LTRC Annual Research Program

Fiscal Year July 1, 2015 - June 30, 2016

FHWA Part II SPR Research Program

FAP Number SPR-0010(34)

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FHWA Funded Research Program

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FHWA LTAP Funded Program

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FHWA STP Funded Program

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State Funded Research Program

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Self Generated Funded Research Program

Conducted by:
Louisiana Department of Transportation and Development
Louisiana Transportation Research Center

In cooperation with
United States Department of Transportation Federal Highway Administration
June 2015

LOUISIANA TRANSPORTATION RESEARCH CENTER
LTRC

Research, Technology Transfer, Education & Training

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

May 11, 2015

Mr. Charles W. Bolinger
Division Administrator
Federal Highway Administration
5304 Flanders Drive, Suite A
Baton Rouge, Louisiana 70808

Attention: Ms. Mary Stringfellow

RE: FY 2015-2016 Louisiana Transportation Research Center Work Program

Dear Mr. Bolinger:

Enclosed please find the FY 2015-2016 Louisiana Transportation Research Center (LTRC) Annual Work Program for your review and approval. You will note that the program is divided into multiple sections reflecting all funding sources.

As delegated by the Secretary, Louisiana Department of Transportation and Development (LADOTD), I, Harold R. Paul, Director, Louisiana Transportation Research Center, of the State of Louisiana, do hereby certify, that the State is in compliance with all requirements of 23 U.S.C. 505 and its implementing regulations with respect to the research, development, and technology transfer program, and contemplate no changes in statutes, regulations, or administrative procedures which would affect such compliance.

If I can provide additional information, please advise.

Sincerely,

Harold R. Paul, P.E.
Director

Enclosure
cc: Ms. Janice Williams
Mr. Mark Morvant
Mr. Sam Cooper
Mr. Brandon Buchner

U.S. Department of Transportation
Federal Highway Administration

FHWA Louisiana Division Office

5304 Flanders Drive, Suite A
Baton Rouge, Louisiana 70808
(225) 757-7600
(225) 757-7601 Fax

June 15, 2015

In Reply Refer To:
HDA-LA

Sherri H. LeBas, P.E.
Secretary
Louisiana Department of Transportation
and Development
Baton Rouge, LA

Subject: FY 2015-2016 State Planning & Research (SPR) Work Program Part II

Attention: Mr. Skip Paul

Dear Ms. LeBas:

This letter is in response to Mr. Skip Paul's letter regarding the review and approval of the FY 2015-2016 SPR Work Program Part II. We have reviewed the subject work program and find it to be satisfactory. Please furnish this office with three copies of the final printed work program.

A separate request from your federal-aid section will be required to process the fiscal documents necessary to obligate the SPR funds.

Should you have any questions regarding this matter, please feel free to contact Mr. Brandon Buckner, FHWA at (225) 757-7622.

Sincerely yours,

Digitally signed by MARY M STRINGFELLOW
DN: c=US, o=U.S. Government, ou=DOT FHWABatonRougeLA, ou=FHWA FHWABatonRougeLA, cn=MARY M STRINGFELLOW
Date: 2015.06.18 13:44:18 -05'00'

Mary M. Stringfellow
Program Delivery Team Leader

Abbreviations and Acronyms

Funding

SPR	State Planning and Research
NCHRP	National Cooperative Highway Research Program
TRB	Transportation Research Board
IBRD	Innovative Bridge Research Deployment
LTAP	Local Technical Assistance Program
STP	State Transportation Program
NSF	National Science Foundation
TT-Fed	Transportation Trust – Federal
TT-State	Transportation Trust – State

Project Types

ADM	Administrative
RS	Research Support
GT	Geotechnical
P	Pavements
B	Bituminous
SS	Special Studies
C	Concrete
ST	Structures
TT	Technology Transfer
LTAP	Local Technical Assistance Program
PF	Pooled Fund (Louisiana Lead)
PFE	Poole Fund External (Other Lead State)

Project Status

A	Active
P	Proposed
RFP	Request for Proposal

Table of Contents

FHWA SPR Work Program
Part II

FAP Number SPR-0010(34)

FHWA Funding

SPR Research Budget Recap	Total
Administrative Budget	$778,617
Research Support Studies Budget	$1,890,800
Active Studies Budget	$3,594,442
Proposed Studies Budget	$2,579,077
Pooled Fund Lead State Studies Budget	$312,209
Total SPR Budget	**$9,155,145**

SPR External Collaboration Budget Recap	Total
Pool Funded Studies	$123,000
TRB Correlations	$127,087
NCHRP	$759,500
Total SPR External Collaboration Budget	**$1,009,587**

LTAP Budget Recap	Total
LTAP	$1,408,858
LTAP Program Total	**$1,408,858**

FHWA Funding

STP: Technology Transfer Program Budget Recap	Total
Technology Transfer Program and Operations	$1,285,649
Workforce Development Program	$6,089,833
Student Support Programs	$210,000
Total STP Budget	**$7,585,482**

State Funding

State Budget Recap	Total
Active Studies Budget	$30,000
Total State Budget	$30,000

Self-Generated Funding

Self-Generated Budget Recap	Total
Active Studies Budget	$121,500
Total Self-Generated Budget	$121,500

Other DOTD Sections Funding

Other DOTD Sections Budget Recap	Total
Active Studies Budget	$321,432
Proposed Studies Budget	$482,451
Total Other DOTD Sections Budget	**$803,883**

LTRC ANNUAL RESEARCH PROGRAM

Administrative

FISCAL YEAR 2015-2016

Funding	A/P	Project Type	SIO No.	Research No.	FY Budget	Total Cost	Agency	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	Page No.
Project Type: Administrative													
SPR: TT-Fed/TT-Reg	A	ADM	30000700	12-1AD	$20,817	$81,032	LTRC	Harold 'Skip' Paul	Administration of LSU Partnership with the National Center for Intermodal Transportation for Economic	3/1/2012	12/31/2013	12/31/2015	C-2
SPR: TT-Fed/TT-Reg	P	ADM	DOTLT1000060	16-1PM	$757,800	$757,800	LTRC	Mark Morvant	Program Management	7/1/2015	6/30/2016		C-3
					$778,617	**$838,832**	**ADMINISTRATIVE BUDGET TOTALS**						
Project Type: Research Support													
SPR: TT-Fed/TT-Reg	P	RS	DOTLT1000061	16-1EQM	$400,000	$400,000	LTRC	Mark Morvant	Equipment Management	7/1/2014	6/30/2016		C-4
SPR: TT-Fed/TT-Reg	P	RS	DOTLT1000062	16-1LFT	$46,000	$46,000	LTRC	Mark Morvant	Research Laboratory and Field Test Support	7/1/2015	6/30/2016		C-6
SPR: TT-Fed/TT-Reg	P	RS	DOTLT1000063	16-1NPE	$94,800	$94,800	LTRC	Mark Morvant	New Products Evaluation	7/1/2015	6/30/2016		C-7
SPR: TT-Fed/TT-Reg	P	RS	DOTLT1000067	16-1SSR	$100,000	$100,000	DOTD	Mark Morvant	DOTD Staff Support for Research	7/1/2015	7/30/2016		C-8
SPR: TT-Fed/TT-Reg	P	RS	DOTLT1000064	16-1TA	$385,000	$385,000	LTRC	Mark Morvant	Technical Assistance	7/1/2015	6/30/2016		C-10
SPR: TT-Fed/TT-Reg	P	RS	DOTLT1000065	16-1TRS	$465,000	$465,000	LTRC	Mark Morvant	Technical Research Surveillance	7/1/2015	6/30/2016		C-13
SPR: TT-Fed/TT-Reg	P	RS	DOTLT1000066	16-1TTRI	$400,000	$499,609	LTRC	Mark Morvant	Technology Transfer and Research Implementation	7/1/2015	6/30/2016		C-14
					$1,890,800	**$1,990,409**	**RESEARCH SUPPORT BUDGET TOTALS**						

LTRC ANNUAL RESEARCH PROGRAM

SPR: TT-Fed/TT-Reg

FISCAL YEAR 2015-2016

Funding	A/P	Project Type	SIO No.	Research No.	FY Budget	Total Cost	Agency	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	Page No.
Project Type: Geotechnical													
SPR: TT-Fed/TT-Reg	A	GT	30000114	08-3GT	$14,451	$389,951	LTRC	Murad Abu-Farsakh	Support Study to Structure Health Monitoring of the I-10 Twin Span Bridge Over Lake Pontchartrain	11/1/2007	11/1/2010	9/30/2015	C-16
SPR: TT-Fed/TT-Reg	A	GT	30000111	10-1GERL	$193,000	$523,000	LTRC	Murad Abu-Farsakh	LTRC Support for Geotechnical Research at the Geotechnical Engineering Research Laboratory (GERL)	7/1/2010	6/30/2015	6/30/2018	C-17
SPR: TT-Fed/TT-Reg	A	GT	30000661	11-1GT	$51,000	$294,679	LTRC	Murad Abu-Farsakh	In Situ Evaluation of Design Parameters and Procedures for Cementitiously Treated Weak Subgrades using Cyclic Plate Load Tests	3/18/2013	9/17/2015		C-18
SPR: TT-Fed/TT-Reg	A	GT	30000134	11-2GT	$91,000	$489,708	LTRC	Murad Abu-Farsakh	Field Instrumentation and Testing to Study Set-Up Phenomenon of Piles Driven into Louisiana Clayey Soils	12/1/2010	11/30/2014	12/31/2015	C-20
SPR: TT-Fed/TT-Reg	A	GT	30000135	11-3GT	$95,000	$656,370	LTRC	Murad Abu-Farsakh	Accelerated Load Testing of Geosynthetic Base Reinforced Pavement Test Sections	12/1/2010	5/31/2012	6/30/2016	C-22
SPR: TT-Fed/TT-Reg	A	GT	30000981	13-5GT	$84,000	$302,200	LTRC	Murad Abu-Farsakh	Monitoring of In-Service Geosynthetic Reinforced Soil (GRS) Bridge Abutments in Louisiana	10/1/2014	9/30/2016		C-23
SPR: TT-Fed/TT-Reg	A	GT	30001220	13-7GT	$8,668	$50,000	LTRC	Murad Abu-Farsakh	Support Study to ITRS proposal on "An Integrated Computational and Experimental Study of Pile Setup in Soft Clays"	2/18/2013	2/17/2016		C-24
SPR: TT-Fed/TT-Reg	A	GT	DOTLT1000049	15-2GT	$20,000	$48,493	LSU	Mostafa Elseifi	Lime Utilization in the Laboratory, Field, and Design of Pavement Layers	2/16/2015	2/15/2016		C-25
					$557,119	**$2,754,401**	**GEOTECHNICAL BUDGET TOTALS**						
Project Type: Pavements													
SPR: TT-Fed/TT-Reg	A	P	30000141	10-1ALF	$740,000	$1,730,000	LTRC	Zhong Wu	Management and Operation of the Pavement Research Facility	7/1/2009	6/30/2015	6/30/2018	C-26
SPR: TT-Fed/TT-Reg	A	P	30000610	12-11P	$40,840	$263,502	LTRC	Mark Martinez	Field Validation of Equivalent Modulus for Stabilized Subgrade Layer	5/1/2012	4/30/2014	5/1/2016	C-27
SPR: TT-Fed/TT-Reg	A	P	30000607	12-1P	$81,181	$341,459	LTRC	Kevin Gaspard	Assessment of Pavement Distresses caused by Trees on Rural Highway	2/1/2012	7/1/2014	6/30/2016	C-28
SPR: TT-Fed/TT-Reg	A	P	30000425	12-2P	$118,956	$329,685	LTRC	Kevin Gaspard	Assessment of Environmental, Seasonal and Regional Variations in Pavement Base and Subgrade Properties	9/1/2011	8/31/2013	6/30/2016	C-29
SPR: TT-Fed/TT-Reg	A	P	30000729	12-3P	$33,000	$200,000	LTRC	Zhong Wu	Minimizing Shrinkage Cracking in Cement-Stabilized Bases Through Micro-Cracking	11/1/2012	4/30/2016		C-30
SPR: TT-Fed/TT-Reg	A	P	30000682	12-7P	$101,000	$476,270	LTRC	Zhong Wu	Roller Compacted Concrete Over Soil Cement Under Accelerated Loading	5/1/2012	4/30/2014	7/31/2016	C-32
SPR: TT-Fed/TT-Reg	A	P	DOTLT1000009	14-2P	$38,300	$103,287	LSU	Mostafa Elseifi	Assessment of Structural Capacity Indicators from Rolling Wheel Deflectometer Data Collection in Louisiana	7/1/2014	12/31/2015		C-33
					$1,153,277	**$3,444,203**	**PAVEMENTS BUDGET TOTALS**						

LTRC ANNUAL RESEARCH PROGRAM

SPR: TT-Fed/TT-Reg

FISCAL YEAR 2015-2016

Funding	A/P	Project Type	SIO No.	Research No.	FY Budget	Total Cost	Agency	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	Page No.
Project Type: Bituminous													
SPR: TT-Fed/TT-Reg	A	B	30000112	10-1EMCRF	$134,021	$345,000	LTRC	Louay Mohammad	Pavement Materials Research Using Special Equipment at the Engineering Materials Characterization Research Facility	7/1/2009	6/30/2015	6/30/2018	C-34
SPR: TT-Fed/TT-Reg	A	B	DOTLT1000007	12-1B	$80,000	$219,476	LTRC	Louay Mohammad	Evaluation Of Asphalt Mixtures Containing Recycled Asphalt Shingles	4/8/2014	4/7/2016		C-35
SPR: TT-Fed/TT-Reg	A	B	DOTLT1000008	14-1B	$155,807	$352,662	LTRC	Louay Mohammad	Effects of Temperature Segregation on the Quality of Asphalt Mixtures	8/5/2014	8/4/2016		C-37
SPR: TT-Fed/TT-Reg	A	B	DOTLT1000054	15-1B	$90,000	$186,408	LTRC	Samuel B. Cooper	Evaluation of Crumb Rubber Modification of Louisiana Mixtures	4/15/2015	4/14/2017		C-39
					$459,828	**$1,103,546**	**BITUMINOUS BUDGET TOTALS**						
Project Type: Structures													
SPR: TT-Fed/TT-Reg	A	ST	30001123	13-2ST	$65,000	$172,209	LSU	Steve C.S. Cai	Live Load Monitoring of the I-10 Twin Span Bridge	8/4/2014	8/3/2016		C-40
SPR: TT-Fed/TT-Reg	A	ST	30001660	14-1ST	$91,500	$179,991	LSU	Ayman Okeil	Evaluating Louisiana New Continuity Detail for Girder Bridges	4/21/2014	12/20/2016		C-41
SPR: TT-Fed/TT-Reg	A	ST	DOTLT1000041	15-1ST	$33,052	$109,762	INTERA Incorporated of Texas	D. Max Sheppard	Development of Wave and Surge Atlas for the Design and Protection of Coastal Bridges in South Louisiana Phase II	2/12/2015	5/11/2016		C-42
					$189,552	**$461,962**	**STRUCTURES BUDGET TOTALS**						
Project Type: Special Studies													
SPR: TT-Fed/TT-Reg	A	SS	30000125	10-1PLAN	$100,000	$358,462	LTRC	Chester Wilmot	LTRC Proposal for the Support of Research and Development in Transportation Planning	7/1/2010	6/30/2015		C-44
SPR: TT-Fed/TT-Reg	A	SS	30000140	10-6SS	$40,000	$161,805	LSU	Sherif Ishak	Establishing an Intelligent Transportation Systems (ITS) Lab at LTRC (Phase II)	8/20/2010	11/19/2011	6/30/2018	C-45
SPR: TT-Fed/TT-Reg	A	SS	30000604	12-1SS	$5,500	$40,002	LSU	Sherif Ishak	DOTD Support for UTC Project: Traffic Counting using Existing Video Detection Cameras	7/1/2013	6/30/2015	12/31/2015	C-47
SPR: TT-Fed/TT-Reg	A	SS	30000605	12-2SS	$28,020	$161,020	LSU	Sherif Ishak	History of Road Design Standards in Louisiana DOTD	8/1/2012	1/31/2014	12/31/2015	C-49
SPR: TT-Fed/TT-Reg	A	SS	30001394	14-1SS	$9,000	$34,996	LSU	Sherif Ishak	DOTD Support For UTC Project: Development of an Optimal Ramp Metering Control Strategy for I-12	7/1/2013	12/31/2014	12/31/2015	C-51
SPR: TT-Fed/TT-Reg	A	SS	30001395	14-2SS	$20,596	$41,199	LSU	Peter Kelle	DOTD Support For UTC Project: A Simulation Model for Intermodal Freight Transportation in the State of Louisiana	11/1/2013	10/31/2015		C-53
SPR: TT-Fed/TT-Reg	A	SS	DOTLT1000018	14-5SS	$50,047	$125,266	LTRC	Adele Lee	LTRC Project Management and Tracking System Upgrade	11/1/2014	7/31/2016		C-55
SPR: TT-Fed/TT-Reg	A	SS	DOTLT1000056	15-3SS	$80,898	$80,898	LTRC	Chester Wilmot	Investigation into Legislative Action Needed to Accommodate the Future Safe Operation of Autonomous Vehicles in the State of Louisiana	12/15/2014	8/14/2015		C-57
					$334,061	**$1,003,648**	**SPECIAL STUDIES BUDGET TOTALS**						

LTRC ANNUAL RESEARCH PROGRAM

SPR: TT-Fed/TT-Reg

FISCAL YEAR 2015-2016

Funding	A/P	Project Type	SIO No.	Research No.	FY Budget	Total Cost	Agency	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	Page No.
Project Type: Concrete													
SPR: TT-Fed/TT-Reg	A	C	30001122	13-1C	$10,631	$58,271	LTRC	Tyson Rupnow	Evaluation of MIT-SCAN-T2 for Thickness Quality Control for PCC and HMA Pavements	1/1/2013	12/31/2013	6/30/2016	C-58
SPR: TT-Fed/TT-Reg	A	C	30001440	14-1C	$24,619	$173,960	LTRC	Tyson Rupnow	Evaluation of Dowel Bar Alignment and Effect on Long Term Performance of Jointed Concrete Pavements	6/5/2013	6/4/2014	6/30/2016	C-59
SPR: TT-Fed/TT-Reg	A	C	DOTLT1000044	14-2C	$42,651	$90,592	LTRC	Tyson Rupnow	Implementation of Concrete Maturity	11/1/2014	4/30/2016		C-60
SPR: TT-Fed/TT-Reg	A	C	30001663	14-4C	$144,792	$269,183	LTRC	Tyson Rupnow	Evaluation of Bonded Concrete Overlays over Asphalt under Accelerated Loading	4/8/2014	4/7/2016		C-61
					$222,693	**$592,006**	**CONCRETE BUDGET TOTALS**						
Project Type: Other													
SPR: TT-Fed/TT-Reg	A	Other	30000169	11-1AD	$287,821	$2,780,222	LTRC		Administration of LTRC External Funding Programs	1/1/2008	6/30/2009	6/30/2018	C-62
SPR: TT-Fed/TT-Reg	A	Other	DOTLT1000035	14-5C	$33,571	$69,914	Southern University	Hak-Shul Shin	DOTD Support for UTC Project: Development of Rapid PCC Pavement Repair Materials and Construction Techniques		6/30/2016		C-64
					$321,392	**$2,850,136**	**OTHER BUDGET TOTALS**						
Project Type: Safety													
SPR: TT-Fed/TT-Reg	A	SA	30001501	12-1SA	$112,617	$250,000	LTRC	Dortha Cummins	Louisiana Center for Transportation Safety	7/1/2014	12/31/2017		C-66
SPR: TT-Fed/TT-Reg	A	SA	30001390	14-1SA	$6,445	$51,760	LSU	Helmut Schneider	DOTD Support For UTC Project: Drugged Driving in Louisiana	7/1/2013	6/30/2015	9/30/2015	C-67
SPR: TT-Fed/TT-Reg	A	SA	30001662	14-2SA	$157,458	$179,766	LSU	Helmut Schneider	Factors Influencing Seatbelt Utilization in Louisiana and Strategies to Improve Usage Rate	6/1/2014	5/31/2016		C-68
SPR: TT-Fed/TT-Reg	A	SA	DOTLT1000053	15-1SA	$80,000	$99,521	LSU	Sherif Ishak	Exploring Naturalistic Driving Data for Distracted Driving Measures	2/16/2015	8/15/2016		C-70
					$356,520	**$581,047**	**SAFETY BUDGET TOTALS**						
					$3,594,442	**$12,790,949**	**SPR: TT-FED/TT-REG ACTIVE BUDGET TOTALS**						

