding of the mechanics of unsaturated soil-reinforcement interfaces involving marginal soils. The outcome of this study will help to develop reliable procedures to account for the loss of soil-reinforcement interface strength due to wetting, in order to achieve a safer design and disseminate them into the current state of practice.

ACCOMPLISHMENTS DURING FFY 2011: Completed and produced Final Report.

PROPOSED ACTIVITIES FOR FFY 2012: End of project.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	-0-	SPR	-0-	STATE
Estimated Cost FFY 2011	-0-	SPR	-0-	STATE
Projected Cost FFY 2012	-0-	SPR	-0-	STATE

CONTACT INFORMATION

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

ODOT SPR Part 2 Contract Administrator: Bryan Hurst, 405-522-3794

Project Sponsor: Vincent G. Reidenbach, Geotechnical Engineer, 405-522-4998

2215 Tube Suction Test for Evaluating Durability of Cementitiously Stabilized Soils

PURPOSE AND SCOPE: Changes in climatic conditions, namely freeze-thaw (F-T) and wet-dry (W-D), have been recognized by pavement engineers as a major factor in poor pavement performance. Strength and stability of subgrade soil, which supports the pavement structure, is a key factor in pavement performance. A more time-efficient, inexpensive and non-abrasive method, called Tube Suction Test, (TST), will be used in the proposed study to evaluate durability of selected stabilized soils that are frequently encountered in Oklahoma. A test protocol for the assessment of durability using the TST will be developed in this study and verified by comparing results with the current test methods, namely wet-dry (ASTM D 559), freeze-thaw (ASTMD560), vacuum saturation (ASTM C 593), and unconfined compressive strength (UCS). The results from this study will be useful in modifying the current ODOT procedure, Soil Stabilization Mix Design Procedure (OHD L-50), for the selection of additive percent. Assessment of durability using the TST will be time-efficient, non-abrasive, and inexpensive, making it attractive to design engineers and industry.

ACCOMPLISHMENTS DURING FFY 2011: Completed and produced Final Report.

PROPOSED ACTIVITIES FOR FFY 2012: End of project.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	-0-	SPR	-0-	STATE
Estimated Cost FFY 2011	-0-	SPR	-0-	STATE
Projected Cost FFY 2012	-0-	SPR	-0-	STATE

CONTACT INFORMATION

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

ODOT SPR Part 2 Contract Administrator: Bryan Hurst, 405-522-3794

Project Sponsor: Vincent G. Reidenbach, Geotechnical Engineer, 405-522-4998

2217 Development of Best Practices Program for a Collaboration of Minority Truckers

PURPOSE AND SCOPE: The ODOT Regulatory Services Office has an efficient certification program, however, they cannot require the large prime contractors to utilize small minority subcontractors when it is not cost effective. This research will focus on assisting the disadvantaged business enterprise (DBE) Certification program to evaluate and develop processes and training to eliminate challenges DBE firms face. Research will reveal if, by pooling resources, DBE truckers can achieve an effective economy of scale by operating together more efficiently at a lower costs than they could individually which will eventually make their bids more attractive to prime contractors. Langston University will aid in the development of a collaborative venture of minority truckers that will address both availability and capacity shortcomings which will enhance DBE participation in ODOT contracts. Ultimately the research findings can be duplicated and used for other DBE transportation related businesses.

ACCOMPLISHMENTS DURING FFY 2011: Provided administrative oversight to cooperative officers and minority truckers; provided business plan for the cooperative of minority trucking firms and issued stocks to members; developed a series of workshops to train the cooperative board in recordkeeping and accounting procedures; outlined a creative bid process for the cooperative and estimated a marketable price for hauling services; negotiated contracts between the cooperative and the Primary contractor on ODOT projects; generated an Oklahoma Minority Truckers Cooperative (OMTC) processes and procedures manual; produced project progress reports; submitted FFY 2010 Annual Report; Final Report submission is pending.

The PI has requested a 3 month No Cost Time Extension for continued project operations to complete proposed task numbers 3 and 6, as well as, to complete the Final Report.

PROPOSED ACTIVITIES FOR FFY 2012: None.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011 (Yr 1 of 1)	$85,861	SPR	-0-	STATE
Estimated Cost FFY 2011	$85,860	SPR	-0-	STATE
Projected Cost FFY 2012	-0-	SPR	-0-	STATE

CONTACT INFORMATION

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

ODOT SPR Part 2 Contract Administrator: Bryan Hurst, 405-522-3794

Project Sponsor: Susan McClune, ODOT Regulatory Services, 405-521-6046

2218 QCQA Testing Differences Between Hot Mix Asphalt and Warm Mix Asphalt

PURPOSE AND SCOPE: The objectives of this study are to develop testing protocols for the different WMA additives for mix design and QC/QA procedures. For mix design, testing protocols need to be developed for rut testing and moisture sensitivity testing. For QC/QA, protocols need to be developed for lab-molded void properties and asphalt content. To meet the objectives, equivalent compaction temperatures and/or compactive efforts need to be established for WMA additives. Once this is established, the effect of WMA additives on lab-molded volumetric results from Superpave Gyratory Compactor (SGC) samples (QC/QA properties) and mix design results (moisture sensitivity and rutting) could be determined. If properties/results differ significantly from those obtained from the same conventional HMA mix, standard testing protocols using the SGC would be developed that would provide test results consistent with conventional HMA test results. Test protocols could be dependent upon the specific WMA technology. The proposed research is essential in formulating the design requirements necessary to write new QC/QA specifications and mix design tests that will produce quality WMA, allowing full implementation of this new technology.