LTRC ANNUAL RESEARCH PROGRAM

SPR: TT-Fed/TT-Reg

FISCAL YEAR 2015-2016

Funding	A/P	Project Type	SIO No.	Research No.	FY Budget	Total Cost	Agency	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	PageNo.
Project Type: Geotechnical													
SPR: TT-Fed/TT-Reg	P	GT			$50,000	$50,000			Geotechnical Asset Management	7/1/2015	6/30/2017		C-73
SPR: TT-Fed/TT-Reg	P	GT		13-3GT	$50,000	$200,000	LTRC	Murad Abu-Farsakh	Finite Element Analysis of the Lateral Load Test on Battered Pile Group at I-10 Twin Span Bridge	7/1/2015			C-75
SPR: TT-Fed/TT-Reg	P	GT	DOTLT1000048	15-1GT	$120,000	$150,000			Geotechnical Information Database - Phase 3	1/1/2015	6/30/2016		C-77
SPR: TT-Fed/TT-Reg	P	GT		16-1GT	$85,000	$85,000			LADOTD Geotechnical Design Manual	7/1/2015	6/30/2016		C-78
SPR: TT-Fed/TT-Reg	P	GT		16-2GT	$60,000	$250,000	LTRC	Murad Abu-Farsakh	Development of Software Solutions for Pile Design in Louisiana	9/1/2015	2/28/2018		C-80
SPR: TT-Fed/TT-Reg	P	GT		16-3GT	$30,000	$250,000	LTRC	Murad Abu-Farsakh	Development of a Design Methodology for Geosynthetic Reinforced Pavement using Finite Element Numerical Modeling	1/1/2016	6/30/2018		C-82
SPR: TT-Fed/TT-Reg	P	GT		16-4GT	$21,000	$100,000	LTRC		Quality Control/Assurance on Base Course and Embankment with the Dynamic Cone Penetrometer				C-84
SPR: TT-Fed/TT-Reg	P	GT		16-5GT	$100,000	$100,000			Pipe Material Zones in Coastal Louisiana	7/1/2015	6/30/2016		C-85
					$516,000	**$1,185,000**	**GEOTECHNICAL BUDGET TOTALS**						
Project Type: Pavements													
SPR: TT-Fed/TT-Reg	P	P		15-1P	$10,273	$50,000	LTRC	Kevin Gaspard	Investigation of Portland Cement Concrete Pavement Rubblization over Weak Subgrades	8/4/2014			C-86
SPR: TT-Fed/TT-Reg	P	P		16-1P	$40,005	$100,000	LTRC	Kevin Gaspard	Right-sizing Truck Registration and Overweight Permits Fees	1/1/2016	4/1/2017		C-87
SPR: TT-Fed/TT-Reg	P	P		16-2P	$78,811	$125,000	LTRC	Kevin Gaspard	Transportation Infrastructure Asset Damage Cost Recovery Correlated with Shale Gas/Oil Recovery Operations in Louisiana				C-88
SPR: TT-Fed/TT-Reg	P	P		16-3P	$38,186	$38,186	LTRC	Mark Martinez	Implementation of a Localized Roughness Specification for use on Louisiana Bridges				C-89
SPR: TT-Fed/TT-Reg	P	P		16-4P	$36,954	$36,954	LTRC	Mark Martinez	Development and Implementationof a Shadow				C-90
SPR: TT-Fed/TT-Reg	P	P		16-5P	$100,000	$100,000			Cost Effectiveness of Mitigating Reflective Cracking when Asphalt Surface Treatment Interlayers are Utilized on Soil Cement Base Courses	7/1/2015	6/30/2016		C-91
SPR: TT-Fed/TT-Reg	P	P		16-6P	$64,000	$64,000	LTRC	Zhong Wu	Field Validation of Alligator Cracking Using LTRC Digital Highway Data Collection System	7/1/2015	6/30/2016		C-92
					$368,229	**$514,140**	**PAVEMENTS BUDGET TOTALS**						

LTRC ANNUAL RESEARCH PROGRAM

SPR: TT-Fed/TT-Reg

FISCAL YEAR 2015-2016

Funding	A/P	Project Type	SIO No.	Research No.	FY Budget	Total Cost	Agency	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	PageNo.
Project Type: Bituminous													
SPR: TT-Fed/TT-Reg	P	B	DOTLT1000059	15-2B	$85,000	$160,866	LSU	William H. Daly	Support Study for Evaluation of Crumb Rubber Modification of Louisiana Mixtures	7/1/2015			C-93
SPR: TT-Fed/TT-Reg	P	B		16-1B	$75,000	$120,000	LTRC	Louay Mohammad	Develop a Fracture Mechanic Based Test for the Evaluation of Moisture Sensitivity in Asphalt Mixtures	7/1/2015	12/31/2016		C-94
SPR: TT-Fed/TT-Reg	P	B		16-2B	$75,000	$143,000	LTRC	Louay Mohammad	Development of a 4.75mm Asphalt Mixture Design	7/1/2015	6/30/2017		C-95
SPR: TT-Fed/TT-Reg	P	B		16-3B	$75,000	$142,025	LTRC	Louay Mohammad	Develop a Cost Effective Perpetual Pavement Design	7/1/2015	6/30/2017		C-96
					$310,000	**$565,891**	**BITUMINOUS BUDGET TOTALS**						
Project Type: Structures													
SPR: TT-Fed/TT-Reg	P	ST	DOTLT1000031	14-1TIRE	$5,000	$30,000	LSU	Todd Shupe	Improvement to Highway Guardrail Assemblies	9/1/2014	8/31/2015		C-97
SPR: TT-Fed/TT-Reg	P	ST		15-2ST	$50,000	$150,000			Material Property Changes of Decayed Timber for Timber Bridges	8/1/2016	7/31/2017		C-98
SPR: TT-Fed/TT-Reg	P	ST	DOTLT1000043	15-3ST	$50,000	$150,000			Rehabilitation of Deteriorated Timber Piles using Fiber Reinforced Polymer (FRP) Composites	10/1/2014			C-99
SPR: TT-Fed/TT-Reg	P	ST		16-1ST	$40,000	$200,000			Retrofit of Existing Statewide Louisiana Safety Walk Bridge Barrier Railing Systems	10/1/2015	9/30/2017		C-100
					$145,000	**$530,000**	**STRUCTURES BUDGET TOTALS**						
Project Type: Special Studies													
SPR: TT-Fed/TT-Reg	P	SS		14-3SS	$91,871	$182,742	LTRC	Chester Wilmot	Development of a Mode Choice Model to Estimate Evacuation Transit Demand	7/1/2015			C-101
SPR: TT-Fed/TT-Reg	P	SS	DOTLT1000046	15-2SS	$70,000	$75,000	LTRC		Cost and Time Benefits for using Subsurface Utility Engineering in Louisiana	7/1/2015	6/30/2016		C-102
SPR: TT-Fed/TT-Reg	P	SS		16-1SS	$75,000	$125,000			Louisiana Trip Generation Manual	9/1/2015	2/28/2017		C-103
SPR: TT-Fed/TT-Reg	P	SS		16-2SS	$75,000	$125,000			Evaluation and Guidance of Planning-Level Cost Estimation	1/1/2016	6/30/2017		C-104
SPR: TT-Fed/TT-Reg	P	SS		16-3SS	$75,000	$125,000			Louisiana Highway Construction Work Zone Mobility Impact Assessment Tool	9/1/2015	2/28/2017		C-106
SPR: TT-Fed/TT-Reg	P	SS		16-4SS	$75,000	$100,000			Dredging Louisiana's Ports	11/1/2015	10/31/2016		C-108
SPR: TT-Fed/TT-Reg	P	SS		16-5SS	$107,000	$198,000	LTRC	Ravindra Gudishala	Diverted Traffic Measurement	7/1/2015	6/30/2017		C-109
					$568,871	**$930,742**	**SPECIAL STUDIES BUDGET TOTALS**						

LTRC ANNUAL RESEARCH PROGRAM

SPR: TT-Fed/TT-Reg

FISCAL YEAR 2015-2016

Funding	A/P	Project Type	SIO No.	Research No.	FY Budget	Total Cost	Agency	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	PageNo.
Project Type: Concrete													
SPR: TT-Fed/TT-Reg	P	C		16-1C	$100,000	$100,000	LTRC	Tyson Rupnow	Radio-frequency Identification (RFID) Tagging for Material Tracking and Future Asset Management	7/1/2015	6/30/2016		C-110
SPR: TT-Fed/TT-Reg	P	C		16-2C	$25,000	$25,000	LTRC	Tyson Rupnow	Reliable Early Opening Strength for Concrete Pavements and Patch Work	7/1/2015	6/30/2016		C-111
SPR: TT-Fed/TT-Reg	P	C		16-3C	$27,000	$250,000	LTRC	Tyson Rupnow	Evaluation of CFRCP: Phase II Accelerated Loading	7/1/2015	6/30/2017		C-112
					$152,000	**$375,000**	**CONCRETE BUDGET TOTALS**						
Project Type: Other													
SPR: TT-Fed/TT-Reg	P	Other	DOTLT1000069	16-1TIRE	$30,000	$30,000	LTU	Fatmir Menkulasi	Development of a Composite Bridge System for Short and Medium-span Bridges	7/1/2015	6/30/2016		C-113
SPR: TT-Fed/TT-Reg	P	Other	DOTLT1000070	16-2TIRE	$30,000	$30,000	LSU	Chandra Theegala	Easy Add-on Fuel Saver for Non-Hybrid Vehicles	7/1/2015	6/30/2016		C-114
SPR: TT-Fed/TT-Reg	P	Other	DOTLT1000071	16-3TIRE	$30,000	$30,000	LTU	Shaurav Alam	Development of High Strength Super Light Weight Concrete for Transportation Infrastructures	7/1/2015	6/30/2016		C-115
SPR: TT-Fed/TT-Reg	P	Other	DOTLT1000068	16-4B	$28,977	$50,000	LTU	Nazimuddin M Wasiuddin	DOTD Support for UTC Project: Ductility of Extreme-Temperature Asphalt Binders by Shear and Extensional Rheology	7/1/2015	9/30/2016		C-116
SPR: TT-Fed/TT-Reg	P	Other	DOTLT1000072	16-4TIRE	$30,000	$30,000	ULL	Matthew Fadden	Performance-Based Plastic Design for Transportation Infrastructure	7/1/2015	6/30/2016		C-117
					$148,977	**$170,000**	**OTHER BUDGET TOTALS**						
Project Type: Safety													
SPR: TT-Fed/TT-Reg	P	SA		15-2SA	$80,000	$150,000	LSU	Sherif Ishak	Development of a Simulation Test Bed for Connected Vehicles using the LSU Driving Simulator	7/1/2015			C-118
SPR: TT-Fed/TT-Reg	P	SA	DOTLT1000087	15-3SA	$60,000	$130,000	ULL	Xiaoduan Sun	Investigating Safety Impacts of Centerline Rumble Strip, Lane Conversion, Roundabout and J-turn Features on Louisiana Highways	7/1/2015			C-119
SPR: TT-Fed/TT-Reg	P	SA		16-1SA	$80,000	$200,000			Highway Construction Work Zone Safety Performance and Improvement in Louisiana	9/1/2015	6/30/2017		C-120
SPR: TT-Fed/TT-Reg	P	SA		16-2SA	$90,000	$125,000			Calibration Factors for Highway Safety Manual (HSM) Intersection SPFs	9/1/2015	12/31/2016		C-121
SPR: TT-Fed/TT-Reg	P	SA		16-3SA	$60,000	$100,000			Estimating Average Daily Traffic Counts Using Cell Phone Data	10/1/2015	12/31/2016		C-122
					$370,000	**$705,000**	**SAFETY BUDGET TOTALS**						
					$2,579,077	**$4,975,773**	**SPR: TT-FED/TT-REG PROPOSED BUDGET TOTALS**						

LTRC ANNUAL RESEARCH PROGRAM

SPR: Pooled Fund: TT-Fed

FISCAL YEAR 2015-2016

Funding	A/P	Project Type	SIO No.	Research No.	FY Budget	Total Cost	Agency	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	Page No.
Project Type: Pooled Fund													
SPR: Pooled Fund: TT-Fed	A	PF	30000281	09-1PF	$10,000	$300,000	LTRC	Mark Morvant	Southeast Transportation Consortium	9/1/2009	8/30/2012	8/30/2018	C-124
SPR: Pooled Fund: TT-Fed	A	PF	DOTLT1000002	14-5PF	$133,410	$306,812	LTRC	Louay Mohammad	Design and Analysis Procedures for Asphalt Mixtures Containing High-RAP Contents and/or RAS	11/1/2014	10/31/2017		C-125
					$143,410	**$606,812**	**SPR: POOLED FUND: TT-FED ACTIVE BUDGET TOTALS**						
SPR: Pooled Fund: TT-Fed	P	PF	DOTLT1000057	15-1PF	$78,799	$142,202	Oklahoma State	Joshua Li	Prep-ME Software Implementation and Enhancement	4/1/2015	12/31/2016		C-127
SPR: Pooled Fund: TT-Fed	P	PF		16-1PF	$90,000	$150,000			Best Management Practices and Guidelines for Determining the Value of Research Results	7/1/2015	3/30/2017		C-129
					$168,799	**$292,202**	**SPR: POOLED FUND: TT-FED PROPOSED BUDGET TOTALS**						
					$312,209	**$899,014**	**POOLED FUND BUDGET TOTALS**						

LTRC ANNUAL RESEARCH PROGRAM

FHWA

FISCAL YEAR 2015-2016

Funding	A/P	Project Type	SIO No.	Research No.	FY Budget	Total Cost	Agency	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	PageNo.
Project Type: Pooled Fund: External Lead State													
SPR: Pooled Fund: TT-Fed	A	PFE		TPF-5(099)	$5,000	$40,000			Evaluation of Low Cost Safety Improvements		10/1/2017		C-131
SPR: Pooled Fund: TT-Fed	A	PFE		TPF-5(114)	$25,000	$190,000			Roadside Safety Research Program	7/1/2008	12/31/2011		C-132
SPR: Pooled Fund: TT-Fed	A	PFE		TPF-5(159)	$10,000	$50,000			Technology Transfer Concrete Consortium	2/5/2008	2/4/2012	2/14/2018	C-133
SPR: Pooled Fund: TT-Fed	A	PFE		TPF-5(212)	$10,000	$60,000			Southeast Transportation Consortium		8/31/2012	8/31/2018	C-134
SPR: Pooled Fund: TT-Fed	A	PFE		TPF-5(228)	$10,000	$165,224			Superpave Regional Center				C-135
SPR: Pooled Fund: TT-Fed	A	PFE		TPF-5(237)	$15,000	$90,000			Transportation Library Connectivity & Development	1/1/2011	12/31/2015		C-136
SPR: Pooled Fund: TT-Fed	A	PFE		TPF-5(242)	$10,000	$60,000			Traffic and Data Preparation for AASHTO MEPDG Analysis and Design		8/31/2014	8/31/2016	C-137
SPR: Pooled Fund: TT-Fed	A	PFE		TPF-5(294)	$28,000	$84,000			Design and Analysis Procedures for Asphalt Mixtures Containing High-RAP Contents and/or RAS		10/31/2017		C-138
SPR: Pooled Fund: TT-Fed	A	PFE		TPF-5(309)	$10,000	$50,000			Partnership for the Transformation of Traffic Safety Culture				C-139
					$123,000	**$789,224**	**POOLED FUND: EXTERNAL LEAD STATE BUDGET TOTALS**						
					$123,000	**$789,224**	**SPR: POOLED FUND: TT-FED ACTIVE BUDGET TOTALS**						

LTRC ANNUAL RESEARCH PROGRAM

LTAP: TT-Fed/TT-Reg

FISCAL YEAR 2015-2016

Funding	A/P	Project Type	SIO No.	Research No.	FY Budget	Total Cost	Agency	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	Page No.
Project Type: LTAP													
LTAP: TT-Fed/TT-Reg	A	LTAP		15-LTAP	$848,068	$5,711,991	LTRC	Marie Walsh	Local Technical Assistance Program (LTAP)		12/31/2015		D-2
LTAP: TT-Fed/TT-Reg	A	LTAP	DOTDLT10 00078	16-LTAP	$560,790	$560,790	LTRC	Marie Walsh	Local Technical Assistance Program (LTAP)		12/31/2016		D-3
					$1,408,858	**$6,272,781**	**LTAP BUDGET TOTALS**						
					$1,408,858	**$6,272,781**	**LTAP: TT-FED/TT-REG ACTIVE BUDGET TOTALS**						

LTRC ANNUAL RESEARCH PROGRAM

STP: TT-Fed

FISCAL YEAR 2015-2016

Funding	A/P	Project Type	SIO No.	Research No.	FY Budget	Total Cost	Agency	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	Page No.
Project Type: Technology Transfer and Training													
STP: TT-Fed	A	TT	30000320	08-1TSQ	$353,904	$353,904	LTRC	Samuel B. Cooper	Technology Transfer Program and Operations (LSU)		6/30/2016		E-2
STP: TT-Fed	A	TT	30000241	10-4AD	$10,000	$110,000	LTRC	Mark Morvant	Technology Transfer & Research Implementation Support for Louisiana Universities	1/1/2010	12/31/2013	6/30/2016	E-4
STP: TT-Fed	A	TT	DOTLT100 0026	15-1WDSC	$102,823	$250,000	LTRC	Dortha Cummins	Workforce Development Support For Safety Center		12/31/2017		E-5
STP: TT-Fed	A	TT	DOTDLT10 00079	16-1SWD	$1,520,000	$1,520,000	LTRC	Samuel B. Cooper	DOTD Staff Support for Workforce Development		6/30/2016		E-6
STP: TT-Fed	A	TT	DOTDLT10 00075	16-1TSQ	$522,245	$522,245	LTRC	Samuel B. Cooper	Technology Transfer Program and Operations (DOTD)		6/30/2016		E-7
STP: TT-Fed	A	TT	DOTDLT10 00080	16-1TT	$37,500	$37,500	LTRC	Samuel B. Cooper	Support for Senior Project Courses		6/30/2016		E-9
STP: TT-Fed	A	TT	DOTDLT10 00073	16-1WD	$1,028,548	$1,028,548	LTRC	Samuel B. Cooper	Workforce Development		6/30/2016		E-10
STP: TT-Fed	A	TT	DOTDLT10 00084	16-2TT	$147,000	$147,000	LTRC	Harold 'Skip' Paul	LTRC Student Program		6/30/2016		E-11
STP: TT-Fed	A	TT	DOTDLT10 00083	16-COOP	$200,000	$200,000	LTRC	Samuel B. Cooper	LADOTD CO-OP Program		6/30/2016		E-12
STP: TT-Fed	A	TT	DOTDLT10 00082	16-PONTIS	$125,000	$125,000	LTRC	Samuel B. Cooper	AASHTO PONTIS Agreement		6/30/2016		E-13
STP: TT-Fed	A	TT	DOTDLT10 00081	16-TTRF	$100,000	$100,000	LTRC	Samuel B. Cooper	Technology Transfer Registration Fees		6/30/2016		E-14
STP: TT-Fed	A	TT	DOTDLT10 00076	16-WDC	$3,438,462	$3,438,462	LTRC	Samuel B. Cooper	Workforce Development Contracts		6/30/2016		E-15
					$7,585,482	**$7,832,659**	**TECHNOLOGY TRANSFER AND TRAINING BUDGET TOTALS**						
					$7,585,482	**$7,832,659**	**STP: TT-FED ACTIVE BUDGET TOTALS**						

LTRC ANNUAL RESEARCH PROGRAM

State: TT-Reg

FISCAL YEAR 2015-2016

Funding	A/P	Project Type	SIO No.	Research No.	FY Budget	Total Cost	Agency	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	Page No.
Project Type: Structures													
State: TT-Reg	A	ST	30001020	13-4ST	$30,000	$60,000	LTRC	Ching Tsai	I-10 Girder Repair Using Post-Tensioned Steel Rods and Carbon Fiber Composite Cables (CFCC)	3/18/2013	3/17/2014	3/16/2016	F-2
					$30,000	**$60,000**		**STRUCTURES BUDGET TOTALS**					
					$30,000	**$60,000**		**STATE: TT-REG ACTIVE BUDGET TOTALS**					

LTRC ANNUAL RESEARCH PROGRAM

Self-Generated

FISCAL YEAR 2015-2016

Funding	A/P	Project Type	SIO No.	Research No.	FY Budget	Total Cost	Agency	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	Page No.
Project Type: Geotechnical													
CALTRANS	A	GT	DOTLT1000055	15-3GT	$26,500	$70,598	LTRC	Murad Abu-Farsakh	Calibration of LRFD Geotechnical Axial (Tension and Compression) Resistance Factors (φ) for California	1/16/2015	1/15/2017		G-2
					$26,500	**$70,598**	**GEOTECHNICAL BUDGET TOTALS**						
Project Type: Bituminous													
NCHRP	A	B	30000545	12-4B	$5,000	$103,796	LTRC	Louay Mohammad	Performance of WMA Technologies: Stage II – Long-term Field Performance	4/29/2011	7/28/2016		G-4
NCHRP	A	B	30001505	14-2B	$90,000	$186,407	LTRC	Louay Mohammad	Field Implementation of the Louisiana Interface Shear Strength Test	8/9/2013	8/8/2015		G-5
					$95,000	**$290,203**	**BITUMINOUS BUDGET TOTALS**						
					$121,500	**$360,801**	**SELF-GENERATED ACTIVE BUDGET TOTALS**						

LTRC ANNUAL RESEARCH PROGRAM

Other DOTD Sections

FISCAL YEAR 2015-2016

Funding	A/P	Project Type	SIO No.	Research No.	FY Budget	Total Cost	Agency	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	Page No.
Project Type: Geotechnical													
Emergency Fund	A	GT	30000980	13-9GT	$10,152	$424,677	LSU	Joshua Kent	CORS 911: Continuously Operating Reference Stations for the Bayou Corne Sinkhole	3/18/2013	3/17/2014	9/30/2015	H-2
					$10,152	**$424,677**	**GEOTECHNICAL BUDGET TOTALS**						
Project Type: Special Studies													
Port Priority Program	A	SS	30001180	13-10SS	$24,000	$146,117	LSU	James Richardson	Economic Evaluation of Applicants to the Port Construction and Development Priority Program	1/2/2013	7/1/2014	12/31/2015	H-4
					$24,000	**$146,117**	**SPECIAL STUDIES BUDGET TOTALS**						
Project Type: Other													
Safety	A	Other	DOTDLT1000077	15-LRSP	$287,280	$287,280	LTRC	Marie Walsh	Louisiana Local Road Safety Program		12/31/2016		H-5
					$287,280	**$287,280**	**OTHER BUDGET TOTALS**						
					$321,432	**$858,074**	**OTHER DOTD SECTIONS ACTIVE BUDGET TOTALS**						
Project Type: Safety													
Safety	P	SA		16-1STFS	$482,451	$1,263,287	LTRC	Dortha Cummins	FHWA Safety Transfer Fund Support for LCTS	7/1/2015	12/31/2017		H-7
					$482,451	**$1,263,287**	**SAFETY BUDGET TOTALS**						
					$482,451	**$1,263,287**	**OTHER DOTD SECTIONS PROPOSED BUDGET TOTALS**						

FHWA

Part II SPR Funded Research Program

ADMINISTRATIVE LINE ITEMS AND RESEARCH SUPPORT STUDIES

Title:	**Administration of LSU Partnership with the National Center for Intermodal Transportation for Economic Competitiveness**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**30000700**		Project Start Date:		3/1/2012
Research Project Number:	12-1AD		Completion Date	(original)	12/31/2013
Research Agency:	LTRC		Completion Date	(revised)	12/31/2015
Principal Investigator:	Mr. Harold 'Skip' Paul				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$26,270		**Total**		**$20,817**
	(revised)	$81,032				
Est. Expended to Date		$60,215		Salaries		$20,817
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)	$35,000		Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure		$31,776		Other		

PURPOSE AND SCOPE

The purpose of the project is to provide the Louisiana Department of Transportation and Development (LADOTD) match funding for the Administration of the Louisiana State University (LSU) partnership with the National Center for Intermodal Transportation for Economic Competiveness (NCITEC). The NCITEC is a University Transportation Center funded by US Department of Transportation, Research and Innovative Administration (RITA). The theme of NCITEC is to promote the development of an integrated, economically competitive, efficient, safe, secure, and sustainable national intermodal transportation network by integrating all transportation modes for both freight and passenger mobility. The total UTC funds provided by the NCITEC to LTRC/LSU will be approximately $600,000 which requires a 100% match. LSU and LADOTD have committed to providing the matching funds.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Held Project Review Committee meetings with Principal Investigators;
-Worked with Principal Investigators to ensure the project tasks are being completed in a timely manner;
-Coordinated the UTC Principal Investigators' presentation at the 2014 NCTEC Conference held at Mississippi State University, Starkville, MS, participated in the conference;
-Published final reports for all completed projects in FY 14-15; and
-Participated in 2015 Southeast Regional UTC conference in Birmingham.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Provide support for the administration of the UTC;
-Continued contract monitoring of existing projects; and
-Coordinate investigators' presentations at the Regional UTC Conference and CUTC Conference.

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	Program Management	Project Status:	Proposed
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000060**		Project Start Date:		7/1/2015
Research Project Number:	16-1PM		Completion Date	(original)	6/30/2016
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Mark Morvant				

BUDGET STATUS

Total Budget				Estimated 2015-2016 Budget		
Total Cost	(original)	$757,800		**Total**		**$757,800**
	(revised)					
Est. Expended to Date				Salaries		$747,800
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		$10,000
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

To cover administrative costs of the staff members involved in the planning and supervision of the SPR Program. This item will cover all general expenditures incurred in the management of the SPR Program, including the expense of the Policy Committee and Project Review Committees.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

Managed the Louisiana Transportation Research Center's (LTRCs) research program including administrative duties, business activities and financial responsibilities;
-Manage the LTRC research program funded by the FHWA SPR Part II monies;
-Developed performance strategies for research goals and implementation of research results;
-Participated in Transportation Research Board (TRB) activities;
-Participated in AASHTO RAC Subcommittee and task forces;
-Participated in the Louisiana Department of Transportation and Development (LADTOTD) committees;
-Updated the LTRC Manual of Research Procedures;
-Held the 2015 Research Peer Exchange;
-Managed the Southeast Transportation Consortium activities; and
-Administer the University Transportation Center funding.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Continue to manage and administer the SPR Research Program;
-Implement the LTRC 2015 RPIC results;
-Staff participation in External Peer Exchanges;
-Continued support for Transportation Research Board activities;
-Continued support for regional and national RAC task group activities;
-Continued support for Southeast Transportation Consortium; and
-Continued support for AASHTO RAC activities.

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	**Equipment Management**	**Project Status:**	**Proposed**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000061**	Project Start Date:		7/1/2014
Research Project Number:	16-1EQM	Completion Date	(original)	6/30/2016
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Mr. Mark Morvant			

BUDGET STATUS

Total Budget			**Estimated 2015-2016 Budget**		
Total Cost	(original)	$400,000	**Total**		**$400,000**
	(revised)				
Est. Expended to Date			Salaries		$350,000
FY 2014 - 2015 Budget			Equipment	(expendable)	$50,000
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		

PURPOSE AND SCOPE

To cover costs incurred to provide support for the purchase, fabrication, evaluation, and maintenance of rolling equipment, special equipment, and instrumentation for research projects. To provide for participation in standardized testing programs for laboratory certification (co-Op, AMRL, CRRL).

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Proficiency testing within the AASHTO Materials Reference Library (AMRL);
-Participation in LADOTD State Cooperative Testing Program;
-General Equipment Calibration and Maintenance;
-Vehicle Inspection Reports;
-FWD replacement;
-Calibration of United Testing System;
–Comparison LWT testing between PMW and APA Jr. devices;
–Fixation of LWT devices;
–CCRL round robin testing and certification program;
–Equipment maintenance to maintain accreditation;
–Purchase and installation of new Materials Testing System (MTS) for Concrete lab; and
–Coordination of Chiller purchase and install to connect MTS.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES
Maintain AMRL laboratory accreditations: -Perform routine and unscheduled maintenance of LTRC research laboratory and field equipment; -Developed plans, prepared specifications and purchase lab equipment as necessary to maintain state-of-the–art laboratory facilities; -Participate in State Coop and CRRL testing programs; -Safety Training and Reporting Duties; -Calibration of Profiler, FWD, Dynaflect, and Friction Tester; -Calibration of Mobile Imaging System; -Calibration of Profiler, FWD, Dynaflect, and Friction Tester; and -Perform routine and unscheduled maintenance of LTRC research laboratory and field equipment.

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	Research Laboratory and Field Test Support	Project Status:	Proposed

Funding Source:	SPR: TT-Fed/TT-Reg	Budget Category:	FHWA

SIO:	DOTLT1000062		Project Start Date:		7/1/2015
Research Project Number:	16-1LFT		Completion Date	(original)	6/30/2016
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Mark Morvant				

BUDGET STATUS

Total Budget			Estimated 2015-2016 Budget		
Total Cost	(original)	$46,000	**Total**		**$46,000**
	(revised)				
Est. Expended to Date			Salaries		$46,000
FY 2014 - 2015 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		

PURPOSE AND SCOPE

The broad objectives of this study are to provide general assistance to other Louisiana public research entities such as laboratory testing, field work, and analysis for Louisiana universities to promote engineering education in the field of transportation. Such support is not related to a Louisiana Transportation Research Center (LTRC) funded research study.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Assessment of Mitigating Traverse Joint Faulting with Polyurethane Foam on LA 1 By Pass, State Project Number 034-30-0023;
-Joor Road Noise Study;
-Providing lab support for Local High School Science Fair Project;
-Evaluation of Rutting Distresses on I-20 near Mound to Delta Scales Investigation of Rutting/Road Failures on LA 30 near LA 73;
-Evaluation of old Break, Seat & O'lay and rut distress on I-20 Near Minden, La.;
-Science Fair Mentor (student is going to International Competition); and
-Providing asphalt mixtures to North Carolina State for their FHWA PRS study Plan Change for SP H.009600.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

Continue to provide general assistance to other Louisiana public research entities as requested in accordance with the mission and founding legislation of LTRC.

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	New Products Evaluation	Project Status:	Proposed
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000063**		Project Start Date:		7/1/2015
Research Project Number:	16-1NPE		Completion Date	(original)	6/30/2016
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Mark Morvant				

BUDGET STATUS

Total Budget				Estimated 2015-2016 Budget		
Total Cost	(original)	$94,800		**Total**		**$94,800**
	(revised)					
Est. Expended to Date				Salaries		$94,800
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

To support evaluation of products for the Louisiana Department of Transportation and Development (LADOTD) New Products Evaluation Committee. To provide general evaluation of new products or technologies not associated with a research project.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-New Product Evaluation of Supper Slurry;
–Evaluation of Forta-FI , NPE Offer No. 15.041;
–Flowable Fill (BASF admixture);
–Evaluation of Ecorphalt NPE Offer No. 15.042;
–ICF – Aspahlt Fiber;
–Honeywell – Polymer modified mixtures; and
–Terra Prime – Primecoat.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

Continue managing the necessary evaluations of new projects submitted to the Louisiana Transportation Research Center (LTRC) by the LADOTD New Product Evaluation Committees including on-going evaluations.

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	DOTD Staff Support for Research	Project Status:	Proposed
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000067**		Project Start Date:		7/1/2015
Research Project Number:	16-1SSR		Completion Date	(original)	7/30/2016
Research Agency:	DOTD		Completion Date	(revised)	
Principal Investigator:	Mr. Mark Morvant				

BUDGET STATUS

Total Budget			Estimated 2015-2016 Budget		
Total Cost	(original)	$100,000	**Total**		**$100,000**
	(revised)				
Est. Expended to Date			Salaries		$100,000
FY 2014 - 2015 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		

PURPOSE AND SCOPE

To cover the costs incurred by the Louisiana Department of Transportation and Development (LADOTD) staff participating in the Louisiana Transportation Research Center (LTRC) support committees and advisory panels such as Project Review Committees (PRC), Research Problem Identification Process (RPIC), Technical Advisory Committee (TAC), and LTRC Policy Committee. These committees and panels providing technical and policy support for development of the LTRC work program, development and conduct of specific research projects, of the participation of LADOTD staff on strategic planning functions for the research program conducted by LTRC. This funding shall not be used by LTRC/LADOTD employees (i.e. Sections 19 and 33).

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

LADOTD Participation in the project review committees to provide technical review and direction on new, on-going and completed research studies:

- •Attend PRC meetings;
- •Define the objective and scope;
- •Identify potential research teams;
- •Assist in the development of the RFP for those problem statements selected for contract research;
- •Review and suggest improvements to proposals;
- •Rate proposals using the Proposal Review Form;
- •Attends periodic meetings to provide feedback to the Principal Investigator (PI);
- •Review task reports, biannual progress reports, interim reports, and research documents;
- •Assists in development of implementation strategies, progress, and activities;
- •Reviews and evaluates subject matter content of the draft final report; and
- •Assists in the assessment of implementation activities, progress, and results.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES
-Participate in Project Review Committees to provide technical direction to research projects; and -Participate in LTRC Policy Committee meetings to provide strategic direction to the research program.

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	**Technical Assistance**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000064**		Project Start Date:		7/1/2015
Research Project Number:	16-1TA		Completion Date	(original)	6/30/2016
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Mark Morvant				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$385,000		**Total**		**$385,000**
	(revised)					
Est. Expended to Date				Salaries		$380,000
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		$5,000
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

To cover costs incurred in providing laboratory, field testing, and forensic analysis in direct response to departmental inquiries for assistance on the Louisiana Transportation and Development (LADOTD) projects which are not related to formal research studies. To provide assistance to state university requests for laboratory or field testing on research projects not funded by the Louisiana Transportation Research Center (LTRC).

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Mall drive, City Of Alexandria (Pavement evaluation consultation);
-I-20 Pavement distress in Rubblized pavement_CS451-02_Milepost 7.596 to 13.6. (In progress and requires FWD and Profiler assessment);
-LA 506 H:002650 Detour road section Alternates (Work Plan which will include FWD and Profiler testing);
-LA 27 and LA 1256 Overlay design, H.010670 (FWD);
-Section 67, Slope stability/inclinometer assistance, Hammond, LA;
-Entergy, Soil Boring Log data acquisition;
-KCI Technologies, Soil Boring Log data acquisition;
-District 04, Direct shear testing;
-District 03, Large direct shear testing assistance;
-Section 22, Geotextile fabric tension tests;
–Evaluation of Rutting Distresses on I-20 near Mound to Delta Scales;
-Investigation of Rutting/Road Failures on LA 30 near LA 73;
–Evaluation of Rutting Distresses on I-20 Near Minden, La.;
–Plan Change for SP H.009600;
–Use of WMA mixtures for Lower Temp Application on a special construction project;
–Providing asphalt mixtures to North Carolina State for their FHWA PRS study;
–Forensic investigation of Roadway cores for LA 3070, District 03;
–Investigation of I-49, OGFC issues near Lake End;
–Evaluation of new plastomeric polymer from Honeywell for asphalt mixtures;
–Epoxy Overlay specifications;
–Specifications committee work;
–HPC / UHPC;
–Dowel bar mixtures for pullout testing for Materials Lab;
–Self-healing concrete;
–Surface resistivity implementation and assistance to districts;
–Mass Concrete specifications;
–ACR Testing requirements;
–ACR field testing and evaluation;
–Evaluation of Rutting Distresses on I-20 near Mound to Delta Scales Investigation of Rutting/Road Failures on LA 30 near LA 73;
–Evaluation of old Break, Seat & O'lay and rut distress on I-20 Near Minden, La.;
–Plan Change for SP H.009600;
–Use of WMA mixtures for Lower Temp Application on a special construction project;
–Providing asphalt mixtures to North Carolina State for their FHWA PRS study;
–Forensic investigation of Roadway cores for LA 3070, District 03;
–Investigation of I-49, OGFC issues near Lake End;
–Evaluation of new plastomeric polymer from Honeywell for asphalt mixtures;
–Assisting districts in implementing the LWT device in support for the JMF approval process according to the new LADOTD thin lift specifications;
–MEPDG Inputs for PCC Pavement;
–Served on the Alternate Design Committee for LADOTD;
–Assisted Bridge Design and Contractors in developing a low strength grout for temporary precast detour bridges; and
–I-20 alternate design / rubblization issue in Lincoln Parrish.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES
-Respond to requests for laboratory, field work, and forensic analysis on LADOTD projects not related to a formal research project; -Field testing (Skid, FWD, Profiler, etc.) in support of District requests; -Respond to requests for laboratory, field work, and analysis for university requests not related to a LTRC formal research project; and -Provide general assistance to other public entities not related to research.

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	**Technical Research Surveillance**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000065**		Project Start Date:		7/1/2015
Research Project Number:	16-1TRS		Completion Date	(original)	6/30/2016
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Mark Morvant				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$465,000		**Total**		**$465,000**
	(revised)					
Est. Expended to Date				Salaries		$465,000
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

To cover costs incurred in providing Administration of the Louisiana Transportation Research Center (LTRC) Research Project Contracts, preparation of research proposals, participation on LTRC Project Review Committees and participation on LTRC Report Review Committees. To provide laboratory and field assistance to LTRC contract researchers on projects funded by LTRC.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Published 16 final reports;
-Managed research projects with contract budget funds of 6.3 million;
-Initiated 21 new research projects for 1.2 million (not including UTC funds); and
-Project management for 63 on-going research projects.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Provide management of LTRC research project contracts;
-Prepare new research proposals for initiation of new projects in accordance with proposed in-house projects as approved in this Annual Work Program document;
-Participation on LTRC Project Review Committees; and
-Participation on LTRC Report Review Committees.

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	**Technology Transfer and Research Implementation**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000066**		Project Start Date:		7/1/2015
Research Project Number:	16-1TTRI		Completion Date	(original)	6/30/2016
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Mark Morvant				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$499,609		**Total**		**$400,000**
	(revised)					
Est. Expended to Date				Salaries		$385,000
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		$15,000
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

To cover costs incurred in providing research implementation activities, technology transfer seminars and participation in external research/training activities (NCHRP, FHWA Panels, TRB Meetings, Technical Conferences, and Research Review Committees).

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS
-Development of strategies for implementation of research projects; -Development of distribution of Research Implementation Impacts brochure; -Development and submittal of projects to AASHTO High Value Research solicitation; -Tracking of implementation progress on completed research projects for previous five years; -TRB committee AFD60 Unsaturated Soils, committee attendance and paper reviews; -TRB Committee AFD80 Strength and Deformation Characteristics of Pavement Sections, committee attendance and paper reviews; -TRB committee AFD90 (Surface properties and Vehicle Interaction) paper reviews; -TRB Committee, AFS10 Transportation Earthwork, committee member and paper review; -TRB Committee, AFS30 Foundations of Bridges and Other Structures, committee member and paper reviews; -TRB Committee, AFS30 Committee Communication Coordinator; -NHI Training course, Soil and Foundations workshop; -Grant proposal writing workshop; -Treatment cost benefit analysis software implementation from project 10-4P; -Software development for electronic measurement technology for DCP testing; -SASHTO 2014, Planning & Presentation of Technical Sessions; –Implementation of New Asphalt Test procedures; –Develop workshops and training seminars; –Participate and present at SEAUPG Annual Meeting, held in Baton Rouge; –Presented and participated at TRB Annual meeting; –Participate and present at LAPA Annual Meeting; –Participate in AAPT Annual Meeting; –Participated at Binder ETG meeting; –Participated in RPIC, PRC meetings; –Test masters PE review classes; –LADOTD training and CPTP classes; –MSCR Task Force Webinars; –Various Other Webinars; –LADOTD Foundations of Leadership Development Class; –NAPA Sustainability Conference; –NCHRP Panel Participation (D18-17); –TTCC/NCC Fall (Omaha, NE) and Spring (Reno, NV) Meetings;
FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES
-Continue Research Implementation activities; -Begin development of program for 2016 Louisiana Transportation Conference; -Development and hosting of Technology Transfer Seminars; -Participate in external research/training activities: NCHRP/FHWA Panels, TRB Meetings; Meetings; Technical Conferences; and -Continue to seek venues for our presentations that effectively communicate the Louisiana Transportation Research Center's (LTRCs) vision.

FHWA

Part II SPR Funded Research Program

CONTINUING RESEARCH

Title:	**Support Study to Structure Health Monitoring of the I-10 Twin Span Bridge Over Lake Pontchartrain**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**30000114**		Project Start Date:		11/1/2007
Research Project Number:	08-3GT		Completion Date	(original)	11/1/2010
Research Agency:	LTRC		Completion Date	(revised)	9/30/2015
Principal Investigator:	Dr. Murad Abu-Farsakh				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$88,776		**Total**		**$14,451**
	(revised)	$389,951				
Est. Expended to Date		$375,500		Salaries		$14,451
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)	$26,500		Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure		$21,500		Other		

PURPOSE AND SCOPE

The objective of this research project is to establish a Structure Health Monitoring System of the I-10 Twin Span Bridge through instrumentation of the M19 Eastbound pier for use in the short-term and long-term monitoring purposes. This includes instrument selected piles with inclinometers and strain gauges, instrument pile-cap with accelerometers and tiltmeters, and instrument column with water pressure cells. Static lateral load test will be performed by the Louisiana Department of Transportation and Development (LADOTD) immediately after completing the installation of the monitoring system in the Eastbound pier M19. The short-term monitoring will be used to validate the applicability of the FB-MultiPier analysis for predicting the performance of battered pile group system under lateral loading and to develop (or back-calculated) the p-y multipliers for battered pile groups in similar soil conditions.

The long-term monitoring will be used to evaluate the behavior of pile group structure under dynamic loads caused by selected events (winds, waves, and vessel collision).

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Finalized report on lateral load test and analysis; and
-Coordinated with Geocomp to prepare the instrumentation report.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Finalize the instrumentation report.

Title:	**LTRC Support for Geotechnical Research at the Geotechnical Engineering Research Laboratory (GERL)**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**30000111**		Project Start Date:		7/1/2010
Research Project Number:	10-1GERL		Completion Date	(original)	6/30/2015
Research Agency:	LTRC		Completion Date	(revised)	06/30/2018
Principal Investigator:	Dr. Murad Abu-Farsakh				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$523,000		**Total**		**$193,000**
	(revised)					
Est. Expended to Date		$890,000		Salaries		$135,000
FY 2014 - 2015 Budget				Equipment	(expendable)	$40,000
FY Funds	(original)	$216,500		Equipment	(non-expendable)	
	(revised)			Travel		$18,000
Est. FY Expenditure		$170,000		Other		

PURPOSE AND SCOPE

The objectives of this research are to:
-Perform support studies to meet the beneficiary requirements for geotechnical and geosynthetic testing, technical assistance and research;
-Advance the state-of-the-art in geotechnical and geosynthetic research;
-Provide development, support and training of new and innovative techniques, software and equipment for advancing the performance of the transportation system; and
-Develop problem statements and research proposals.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Provided geotechnical testing support and technical assistance for the Louisiana Department of Transportation and Development (LADOTD);
-Published several technical papers/proceedings/reports on findings of LTRC research projects;
-Developed potential ideas and problem statements for future LTRC research projects;
-Developed research proposal on "Finite Element Analysis of the Lateral Load Test on Battered Pile Group at I-10 Twin Span Bridge";
-Started training classes for engineers and technicians; and
-Maintained and upgraded software's related to CPT application.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Provide geotechnical and geosynthetic testing support and technical assistance for LADOTD;
-Provide support and training for implementation of research results;
-Develop research proposals and problem statements for future activities;
-Publish research findings on technical papers and reports; and
-Maintain CPT software's.