ACCOMPLISHMENTS DURING FFY 2011: Determined mix design equivalent laboratory compaction temperature and compactive effort; evaluated lab-molded voids; performed rut depth testing and moisture sensitivity testing; produced project progress reports; submitted FFY 2010 Annual Report.

The PI has submitted a proposal to extend the project for 1 year to include a laboratory evaluation of foam WMA, the predominate WMA technology in Oklahoma. The objectives of this additional study are to evaluate laboratory produced foamed WMA and compare them to the QC/QA procedures developed from the previous 2 year project and make recommended changes for foam WMA.

FFY 2011 Annual Report submission is pending

PROPOSED ACTIVITIES FOR FFY 2012: Gather and obtain materials; determine mix design equivalent laboratory compaction temperatures; perform lab-molded void testing; perform rut depth tests; perform moisture sensitivity testing, (AASHTO T 283); produce project progress reports; prepare and submit Final Report.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011 (Yr 2 of 2)	$61,336	SPR	-0-	STATE
Estimated Cost FFY 2011	$61,000	SPR	-0-	STATE
Projected Cost FFY 2012 (Yr 1 of 1)	$78,397	SPR	-0-	STATE

CONTACT INFORMATION

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

ODOT SPR Part 2 Contract Administrator: Bryan Hurst, 405-522-3794

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

2219 Evaluation of the Effectiveness of ODOT's Cable Barrier Program

PURPOSE AND SCOPE: Oklahoma has been using cable barrier systems for several years as a method of reducing or eliminating cross-over crashes. At present, Oklahoma uses several types of cable barrier systems. They differ in the types of support posts/bases, heights of cables, types of cables/anchorage, as well as, the placement of the system. As more median cable barrier systems are installed, there is a need to study their effectiveness in reducing crossover accidents and the cost-effectiveness of the various cable barrier systems. This study would include all crashes related to the systems being hit, types of systems, system placement, initial cost per mile, repair cost analysis related to manufacture type, and an analysis of prevented accidents since the installation. This research program will help identify successful designs, placement and implementation practices.

ACCOMPLISHMENTS DURING FFY 2011: Final Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2012: None.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	-0-	SPR	-0-	STATE
Estimated Cost FFY 2011	-0-	SPR	-0-	STATE
Projected Cost FFY 2012	-0-	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Chris Ramseyer, University of Oklahoma, 405-325-1415

ODOT SPR Part 2 Contract Administrator: Bryan Hurst, 405-522-3794

Project Sponsor: Harold Smart, ODOT Traffic Engineer, 405-521-2861

2220 Development of ODOT Guidelines for Use of Geogrids in Aggregate Bases

PURPOSE AND SCOPE: The objective of this study is to help ODOT develop materials specifications and guidelines for the acceptance and use of geogrids for aggregate base reinforcement. ODOT's current geogrid specifications are very limited and exclusive of many new types of geogrids that could be equally effective for base reinforcement applications at lower costs. Currently, ODOT engineers are unsure of minimum material properties that are necessary to ensure that a geogrid will perform adequately in base reinforcement applications in the field. Using geogrids to reinforce aggregate bases and/or subgrades can result in considerable cost-savings and improved performance. The focus of this study is to address current shortcomings of the AASHTO and FHWA guidelines with respect to the influences of junction mechanical properties and type of geogrids on their performance in reinforced bases. The goal of this study is to help make the new ODOT specifications more generic, consistent and cost-effective by including a wider variety of commercially available products than what is currently included in their specifications.

ACCOMPLISHMENTS DURING FFY 2011: Carried out large-scale cyclic plate load tests emulating resilient modulus testing of base layer; performed field study testing instrumenting sections using earth pressure cells, strain gauges, LVDTs and other instruments; used laboratory test results to identify candidate geogrid products for side-by-side comparisons of field performance; coordinated with contractors to carry out installation damage tests on selected geogrids during construction; reduced and analyzed data to determine influence of the geogrid type and mechanical properties on field performance of reinforced aggregate bases; produced project progress reports; submitted FFY 2010 Annual Report; Final Report submission is pending.

The PI has requested a 3 month No Cost Time Extension for continued project operations and the completion of the Final Report.

PROPOSED ACTIVITIES FOR FFY 2012: None.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011 (Yr 2 of 2)	$110,367	SPR	-0-	STATE
Estimated Cost FFY 2011	$110,000	SPR	-0-	STATE
Projected Cost FFY 2012	-0-	SPR	-0-	STATE

CONTACT INFORMATION

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

ODOT SPR Part 2 Contract Administrator: Bryan Hurst, 405-522-3794

Project Sponsor: Vincent G. Reidenbach, Geotechnical Engineer, 405-522-4998

2221 Analysis of Aggregates and Binders Used for the ODOT Chip Seal Program

PURPOSE AND SCOPE: Chip seals are widely used for preventative maintenance of pavements. While there has been extensive research on the various parts of the surface treatment, there is little research on how the various materials and methods are brought together. Hence, chip sealing continues to be considered an art rather than a rationally engineered composite system. In most cases ODOT maintenance engineers use empirical design based on trial and error. Additional technical information is needed that defines binder selection based on environment and local traffic conditions. This information must be integrated with locally available aggregate properties to permit ODOT engineers to calculate appropriate emulsion/binder and aggregate application rates during chip seal placement based on local conditions. This information can then be used to revise ODOT chip seal specifications and update ODOT chip design methods. The major products of this project will be recommendations for revising ODOT chip seal specifications, fine-tuning division-specific chip seal design procedures, and training for ODOT maintenance engineers in each division.