Title:	In Situ Evaluation of Design Parameters and Procedures for Cementitiously Treated Weak Subgrades using Cyclic Plate Load Tests	Project Status:	Ongoing
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**30000661**		Project Start Date:		3/18/2013
Research Project Number:	11-1GT		Completion Date	(original)	9/17/2015
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Murad Abu-Farsakh				

BUDGET STATUS

Total Budget			Estimated 2015-2016 Budget		
Total Cost	(original)	$294,679	**Total**		**$51,000**
	(revised)				
Est. Expended to Date		$200,000	Salaries		$48,000
FY 2014 - 2015 Budget			Equipment	(expendable)	$3,000
FY Funds	(original)	$107,500	Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure		$87,000	Other		

PURPOSE AND SCOPE

The purpose of this research study is to evaluate the design parameters and procedures for cementitious treated soft subgrade soil using cyclic plate load tests. This includes evaluating the composite resilient modulus (Mr) of various cementitious (cement, lime, fly ash)treated soft subgrade materials for inclusion in the pavement design. A treated subgrade soil has many characteristics that contribute to the performance of the pavement structure. As such, an adequate evaluation of the design parameters of treated subgrade soils is necessary in pavement analysis and design. The resilient modulus is a key input parameter for subgrade soil in both the 1993 AASHTO and the Mechanistic-Empirical Pavement Design Guide (MEPDG). Therefore, the determination and use of the "composite" resilient modulus of cementitious treated soft subgrades can provide a more suitable pavement structure design responsive to site conditions and projected loading is crucial in pavement design process. The work program includes conducting in-box resilient and permanent deformation tests using cyclic plate load tests on sections build inside a steel test box with dimensions of 6.5 ft (length) × 6.5 ft (width) × 5.5 ft (height). Laboratory unconfined compression tests, resilient mod repeated plate load tests will be also conducted on cementatious treated soft subgrade samples. In addition, Dynamic Cone Penetrometer (DCP), Light Falling Weight Deflectometer (LFWD), Geogauge, Portable Seismic Pavement Analyzer (PSPA) tests, and repeated triaxial load tests will be conducted.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Performed literature review on relevant research topics related to cementitious stabilization/treatment subgrades;
-Completed Phase 1 of the study. Evaluated the resilient modulus of cementitious treated hauled soil for phase 1;
-Completed screening of Phase 2 of the study. Selected the moisture contents and the cementitious ratios to treat in-situ wet subgrade soils to achieve 50 and 100 psi UCS; and
-Conducted laboratory repeated load triaxial tests to evaluate the resilient modulus and permanent deformation of treated in-situ wet soils; and
-Started shrinkage and tube section tests.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES
-Finalized the resilient modulus values for the treated in-situ wet subgrade soil for Phase 2; -Complete the shrinkage and tube section tests; -Modify the cyclic plate load testing facility and purchasing instrumentation needed for Phase 2 in-box cyclic plate load tests; and -Conduct in-box cyclic plate load tests on cementitious subgrade soil.

Title:	**Field Instrumentation and Testing to Study Set-Up Phenomenon of Piles Driven into Louisiana Clayey Soils**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**30000134**		Project Start Date:		12/1/2010
Research Project Number:	11-2GT		Completion Date	(original)	11/30/2014
Research Agency:	LTRC		Completion Date	(revised)	12/31/2015
Principal Investigator:	Dr. Murad Abu-Farsakh				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$489,708		**Total**		**$91,000**
	(revised)					
Est. Expended to Date		$394,272		Salaries		$91,000
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)	$81,600		Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure		$93,272		Other		

PURPOSE AND SCOPE

Piles driven into saturated cohesive soils usually experience a time-dependent increase in pile capacity, known as pile setup, which contributes to the long-term capacity of the piles. Field observations showed that pile set-up is significant and continues to develop for long time after installation. An increase in pile capacity of up to 12 times has been reported. The pile set-up phenomenon depends on many factors including the increase in soil strength around the pile during the consolidation process resulting from dissipation of excess pore pressure with time, the effect of thixotropy in disturbed clayey soils during installation, and the aging effect. An accurate estimation and incorporation of pile set-up during design will result in reducing the cost of highway projects. The main objective of this research study is to evaluate the time-dependent increase in pile capacity (or pile setup phenomenon) for piles driven into Louisiana soils through conducting repeated static and dynamic field testing with time on full-scale instrumented piles for the purpose of incorporation the pile setup into the Louisiana Department of Transportation and Development (LADOTD) design practice. This will include investigating the mechanism of pile setup, study the effect of soil type/properties, pile size, and their interaction on pile setup phenomenon, and develop a model and its reliability to estimate the increase in pile capacity with time.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Completed analyzing the pile setup data at Bayou Lacassine Bridge site;
-Completed data collection and analysis from previous projects for piles tested several times after installation;
-Completed laboratory tests to evaluate pile setup parameters;
-Conducted multilinear statistical regression analysis on the collected setup data and soil properties;
-Developed analytical models for estimation pile setup; and
-Started reliability analysis to calibrate the setup resistance factors for the developed analytical models.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES
-Complete the reliability analysis to calibrate the setup resistance factors for the developed analytical models; and -Prepare a final report.

Title:	**Accelerated Load Testing of Geosynthetic Base Reinforced Pavement Test Sections**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**30000135**		Project Start Date:		12/1/2010
Research Project Number:	11-3GT		Completion Date	(original)	5/31/2012
Research Agency:	LTRC		Completion Date	(revised)	6/30/2016
Principal Investigator:	Dr. Murad Abu-Farsakh				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$297,579		**Total**		**$95,000**
	(revised)	$656,370				
Est. Expended to Date		$536,396		Salaries		$92,000
FY 2014 - 2015 Budget				Equipment	(expendable)	$3,000
FY Funds	(original)	$112,926		Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure		$111,000		Other		

PURPOSE AND SCOPE

The main objective of this research study is to evaluate the benefits of geosynthetics stabilization and reinforcement of subgrade/base aggregate layer in flexible pavements build on weak subgrades, and the effect of pre-rut of pavement sections prior to the construction to HMA layer on geosynthetics benefits and performance. This will be achieved through conducting accelerated load testing on geosynthetic reinforced unpaved and pavement test sections to be constructed at the ALF site. Different types of geogrids and geotextiles will be considered for base reinforcements. Another objective is to evaluate the design parameters of geosynthetic reinforced flexible pavement in terms of the 1993 AASHTO Pavement Design Guide and possibly the MEPDG that can provide a more suitable pavement structure design responsive to site conditions and projected loading.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Conducted accelerated load tests on the paved test lane sections. Completed 210,000 passes on lanes 1, 2, and 4, 310,000 passes on lane 3, 110,000 passes on lane 5 and 25,000 passes on lane 6;
-Completed four laboratory in-box cyclic plate load tests on geosynthetic reinforced test sections;
-Completed three cyclic plate load tests on the test lane sections at ALF;
-Conducted laboratory resilient and permanent deformation tests to characterize subgrade and base materials;
-Conducted dynamic test on asphalt material; and
-Started analyzing the experimental test results.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Continue performing accelerated load testing on the paved test lane sections;
-Continue in-situ cyclic plate load tests on the test lane sections at ALF;
-Continue analyzing the experimental test results;
-Study cost benefit of geosynthetic reinforced pavements; and
-Prepare a draft final report.

Title:	**Monitoring of In-Service Geosynthetic Reinforced Soil (GRS) Bridge Abutments in Louisiana**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**30000981**		Project Start Date:		10/1/2014
Research Project Number:	13-5GT		Completion Date	(original)	9/30/2016
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Murad Abu-Farsakh				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$232,200		**Total**		**$84,000**
	(revised)	$302,200				
Est. Expended to Date		$130,220		Salaries		$81,000
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)	$83,500		Equipment	(non-expendable)	
	(revised)	$130,220		Travel		$3,000
Est. FY Expenditure		$130,220		Other		

PURPOSE AND SCOPE

Traditional bridge construction can be slow, expensive, and complex. Researchers at the Federal Highway Administration (FHWA) recognized that bridges could be built better, faster, and for less money. In 2010, the FHWA introduced an initiative "Every Day Counts" (EDC) to promote technologies that speed up the design and construction of highway projects such as bridge abutments, while at the same time reducing their costs. One promising technology is to use Geosynthetic Reinforced Soil (GRS) in the Integrated Bridge Systems (IBS). The use of GRS can also help in eliminating/minimizing the roadway and bridge "bump" problem. The purpose of this research study is to apply the GRS technology in the design and construction of bridge abutments in Louisiana, and evaluate the performance of GRS abutments during construction and under service loads. The project will include instrumenting and monitoring selected GRS bridge abutment at Maree Michel Bridge.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Conduct literature review relevant to the geosynthetic reinforced soil and its application for bridge abutments;
-Prepared an instrumentation plan for monitoring the GRS bridge abutment at the Maree Michel Bridge GRS abutment;
-Purchased all the instrumentations needed for the GRS abutment;
-Purchased large direct shear test device;
-Prepared the instrumented geotextile layers with strain gauges in the lab; and
-Installed the instrumentations in the GRS abutment at the critical locations to obtain reliable and meaningful important measurements.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Continue literature review relevant to the geosynthetic reinforced soil and its application for bridge abutments;
-Start monitoring and collecting data for the Maree Michel GRS Bridge abutment site;
-Plan for loading the GRS bridge abutment; and
-Start analyzing the collected field data.

Title:	**Support Study to ITRS Proposal on "An Integrated Computational and Experimental Study of Pile Setup in Soft Clays"**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**30001220**		Project Start Date:		2/18/2013
Research Project Number:	13-7GT		Completion Date	(original)	2/17/2016
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Murad Abu-Farsakh				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$50,000		**Total**		**$8,668**
	(revised)					
Est. Expended to Date		$41,333		Salaries		$8,668
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)	$16,666		Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure		$16,666		Other		

PURPOSE AND SCOPE

This support study is setup to provide the additional support fund for the CO/PI: Dr. Murad Abu-Farsakh during the three years duration of the Board of Regents funded proposal on “An Integrated Computational and Experimental Study of Pile Setup in Soft Clays”. The objectives of the research project, as stated in the proposal, are: a) to develop, via laboratory testing, field instrumentation and testing, and numerical modeling, a fundamental understanding of the physical and scientific mechanisms underlying the pile setup phenomenon; b) to formulate an analytical model/equation for estimating and predicting pile setup with time, which can be transferred to various private sectors for the design and construction of driven pile foundations; and c) to establish the plans and mechanisms for transforming the research findings into exploitable, commercially feasible technologies to enhance the economic development in Louisiana and the nation.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Conducted literature review relevant to pile setup in clay soils;
-Developed an instrumentation plan for the tested piles at Baton Rouge site;
-Conducted in-situ and laboratory tests to characterize the soil type at Baton Rouge site; and
-Conducted finite element numerical modeling.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Install instrumentations on piles and surrounding soils;
-Start testing piles at Baton Rouge site at Baton Rouge site;
-Continue finite element numerical modeling; and
-Conduct in-situ and laboratory tests to characterize the soil type at New Orleans site.

Title:	**Lime Utilization in the Laboratory, Field, and Design of Pavement Layers**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000049**		Project Start Date:		2/16/2015
Research Project Number:	15-2GT		Completion Date	(original)	2/15/2016
Research Agency:	LSU		Completion Date	(revised)	
Principal Investigator:	Dr. Mostafa Elseifi				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$48,493		**Total**		**$20,000**
	(revised)					
Est. Expended to Date		$10,000		Salaries		$20,000
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)	$10,000		Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure		$10,000		Other		

PURPOSE AND SCOPE

The objective of the research is to conduct a synthesis on the topic to examine other state specifications and practices, their requirements, soils allowed, and typical percentages utilized. The researcher will tabulate the results, make conclusions, and provide the Louisiana Department of Transportation and Development (LADOTD) recommendations on how to implement the results within its specifications, laboratory, field, and design policy.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

The researcher will begin a literature review and preparation of a survey to investigate and research the topic.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

The researcher will conduct a survey to investigate and research the topic. The results will be shared with the project review committee. The researcher will begin the comparison and create recommendations based on the analysis.

Title:	**Management and Operation of the Pavement Research Facility**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**30000141**		Project Start Date:		7/1/2009
Research Project Number:	10-1ALF		Completion Date	(original)	6/30/2015
Research Agency:	LTRC		Completion Date	(revised)	06/30/2018
Principal Investigator:	Dr. Zhong Wu				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$1,730,000		**Total**		**$740,000**
	(revised)					
Est. Expended to Date		$320,000		Salaries		$450,000
FY 2014 - 2015 Budget				Equipment	(expendable)	$40,000
FY Funds	(original)	$550,000		Equipment	(non-expendable)	$250,000
	(revised)			Travel		
Est. FY Expenditure		$550,000		Other		

PURPOSE AND SCOPE

The Pavement Research Facility (PRF) is a full scale test facility site designed to test any and all types of pavements using the Australian designed ALF. The purpose of the Louisiana Transportation Research Center's (LTRC's) Pavement Research Facility is to investigate and evaluate economic and practical alternatives to current design and construction practices.

The objective of this study is to provide for the management and operation structure of the PRF site in performing full-scale accelerated pavement testing.

A manager and two operators will be funded in this study. The scope of the work includes management of the facility, maintenance and operation, preparations of plans for individual experiments, construction and instrumentation activities and planning.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-ALF loading of Geo-grid reinforced test sections;
-ATLaS loading of RCC test sections.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Construct test sections of bonded overlay;
-Complete loading of Geo-grid reinforced test sections;
-Complete loading of RCC test sections.

Title:	**Field Validation of Equivalent Modulus for Stabilized Subgrade Layer**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**30000610**	Project Start Date:		5/1/2012
Research Project Number:	12-11P	Completion Date	(original)	4/30/2014
Research Agency:	LTRC	Completion Date	(revised)	5/1/2016
Principal Investigator:	Mr. Mark Martinez			

BUDGET STATUS

Total Budget			**Estimated 2015-2016 Budget**		
Total Cost	(original)	$263,502	**Total**		**$40,840**
	(revised)				
Est. Expended to Date		$222,662	Salaries		$40,840
FY 2014 - 2015 Budget			Equipment	(expendable)	
FY Funds	(original)	$140,202	Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure		$43,064	Other		

PURPOSE AND SCOPE

The central objective of the research is to validate the newly developed Modulus Analysis spreadsheet through comparison to field collected data so that current pavement design strategies and policies can be updated and modified in an effort to improve long-term performance and increase benefit-cost ratios on future pavement projects. It is also an objective of this research to develop a subgrade stabilization specification (lime and\or cement) of the Louisiana Department of Transportation and Development (LADOTD) that will allow the Department to take design advantage of the structural improvements that subgrade treatment applications provide.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Task 2: DCP cores, Shelby tubes, FWD and LFWD testing has been conducted on relevant projects. Progress in this area was severely hampered by a chronic long-term problem with the FWD. FWD has been recently fixed, however, and project is again progressing as required;
-Task 3: Continued compilation of empirical data and continued projections are ongoing. Comparison of results continue as well; and
-Task 4: Continued development of usage model based on data already collected.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Task 2: Finish canvassing of prospective rehabilitation and new construction projects that fit project needs were compiled and a number of projects have been selected for evaluation. DCP, cores, Shelby tubes, FWD and LFWD testing is being conducted according to schedule on said projects;
-Task 3: Finish compilation of empirical data and continued projections are being developed. Preliminary comparisons have been carried out;
-Task 4: Finish development of usage model; and
-Task 5: Submit Final Report and Benefit-Cost Analysis.

Title:	**Assessment of Pavement Distresses caused by Trees on Rural Highway**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**30000607**		Project Start Date:		2/1/2012
Research Project Number:	12-1P		Completion Date	(original)	7/1/2014
Research Agency:	LTRC		Completion Date	(revised)	6/30/2016
Principal Investigator:	Mr. Kevin Gaspard				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$341,459		**Total**		**$81,181**
	(revised)					
Est. Expended to Date		$94,000		Salaries		$81,181
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)	$36,011		Equipment	(non-expendable)	
	(revised)	$65,000		Travel		
Est. FY Expenditure		$65,000		Other		

PURPOSE AND SCOPE

Pavement surface and foundation distresses due to shrinking and swelling soils are an issue on certain Louisiana Highways which is the focus of this study. Desiccation is a common phenomenon due to diurnal changes in soil moisture content and can be caused by three primary sources (Evaporation, Transpiration, Water Table Fluctuations), hereafter referred to as Evapotranspiration . Expansive clay soils (PI>20) are particularly vulnerable to changes in moisture content; shrinking during the drying cycles (desiccation) and swelling during wetting cycles (recharge). While research has been conducted in these areas, though sometimes sparingly, assessment guidelines for soil characterization, environmental factors, and the stress state of the pavement system coupled with appropriate cost effective mitigation methods for evapotranspiration distresses on Highways will be provided through a comprehensive report and technical assistance to the Districts.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

LA 493 has been selected to construct test sections. The instruments required to assess the site has been acquired. If the contractor constructs tests sections this fiscal year then they will be instrumented. If not, then they will be instrumented and monitored next fiscal year.

Note: There was a suggestion at the RPIC meeting that the scope of this project be modified to include roadways with high PI clays where trees were not present.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

Instrument the six test sections on LA 493 and complete soil laboratory testing on the soils. Monitor the test sections seasonally, (January, March, June, and September.) In addition to collect data from the data loggers, elevations will be taken on the sections, and the pavement will be monitored for cracking with our imaging and profiling vehicle.

Title:	**Assessment of Environmental, Seasonal and Regional Variations in Pavement Base and Subgrade Properties**	**Project Status:**	**Ongoing**

Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**30000425**		Project Start Date:		9/1/2011
Research Project Number:	12-2P		Completion Date	(original)	8/31/2013
Research Agency:	LTRC		Completion Date	(revised)	6/30/2016
Principal Investigator:	Mr. Kevin Gaspard				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$262,210		**Total**		**$118,956**
	(revised)	$329,685				
Est. Expended to Date		$177,000		Salaries		$111,456
FY 2014 - 2015 Budget				Equipment	(expendable)	$2,500
FY Funds	(original)	$56,000		Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure		$56,000		Other		$5,000

PURPOSE AND SCOPE

The purpose of this project is to validate the prediction of seasonal variation strengths in the base course and subgrade, validate MEPDG provided soil properties and strengths, validate soil properties and locations from Soil Unit Maps, link soil unit maps with the Louisiana Department of Transportation and Development (LADOTD) Geotechnical data base, document water table depths, and obtain Level 2 modulus inputs with data from the Falling Weight Deflectometer (FWD) and Dynamic Cone Penetrometer (DCP). A companion study will be conducted through the Southeast Superpave Pool Fund Study to refine the historical climatic model and build new future climatic models to be utilized in the MEPDG.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Installed instrumentation on 4 sites;
-Completed FWD assessments in February and June, 2015; and
-Completed laboratory testing on 3 sites.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Finish laboratory testing on the 14 research sites; and
-Write interim report.

Title:	**Minimizing Shrinkage Cracking in Cement-Stabilized Bases Through Micro-Cracking**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**30000729**		Project Start Date:		11/1/2012
Research Project Number:	12-3P		Completion Date	(original)	4/30/2016
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Zhong Wu				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$200,000		**Total**		**$33,000**
	(revised)					
Est. Expended to Date		$150,000		Salaries		$33,000
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)	$34,250		Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure		$15,000		Other		

PURPOSE AND SCOPE

Micro-cracking is a construction process used to reduce the severity of shrinkage cracking problems associated with pavements that have cement-treated or stabilized bases. Several research studies have reported that micro-cracking improves the performance of soil cement layers by reducing the crack width, reducing the total length, or both. Through these mechanisms, the micro-cracking process possesses a great potential to reduce the risk of reflective cracking on soil cement pavements in Louisiana.

The main purpose of this study is to document the micro-cracking process in Louisiana and evaluate the effectiveness of using micro-cracking to reduce shrinkage/reflective cracking problems on soil cement pavements through field test sections. Several new cement-stabilized base construction projects will be identified and selected for this study. After placement and satisfactory compaction of cement stabilized layer, it should be moist-cured 2 or 3 three days before and after micro-cracking. In situ deflection tests will performed before and after the micro-cracking to monitor the base strength changes. Reflective cracking of pavements after one year in-service will be collected and compared.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

1. Monitored ALF Microcracking test sections:
   -Performed NDT testing (FWD, and LFWD) at different curing times; and
   -Conducted visual crack-mapping for the ALF sections.
2. Constructed a field Microcracking test section including five sub test sections: control of cement stabilized design ,or CSD, Micro-cracking CSD, CSD with Double-layer AST, Control of Cement Treated Design, or CTD, and Micro-cracking CTD.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES
-Continue monitoring ALF test sections; -Construct one or two new field Microcracking test sections; -Monitor the performance of field test sections through in situ NDT testing; and -Analyze the performance data.

Title:	**Roller Compacted Concrete Over Soil Cement Under Accelerated Loading**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**30000682**		Project Start Date:		5/1/2012
Research Project Number:	12-7P		Completion Date	(original)	4/30/2014
Research Agency:	LTRC		Completion Date	(revised)	7/31/2016
Principal Investigator:	Dr. Zhong Wu				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$363,959		**Total**		**$101,000**
	(revised)	$476,270				
Est. Expended to Date		$325,000		Salaries		$101,000
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)	$58,400		Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure		$30,000		Other		

PURPOSE AND SCOPE

The objective of this research is to document the experience of mix design and construction practice of a new RCC-surfaced pavement type for the Louisiana Department of Transportation and Development (LADOTD) and evaluate the structural performance and load carrying capacity of RCC surfacing soil cement base pavements under accelerated pavement testing. Six RCC accelerated pavement testing (APT) sections (each of 71.7-ft long and 13-ft wide) will be constructed for this research study.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Completed the accelerated loading of 4"RCC over soil cement section (Section 6);
-Completed the accelerated loading of 6"RCC over soil cement section (Section 5);
-Partially completed the accelerated loading of 8"RCC over soil cement section (Section 4);
-Monitored the cracking and load-carrying performance of RCC test sections using FWD, laser profiler, instrumentation. Accelerated loading of RCC test sections using the ATLAS; and
-Show-cased the RCC test sections and ATLaS30 loading among DOTD and other state pavement engineers and consulting engineers.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Continue the accelerated loading of RCC test sections using the ATLAS;
-Evaluation of RCC pavements' fatigue life using the Mechanistic-Empirical(M-E)Pavement Design procedure; and
-Development of an RCC thickness design procedure.

Title:	**Assessment of Structural Capacity Indicators from Rolling Wheel Deflectometer Data Collection in Louisiana**	**Project Status:**	**Ongoing**

Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000009**		Project Start Date:		7/1/2014
Research Project Number:	14-2P		Completion Date	(original)	12/31/2015
Research Agency:	LSU		Completion Date	(revised)	
Principal Investigator:	Dr. Mostafa Elseifi				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$103,287		**Total**		**$38,300**
	(revised)					
Est. Expended to Date		$52,739		Salaries		$38,300
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)	$80,935		Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure		$65,000		Other		

PURPOSE AND SCOPE

The objective of this project is to evaluate structural capacity indicators in predicting pavement structural deficiency based on RWD measurements collected in District 05. Based on this evaluation, the research team introduces modifications to improve prediction of pavement structural deficiency. This project will also develop a methodology to integrate the most promising structural capacity indicators into the Louisiana Pavement Management System (PMS).

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-The research team has completed Tasks 1 to 5 with the exception of Task 4;
-A meeting is scheduled with the Project Review Committee (PRC) on April 9th to discuss our findings to date;
-Developed a number of modifications to the structural capacity models developed in the original study; and
-The research team has focused on assessing the added values of RWD measurements by comparing the sections that were predicted to be structurally-deficient to the sections that were predicted to be structurally-sound.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-The research will continue its progress towards completion of the project in 12/2015 by completing the remaining tasks highlighted in the proposal; and
-The findings of this project will be used to propose a structural index that is ready for implementation in the Louisiana PMS.

Title:	**Pavement Materials Research Using Special Equipment at the Engineering Materials Characterization Research Facility**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**30000112**		Project Start Date:		7/1/2009
Research Project Number:	10-1EMCRF		Completion Date	(original)	6/30/2015
Research Agency:	LTRC		Completion Date	(revised)	06/30/2018
Principal Investigator:	Dr. Louay Mohammad				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$345,000		**Total**		**$134,021**
	(revised)					
Est. Expended to Date		$345,000		Salaries		$118,021
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)	$143,000		Equipment	(non-expendable)	$10,000
	(revised)			Travel		$6,000
Est. FY Expenditure		$143,000		Other		

PURPOSE AND SCOPE

The Engineering Materials Characterization and Research Facility (EMCRF), provides a multi-disciplinary expertise and state-of-the-art research capabilities to assess the fundamental engineering properties of materials used in the transportation industry in Louisiana. EMCRF plays an important role in the evaluation of the engineering properties of materials used in the Louisiana Transportation Research Center's (LTRC's) regional pavement testing facility, ALF. In addition, EMCRF provides specialized analytical expertise for on-going as well as newly initiated in-house research projects; develops new software to be used by the Louisiana Department of Transportation and Development (LADOTD) engineers; provides experimental design and analysis; provide training for DOTD employees for the purpose of adopting newly developed technology and implementation methodology into the daily operations of LADOTD, and, assists in-house LTRC investigators to develop thorough research programs.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Participated in the LADOTD Parts five and ten Specification Committee;
-Participated in the organization and conduct of Semi Circular Bend training workshop and Best -Practices for Tack Coat workshop;
-Developed and submitted proposals to NCHRP; and
-Participated in several technical assistance Projects.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Continue participation in the Louisiana DOTD Asphaltic Concrete Specification Committee;
-Continue participation in technical assistance projects;
-Develop and submit proposals for external funding; and
-Conduct workshops and seminars.

Title:	**Evaluation Of Asphalt Mixtures Containing Recycled Asphalt Shingles**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000007**		Project Start Date:		4/8/2014
Research Project Number:	12-1B		Completion Date	(original)	4/7/2016
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Louay Mohammad				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$219,476		**Total**		**$80,000**
	(revised)					
Est. Expended to Date		$146,752		Salaries		$78,000
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)	$106,000		Equipment	(non-expendable)	
	(revised)			Travel		$2,000
Est. FY Expenditure		$106,000		Other		

PURPOSE AND SCOPE

The objective of this research project is to evaluate the potential use of roofing shingle in asphalt concrete mixtures. The roofing shingles may be blended with asphalt binder through a wet process, in which the ground recycled material is blended with a virgin binder at high temperature prior to mixing with the aggregates. To achieve this objective, this research will measure experimentally the rheological and mechanical properties of asphalt binders and aggregates extracted from three contrasting sources of Recycled Asphalt Shingles (RAS). The ground recycled material will then be blended with virgin asphalt binder at high temperature and at different RAS content levels. The chemical and physical interaction mechanisms taking place in the blending process will be characterized using rheological testing and GPC. Rheological and mechanical characterization of asphalt binders and aggregates extracted from three contrasting sources of RAS will be performed. In addition, the mechanical properties of asphalt/aggregate mixtures with and without RAS will be evaluated at high, intermediate and low temperatures.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Binder Experiment: Completed binder extractions from mixtures containing five percent PCWSs and MWSs. Further, PG grading of those binder was also completed. The influence of two types of recycling agent (Naphthenic based and tall oil based) was evaluated;
-Mixture Experiment: Completed the conduct of the following tests on mixtures containing binders described in the binder experiment: Semi-Circular Bending test at intermediate temperatures, Hamburg Loaded Wheel Test, Thermal Stress Restrained Specimen Tensile Strength Test, and dynamic modulus test; and
-Performed data analysis: Preliminary results of this study were presented to peer groups at the FHWA binder ETG held in Baton Rouge, September 16, 2014.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES
-Binder Experiment: Continue rheological characterization of binders extracted from asphalt mixture with the remaining recycling agents as per the test factorial; -Mixture Experiment: Continue the conduct of following tests on mixtures containing binders described in the above binder experiment: Semi-Circular Bending test at intermediate temperatures, Hamburg Loaded Wheel Test, Thermal Stress Restrained Specimen Tensile Strength Test, and dynamic modulus test; -Prepare standard practice document for the use of RAS in asphalt mixtures; and -Prepare final report.

Title:	**Effects of Temperature Segregation on the Quality of Asphalt Mixtures**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000008**		Project Start Date:		8/5/2014
Research Project Number:	14-1B		Completion Date	(original)	8/4/2016
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Louay Mohammad				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$352,662		**Total**		**$155,807**
	(revised)					
Est. Expended to Date		$156,000		Salaries		$153,807
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)	$156,000		Equipment	(non-expendable)	
	(revised)			Travel		$2,000
Est. FY Expenditure		$156,000		Other		

PURPOSE AND SCOPE

Segregation in asphalt mixtures is a non-uniform distribution of coarse and fine aggregates all through its mass, i.e., concentration of coarse materials in some area and fine materials in others. Coarse materials tend to cool more rapidly than fine materials, causing temperature segregation, i.e. temperature differentials. Excessive temperature differentials cause variation in the density levels of pavements during construction. These variations in pavement temperature lead to inconsistent compaction levels. A lack of density in the cooler areas of the pavement can cause premature deterioration of those pavement areas such as moisture damage, fatigue cracking, rutting, raveling, pothole, etc. The objective of this study is to determine the effects of temperature segregation on densification and mechanistic properties of asphalt mixtures in Louisiana. Asphalt paving projects across the State will be selected for mat temperature scanning for a reliable analysis on various contributing factors to the temperature segregation. Three test sections from each project will be identified. Cores across the mat from each test section will be secured for density measurements and mechanistic properties from tests such as the Hamburg type loaded wheel tracking and semi-circular bending

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Completed conduct of literature Review;
-Installed and calibrated Pave-IR device. This device continuously measures pavement surface temperature during paving operation;
-Developed an experimental design and identified two candidate field project, LA 30, US 165 and LA 1058;
-Conducted temperature measurement on three field projects: LA 30, US 165 and LA 1058;
-Secured Cores from LA 30, US 165 and LA 1058 projects;
-Performed density, SCB, and LWT tests on samples from LA 30, US 165 and LA 1058 projects; and
-Conducted preliminary data analysis.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES
-Continue the identification candidate field project; -Continue the conducted of temperature measurement on the candidate field projects; -Secure cores from candidate field projects; -Perform density, SCB, and LWT tests on samples from the candidate field projects; and -Conduct preliminary data analysis.

Title:	**Evaluation of Crumb Rubber Modification of Louisiana Mixtures**	**Project Status:**	**Ongoing**

Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000054**		Project Start Date:		4/15/2015
Research Project Number:	15-1B		Completion Date	(original)	4/14/2017
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Samuel B. Cooper				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$186,408		**Total**		**$90,000**
	(revised)					
Est. Expended to Date		$15,000		Salaries		$90,000
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

The objective of this research is to evaluate the effect of using CRM on Louisiana asphalt mixtures. The evaluation will include impacts of modification on design volumetric, LWT performance, and SCB performance. Dense graded and gap graded mixtures will be evaluated.
This research will also evaluate potential methods for quality control/quality assurance (QC/QA) of binders modified with crumb rubber. The binder evaluation will include standard SHRP Superpave Rheometer testing, chemical evaluation, and extraction.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Began mixture design and literature;
-Began gathering materials for specimen preparation; and
-Began preliminary laboratory testing.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Finalize mixture designs;
-Continue compiling relevant literature; and
-Continue specimen preparation and laboratory evaluation.

Title:	**Live Load Monitoring of the I-10 Twin Span Bridge**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**30001123**		Project Start Date:		8/4/2014
Research Project Number:	13-2ST		Completion Date	(original)	8/3/2016
Research Agency:	LSU		Completion Date	(revised)	
Principal Investigator:	Dr. Steve C.S. Cai				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$172,209		**Total**		**$65,000**
	(revised)					
Est. Expended to Date		$10,000		Salaries		$47,000
FY 2014 - 2015 Budget				Equipment	(expendable)	$2,000
FY Funds	(original)	$60,000		Equipment	(non-expendable)	
	(revised)			Travel		$1,000
Est. FY Expenditure		$45,000		Other		$15,000

PURPOSE AND SCOPE

The objectives of this project are to validate the performance of the monitoring system and the OSMOS WIM; develop a data interface tool to easily produce data downloads in table and graphical formats; and determine the effects of traffic loads on instrumented components of the structure.
The scope of work of the proposed research is expected as:
-Field trip to be familiar with the system. The research team will travel to the bridge site to become familiar with the instrumentation layout and to verify sensors and system connections;
-Field data collection - The vehicle data will be collected on the bridge site and will be compared with the WIM measurements. More field data will be collected through internet thereafter; and
-Tools for data processing and visualization – Convenient tools will be developed to characterize/visualize the live load and to process/visualize the measured bridge responses;
-Data Analysis – The collected data will be analyzed to understand the characteristics of live loads and bridge performance, such as the truck weight distribution, stress level, deformation, etc. The performance of the instrumented bridge components will be assessed using the measured data.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Literature review was conducted;
-The current instrumentation has been assessed for different options to resolve the issue are suggested; and
-An interim report has been submitted.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Understand the instrumentation details;
-Collect field measurement data;
-Develop strategies to utilize the data to assess vehicle information; and
-Assess the performance of bridge components and system.

Title:	**Evaluating Louisiana New Continuity Detail for Girder Bridges**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**30001660**		Project Start Date:		4/21/2014
Research Project Number:	14-1ST		Completion Date	(original)	12/20/2016
Research Agency:	LSU		Completion Date	(revised)	
Principal Investigator:	Dr. Ayman Okeil				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$179,991		**Total**		**$91,500**
	(revised)					
Est. Expended to Date		$10,352		Salaries		$90,000
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)	$26,059		Equipment	(non-expendable)	
	(revised)	$10,352		Travel		$1,500
Est. FY Expenditure		$10,352		Other		

PURPOSE AND SCOPE

The main objective of the proposed research is to evaluate the field performance of a continuity detail that will be included in the new Louisiana Bridge Design and Evaluation Manual(BDEM). The new detail is different from the standard continuity detail in the current Bridge Design manual (BDM).

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

The instrumentation plan developed by the research team was approved by the Louisiana Department of Transportation (LADOTD) Bridge Design and change of order plans were developed and submitted to the contractor. Revisions were made to the instrumentation plan and change of order plans after discussions with the contractor and the construction division.
Because of the delay in finalizing the change of order plans, the project is currently paused as per the RFP and Phase 2 of the project (Tasks 3 and beyond) have not yet started. The pause also affected Task X since the research team could not hire students to work on this task.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

It is expected that the fabrication of Ouachita Bridge girders will start soon. The research team will seek approval for starting Phase 2 of the project by monitoring and inspecting the installation of the girder embedded instrumentation.
The following tasks are expected to commence in the 2015-2016 Fiscal Year:
-Task 3 : Installation of Monitoring System;
-Task X : Development of GUI Data Tool;
-Task 4 : Conduct Static Live Load Test (if bridge is completed); and
-Task 5: Data Collection, Processing, and Link Slab Evaluation.

Title:	**Development of Wave and Surge Atlas for the Design and Protection of Coastal Bridges in South Louisiana Phase II**	**Project Status:**	**Ongoing**

Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000041**		Project Start Date:		2/12/2015
Research Project Number:	15-1ST		Completion Date	(original)	5/11/2016
Research Agency:	INTERA Incorporated of Texas		Completion Date	(revised)	
Principal Investigator:	Mr. D. Max Sheppard				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$109,762		**Total**		**$33,052**
	(revised)					
Est. Expended to Date		$20,136		Salaries		$28,877
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)	$76,710		Equipment	(non-expendable)	
	(revised)	$76,710		Travel		$4,140
Est. FY Expenditure		$1,380		Other		$35

PURPOSE AND SCOPE

The recently completed Louisiana Department of Transportation and Development (LADOTD) Storm Surge and Wave Atlas (Atlas) contains significant hydraulic information that could prove useful in analyzing storm surge and wave forces on existing bridges and new coastal bridges.

The current Atlas contains surge and wave information with a 1% chance of occurrence each year (100-year return interval). One may use this information to compute wave loads on bridge superstructures. However, many issues encountered by LADOTD engineers require other frequency meteorological/oceanographic information (e.g., 10-, 25-, 50-year return interval values). For instance, engineers may design a temporary facility (a detour bridge) based on a 5-year return interval (20% chance of occurrence each year). Bridges, whose service life is approaching their design life, may undergo retrofitting based on a return interval different from the 100-year return interval. The information needed to produce these values exists in the Level III analysis solution files developed in the recently completed Phase I of the project.

Because of the size of the study area (and therefore the size of the numerical model mesh) and the amount of information in the recently completed Surge/Wave Atlas (GIS database), prudence dictates providing additional information in separate GIS databases. Therefore, this work will produce a separate GIS database for a 50-year return interval (2% chance of occurrence each year), a 25-year return interval (4% chance of occurrence each year), a 10-year return interval (10% chance of occurrence each year), and a 5-year return interval (20% chance of occurrence each year).

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS
INTERA intends to complete 79% of (Task 1) the development of the surge/wave atlas for the 5-, 10-, 25-, and 50-year return intervals, 78% of (Task 2) the development of the surge/wave atlas for the maximum values of the actual hurricane/tropical storm-induced sea state for the study area over the past 150 years, 80% of (Task 3) the development of the surge/wave atlas for the maximum values of the actual + path shifted hurricane/tropical storm-induced sea state for the study area over the past 150 years, 71% of (Task 4) the development of an AASHTO Wave Load Calculator, 0% of (Task 5) the development of a training class for the AASHTO Wave Load Calculator, 68% of (Task 6) the development of wave forces on all the spans of the vulnerable bridges and provide PDF files of the results embedded in the (GIS) Atlas, 70% of the final report, and 65% of the interim reports, meetings and presentations.
FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES
INTERA will complete all tasks and transmit all deliverables.

Title:	LTRC Proposal for the Support of Research and Development in Transportation Planning	Project Status:	Ongoing

Funding Source:	SPR: TT-Fed/TT-Reg	Budget Category:	FHWA

SIO:	**30000125**		Project Start Date:		7/1/2010
Research Project Number:	10-1PLAN		Completion Date	(original)	6/30/2015
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Chester Wilmot				

BUDGET STATUS

Total Budget			Estimated 2015-2016 Budget		
Total Cost	(original)	$358,462	**Total**		**$100,000**
	(revised)				
Est. Expended to Date		$282,254	Salaries		$65,000
FY 2014 - 2015 Budget			Equipment	(expendable)	
FY Funds	(original)	$358,462	Equipment	(non-expendable)	$1,000
	(revised)		Travel		$4,000
Est. FY Expenditure		$100,000	Other		$30,000

PURPOSE AND SCOPE

This project provides long-term professional assistance to the Louisiana Department of Transportation and Development (LADOTD) on transportation planning and other matters, and permits teaching of courses in the Department of Civil and Environmental Engineering at Louisiana State University (LSU) on a case by case basis depending on the work schedule. Such exposure encourages graduate students to participate in the Louisiana Transportation Research Center (LTRC) research program and affords LTRC the opportunity to support the enhancement of higher education. The Principal Director of this project reports to the Director, LTRC. Research is conducted on topics from LTRC's research program, technical assistance requests from LADOTD, and external research solicitations.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Managed project 13-2SS, "Travel Time Estimation using Bluetooth";
-Conducted project 14-4SS, "Identifying Local Transit Resources for Evacuation"
-Conducted project 15-3SS, "Investigation into Legislative Action needed to Accommodate the Future Safe Operation of Autonomous Vehicles in the state of Louisiana";
-Taught CE 7621, Mass Transit Systems, Fall 2014; and
-Taught CE 7600, Data Collection Methods, Spring 2015.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Complete project 15-SS, "Investigation into Legislative Action needed to Accommodate the Future Safe Operation of Autonomous Vehicles in the state of Louisiana";
-Initiated project 14-3SS, "Development of a Mode Choice Model to Estimate Evacuation Transit Demand";
-Teach CE 7640, Transportation Policy and Planning, Fall 2015; and
-Teach CE 7641, Urban Transportation Planning Models, Spring 2016.

Title:	**Establishing an Intelligent Transportation Systems (ITS) Lab at LTRC (Phase II)**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**30000140**		Project Start Date:		8/20/2010
Research Project Number:	10-6SS		Completion Date	(original)	11/19/2011
Research Agency:	LSU		Completion Date	(revised)	6/30/2018
Principal Investigator:	Dr. Sherif Ishak				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$87,474		**Total**		**$40,000**
	(revised)	$161,805				
Est. Expended to Date		$161,570		Salaries		$39,000
FY 2014 - 2015 Budget				Equipment	(expendable)	$1,000
FY Funds	(original)	$36,139		Equipment	(non-expendable)	
	(revised)	$36,139		Travel		
Est. FY Expenditure		$35,904		Other		

PURPOSE AND SCOPE

The primary goal of this research project was to establish a state-of-the-art Intelligent Transportation Systems (ITS) Lab at the Louisiana Transportation Research Center (LTRC), where data will be collected, analyzed, and reported as part of the ITS effort in Louisiana. The ITS Lab was established at LTRC in 2012 with the intention to serve as a central repository for traffic data collected in the state of Louisiana. The data can be transformed into useful information that is instrumental to procedures and applications that benefit the Department of Transportation and Development (LADOTD), the local government, and the general public. The lab is a valuable tool to retain, recruit, and inspire interest in the field of advanced traffic management systems for students in Louisiana as well as potential graduate students from outside Louisiana. In the last phase of the ITS Lab development project, the research team developed procedures to collect data in real time from two data sources: (1) the BlueTOAD (Bluetooth Travel-time Origination and Destination); and (2) the 360 detector data. The data is compiled into the SQL server and stored into separate databases. Also, a web interface was built to query and display the traffic information in real time on Google maps. Access to video streaming was also established with LADOTD and video data can now be recorded, whenever needed and permitted for conducting research, in real time from various locations at any multicast video stream available on the ITS backbone which includes cameras from Baton Rouge, New Orleans, North Shore, Lafayette, and Lake Charles.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Maintained data collection and archival process where possible;
-Incorporated new traffic data sources; and
-Developed an operation and maintenance plan.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES
-Develop a Strategic Plan for the ITS Lab; -Maintain data collection and archival process; and -Incorporated new traffic sources.

Title:	**DOTD Support for UTC Project: Traffic Counting using Existing Video Detection Cameras**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**30000604**		Project Start Date:		7/1/2013
Research Project Number:	12-1SS		Completion Date	(original)	6/30/2015
Research Agency:	LSU		Completion Date	(revised)	12/31/2015
Principal Investigator:	Dr. Sherif Ishak				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$40,002		**Total**		**$5,500**
	(revised)					
Est. Expended to Date		$29,153		Salaries		$5,500
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)	$23,976		Equipment	(non-expendable)	
	(revised)	$23,976		Travel		
Est. FY Expenditure		$25,000		Other		

PURPOSE AND SCOPE

This study will evaluate the video detection technologies currently adopted by the City of Baton Rouge and the Louisiana Department of Transportation and Development (LADOTD) with the purpose of establishing design guidelines based on the detection needs, functionality, and cost. The study will also develop a mechanism for integrating traffic count data from video cameras at intersections in the Baton Rouge Metropolitan Area into a database that can be used to supplement traffic count information.

The main objectives of this research are:
-Conduct a review of similar studies by other researchers with emphasis on the type of video detection technology used and the ability of the system to retrieve, edit, and analyze data as well as how the information is used;
-Make an inventory of the intersections in the Baton Rouge Metropolitan Area where video cameras are installed. Information on the mounting type, technology used, geometric characteristics of the intersection, lighting condition, and turning movements/lanes will be collected to include in the evaluation process;
-Select sample of intersections from the inventory. The sample size will be determined based on the factors outlined in objective 2;
-Collect traffic data from the selected signalized intersections using the video detection system installed on site and another reliable method (inductive loops, video recording, or manual observations) to provide ground truth data;
-Assess the capabilities of the existing video detection systems used to analyze the data and the quality of the data collected under different settings (nighttime, mounting angle, turning movements, etc.);
-Determine the accuracy of the video detection system through a comparison with the ground truth data; and
-Develop design guidelines for the selection of the appropriate video detection system based on detection need, functionality, ease of use, and cost, and make final recommendations.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Task 1: Literature Review: The literature review is 95% complete although it has a completion date of November 2013. This is because the research team continues to explore current publications with the view to attain state-of-the-art information on the subject. The review consists of summaries of recent studies on the evaluation of video detection systems in other states;
-Task 2: Compile Inventory of Intersections: This task has a completion date of January 2014. It is 100% complete. The research team has compiled an inventory of all 235 intersections in the Baton Rouge Metropolitan Area that currently have video detection systems installed, and has obtained the technical specifications of the different systems used including the names of the manufacturers, number of detectors at the intersection, capability of the detectors to count, whether the cameras can be accessed remotely and whether the counts have been verified. Geometric characteristics, number of lanes, lighting information, mounting system, and turning movements have also been obtained for all intersections;
-Task 3: Select Sample of Intersections: This task has a completion date of June 2014. It is 100% complete now. All 235 intersections have been marked on a map. The sample was selected based on the inventory and statistical procedures. Of the 235 intersections, an initial 22 intersections were sampled to be representative of the population. Upon further analyses, some of the cameras were found to be inaccessible (e.g. Naztec cameras, cameras that do not count and cameras that are not remotely accessible). The final sample selected therefore do not include any of such cameras; and
-Task 4: Collect Traffic Data: This task has an original completion date of January 2015. It is 80% complete and on-going. A 6-month time extension was requested due to a delay in the data processing phase because of the extensive amount of time needed to manually count the turning and through movements at every single intersection approach, and the sheer number of video hours to process. The 20% remaining task refers to statistical analysis. This is expected to be completed by March 2015.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Task 4: Collect Traffic Data: The 20% remaining task refers to statistical analysis and will be completed;
-Task 5: Evaluate Data Management Systems; and
-Task 6: Final Report: The final report will be submitted by end of September 2015 to allow for review and revision.