ACCOMPLISHMENTS DURING FFY 2011: Completed and produced Final Report.

PROPOSED ACTIVITIES FOR FFY 2012: End of project.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	-0-	SPR	-0-	STATE
Estimated Cost FFY 2011	-0-	SPR	-0-	STATE
Projected Cost FFY 2012	-0-	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Douglas D. Gransberg, University of Oklahoma, 405-325-4278

ODOT SPR Part 2 Contract Administrator: Bryan Hurst, 405-522-3794

Project Sponsor: Scott Seiter, ODOT Asst. Materials Engineer, 405-521-2677

2222 Performance of Ultra-Thin Whitetopping (UTW) in Oklahoma

PURPOSE AND SCOPE: ODOT is in need of a long-life, cost effective means of repairing low to medium volume roadways. Ultra Thin Whitetopping (UTW) has been used around the country well as in Oklahoma, and has proven itself as a cost-effective and rapid means of repairing damaged asphalt pavement roads. Concrete overlays have been used over hot-mix asphalt (HMA) pavements and intersections as a method to restore ride quality. The objective of this project is to determine the performance and cost-efficiency of UTW projects within Oklahoma and provide recommendations for their future use. The development of an effective UTW guidelines and best practices document would provide ODOT with an option for repairing low to medium volume HMA roadways with a long lasting repair. This in turn would provide ODOT with a lower life cycle cost for their pavements and would allow the state dollars to be extended to other needs. This research will provide a review of UTW projects in Oklahoma and their current performance. Guidelines will also be provided over the best practices established from Oklahoma and national experiences.

ACCOMPLISHMENTS DURING FFY 2011: Completed and produced Final Report.

PROPOSED ACTIVITIES FOR FFY 2012: End of project.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	-0-	SPR	-0-	STATE
Estimated Cost FFY 2011	-0-	SPR	-0-	STATE
Projected Cost FFY 2012	-0-	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Tyler Ley, Oklahoma State University, 405-744-9307

ODOT SPR Part 2 Contract Administrator: Bryan Hurst, 405-522-3794

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

2223 Test Methods for Use of Recycled Asphalt Pavement in Asphalt Mixes

PURPOSE AND SCOPE: Although ODOT has adopted the use of RAP in asphalt pavements, some field divisions are concerned about the quality of aggregates in some RAPs. Such concerns arise partly from the use of aggregates in original pavements from quarries that might not meet current ODOT specifications. Also, there are questions on possible influence of the Abson Recovery method, which is commonly used by ODOT, on the Performance Grade of recovered binders. To help address such questions and concerns, the proposed study will compare the physical and mechanical properties of recovered aggregates with those of the virgin aggregates from the same source to examine potential statistical differences. This study will also evaluate the influence of the Abson Recovery method on the Performance Grade of recovered binders, and demonstrate if an alternate recovery method is better. The objective of this study is to generate laboratory data on recovered and virgin aggregates and binders that will help address the aforementioned concerns on the use of RAP in asphalt pavements. The results from this study will be very useful in revising specifications for use of RAP in asphalt pavements and are expected to be useful for ODOT in devising better management plan for the usage of RAP in HMA.

ACCOMPLISHMENTS DURING FFY 2011: Continued literature review; collected 2 additional bulk RAP; studied laboratory simulated RAP while investigating softer binder and focused on field RAP for high grade binder; continued to recover aggregates from bulk RAP using NCAT ignition oven to determine binder content; evaluated physical and mechanical properties of recovered aggregates; extracted binder from bulk RAP and fresh HMA mix; performed binder rheology testing and performance grading of rheological properties; performed statistical analysis and documentation of recovered aggregate properties for different RAP's; produced project progress reports; submitted FFY 2010 Annual Report; Final Report submission is pending.

The PI has requested a 3 month No Cost Time Extension for continued project operations and the completion of the Final Report.

PROPOSED ACTIVITIES FOR FFY 2012: None.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011 (Yr 2 of 2)	$93,072	SPR	-0-	STATE
Estimated Cost FFY 2011	$93,000	SPR	-0-	STATE
Projected Cost FFY 2012	-0-	SPR	-0-	STATE

CONTACT INFORMATION

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

ODOT SPR Part 2 Contract Administrator: Bryan Hurst, 405-522-3794

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

2224 Energy Harvesting on Highway Bridges

PURPOSE AND SCOPE: This project is investigating the potential for generating electrical power from the vibrations of a bridge due to large vehicles. It utilizes state-of-the-art technology and interdisciplinary expertise in solid-state electronics and bridge engineering to develop a system for providing electricity to power sensor networks, lighting, and other systems. The resulting technology will allow Oklahoma access to locally-generated power, minimizing vulnerability to disruptions in the power grid and contribute to the overall goal of sustainable infrastructure. The following outlines Phase II and Phase III of the current project. Phase I, which is ongoing through FFY 2010, is dedicated to the design and construction of a prototype piezoelectric energy harvester for highway bridges. Phases II (FFY 2011) and III (FFY 2012) will extend the implementation of the power harvesting technology to a field demonstration on a highway bridge (Phase II) and rollout to one or more additional bridges including integration into local sensor and/or lighting systems (Phase III).

ACCOMPLISHMENTS DURING FFY 2011: Completed and produced Final Report.

PROPOSED ACTIVITIES FOR FFY 2012: End of project.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	-0-	SPR	-0-	STATE
Estimated Cost FFY 2011	-0-	SPR	-0-	STATE
Projected Cost FFY 2012	-0-	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: J. David Baldwin, University of Oklahoma, 405-325-1090

ODOT SPR Part 2 Contract Administrator: Bryan Hurst, 405-522-3794

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

2225 Correlation of Fully Softened Shear Strength of Clay Soil with Index Properties—Phase I

PURPOSE AND SCOPE: Slope failures in clay soils cause damage annually on highway embankments and cut slopes and necessitate difficult and expensive repairs that negatively impact budgets, traffic flow, and the environment. The use of peak strength in the analyses tends to overestimate the factor of safety (stability) and the use of residual shear strength in the analysis tends to underestimate the factor of safety (stability). The use of fully-softened shear strength values results in a more accurate analysis and leads to designs or repair methods that provide long-term stability at reasonable costs. Understanding the mechanisms of these slope failures and being able to economically predict the fully softened shear strength of clay soils is key to successful design, repair, and stabilization of clay slopes. The objectives of this research project are to develop a correlation between peak strength values and fully-softened strength values using index properties (Atterberg Limits and Percent Passing No. 200 Sieve) and moisture content of the test samples and to formalize an equation for calculating fully-soften shear strength values from available peak values. The results of this study will facilitate more accurate and cost effective analysis and design of new highway slopes and repair/stabilization of existing slopes.

ACCOMPLISHMENTS DURING FFY 2011: Completed and produced Final Report.

PROPOSED ACTIVITIES FOR FFY 2012: End of project.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	-0-	SPR	-0-	STATE
Estimated Cost FFY 2011	-0-	SPR	-0-	STATE
Projected Cost FFY 2012	-0-	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Garry Gregory, Oklahoma State University, 405-744-5189

ODOT SPR Part 2 Contract Administrator: Bryan Hurst, 405-522-3794

Project Sponsor: Vincent G. Reidenbach, Geotechnical Engineer, 405-522-4998

2226 Evaluation of Hamburg Rut Tester for Field Control of HMA

PURPOSE AND SCOPE: The Asphalt Pavement Analyzer (APA) and AASHTO T 283, Resistance of Compacted Bituminous Mixture to Moisture-Induced Damage, are currently used in mix designs to evaluate rutting and moisture damage potential of hot mix asphalt (HMA) mixtures. AASHTO T 283 is also used for field control of HMA mixtures. ODOT is moving toward replacing the APA with the Hamburg Wheel Test. Variability of T 283 field test results has always been an issue and currently ODOT does not check rutting potential of field produced mixtures. The Hamburg rut tester is being used by other DOTs to monitor field produced mixtures for rutting and moisture susceptibility. Use of the Hamburg rut tester needs to be evaluated for field control of HMA mixtures in Oklahoma. Laboratory prepared (mix design) samples and field produced mix from across Oklahoma will be sampled and tested for Hamburg rutting resistance and AASHTO T 283. APA testing could be included for comparison. Results of this research could lead to the implementation of the Hamburg Rut Tester as a viable test method for evaluating the field performance of HMA.

ACCOMPLISHMENTS DURING FFY 2011: Performed a literature review of surrounding states concentrating on Hamburg Rut Testing and how it is used to replace or supplement moisture damage testing; evaluated laboratory produced mix design samples using AASHTO T 283 and OHD L-55 test results; tested and evaluated field produced mix for AASHTO T 283 and OHD L-55 testing; performed analysis of data on all test results; produced project progress reports.

The PI has submitted a proposal to extend the project for 1 year to include the use of a "Moisture Induced Stress Tester (MIST) for evaluation of moisture damage of HMA.

FFY 2011 Annual Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2012: Gather sufficient AASHTO T 283 and Hamburg Rut Test data from laboratory prepared (mix design) samples and field produced mix from across Oklahoma; determine if the Hamburg Rut Tester can be implemented to monitor field produced mixtures for rutting and/or moisture susceptibility; develop draft implementation plans (draft test methods and/or specifications) if test results warrant implementation; produce project progress reports; prepare and submit Final Report.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011 (Yr 1 of 1)	$76,055	SPR	-0-	STATE
Estimated Cost FFY 2011	$76,000	SPR	-0-	STATE
Projected Cost FFY 2012	$49,034	SPR	-0-	STATE

CONTACT INFORMATION

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

ODOT SPR Part 2 Contract Administrator: Bryan Hurst, 405-522-3794

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

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 2011: Collected and summarized available literature of approach slab settlement problems and solutions; selected approach slab sites for forensic analysis and performed critical investigation of ODOT design and construction practices related to bridge approach slab performance; assembled pertinent information concerning design and as-built plans, geologic and hydraulic info, climatic records, construction records, geotechnical info, etc.; performed field investigation of existing approach slab settlement sites including visual inspections of approach slabs, abutments, and paving drainage outlets, manual measurements, and subsurface investigations; performed nondestructive testing methods and collected borrowed soils; performed several laboratory soil sample tests; produced project progress reports; FFY 2011 Annual Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2012: Continue to perform field investigations of existing approach slab settlement sites; perform further laboratory soil sample tests; produced project progress reports; perform assessment of forensic data to determine possible settlement causes and combination(s) of contributing settlement factors; investigate design and construction methods and provide recommendations to minimize or eliminate approach slab settlement; produced project progress reports; prepare and submit Final Report.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011 (Yr 1 of 2)	$99,474	SPR	-0-	STATE
Estimated Cost FFY 2011	$99,000	SPR	-0-	STATE
Projected Cost FFY 2012 (Yr 2 of 2)	$99,558	SPR	-0-	STATE