Title:	**History of Road Design Standards in Louisiana DOTD**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**30000605**		Project Start Date:		8/1/2012
Research Project Number:	12-2SS		Completion Date	(original)	1/31/2014
Research Agency:	LSU		Completion Date	(revised)	12/31/2015
Principal Investigator:	Dr. Sherif Ishak				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$149,999		**Total**		**$28,020**
	(revised)	$161,020				
Est. Expended to Date		$130,000		Salaries		$28,020
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)	$14,000		Equipment	(non-expendable)	
	(revised)	$14,000		Travel		
Est. FY Expenditure		$3,000		Other		

PURPOSE AND SCOPE

The research objectives of this study are to identify national and state road design standards applied in Louisiana over the last 90 years; determine state and federal laws that have a bearing on road design in Louisiana; identify internal directives, policies, and practice applied to road standards in the Louisiana Department of Transportation (LADOTD) over the last 90 years; and develop a document library of files in Access, Excel, or Word format listing the
standards in chronological order.

Scope of Work: The research is restricted to road design standards in force in Louisiana over the last 90 years. The 90-year period is chosen because it is likely to cover the lifespan of most state-controlled roads. Beside formally established standards (both applicable national and state standards), the study is also to report on accepted codes, policies, directives, or agreements in force within the LADOTD during the last 90 years.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-TASK 1: Literature Review: The Literature review is 100% complete. All the possible documents were collected. These documents include road design standards and design policies of different time periods. Necessary information regarding to these documents was collected from Harvey Shaffer, the Road Design Engineer. Final scanning of all the collected documents was done and compiled under appropriate headings (Design Standards, Design Policies and Other Documents);
-TASK 2: Data Assessment: This task is 100% complete. Scanned documents were categorized as Road Design Standards, Design Policies and Other Documents. "Other Documents" consist of the collection of memorandums, Road Design Manual, and some relevant graphs and rough sheets. Every document was carefully analyzed and a summary of all the documents was also prepared. Finally the documents were arranged in a chronological order in a tabular format;
-TASK 3: Prepare and present the Project Review Committee (PRC) with Interim Report: The Interim Report was presented to the PRC members on December 6, 2013. This task is 100% complete;
-TASK 4: Law Review: The legal consultant will review the design documents and develop descriptive listing of pertinent state and federal statutory provisions and regulations, and specific road design standards. As the previous research member of the legal section was unavailable to conduct this task, the PRC agreed to remove this task from the project. It should therefore be considered 100% complete;
-TASK 5: Internal Review: The main objective of this task is to get more information about the history of road design guidelines, state and federal laws, and design policies. An open survey will be conducted among the retired and current road design engineers and administrators. A format of the questionnaire for the survey was prepared. However, since Task 4 was omitted from the project, this task became obsolete, and was also removed from the project. It should therefore be considered 100% complete;
-TASK 6: Establish Appropriate Format to Document the Information: A single pdf file has been prepared for all the scanned documents. The file includes the summary of every task that has been done during the survey along with a summary table for all the scanned documents. A hard copy of the pdf file has also been prepared. The pdf file has been bookmarked to allow for easy online access to specific pages. This task is 100% complete;
-TASK 7: Update Report: The project was modified to expand the scope, centered on getting LADOTD personnel to become familiar with the proper use and intent of the documented information from Task 6. This task refers to updating the report following comments received from the PRC. It is 100% complete;
-TASK 8: Undertake a Workshop: Following completion of Task 7, the research team will organize a workshop for LADOTD personnel expected to use the final report. The purpose of this workshop is to provide the personnel with formal training on the proper use and intent of the report and corresponding data. This task has an expected completion date of February, 2015. It is 0% complete;
-TASK 9: LADOTD Assessment/Trial Run: Following completion of Task 1, an assessment or trial run will be undertaken by LADOTD personnel (e.g. LADOTD legal, Road Design, and District Design Sections) regarding the format and appropriateness of the report and its included documents. It is anticipated that this effort will identify any gaps in the data or report. The research team will follow up with review requests from LADOTD personnel by clarifying, identifying potential sources to fill any gaps, and updating the data and report. This task is expected to be completed by September 2015. It is 0% complete; and
-TASK 10: Develop a Final Report: The research team will incorporate all comments from the assessment period and issue a revised draft report to the PRC immediately following completion of the assessment period. Comments from the PRC will be incorporated into a draft report to be issued by end of September 2015 to facilitate review and completion of the final report by end of December 2015. It is 0% complete.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-TASK 8: Undertake the Workshop;
-TASK 9: Undertake LADOTD Assessment/Trial Run; and
-Task 10: Complete Final report.

Title:	**DOTD Support For UTC Project: Development of an Optimal Ramp Metering Control Strategy for I-12**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**30001394**		Project Start Date:		7/1/2013
Research Project Number:	14-1SS		Completion Date	(original)	12/31/2014
Research Agency:	LSU		Completion Date	(revised)	12/31/2015
Principal Investigator:	Dr. Sherif Ishak				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$34,996		**Total**		**$9,000**
	(revised)					
Est. Expended to Date		$16,600		Salaries		$9,000
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)	$20,000		Equipment	(non-expendable)	
	(revised)	$20,000		Travel		
Est. FY Expenditure		$10,000		Other		

PURPOSE AND SCOPE

A recent evaluation of the effectiveness of the existing ramp metering strategy on I-12 concluded that the fixed time operation of the control system had not been effective in reducing congestion along the corridor and recommended that the feasibility of a dynamic time ramp metering operation be investigated and applied to the study area if applicable. Dynamic time ramp metering operation involves a system where the signals change every few seconds in response to freeway conditions. The purpose of this study is to investigate the most effective algorithm for the I-12 ramp meters. A traffic simulation tool will be used to model the existing traffic conditions on the affected I-12 corridor, using collected traffic data that was used for the evaluation studies. The various algorithms will be tested to find the most effective one that is capable of increasing traffic throughput, improve travel time reliability and reduce delays on the mainline.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Review the state of the practice of the different ramp metering strategies and applications in other metropolitan areas in order to learn from similar experiences and identify points of strengths and weaknesses of the various strategies. This includes identification of the ramp metering strategies that were proved to be effective to improving traffic conditions in similar study areas as I-12;
-Identify and collect the geometric and traffic data required to simulate the I-12 corridor under the selected ramp metering strategies;
-Select a microscopic simulation platform and build the simulation network for the study corridor;
-Calibrate the selected simulation model with the collected data to replicate the actual traffic conditions on the study corridor; and
-Determine the required simulation scenarios and runs for the selected ramp metering strategies with all ramp meters turned off serving as the base case.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES
-Establish an evaluation criterion to assess the tested ramp metering strategies. Based on this criteria, some performance measures will be measured from the output of the simulation runs; such as, travel time, delay, and throughput on the mainline. Using these performance measures, a comparative analysis will be conducted between the tested strategies; -The selected strategy based on the comparative analysis will be recommended for implementation on I-12 corridor to be tested for a short period of time (to be determined by the research team and the Department of Transportation and Development (LADOTD). Based on this, a comparative analysis will be conducted to determine if the results from the field are consistent with the simulation results; and -Prepare the final report to document the entire research effort and obtained results.

Title:	**DOTD Support For UTC Project: A Simulation Model for Intermodal Freight Transportation in the State of Louisiana**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**30001395**		Project Start Date:		11/1/2013
Research Project Number:	14-2SS		Completion Date	(original)	10/31/2015
Research Agency:	LSU		Completion Date	(revised)	
Principal Investigator:	Dr. Peter Kelle				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$41,199		**Total**		**$20,596**
	(revised)					
Est. Expended to Date		$20,596		Salaries		$18,302
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)	$20,603		Equipment	(non-expendable)	
	(revised)			Travel		$2,294
Est. FY Expenditure		$20,596		Other		

PURPOSE AND SCOPE

The new Moving Ahead for Progress in the 21st Century Act (MAP-21) asks all state DOTs to evaluate and improve the operation and maintenance of their freight networks. Because of the high complexity and high variability involved in transportation flows, it is technically difficult to use analytical models to evaluate intermodal freight networks and identify improvement areas. Therefore, a simulation model is proposed to include the links and nodes of all three surface modes and the connections between different modes. In the literature and practice, the capacity and volume/speed relationships are only well defined for some infrastructure in a single mode, such as highway links, dams and ports, or rail links. There are no simulation models that incorporate the capacity at intermodal connections and the nonlinear dwelling time vs. volume relationships at connections though most freight flow time is spent at the connection nodes between modes or within modes (e.g., classification yards or ports). Those intermodal connection points are often bottlenecks for the capacity of the overall freight network. The freight transportation network is an integrated system with various impacts on the society. In addition to mobility, the intermodal simulation model should also incorporate other transportation performance metrics such as reliability, safety and security, environmental impact, economic development, etc. The proposed simulation model is expected to incorporate performance metrics that will be identified by an ongoing project of “Development of Performance Measurement for Freight Transportation” funded by the National Center for Intermodal Transportation for Economic Competitiveness (NCITEC) and the Louisiana Department of Transportation and Development (LADOTD).

The objectives of this proposed project are to:
-Develop a comprehensive simulation model for an intermodal freight network that considers the dynamics at the connections between transportation modes; and
-Conduct what-if analysis of the performance of the Louisiana freight network under different scenarios and evaluate the benefits of selected network improvement initiatives.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Task 3: Development of the Simulation Model: Following the framework defined in Task 2, we developed the Arena program of the simulation model for the intermodal freight network in the State of Louisiana. The simulation model incorporates the ways to calculate system-level performance metrics for intermodal freight networks. The model has the capability of allowing users to change settings, input data, and define scenarios. To simplify the simulation model at the current stage, all drivers from three transport modes have no rest time during travel and all vehicles runs 24 hours a day, 7 days a week. However, the research team plans to incorporate rush hours and non-rush hours in the model later. The highway sub-model directs cargos to their desired destinations immediately, while a classification rail yard sub-model collects railcars from its originations or from an existing train in receiving area. All railcars are released from the existing train and go to classification area for sorting. In departure area, railcars are put up together again to form a train with the same direction. Waterway network consists of 6 ports on lower Mississippi river along the east state border of Louisiana. From north to south, the ports are Cracraft, Vicksburg, Natchez, Above Old River, Baton Rouge, and New Orleans; and
-Task 4: Validation of the Simulation Model: The simulation model is under validation based on historical traffic data in the State of Louisiana. LADOTD provided some feedbacks to validate the simulation model but further information is needed for the complete validation. Changes, if necessary, will be made to the simulation model based on the suggestions from LADOTD.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Task 5: Analysis of Various Scenarios on the Simulation Model: A selected number of scenarios, such as different traffic demand patterns and various freight improvement projects, will be identified based on suggests from LADOTD and run on the simulation model. The developed simulation model and findings of what-if analysis will be widely disseminated in the academic community and to practitioners. The detailed dissemination and technology transfer plans are laid out in F.5.

Title:	**LTRC Project Management and Tracking System Upgrade**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000018**		Project Start Date:		11/1/2014
Research Project Number:	14-5SS		Completion Date	(original)	7/31/2016
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Adele Lee				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$125,266		**Total**		**$50,047**
	(revised)					
Est. Expended to Date		$24,136		Salaries		$43,047
FY 2014 - 2015 Budget				Equipment	(expendable)	$2,000
FY Funds	(original)	$80,474		Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure		$41,081		Other		$5,000

PURPOSE AND SCOPE

The objective of this research is to update and complete the existing Louisiana Transportation Research Center (LTRC) Project Management and Tracking System. This project will complete the implementation of the current functionality, add additional features to increase user reliability and help screens, beta test the system, and provide system review and troubleshooting implementation.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

68 defects within previous code have been corrected. Some of these defects were major and discovered by the PI that were previously unknown by LTRC users. Two such examples of major defects are:
-The Project Revised Completion Date was being altered on Biannual Reports when the Technology Manager's comments were added; and
-For Technical Summary submissions, the system was copying the last submission and adding misinformation into the publication status, dates submitted and report number fields.

New capabilities were also developed. Some examples are:
-Altering the database to accept the new state budget number format that is alphanumeric. Also all functionality within PMTS that utilizes the financial information was altered to accept this new data format (reports, biannual submissions, AWP submissions, etc.);
-Fixing all financial reports that had been non-functional due to budget number issue mentioned above;
-Changing the CON project type to the SA project type to accommodate changing research business processes for project tracking;
-A fully functional web application for testing purposes that points to a copy of the projects database to mimic real functionality to the user for testing and the developer for determining coding effects;
-Code versioning has been set-up through MS Team Foundation Server which will aid in rollback should newly deployed code disrupt previously working portions of PMTS; and
-It has been discovered that the Windows server and SQL Server software that PMTS is deployed onto will both need to be upgraded.

A Gap Analysis was performed and the results were formatted into a table that illustrates both current functionality of PMTS and 135 software requirements for requested enhanced capability. The Project Review Committee (PRC) has determined the prioritized order for implementation.

Tasks 1-5 are completed.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Perform computer programming within PMTS to provide additional functionality and documentation listed in the Gap Analysis included in the Interim Report. Programming tasks will be done in prioritized order as determined by the PRC;
-It has been discovered that Windows server and SQL Server upgrades will be required due to the age of the Windows server version. This work was unknown at time of proposal. It requires an increase in Task 6 project time as it is a significant change in project scope and could introduce defects in PMTS current functionality that would have to be corrected. It will also require a budget modification to purchase the SQL Server licensing. Windows must be upgraded by July 2015; and
-Full implementation expected in October, 2017.

Title:	**Investigation into Legislative Action Needed to Accommodate the Future Safe Operation of Autonomous Vehicles in the State of Louisiana**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000056**	Project Start Date:		12/15/2014
Research Project Number:	15-3SS	Completion Date	(original)	8/14/2015
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Dr. Chester Wilmot			

BUDGET STATUS

Total Budget			**Estimated 2015-2016 Budget**		
Total Cost	(original)	$80,898	**Total**		**$80,898**
	(revised)				
Est. Expended to Date			Salaries		$64,790
FY 2014 - 2015 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		$16,108

PURPOSE AND SCOPE

This study is conducted in response to House Resolution 133 in which the Louisiana Department of Transportation and Development (LADOTD) was requested to study and test autonomous vehicles with a view to identifying rules for the safe operations of such vehicles on the roads of the state.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Literature review; and
-Legislation review.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Preparation of a final report; and
-Recommendations on rules governing autonomous vehicles in Louisiana.

Title:	**Evaluation of MIT-SCAN-T2 for Thickness Quality Control for PCC and HMA Pavements**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**30001122**		Project Start Date:		1/1/2013
Research Project Number:	13-1C		Completion Date	(original)	12/31/2013
Research Agency:	LTRC		Completion Date	(revised)	6/30/2016
Principal Investigator:	Dr. Tyson Rupnow				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$58,271		**Total**		**$10,631**
	(revised)					
Est. Expended to Date		$47,640		Salaries		$10,631
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)	$25,550		Equipment	(non-expendable)	
	(revised)	$14,949		Travel		
Est. FY Expenditure		$15,000		Other		

PURPOSE AND SCOPE

This research project will evaluate the use of the MIT-SCAN-T2 as a non-destructive thickness measuring device. The results of this study are expected to give the Department an acceptable quality tool alternative to coring. An operating procedure and implementation plan will be developed for the Department.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

One PCC project was monitored in North Louisiana. Difficulty obtaining suitable paving projects has plagued this project for a period of two years.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

Identify or personally construct two other suitable sections to complete the remaining evaluation of the technology.

Title:	**Evaluation of Dowel Bar Alignment and Effect on Long Term Performance of Jointed Concrete Pavements**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**30001440**		Project Start Date:		6/5/2013
Research Project Number:	14-1C		Completion Date	(original)	6/4/2014
Research Agency:	LTRC		Completion Date	(revised)	6/30/2016
Principal Investigator:	Dr. Tyson Rupnow				

BUDGET STATUS

Total Budget			**Estimated 2015-2016 Budget**		
Total Cost	(original)	$98,960	**Total**		**$24,619**
	(revised)	$173,960			
Est. Expended to Date		$149,071	Salaries		$24,619
FY 2014 - 2015 Budget			Equipment	(expendable)	
FY Funds	(original)	$75,514	Equipment	(non-expendable)	
	(revised)	$50,895	Travel		
Est. FY Expenditure		$51,000	Other		

PURPOSE AND SCOPE

This research project will use the MIT-SCAN as a non-destructive dowel bar measuring device to determine the effects of dowel bar misalignment on long term jointed concrete pavement performance. The results of this study are expected to give the Department adequate data to allow the use of this device as a primary means of checking dowel bar alignment as well as a specification for dowel bar placement tolerances. An operating procedure and implementation plan will be developed for the Department.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

The research team has measured joints on pavement projects that are older than 15 years of age. Ongoing work will continue in this area.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

Continue to measure doweled joints on pavements older than 15 years.

Title:	**Implementation of Concrete Maturity**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000044**		Project Start Date:		11/1/2014
Research Project Number:	14-2C		Completion Date	(original)	4/30/2016
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Tyson Rupnow				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$90,592		**Total**		**$42,651**
	(revised)					
Est. Expended to Date		$48,000		Salaries		$42,651
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)	$47,976		Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure		$48,000		Other		

PURPOSE AND SCOPE

This implementation project will provide a side-by-side comparison of traditional strength specimens with the maturity method outlined in ASTM C1074. Three structural and three pavement projects are expected to be tested. A maturity curved will be developed for each of the project specific mixtures and then piloted for about a week to obtain validation data. Laboratory mixtures utilizing a rapid setting concrete normally used for rapid patching applications will also be investigated. An implementation report will be developed and published with a proposed test method for quality control and quality assurance purposes.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

Measured and developed a maturity curve for one project in North Louisiana.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

Develop and measure maturity curves for rapid early strength mixtures and pilot the technology on three structural concrete projects.

Title:	**Evaluation of Bonded Concrete Overlays over Asphalt under Accelerated Loading**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**30001663**		Project Start Date:		4/8/2014
Research Project Number:	14-4C		Completion Date	(original)	4/7/2016
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Tyson Rupnow				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$269,183		**Total**		**$144,792**
	(revised)					
Est. Expended to Date		$73,331		Salaries		$23,346
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)	$135,879		Equipment	(non-expendable)	
	(revised)	$63,000		Travel		
Est. FY Expenditure		$73,331		Other		$121,446

PURPOSE AND SCOPE

This project will investigate concrete overlays of various thicknesses under accelerated loading. Thicknesses to be investigated include 2 inch, 4 inch, and 6 inches. The base course will be identical under all three sections and includes a 3 inch dense graded HMA over crushed stone. The sections will be loaded progressively until failure to show performance and identify, based on ESALS or load to failure, locations to implement the selected design thicknesses across the State.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Developed sections;
-Held a preconstruction meeting; and
-Developed concrete mixture designs.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Start testing sections.

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	Administration of LTRC External Funding Programs	Project Status:	Ongoing

Funding Source:	SPR: TT-Fed/TT-Reg	Budget Category:	FHWA

SIO:	**30000169**		Project Start Date:		1/1/2008
Research Project Number:	11-1AD		Completion Date	(original)	6/30/2009
Research Agency:	LTRC		Completion Date	(revised)	6/30/2018
Principal Investigator:					

BUDGET STATUS

Total Budget				Estimated 2015-2016 Budget		
Total Cost	(original)	$211,428		**Total**		**$287,821**
	(revised)	$2,780,222				
Est. Expended to Date		$178,418		Salaries		$229,665
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)	$231		Equipment	(non-expendable)	
	(revised)			Travel		$10,000
Est. FY Expenditure		$236,416		Other		$48,156

PURPOSE AND SCOPE

To cover administrative costs handled under contract to support the Louisiana Transportation Research Center (LTRC) Research, Development and Technology Transfer expansion funding programs.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Collaborated in submission of a UTC-Tier I proposals to RITA;
-Coordinated TIRE Research Program;
-Coordinated the repair and rehabilitation of Morganza Spillway bent repair project;
-Completed the study on performance and assessment of timber bridges in Louisiana, Georgia, Alabama, and North Carolina and uploaded all data to repository;
-Served on several NSF Proposal Review Panels and Site Visit Teams of Natural Hazard Engineering Research Infrastructure Program;
-Presented technical papers related to the timber bridge study at an International Timber Engineering Conference;
-Delivered lecture on timber bridge performance and rehabilitation to Louisiana Association of Parish Engineers and Supervisors Association;
-Delivered keynote address on FRP repair of timber bridge elements at Workshop in Nanjing Tech University; and
-Coordinated a series of mini-workshops for university faculty and LADOTD staff in the areas of structures, geotechnical engineering/pavements, environmental engineering, planning/ITS/Intermodal/Safety. The workshops drew a large attendance.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES
-Support coordination of UTC (Year 1 and Year 2) project efforts; -Continue coordination of TIRE program; -Finalize the establishment of a civil engineering course pool across all CE programs in the state (after higher education budget issues are resolved). This is in lieu of a state-wide Master of Engineering Program; -Coordinate a NHI instructor training program for potential instructors; -Hold LTRC Town Hall meetings on a few campuses across the state; -Seek external funds from federal agencies by establishing collaborative teams; and -Complete response to NSF inquiry for funding of DUE proposal for $340,000.