CONTACT INFORMATION

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

ODOT SPR Part 2 Contract Administrator: Bryan Hurst, 405-522-3794

Project Sponsor: Vincent G. Reidenbach, Geotechnical Engineer, 405-522-4998

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

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.

ACCOMPLISHMENTS DURING FFY 2011: Performed literature search and collection of background information; performed filed investigations of distressed bridge sites which included visual inspections of expansion joints, pavement and approach slabs, abutments, roller supports, etc.; selected two bridges for instrumentation; prepared detailed field instrumentation plans and acquired instruments to measure/determine movement across expansion joints to concrete slabs; produced project progress reports; FFY 2011 Annual Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2012: Install instrumentation on selected bridges; initiate a subsurface exploration to include soils boring sampling and laboratory in situ tests; perform instrumentation data collection and analysis; create computer models of instrumented bridges; develop preliminary computer simulations concerning complex soil-structure interactions that may be occurring at test sites; produce project progress reports; submit FFY 2012 Annual Report.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011 (Yr 1 of 3)	$134,880	SPR	-0-	STATE
Estimated Cost FFY 2011	$134,000	SPR	-0-	STATE
Projected Cost FFY 2012 (Yr 2 of 3)	$83,721	SPR	-0-	STATE

CONTACT INFORMATION

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

ODOT SPR Part 2 Contract Administrator: Bryan Hurst, 405-522-3794

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

2229 Expected Life of Silane Water Repellant Treatments on Bridge Decks

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.

ACCOMPLISHMENTS DURING FFY 2011: Performed literature review focusing on previous research on the mechanisms of silane bond and deterioration, methods of reapplying silane to existing concrete, and previous tests used to evaluate the effectiveness of silanes; established laboratory procedures to evaluate silane performance by performing destructive chemical method tests on field and laboratory samples to determine presence and performance of silanes; investigated non-destructive field techniques to evaluate silane performance using Germann Water Permeability and Concrete Surface Resistivity test methods; determined and evaluated the effectiveness of silanes for in-service bridge decks using both destructive and nondestructive techniques; produced project progress reports; FFY 2011 Annual Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2012: Continue to establish laboratory procedures to evaluate silane performance; continue investigations of non-destructive field techniques to evaluate silane performance; continue to determine and evaluate the effectiveness of silanes for in-service bridge decks using both destructive and nondestructive techniques; investigate methods of reapplication of silanes to mature concrete; produce project progress reports; prepare and submit Final Report.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011 (Yr 1 of 2)	$99,100	SPR	-0-	STATE
Estimated Cost FFY 2011	$99,000	SPR	-0-	STATE
Projected Cost FFY 2012 (Yr 2 of 2)	$98,084	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Tyler Ley, Oklahoma State University, 405-744-9307

ODOT SPR Part 2 Contract Administrator: Bryan Hurst, 405-522-3794

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

2230 Effect of Y-Cracking on CRCP Performance

PURPOSE AND SCOPE: Performance of Continuously Reinforced Concrete Pavement (CRCP) is thought to be highly dependent on the early age cracking pattern. Punchouts, the primary failure mechanism in CRCP, are found to occur more frequently at Y-crack and other irregular or closely spaced crack locations. In 1996, Y- cracking was observed on some newer ODOT CRCP projects and there was a concern about the effect it might have on future performance. This project would determine if the early age Y-cracking observed on those projects has had a detrimental effect on the long-term performance of the pavements. The researcher will gather information from previous reports, the pavement management condition database, and the ODOT CRCP database to attempt to correlate present condition to the presence or absence of early age Y-cracking. If Y-cracking is correlated to poor performance in Oklahoma CRC pavements, further examination would include looking at different variables (base type, % reinforcement, absence of transverse steel, tied vs. free or AC shoulders, tube fed vs. tied steel, season and or time of construction, and other design features) that could have contributed to Y- cracking on those specific pavements. The results of this study are anticipated to lead to improved CRCP design, construction, and performance

ACCOMPLISHMENTS DURING FFY 2011: Performed literature review of both previous national reports and papers and ODOT reports to determine previous experience with Y-cracking, mitigation methods used, and potential future cost-effective solutions to prevent Y-cracking; updated the ODOT CRCP project database for projects constructed since 2003 utilizing available data; reviewed pavement management condition data to determine current and previous performance levels of CRCP with and without Y-cracking; performed field inspections on 9 pavement sections with and without Y-cracking, 4 of which, included core sampling; performed early-age stress development and time to first cracking modeling for pavements evaluated in this study; developed investigation correlations between the occurrence of Y-cracking and pavement performance; produced project progress reports; FFY 2011 Annual Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2012: All tasks listed above continue for FFY 2012; develop methods to minimize Y-Cracking; produce project progress reports; prepare and submit Final Report.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011 (Yr 1 of 2)	$77,438	SPR	-0-	STATE
Estimated Cost FFY 2011	$77,000	SPR	-0-	STATE
Projected Cost FFY 2012 (Yr 2 of 2)	$35,276	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Tyler Ley, Oklahoma State University, 405-744-9307

ODOT SPR Part 2 Contract Administrator: Bryan Hurst, 405-522-3794

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

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 2011: Performed literature search concerning the corrosion resistance of reinforcing steel and the durability of bridge decks; performed several accelerated corrosion lab testing procedures on various forms of steel; produced project progress reports; FFY 2011 Annual Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2012: Continue to perform accelerated corrosion lab testing procedures on various forms of steel; estimate life expectancy and cost effectiveness of tested steels; document construction of a bridge project; perform a life cycle cost analysis and identify life cycle cost parameters; produce project progress reports; prepare and submit FFY 2012 Annual Report.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011 (Yr 1 of 3)	$83,013	SPR	-0-	STATE
Estimated Cost FFY 2011	$83,000	SPR	-0-	STATE
Projected Cost FFY 2012 (Yr 2 of 3)	$80,925	SPR	-0-	STATE

CONTACT INFORMATION

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

ODOT SPR Part 2 Contract Administrator: Bryan Hurst, 405-522-3794

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

2232 Next Generation Smart Barrel System for Workzone Safety Enhancement

PURPOSE AND SCOPE: Work zones are among the most safety-critical areas on the state and national roadways. A "smart barrel", as originally proposed by University of Michigan for FHWA, is a device appearing to be a normal traffic control barrel while internally equipped with low-cost sensors and wireless transceivers. Once deployed as a distributed system, the smart barrels can adaptively sense the condition of traffic flow in the area, send speed and queue advisory signals through LED flashes automatically, and inform the "site supervisor" or traffic monitoring centers. The past four years of development in distributed sensor network protocols, integrated sensors and new battery sources has come to a matured stage. This will allow researchers to develop a completely new generation of smart barrel which transforms the centralized system control into a fully distributed scheme, enables more autonomous and intelligent behaviors of the smart barrels, and greatly reduces the costs and power consumptions in the overall system. It is envisioned that the new smart barrels will have mesh-networking capability and enhanced onboard processing, be capable of sensing the work zone environments (including both traffic and roadway environment condition) in real-time, at lower cost per unit, and lower power consumption for normal operations. The objective of this effort is to achieve a very low-cost single-chip package that utilizes the same RF frequency band for shared traffic detection, speed monitoring, relative localization, and mesh networking functions.

ACCOMPLISHMENTS DURING FFY 2011: Performed literature search focusing on effective warning and alert mechanisms to reduce workzone related crashes, accidents and congestions; met with ODOT traffic engineers to determine the desired specifications for the workzone collision warning system and specified system requirements; implemented simulation tools to predict system performance and deployment costs, response time, communication bandwidth and synchronizations; designed and tested a smaller Doppler Radar sensor with better speed sensitivity; acquired the latest ZigBee development and control kit and developed ZigBee-based distributed control software; integrated and field tested smart barrel modules together with preliminary site supervisor software; produced project progress reports; Final Report submission is pending.

PROPOSED ACTIVITIES FOR FFY 2012: None.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011 (Yr 1 of 1)	$75,653	SPR	-0-	STATE
Estimated Cost FFY 2011	$75,000	SPR	-0-	STATE
Projected Cost FFY 2012	-0-	SPR	-0-	STATE

CONTACT INFORMATION

Principal Investigator: Yan Zhang, University of Oklahoma, 405-325-6036

ODOT SPR Part 2 Contract Administrator: Bryan Hurst, 405-522-3794

Project Sponsor: Harold Smart, ODOT Traffic Engineer, 405-521-2861

2233 Rail Diesel Car Demonstration

PURPOSE AND SCOPE: The Rail Diesel Car (RDC) is a self-propelled diesel-hydraulic multiple unit railcar originally built in the 1950s and primarily used for passenger service in rural areas with low traffic density or in short-haul commuter service. The RDCs were less expensive to operate in this context than a traditional locomotive-drawn train. The cars can be used singly or several coupled together in train sets and controlled from the cab of the front unit. The purpose of this project is to introduce the concept of RDC use into Oklahoma transportation practice.

ACCOMPLISHMENTS DURING FFY 2011: After further discussions and consideration, ODOT Senior Staff concluded that operation expenses, fuel and maintenance costs to conduct the RDC demonstration was not in the best interest for the state of Oklahoma at this time. The RDC demonstration was terminated before a notice to proceed was granted.