Title:	**DOTD Support for UTC Project: Development of Rapid PCC Pavement Repair Materials and Construction Techniques**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000035**		Project Start Date:		7/1/2014
Research Project Number:	14-5C		Completion Date	(original)	6/30/2016
Research Agency:	Southern University		Completion Date	(revised)	
Principal Investigator:	Mr. Hak-Shul Shin				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$69,914		**Total**		**$33,571**
	(revised)					
Est. Expended to Date		$30,000		Salaries		$25,886
FY 2014 - 2015 Budget				Equipment	(expendable)	$2,892
FY Funds	(original)	$36,344		Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure		$30,000		Other		$4,793

PURPOSE AND SCOPE

The main objective of the proposed research is to determine the feasibility of producing cost effective materials for rapid pavement repair. The study will include mixture optimization as well as evaluating fresh and hardened properties and durability aspects of such novel materials through laboratory tests. Two types of pavement technologies will be applied in this project, crack-free early strength concrete, and self-consolidating concrete mixture for repair.

Field implementation will also be carried out to investigate in-situ performance of the proposed concrete in different geographic locations in the U.S. (e.g. LA and/or MO). The project will also evaluate Life Cycle Cost Analysis (LCCA) in order to determine the economic impacts of using such novel material in infrastructure applications.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-The literature review had a good progress by searching the current practice and experience on the rapid joint repair materials and construction techniques of PCC pavements. Experience on the partial- and full-depth repair materials and construction techniques was collected by interviewing contractors and material suppliers. Source of early age cracking and related parameters are being identified;
-Developing self-consolidating concrete for repair had been progressed with the corporation with the partner in Missouri University of Science and Technology. The mixture design and matrix had been determined and characterization of the SCC materials are being studied; and
-Some of feasible materials to be used in the development of crack-free early strength concrete are identified and their material properties are measuring. Internal curing using recycled aggregate and light weight aggregate is considered for the mixture design.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES
-The research will continue to measure SCC material properties. The potential of the SCC to be used in rapid repair will be investigated; -With the progress of Task 2, the slip forming of SCC will be studied; -Finalize the mixture design of crack-free early strength concrete, and start to cast the mixtures. Basic material properties (shrinkage and thermal properties, cracking potential in restrained conditions) will be measured. Internal curing effects will be investigated on the mixtures; and -Potential site of field implementation will be discussed with Missouri S&T partners and Louisiana DOTD engineers.

Title:	**Louisiana Center for Transportation Safety**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**30001501**		Project Start Date:		7/1/2014
Research Project Number:	12-1SA		Completion Date	(original)	12/31/2017
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dortha Cummins				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$250,000		**Total**		**$112,617**
	(revised)					
Est. Expended to Date		$62,000		Salaries		$91,117
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)	$52,725		Equipment	(non-expendable)	$18,000
	(revised)			Travel		$1,500
Est. FY Expenditure		$10,000		Other		$2,000

PURPOSE AND SCOPE

The Louisiana Center for Transportation Safety (LCTS) will provide a structure for Louisiana's research universities to collaborate on safety related projects and leverage resources. Supported by research and technology transfer, the LCTS will provide enhanced technical assistance to federal, state and local transportation agencies and will be available to work to meet other state and regional needs. An expanded training and education program which includes the new multi-disciplinary highway safety professional curriculum being developed by the Transportation Research Board (TRB) will be made available to transportation professionals on a national basis. The Louisiana Department of Transportation and Development (LADOTD), Louisiana Transportation Research Center (LTRC), and the Transportation Training and Education Center (TTEC) in Baton Rouge, Louisiana will serve as the nucleus for these activities.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Staffed the LCTS;
-Moved the Local Road Safety Program into the LCTS; and
-Working closely with LTAP to transition safety related activities in the LCTS.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Develop a Strategic Plan for the LCTS; and
-Develop a Business Plan for the LCTS.

Title:	**DOTD Support For UTC Project: Drugged Driving in Louisiana**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**30001390**		Project Start Date:		7/1/2013
Research Project Number:	14-1SA		Completion Date	(original)	6/30/2015
Research Agency:	LSU		Completion Date	(revised)	09/30/2015
Principal Investigator:	Dr. Helmut Schneider				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$51,760		**Total**		**$6,445**
	(revised)					
Est. Expended to Date		$45,202		Salaries		$3,713
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)	$19,322		Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure		$19,322		Other		$2,732

PURPOSE AND SCOPE

The purpose of this project is to provide highway safety stakeholders, law enforcement and prosecutors with information to guide strategies to reduce drug impaired driving through detection, enforcement actions, and more successful prosecution; identifying training and other resource needs for law enforcement and prosecutors; provide initial baseline information of the drugged driving contribution to the impaired driving in Louisiana to inform public health community, enforcement community and other stakeholders that make strategic decisions regarding resource allocation; identify opportunities to collect significant data needed for adequate characterization of drug impaired driving; and provide best practices from other states and jurisdictions that can be related to Louisiana's situation.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

The following tasks were completed fully or partially as indicated by the percentage in parentheses:
-Task 1 - Literature review (100%);
-Task 2 - Prepare instruments to conduct structured interviews (100%);
-Task 3 - Conduct Interviews (100%);
-Task 4 - Data collection (100%);
-Task 5 - Data preparation (75%); and
-Task 6 - Data Analysis (40%).

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

To be accomplished in Fiscal Year 2015-2016 are tasks 5 and 6. Those tasks include completing the organization of all collected data. This includes crime lab data, crash data, and surveys collected from the public, defense attorneys, prosecuting attorneys, and law enforcement. As the data sets are organized, analysis of the data is performed. This organization and analysis will be complete before the end of the fiscal year and the final report will be complete by the end of the fiscal year.

Title:	**Factors Influencing Seatbelt Utilization in Louisiana and Strategies to Improve Usage Rate**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**30001662**		Project Start Date:		6/1/2014
Research Project Number:	14-2SA		Completion Date	(original)	5/31/2016
Research Agency:	LSU		Completion Date	(revised)	
Principal Investigator:	Dr. Helmut Schneider				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$179,766		**Total**		**$157,458**
	(revised)					
Est. Expended to Date		$22,308		Salaries		$58,152
FY 2014 - 2015 Budget				Equipment	(expendable)	$2,000
FY Funds	(original)	$22,308		Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure		$22,308		Other		$97,306

PURPOSE AND SCOPE

Despite a considerable increase in seat belt use since 1996, Louisiana still lags behind the average belt use in the United States. For instance, in 1996 Louisiana ranked 28th with respect to belt use among the 50 states and the District of Columbia while in 2012 it ranked 41st. The overall goal of this project is to identify factors that affect belt use in Louisiana and that can be used to develop strategies leading to a significant increase in belt use rates. Past studies have revealed key demographic factors that are associated with belt use rates. These include gender, race, age, vehicle type, seat belt laws, fines and socio-demographic factors. Prior research also has shown that enforcement with accompanied media messages are the most effective means of increasing belt use. This project concentrates on the group of unbelted occupants in Louisiana to determine additional factors that can be used for effective strategies to increase belt use in Louisiana. To this end a comprehensive analysis of Louisiana data and programs related to belt use will be conducted. Based on the outcome of the data analysis, additional data will be collected using an attitudinal survey and additional socio-economic factors focused on the high risk groups of the likely non-belted population. Best practices in states with high use rates will also be reviewed to identify strategies that could most likely work in Louisiana. One of the primary contributions of this research is to demonstrate how the combined knowledge of geographic, demographic, socio-economic factors and attitudinal factors can be used for more effective enforcement and media deployment.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Task 1: Literature Review (100% complete): Topics researched to help form methods of data collection;
-Task 2: Data Collection (50% complete): Two preliminary surveys distributed to LSU students and on to adults identified by LSU students (parents, relatives, etc.);
-Task 3: Interim Report (75% complete): Covers all information and progress made thus far; and
-Task 4: Data Analysis to Identify Targeted Groups (25% complete): Three preliminary surveys were used to refine questions for the final statewide phone survey.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES
-Task 2: Conduct statewide phone (and possibly internet) surveys and collect the results; -Task 3: Complete and distribute; -Task 4: Organize and analyze the results of the survey(s) from Task 2 to identify target groups; -Task 5: Determine characteristics and motivations of the identified groups in Task 4; -Task 6: Determine the best methods for increasing seatbelt use of targeted groups; and -Task 7: Compile and report all information from the study.

Title:	**Exploring Naturalistic Driving Data for Distracted Driving Measures**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000053**		Project Start Date:		2/16/2015
Research Project Number:	15-1SA		Completion Date	(original)	8/15/2016
Research Agency:	LSU		Completion Date	(revised)	
Principal Investigator:	Dr. Sherif Ishak				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$99,521		**Total**		**$80,000**
	(revised)					
Est. Expended to Date				Salaries		$80,000
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)	$10,728		Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure		$10,000		Other		

PURPOSE AND SCOPE

The main focus of this exploratory study is to compile a technical summary of the limitations and capabilities of the SHRP 2 NDS data for an enhanced research on distracted driving that will provide valid statistical inferences to be applied to Louisiana drivers based on gender, age, and road facility type. The specific objectives are to conduct a thorough literature review of nationwide laws regulating distracted driving with particular emphasis on cell phone conversation (handheld and hands-free) and texting; to thoroughly explore the SHRP 2 NDS database; to identify appropriate performance measures that can be used as surrogate measures of distraction; and to outline a methodology of developing a distraction index.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Task 1: Literature Review: In this task, the research team will document the driver distraction laws in all 50 U.S. states. For those states that have banned the use of cell phone use, the research team will search for studies that guided the states in adopting the banned laws governing the use of cell phone (texting and conversation) while driving. Focus will be on the surrogate measures of distractions that were used. This task will be completed by July 2015.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES
-Task 2: Data Exploration: This task will explore the SHRP 2 NDS data in-depth and will include the following activities: secure "qualified researcher" access to the NDS data for all researchers; identify dataset attributes of each of the 6 geographic locations; identify the performance variables for which data were collected; review availability of video data and its usefulness (e.g. turn signals, eye tracker etc.); document relevant driver demographic information and vehicle descriptions; review ability to develop custom queries that will produce data matching specific baseline events (environmental and situational), cell phone conversation, texting, etc.; and identify a suitable sample that can be utilized for further enhanced distracted driving studies; -Task 3: Identification of Surrogate Measures of Distraction: From Tasks 1 and 2, the research team will undertake a comprehensive review of the performance variables that are available in the SHRP 2 NDS data and statistically assess each variable's appropriateness in being used as a surrogate measure to quantify distraction. The outcome of this task will be a reduced list of performance variables that can best be used to quantify distraction; and -Task 4: Distraction Index: This task will involve the outline of a methodology that will be used to construct a distraction index. The distraction index will be a mathematical model that will apportion weights to the identified performance measures in Task 3. Since the performance measures reflect the driving behavior of drivers, such a distraction index will be able to quantify the crash risk potential of various distracting activities which have different effect on the driving patterns of drivers.

FHWA

Part II SPR Funded Research Program

PROPOSED RESEARCH

Title:	**Geotechnical Asset Management**	**Project Status:**	**Proposed**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		7/1/2015
Research Project Number:			Completion Date	(original)	6/30/2017
Research Agency:			Completion Date	(revised)	
Principal Investigator:					

BUDGET STATUS

Total Budget			**Estimated 2015-2016 Budget**		
Total Cost	(original)	$50,000	**Total**		**$50,000**
	(revised)				
Est. Expended to Date			Salaries		$50,000
FY 2014 - 2015 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		

PURPOSE AND SCOPE

The Louisiana Department of Transportation and Development (LADOTD) have many elements that compose the transportation system. Yet do we know how many retaining walls, slopes, and other geotechnical elements exist within the state? Do we have a system to track, rate, and describe these items both qualitatively and quantitatively to identify each item's current condition (No Issue, failing, sliding, etc.) and priority of repair?

Similar to the sections of Bridge Management, Pavement Management, Dam Safety (Levee Safety), LADOTD should have a system to evaluate bridge embankments, retaining walls and problematic slopes, so that priorities can be determined and repairs can be implemented.

Comparing two recent examples: First LA 66 is a two lane highway roughly 20 miles long (Bains to Tunica); and a second example stretches along LA 84 roughly 25 miles (Clarence to Winfield).

They sound similar, yet the first is the lifeline of the Angola Prison to the rest of the world. It must be maintained as a two lane highway, 24-7, and there are no other alternate routes. LA 84, though vital, is not the only route to either city. The LA 66 repair was an emergency action that costs millions to repair. The LA 84 repair was not as critical, but progressively got worse (escalating the potential repair costs) as allowed to linger.

Problematic slopes have occurred on these roads and Future slopes failures may occur on these or other roads. The Department should have way of managing and addressing each location and effective rationale to implement each repair in a timely manner.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS
The project is proposed.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES
-Start with a small study to determine data that exists, data required, and storage database and formatting needs; and -Retaining walls and culverts are the most likely starting points for the study.

Title:	**Finite Element Analysis of the Lateral Load Test on Battered Pile Group at I-10 Twin Span Bridge**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		7/1/2015
Research Project Number:	13-3GT		Completion Date	(original)	
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Murad Abu-Farsakh				

BUDGET STATUS

Total Budget			**Estimated 2015-2016 Budget**		
Total Cost	(original)	$200,000	**Total**		**$50,000**
	(revised)				
Est. Expended to Date			Salaries		$44,000
FY 2014 - 2015 Budget			Equipment	(expendable)	$6,000
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		

PURPOSE AND SCOPE

A unique full-scale lateral load test was conducted at M19 pier of the new I-10 Twin Span Bridge over Lake Pontchartrain to assess the current methodology used in the design and analysis of batter pile group foundations and to evaluate their performance under lateral loading. Measurements obtained from instrumentations (inclination and strains) can provide valuable information for use in the analysis of lateral behavior of battered pile foundations and for back-calculating the soils' p-y curves. Two approaches can be used to analyze the lateral behavior of piles: simplified p-y methods and continuum-based FE methods. The simplified methods are based on the theory of subgrade reaction, in which soils surrounding piles are simplified as a set of linear or nonlinear springs resenting the soils' resistances(assumed p-y curves) to lateral movement of piles. With the development of computer software's, such as LPile and FB-MultiPier, this approach has been widely used for design of laterally loaded piles. However, the p-y method cannot describe the three dimensional nature of the problem, pile geometry, different boundary conditions, continuum behavior of soil, soil-structure interface effect and soil-porewater pressure interaction. The continuum-based FE analysis is desirable for a better understanding of the problem. The continuum-based methods treat the soils surrounding piles as elastic or elasto-plastic continuums using constitutive models that can describe the actual behavior of soils under any loading. The results of the lateral load test at M19 pier was analyzed using the FB-MultiPier software and using high order polynomial curve fitting to the measured rotations from IPI sensors. The FB-MultiPier analyses gave much higher conservative values, with the measured lateral deformations and microstrains were about 50% and 60% of the values predicted using the FB-MultiPier values, respectively. Although, the high order polynomial curve fitting has good agreement with the measured lateral deformation profiles and the measured moments from strain gauges, there is a possibility of accumulation of errors in deriving the soil resistance and hence the back-calculated p-y curves resulting from triple differentiation of the inclination polynomial function and effect of soil layering. In order to better understand the behavior of batter pile group foundations subjected to lateral loading, we propose to develop a three-dimensional finite element model to analyze the lateral load test that was conducted at M19 pier. The finite element technique is a powerful tool that can simulate the behavior of complex soil-structure interaction problems. The piles and foundation (pile cap) will be simulated as beam elements. The surrounding soils will be treated as a continuum media (instead of springs) representing the actual soil properties and their behavior will be described using the elasto-plastic anisotropic modified cam clay model. The soil-pile interaction will be also simulated using Mohr Coulomb frictional criteria. The finite element model will be first calibrated using the results of full-scale test at M19 pier. Once the model is calibrated, it will then be used to conduct a comprehensive finite element parametric study to evaluate the effect of different variables and parameters on the lateral performance of batter pile group foundations. The results from parametric study (calculated soil resistances, p, and displacements, y) will be used to develop p-y curve models that represent the different soil type and conditions in Louisiana for implementing in the FB-MultiPier program for future analysis and design of batter pile group foundations.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES
-Start literature review on the finite element numerical modeling of the lateral behavior of single and group of piles; -Start developing the finite element model to analyze the lateral load test on M19 pier of I-10 Twin Span Bridge; and -Start evaluating the constitutive models and corresponding.

Title:	**Geotechnical Information Database - Phase 3**	**Project Status:**	**Proposed**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000048**		Project Start Date:		1/1/2015
Research Project Number:	15-1GT		Completion Date	(original)	6/30/2016
Research Agency:			Completion Date	(revised)	
Principal Investigator:					

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$150,000		**Total**		**$120,000**
	(revised)					
Est. Expended to Date		$30,000		Salaries		$120,000
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)	$30,000		Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure		$30,000		Other		

PURPOSE AND SCOPE

The research will address the needs of HQ Pavement and Geotechnical and expand on work developed under the initial and Phase 2 projects. The research would add modules to the system. Specifically: shallow soil subgrade survey data, including dynamic cone penetrometer (DCP) data, and district auger boring information. This data should be incorporated into the database; and like deep borings, be plotted and added to the plans, via a standardized template accessible to districts and designers for analysis. There will likely be some linkage to ongoing work by the Materials Lab on Materials Manager/ Laboratory Information Management System (LIMS) in order to access the data without replication or duplication of data. Pile load test data, driving records, ground penetrating radar (GPR), and other information could also be added to the database, and be made digitally available and accessible via GIS systems. A tracking system/template, incorporated with SharePoint software already within the department will also be addressed. Security issues within IT regarding public access to geotechnical borings logs will also be addressed.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

The project is estimated to start toward the latter part of FY 14-15. The in-house review and interim report will be worked on to best outline how the tasks and necessary steps to be accomplished.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

The Principal Investigator will conduct the research to accomplish the tasks.

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	**LADOTD Geotechnical Design Manual**			**Project Status:**	**Proposed**
Funding Source:	**SPR: TT-Fed/TT-Reg**			**Budget Category:**	**FHWA**

SIO:			Project Start Date:		7/1/2015
Research Project Number:	16-1GT		Completion Date	(original)	6/30/2016
Research Agency:			Completion Date	(revised)	
Principal Investigator:					

BUDGET STATUS

Total Budget			**Estimated 2015-2016 Budget**		
Total Cost	(original)	$85,000	**Total**		**$85,000**
	(revised)				
Est. Expended to Date			Salaries		$80,000
FY 2014 - 2015 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		$5,000

PURPOSE AND SCOPE

The Consultant shall be responsible for the following:
-Organization and recording of regularly scheduled technical sessions with the Louisiana Department of Transportation and Development (LADOTD) Geotechnical Design staff. The consultant shall meet with the LADOTD Geotechnical staff to discuss the various subject/chapters to be included in the manual;
-Submittals and electronic drafts of each chapter based on technical content included in all previous sessions for comment by the LADOTD Geotechnical staff. Interim drafts shall be submitted for review and comment in accordance with the schedule to be determined by the project manager;
-Independent research and recommendations on select subject matter;
-Submittal of final draft in written and electronic linkable hypertext format; and
-Continuing maintenance for duration of the contract. This will include, but may not be limited to, periodic review, and incorporation if necessary, of AASHTO LRFD Bridge design specification revisions, attendance at technical meetings with Pavement and Geotechnical Services Section to review and discuss revisions or updates to the Manual, and independent research as requested by LADOTD Pavement and Geotechnical Services Section on subjects to be added or updated within the manual.

Minimum Personnel Requirements: At least one Principal or a Responsible Member of the Prime Consultant must meet the following requirements:
-Registered Professional Civil Engineer in the State of Louisiana;
-A minimum of ten years' experience in geotechnical design;
-Prior experience in the development of a Geotechnical Design Manual;
-Working knowledge of the AASHTO LRFD Bridge Design Specifications;
-Proven project management skills; and
-Technical writing skills including the capability of producing the document in the specified formats.

Minimum Content Requirements: The manual shall include at least the following topics:
-Table of Contents;
-Project Coordination Process;
-Consultant Services and Review;
-Subsurface Investigation Guidelines;
-Field and Laboratory Testing Procedures;
-Material Description-Classification-Logging;
-GeoMechanics;
-Geotechnical LRFD Design;
-Geotechnical Resistance Factors;
-Geotechnical Performance Limits;
-LA Geology and Seismicity;
-Shallow Foundations;
-Deep Foundations;
-Embankments;
-Earth Retaining Structures;
-Ground Improvement;
-Geosynthetic Design;
-Geotechnical Reports;
-Plan Preparation;
-Specifications and Special Provisions;
-Construction QA-QC;
-Construction Monitoring and Instrumentation;
-Geotechnical Software;
-Geotechnical Design Section Forms;
-MSE Walls;
-Reinforced Soil Slopes;
-Geotechnical Template Plans; and
-Project Specific Specifications List.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

Select the consultant; put together an action plan for review and approval.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

Work on the manual.