PROPOSED ACTIVITIES FOR FFY 2012: End of project.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	$150,000	SPR	-0-	STATE
Estimated Cost FFY 2011	-0-	SPR	-0-	STATE
Projected Cost FFY 2012	-0-	SPR	-0-	STATE

CONTACT INFORMATION

ODOT SPR Part 2 Contract Administrator: Bryan Hurst, 405-522-3794

Project Sponsor: Ken LaRue, ODOT Transit Programs, 405-521-2584

2234 Energy Dissipation in Eighteen-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 18 foot drop using laboratory scale modeling technique by investigating vertical drops of 6 and 18 feet 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 2011: New Project

PROPOSED ACTIVITIES FOR FFY 2012: Construct a laboratory scale model for 150 feet long, two barrels of 10 X 10 feet and a broken-back culvert with vertical drop of 18 feet; simulate different flow conditions for 0.8, 1.0 and 1.2 times the hydraulic head in the scale model; evaluate the energy dissipation between upstream and downstream ends of the broken-back culvert with sills and/or friction blocks of different sizes and shapes; refine the sill design for easy drainage of water from the broken-back culvert; observe, 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; produce project progress reports; prepare and submit FFY 2012 Final Report.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	-0-	SPR	-0-	STATE
Estimated Cost FFY 2011	-0-	SPR	-0-	STATE
Projected Cost FFY 2012 (Yr 1 of 1)	$99,992	SPR	-0-	STATE

CONTACT INFORMATION

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

ODOT SPR Part 2 Contract Administrator: Bryan Hurst, 405-522-3794

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

2235 Distress Modeling for DARWin-ME, Phase I

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 a 4-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 2011: New Project

PROPOSED ACTIVITIES FOR FFY 2012: Perform literature review; gather cracking, rutting, and roughness data from ODOT on selected routes and sites for testing; collect design, materials, construction, and performance data from ODOT for calibration of DARWin-ME distress models; perform data analysis and calibrate the models with data from the selected sites by examining precision and bias levels of rutting, cracking, and roughness data sets in the historical ODOT databases; produce project progress reports; prepare and submit FFY 2012 Annual Report.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	-0-	SPR	-0-	STATE
Estimated Cost FFY 2011	-0-	SPR	-0-	STATE
Projected Cost FFY 2012 (Yr 1 of 2)	$106,398	SPR	-0-	STATE

CONTACT INFORMATION

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

ODOT SPR Part 2 Contract 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 2011: New Project

PROPOSED ACTIVITIES FOR FFY 2012: Perform literature search; perform testing of 3 laboratory produced subgrade soil samples; perform testing on 3 field produced subgrade soil samples; use the Enhanced Integrated Climatic Model (EICM) and Thornthwaite Moisture Index (TMI) with the Oklahoma climatic information (i.e., Oklahoma Mesonet), to evaluate the seasonal moisture content changes in subgrade soils; perform numerical modeling to analyze moisture diffusion processes, soil suction variations and corresponding volume changes within the shrinking subgrade clay soils under different geometry and moisture flux boundary conditions; conduct a feasibility study and investigate different materials for the purpose of using as horizontal and/or vertical moisture barriers; conduct Numerical and Statistical Analysis of Data using information collected from the literature, EICM and Oklahoma Mesonet, laboratory and field prepared test results, and numerical analysis and modeling; produce project progress reports; prepare and submit FFY 2012 Annual Report.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	-0-	SPR	-0-	STATE
Estimated Cost FFY 2011	-0-	SPR	-0-	STATE
Projected Cost FFY 2012 (Yr 1 of 2)	$55,879	SPR	-0-	STATE

CONTACT INFORMATION

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

ODOT SPR Part 2 Contract Administrator: Bryan Hurst, 405-522-3794

Project Sponsor: Christopher Clarke, 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 2011: New Project

PROPOSED ACTIVITIES FOR FFY 2012: Estimate flocculation and turbidity constants; investigate the validity of using laboratory jar tests for designing and sizing the OSU Injection and Mixing System to remove sediment and reduce turbidity from construction site runoff; conduct a demonstration to present technology developed and refined by this study, as well as, earlier research by designing, installing and monitoring an OSU Flocculant Injection and Mixing System at an active ODOT highway construction site; produce project progress reports; prepare and submit FFY 2012 Annual Report.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	-0-	SPR	-0-	STATE
Estimated Cost FFY 2011	-0-	SPR	-0-	STATE
Projected Cost FFY 2012 (Yr 1 of 2)	$92,541	SPR	-0-	STATE

CONTACT INFORMATION

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

ODOT SPR Part 2 Contract Administrator: Bryan Hurst, 405-522-3794

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

2238 New Asphalt Mix Design Program for ODOT

PURPOSE AND SCOPE: Oklahoma Department of Transportation (ODOT) has been using the Superpave mix design software for several years [9]. The original Superpave mix design software was built around Fox Database and did not meet ODOT requirements. The software currently being used by ODOT is implemented using two Microsoft Excel® files to create asphalt mix designs and is customized for ODOT use. However, the implementation is inefficient and cumbersome to maintain. This proposal is being submitted to ODOT with the specific aim of developing a Microsoft Visual Basic 2010® based Asphalt Mix Design Software that is efficient and easy to use. The software architecture will allow for the transition to a networked SQL server based version and simplify the revisions and the maintenance of the software in the future. The objective of the proposed work is the software implementation of the ODOT Asphalt Mix Design method. This work will include the migration of the existing Microsoft EXCEL® based software to Microsoft Visual Basic 2010® Express. The Express version of Visual Basic is freely available and does not require the purchase of additional software licenses. The upgrade of the ODOT Asphalt Mix Design software will also include a systematic redesign of the current software to improve its efficiency. The software will be thoroughly tested and the output will be compared with the mix designs obtained using the current Excel® based process to verify the accuracy of the software. The project team will work with the relevant personnel from ODOT to facilitate the transition to the new software. On successful completion of the project, complete documentation of the software will be provided along with user manuals and training modules to facilitate the adoption of the software by the user community.

ACCOMPLISHMENTS DURING FFY 2011: New Project

PROPOSED ACTIVITIES FOR FFY 2012: Development of a detailed design document to include requirement specifications, design and test matrix; revise the software and replace the Excel and VBA modules in the current implementation with modules implemented in VB 2010; implement revised software and optimize the code and improve transaction security; demonstrate the new software and work with ODOT to identify and remedy any coding /performance issues; train ODOT personnel; deliver software, user documentation and training manuals; produce project progress reports, prepare and submit Final Report.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	-0-	SPR	-0-	STATE
Estimated Cost FFY 2011	-0-	SPR	-0-	STATE
Projected Cost FFY 2012 (Yr 1 of 1)	$89,995	SPR	-0-	STATE

CONTACT INFORMATION

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

ODOT SPR Part 2 Contract Administrator: Bryan Hurst, 405-522-3794

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

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 2011: New Project

PROPOSED ACTIVITIES FOR FFY 2012: Perform literature review; identify cover aggregates and binder sources and collect samples; perform laboratory testing of aggregates to evaluate durability using Los Angeles Abrasion (AASHTO T 96) [2] and Micro-Deval (AASHTO T 327) [1] tests and shape, and texture-related index properties using AIMS (AASHTO TP81-10); begin laboratory evaluation of aggregate-binder compatibility; conduct evaluation of Performance-based Uniformity Coefficient (PUC); initiate field testing and monitoring for performance evaluation of chip seals; construct 10 new chip seal test sections and monitor performance using field testing and visual observations; start constructability review of division chip seal practices; analyze findings and begin draft cover aggregate specifications; conduct 1 of 2 tech transfer workshops to share findings with those who work in ODOT field maintenance divisions and are responsible for pavement maintenance and preservation; produce project progress reports; prepare and submit FFY 2012 Annual Report.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	-0-	SPR	-0-	STATE
Estimated Cost FFY 2011	-0-	SPR	-0-	STATE
Projected Cost FFY 2012 (Yr 1 of 2)	$45,570	SPR	-0-	STATE

CONTACT INFORMATION

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

ODOT SPR Part 2 Contract Administrator: Bryan Hurst, 405-522-3794

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

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

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 2011: New Project

PROPOSED ACTIVITIES FOR FFY 2012: Perform literature search; initiate ODOT discussions concerning current analysis being performed on the WIM data and obtain historical WIM data obtained the last five years; convert the historical WIM data into comma delimited data; develop techniques to obtain vehicle signatures; develop data mining algorithms for vehicle signature detection and the calculation of time duration and route traveled; perform 1st and 2nd order analysis on the WIM data per site and correlate the results across other sites; expand the 1st and 2nd order analyses across different seasons and different years to establish tendencies; implement a camera based system for vehicle classification validation; develop image processing algorithms for axel and axel space detections; test and evaluate the portable WIM with the camera based classifier; collect WIM data samples using the portable WIM system developed under previous research; produce project progress reports, prepare and submit Final Report.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	-0-	SPR	-0-	STATE
Estimated Cost FFY 2011	-0-	SPR	-0-	STATE
Projected Cost FFY 2012 (Yr 1 of 1)	$103,009	SPR	-0-	STATE

CONTACT INFORMATION

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

ODOT SPR Part 2 Contract Administrator: Bryan Hurst, 405-522-3794

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

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 2011: New Project

PROPOSED ACTIVITIES FOR FFY 2012: Perform literature search; identify and characterize problematic slide areas in eastern OK; collect historical landslide data; gather satellite and surface observational network information; establish a comprehensive Oklahoma Landslide Inventory Database based on gathered data that defines landslide event entries including location, time, size, extent, cause, geology, climate, etc.; based on the comprehensive database, create a first-cut regional Susceptibility and Hazard Landslide Map; derive and classify landslide-controlling factors such as elevation, slope, aspect, curvature, concavity, percentage of soil types (e.g. clay, loam, silt, and sand etc.), soil texture, land cover etc.; assign numerical weight values to classify landslide-controlling factors; derive and verify landslide hazard maps using multi-thematic geospatial datasets and landslide inventory data; produce project progress reports; prepare and submit FFY 2012 Annual Report.

FINANCIALS	AMOUNT	FUND	AMOUNT	FUND
Programmed Amount FFY 2011	-0-	SPR	-0-	STATE
Estimated Cost FFY 2011	-0-	SPR	-0-	STATE
Projected Cost FFY 2012	$88,531	SPR	-0-	STATE

CONTACT INFORMATION

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

ODOT SPR Part 2 Contract Administrator: Bryan Hurst, 405-522-3794

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

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 2011: 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; furnished technical support and services to observe, monitor and collect still photograph records of the following products: "Monitoring of "Hydro-Straw" and "EarthGuard" hydromulch product evaluations on SH-82 in Cherokee county for seeding steep slopes for the mitigation of soil erosion in marginal spoil types; monitoring of Cusak "Hay Wattle" product evaluation on SH-82 in Cherokee county for purposes of decelerating and redirecting storm water runoff on steep slopes and publish final report of these 3 products; Distributed submissions to various ODOT Divisions for their review.

PROPOSED ACTIVITIES FOR FFY 2012: 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 2011	$20,000	SPR	-0-	STATE
Estimated Cost FFY 2011	$20,000	SPR	-0-	STATE
Projected Cost FFY 2012	$20,000	SPR	-0-	STATE

CONTACT INFORMATION

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