Title:	**Development of Software Solutions for Pile Design in Louisiana**	**Project Status:**	**Proposed**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		9/1/2015
Research Project Number:	16-2GT		Completion Date	(original)	2/28/2018
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Murad Abu-Farsakh				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$250,000		**Total**		**$60,000**
	(revised)					
Est. Expended to Date				Salaries		$55,000
FY 2014 - 2015 Budget				Equipment	(expendable)	$5,000
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

A research project (FHWA/LA.99/334) was completed in 1999 to evaluate eight different direct CPT methods for estimating the pile resistance in Louisiana, which resulted in implementing three CPT methods into visual basic software (LPD-CPT). However, the evaluation was based on estimating the total pile resistance using scanned CPT data (no electronic files), which recently showed discrepancy in estimating frictional and end bearing components of instrumented piles. Since 1999, many new CPT methods have been developed (Eslami & Fellenius, Almeida et al., Powell et al., UWA-05, UF, etc.), and a lot of new pile load tests with electronic CPT data are available that warrant re-evaluating the CPT – pile estimation methods. The effect of scour on pile resistance was not considered. In addition, it is to use data from multi-CPT tests (spatial variation) to estimate the nominal resistance of all piles in the specific project and incorporating the LRFD resistance factors for pile design in the LPD-CPT software.

There is a need to re-evaluate the CPT methods including previously evaluated and recent developments for estimating the nominal end bearing resistance, nominal side friction resistance and total resistance of driven piles in Louisiana using the updated pile load test -CPT databases including instrumented piles. The research study will identify the best CPT method, modifications or developing a different CPT method, if needed, to best estimate the pile resistance in Louisiana. The effect of scour depth on pile resistance (overburden pressure) will be incorporated into the selected/developed CPT methods that will be implemented into the LPD-CPT. The LPD-CPT will be modified to include the capability of using multi-CPT data (and possibly soil borings and SPT data) to estimate the nominal pile resistances of all piles in a specific project considering site variation. The LPD-CPT method will also be updated to incorporate the default and user selectable resistance factors for LRFD design of piles. Other software usability enhancements such as cone factor override and batch processing will be implemented.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES
-Conduct literature review relevant to the application of CPT technology and available direct CPT methods for estimating the nominal tip and side resistances of driven piles; -Collect available pile load test data and CPT data from all previous and new sites in Louisiana to establish a database for evaluating the Pile-CPT methods; -Start modifying the LPD-CPT software to incorporate LRFD design methodology and scour effect; and -Start evaluating newly developed pile-CPT methods and re-evaluate previously implemented pile-CPT methods.

Title:	**Development of a Design Methodology for Geosynthetic Reinforced Pavement using Finite Element Numerical Modeling**	**Project Status:**	**Proposed**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		1/1/2016
Research Project Number:	16-3GT		Completion Date	(original)	6/30/2018
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Murad Abu-Farsakh				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$250,000		**Total**		**$30,000**
	(revised)					
Est. Expended to Date				Salaries		$30,000
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

Gesynthetic reinforcement has been used for the past three decades or so to improve the performance of paved and unpaved roadways. Although the benefits of geosynthetics reinforcement have been well-realized in terms of increasing the pavement's service life, reducing the thickness of base course layer, and stabilizing and allowing construction over soft subgrade layer, unfortunately, there is no nationally acceptable design method until now for geosynthetic reinforcement/stabilization of pavement. There is several design methods proposed by the geosynthetic manufacturers that need to be verified, modified and/or develop new design methods. The MEPDG did not consider geosynthetic reinforced pavement due to the lack of understanding the geosynthetic mechanism and lack of quantifying the benefits of geosynthetic.

Two experimental research projects (05-5GT, 11-3GT) had been conducted at the Louisiana Transportation Research Center (LTRC) using cyclic plate load testing and accelerated load testing on geosynthetic reinforced test sections for the purpose of evaluating the benefits of geosynthetic reinforcement in flexible pavements constructed over weak subgrades. However, the tested sections in these studied included only 2 and 3 inch thick AC layers and 12 and 18 inch thick base course layers build over weak subgrade, which will make it difficult to develop a generalized design methodology for geosynthetic reinforced pavement involved sections with different AC and base layers thicknesses, and different subgrade strength/stiffness condition.

The finite element method is a powerful technique that can be used to simulate and model difficult geotechnical and pavement engineering problems. The objective of this study is to develop a finite element numerical model to study geosynthetic reinforced pavement. The numerical model will be first verified and calibrated using the results of experimental test sections conducted at LTRC. The model will then be used to perform parametric study on the effect of different variables and parameters contributing to the benefits of geosynthetic reinforcement of pavement including stiffness and thickness of AC layer, stiffness and thickness of base layer, tensile modulus and location of geosynthetics and strength of subgarde layer (for low volume to high volume roads). The results of finite element parametric study can be used to quantify the geosynthetic benefits and develop a comprehensive design method for geosynthetic reinforced pavement that can be incorporated into the context of AASHTO 1993 Design Guide and MEPDG.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES
-Conduct literature review relevant to experimental, analytical and finite element analysis of geosynthetic reinforced pavements; -Develop a finite element numerical model to simulate geosynthetic reinforcement of pavements; and -Start verifying the model using the results of in-box and field accelerated load testing on geosynthetic reinforced pavements.

Title:	**Quality Control/Assurance on Base Course and Embankment with the Dynamic Cone Penetrometer**	**Project Status:**	**Proposed**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		
Research Project Number:	16-4GT		Completion Date	(original)	
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:					

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$100,000		**Total**		**$21,000**
	(revised)					
Est. Expended to Date				Salaries		$21,000
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

Current QA/QC processes on base courses and subgrades are based on densities and moisture contents obtained from the nuclear gauge. Nuclear gauges utilize radioactive materials to determine the density and moisture contents. These gauges are expensive to maintain and dispose of. The DCP is a simple tool, relatively inexpensive compared to nuclear devices, and can be used in areas where nuclear devices cannot. Furthermore, nuclear gauges produce average values for the layer that the probe is inserted to while the DCP produces the entire stiffness profile.

The DCP has been utilized in both research and construction projects for over 10 years in Louisiana. Currently, DCP readings are required on certain subgrade soil surveys and on all projects which are assessed for rubblization.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

To Be Determined.

Title:	**Pipe Material Zones in Coastal Louisiana**	**Project Status:**	**Proposed**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		7/1/2015
Research Project Number:	16-5GT		Completion Date	(original)	6/30/2016
Research Agency:			Completion Date	(revised)	
Principal Investigator:					

BUDGET STATUS

Total Budget			**Estimated 2015-2016 Budget**		
Total Cost	(original)	$100,000	**Total**		**$100,000**
	(revised)				
Est. Expended to Date			Salaries		$100,000
FY 2014 - 2015 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		

PURPOSE AND SCOPE

Metal culverts can corrode over time and at various rates based on their environmental conditions (corrosive nature of coastal soils, high water table, salt water intrusion, subsidence, tidal flows and frequent hurricane surge issues). The salinity and likelihood of flooding in LADOTD coastal parishes has led to a policy of disallowing the use of metal pipes for new drainage installations.

District 02 is mostly coastal. Other districts (07, 03, 61, and 62) have some coastal edges, but extend far enough north where environmental issues are less corrosive. Delineating a break point boundary line is necessary to promote competition in the north, and provide/ensure durable material for our coastal pipes.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

The project is proposed.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Conduct a field survey of pipes in coastal parishes and compare to regional PH and resistivity records. Conduct limited sampling as necessary to validate survey results. Quantify results and make a determination of the variability of allowing metal pipe. Results may be used to determine the feasibility of having a simplified pipe material zones for determination of allowable materials; and
-Delineating a break point boundary line would continue to promote competition in the north, and provide/ensure only durable material for our coastal pipes. Pre-delineated zones would reduce the testing required for pipe material determinations.

Title:	**Investigation of Portland Cement Concrete Pavement Rubblization over Weak Subgrades**	**Project Status:**	**Proposed**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		8/4/2014
Research Project Number:	15-1P		Completion Date	(original)	
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Kevin Gaspard				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$50,000		**Total**		**$10,273**
	(revised)					
Est. Expended to Date				Salaries		$10,273
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

The proposed research will consist of a detailed investigation of the two projects where failures occurred during rubblization, constructing test sections at ALF, constructing field test sections, determining the pavement fracturing guidelines utilized by other State agencies, apply those methods to projects previously evaluated by the Louisiana Transportation Research Center (LTRC), document the historical performance of rubblized and break/seat projects in Louisiana by data mining the PMS database, and the development of pavement fracturing guidelines for Louisiana

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

No work was conducted on this project. We have been unable to locate any field projects to conduct work on mainly for two reasons: (1) we were not contacted to conduct rubbilization evaluations on any projects; and (2) when we contacted the Districts attempting to locate candidate projects, the Districts were reluctant to experiment with rubblizing roadways on weak subgrades.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

Attempt to locate candidate projects for this study. If some are found, design the experiment and conduct the research.

Title:	Right-sizing Truck Registration and Overweight Permits Fees	Project Status:	Proposed

Funding Source:	SPR: TT-Fed/TT-Reg	Budget Category:	FHWA

SIO:			Project Start Date:		1/1/2016
Research Project Number:	16-1P		Completion Date	(original)	4/1/2017
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Kevin Gaspard				

BUDGET STATUS

Total Budget				Estimated 2015-2016 Budget		
Total Cost	(original)	$100,000		**Total**		**$40,005**
	(revised)					
Est. Expended to Date				Salaries		$40,005
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

Truck registration and overweight permit fees may not accurately reflect the user impacts on highway infrastructure. If industry subsidies are desirable from a public policy perspective, then they should be accomplished in an overt manner rather than via artificially low user fees. The goals of this projects are: (1) determine the appropriate annual registration fees for trucks, including agriculture and timber haulers, based on the impacts on road and bridge infrastructure; (2) determine the appropriate single trip and harvest season overweight permit fees based on the impacts on road and bridge infrastructure; and (3) identify tax credits that the legislature could offer industry to offset the increased registration fees/overweight permit fees. Results of this project will be presented to the Joint Transportation Committee for potential legislative action to adjust registration and permit fees potentially to be offset by tax credits or after appropriate mechanisms.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

No work conducted.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Complete literature review; and
-Begin data analysis.

Title:	**Transportation Infrastructure Asset Damage Cost Recovery Correlated with Shale Gas/Oil Recovery Operations in Louisiana**	**Project Status:**	**Proposed**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		
Research Project Number:	16-2P		Completion Date	(original)	
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Kevin Gaspard				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$125,000		**Total**		**$78,811**
	(revised)					
Est. Expended to Date				Salaries		$78,811
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

This project consists of identifying routes that are currently being traversed by trucks carrying equipment, supplies, recovery fluids or crude oil to and from existing shale gas/oil recovery sites. Predicting additional routes that may be traversed due to new shale gas/oil recovery sites will also transpire. Once routes are identified, infrastructure damage assessments will be conducted. Fiscal remedies for the damage such as drilling permits or bonds will be suggested based upon the data collected.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Conduct literature review;
-Identify routes traversed by shale gas/oil equipment, conduct damage assessment; and
-Develop fiscal remedies for the damages.

Title:	**Implementation of a Localized Roughness Specification for use on Louisiana Bridges**	**Project Status:**	**Proposed**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:		Project Start Date:		
Research Project Number:	16-3P	Completion Date	(original)	
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Mr. Mark Martinez			

BUDGET STATUS

Total Budget			**Estimated 2015-2016 Budget**		
Total Cost	(original)	$38,186	**Total**		**$38,186**
	(revised)				
Est. Expended to Date			Salaries		$38,186
FY 2014 - 2015 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		

PURPOSE AND SCOPE

Current methods like the International Roughness Index (IRI) used for locating the position of localized roughness on highways has been shown to have difficulty in isolating the exact location that localized roughness occurs sometimes causing contractors to grind in the wrong locations thereby exacerbating the problem. The Localized Roughness Index (LRI), a methodology developed by the Pavement Division of the Louisiana Transportation Research Center (LTRC), has demonstrated an ability to overcome this problem. This project seeks to automate the LRI application. It also seeks to develop a usable LRI specification that will be verified on LADOTD projects.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

Project not yet started.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Automate the LRI algorithm;
-Develop a draft LRI specification;
-Find prospective projects to trial the draft specification on;
-Assess effectiveness of proposed specification and revise as necessary; and
-Attempt implementation of revised specification.

Title:	**Development and Implementation of a Shadow Specification that utilizes the Localized Roughness Index (LRI) to Locate Bumps on Louisiana Highways**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		
Research Project Number:	16-4P		Completion Date	(original)	
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Mark Martinez				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$36,954		**Total**		**$36,954**
	(revised)					
Est. Expended to Date				Salaries		$36,954
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

Throughout 2014 and 2015, the Louisiana Department of Transportation and Development (LADOTD) has developed a localized roughness specification for bridges. Much of the development of this specification has come from engineering experience as well as from input from other states. However, this specification has not been trialed in the field as of yet. This project is intended to verify the bridge section's localized roughness specification through field trials.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

Project not yet started.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Conduct a statistical analysis of localized roughness on newly constructed bridges;
-Check proposed thresholds against the statistical distributions;
-Revise thresholds so that they conform to the upper confidence intervals of the statistical distributions if deemed reasonable; and
-Trial the revised specification on a number of new bridges and check roughness is improved as a result of the implementation of the specification.

Title:	**Cost Effectiveness of Mitigating Reflective Cracking when Asphalt Surface Treatment Interlayers are Utilized on Soil Cement Base Courses**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		7/1/2015
Research Project Number:	16-5P		Completion Date	(original)	6/30/2016
Research Agency:			Completion Date	(revised)	
Principal Investigator:					

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$100,000		**Total**		**$100,000**
	(revised)					
Est. Expended to Date				Salaries		$100,000
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

Louisiana has used many different types of treatments attempting to mitigate reflective cracking in Asphaltic Concrete (AC) pavements with soil cement base courses. One popular treatment method is to place an asphalt surface treatment (AST) interlayer over the soil cement prior to placing AC pavement over it. Though this treatment has been used on many projects, the benefit of doing so has not been quantified. The purpose of this project is ascertaining the benefits of using AST interlayers. This will be accomplished using data from the pavement management system to compare the differences in distress between treated and untreated soil cement base courses.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

Complete all tasks including the final report.

Title:	**Field Validation of Alligator Cracking Using LTRC Digital Highway Data Collection System**	**Project Status:**	**Proposed**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		7/1/2015
Research Project Number:	16-6P		Completion Date	(original)	6/30/2016
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Zhong Wu				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$64,000		**Total**		**$64,000**
	(revised)					
Est. Expended to Date				Salaries		$64,000
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

The objectives of this study are: (1) to collect project-level alligator cracking data on selected projects and compare the measurements with the corresponding data retrieved from the PMS database; and (2) to revise and modify any default design inputs and local calibration coefficients used in the implementation of Pavement ME in Louisiana.

The scope will include (1) select 10~20 aged asphalt pavement test sections, (2) perform pavement image survey using LTRC's digital highway data vehicle, (3) analyze pavement cracking data based on automatic, semi-automatic and/or manual distress evaluation on a workstation at LTRC.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

(1) compare the LTRC alligator cracking data vs. PMS alligator cracking data, (2) evaluate the alligator cracking model in Pavement ME using LTRC measured data and update the calibration coefficients accordingly, (3) provide recommendations regarding future alligator cracking data collection and Pavement ME evaluation.

Title:	**Support Study for Evaluation of Crumb Rubber Modification of Louisiana Mixtures**	**Project Status:**	**Proposed**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000059**		Project Start Date:		7/1/2015
Research Project Number:	15-2B		Completion Date	(original)	
Research Agency:	LSU		Completion Date	(revised)	
Principal Investigator:	Mr. William H. Daly				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$160,866		**Total**		**$85,000**
	(revised)					
Est. Expended to Date		$25,000		Salaries		$82,000
FY 2014 - 2015 Budget				Equipment	(expendable)	$3,000
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

The objective of this research is providing chemical support to LTRC Project No. 15-1B entitled “Evaluation of Crumb Rubber Modification of Louisiana Mixtures”. This research will also evaluate potential methods for quality control/quality assurance (QC/QA) of binders modified with crumb rubber. The binder evaluation will include standard SHRP Superpave rheometer testing and comprehensive chemical analysis, CRM binder blends and cements will be laboratory aged, the binder will be extracted, and the extent of ageing will be assessed using FTIR , DTA and SEM techniques.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Began conduction literature review; and
-Began material compilation.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Continue compiling relevant literature;
-Continue material collection; and
-Begin laboratory evaluation.

Title:	**Develop a Fracture Mechanic Based Test for the Evaluation of Moisture Sensitivity in Asphalt Mixtures**	**Project Status:**	**Proposed**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		7/1/2015
Research Project Number:	16-1B		Completion Date	(original)	12/31/2016
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Louay Mohammad				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$120,000		**Total**		**$75,000**
	(revised)					
Est. Expended to Date				Salaries		$75,000
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

The objective of the proposed research is to develop a new mechanistic test that would produce reliable and repeatable predictions of moisture susceptibility of asphalt mixtures including WMA. A comprehensive experimental program will be developed to consider different laboratory test methods including a new procedure that would be based on the Semi-Circular Bending (SCB) test. Selected test procedures will be compared to conventional laboratory test methods including the Hamburg test method and the Modified Lottman test. To validate the proposed laboratory procedure, field cores will be extracted from in-service pavements with contrasting performance against moisture damage (i.e., poor and good performers). Field performance will be correlated to the predictions obtained from different laboratory test methods.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Conduct a thorough literature review;
-Develop a laboratory and field experiments; and
-Conduct laboratory experiment.

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	**Development of a 4.75mm Asphalt Mixture Design**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:		Project Start Date:		7/1/2015
Research Project Number:	16-2B	Completion Date	(original)	6/30/2017
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Dr. Louay Mohammad			

BUDGET STATUS

Total Budget			**Estimated 2015-2016 Budget**		
Total Cost	(original)	$143,000	**Total**		**$75,000**
	(revised)				
Est. Expended to Date			Salaries		$75,000
FY 2014 - 2015 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		

PURPOSE AND SCOPE

The smallest NMAS asphalt mixture in the Louisiana Department of Transportation and Development (LADOTD) specifications for Roads and Bridges is 12.5mm (0.5 inch). The objective of this study is to develop a 4.75 NMAS mixture that meets Superpave volumetric and densification requirements. Further, the developed mixture is expected to meet the intermediate temperature semi-circular bend test as well as high temperature loaded wheel tracking test requirements.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Conduct Literature Review;
-Develop Test Factorial;
-Conduct Laboratory Experiment;
-Perform Data Analysis;
-Develop 4.75 asphalt mixture specification for the LADOTD specifications for Roads and Bridges, and
-Prepare Final Report.

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	Develop a Cost Effective Perpetual Pavement Design	Project Status:	Proposed

Funding Source:	SPR: TT-Fed/TT-Reg	Budget Category:	FHWA

SIO:			Project Start Date:		7/1/2015
Research Project Number:	16-3B		Completion Date	(original)	6/30/2017
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Louay Mohammad				

BUDGET STATUS

Total Budget				Estimated 2015-2016 Budget		
Total Cost	(original)	$142,025		**Total**		**$75,000**
	(revised)					
Est. Expended to Date				Salaries		$75,000
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

Perpetual pavements are used to reduce maintenance cost and rehabilitation activities through the increase in the service life of the pavement structures. Currently the Louisiana Department of Transportation and Development (LADOTD) assign 15 to -20 years design life for asphalt mixture in a pavement structure. It is reported that the use of perpetual pavements can increase the performance life up to 30 years with no major structural rehabilitation. It is noted that the initial costs of current perpetual pavement designs are reported to be prohibitive. The objective of this research is to examine potential cost savings in the material selection, design and construction methods in the development of asphalt mixture specifications for perpetual pavement structures. Potential materials include: high RAP, use of mineral fillers such as hydrated lime, elastomeric polymer modification, crumb rubber modifications, and warm mix additives. Further, the design process would incorporate mechanistic evaluation to optimize mixture design. Construction techniques utilized will ensure that a uniform, increased surface density.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Conduct Literature Review;
-Develop Test Factorial;
-Conduct Laboratory Experiment;
-Perform Data Analysis;
-Develop specification for the LADOTD specifications for Roads and Bridges for the Use of Perpetual Pavements; and
-Prepare Final Report.

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	Improvement to Highway Guardrail Assemblies	Project Status:	Proposed

Funding Source:	SPR: TT-Fed/TT-Reg	Budget Category:	FHWA

SIO:	DOTLT1000031		Project Start Date:		9/1/2014
Research Project Number:	14-1TIRE		Completion Date	(original)	8/31/2015
Research Agency:	LSU		Completion Date	(revised)	
Principal Investigator:	Todd Shupe				

BUDGET STATUS

Total Budget			Estimated 2015-2016 Budget		
Total Cost	(original)	$30,000	**Total**		**$5,000**
	(revised)				
Est. Expended to Date		$25,000	Salaries		$4,000
FY 2014 - 2015 Budget			Equipment	(expendable)	
FY Funds	(original)	$25,000	Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure		$25,000	Other		$1,000

PURPOSE AND SCOPE

The overall goal of this study is to improve the performance and level of green highway guardrail assemblies. This work will be focused on two goals. Goal 1 will be achieved by developing a composite block out for decommissioned CCA-related wood and Goal 2 will be about improving the connection between wood posts and block outs.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Determination of the properties of the raw Materials (Spend Guardrails Posts/Block outs);
-Production and Testing of Molded Guardrail Block outs; and
-Finite Element Analyses and optimization.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Finite Element Analyses and optimization; and
-Final Report.

Title:	**Material Property Changes of Decayed Timber for Timber Bridges**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		8/1/2016
Research Project Number:	15-2ST		Completion Date	(original)	7/31/2017
Research Agency:			Completion Date	(revised)	
Principal Investigator:					

BUDGET STATUS

Total Budget			**Estimated 2015-2016 Budget**		
Total Cost	(original)	$150,000	**Total**		**$50,000**
	(revised)				
Est. Expended to Date			Salaries		$40,000
FY 2014 - 2015 Budget			Equipment	(expendable)	$5,000
FY Funds	(original)		Equipment	(non-expendable)	$3,000
	(revised)		Travel		$1,000
Est. FY Expenditure			Other		$1,000

PURPOSE AND SCOPE

The purpose of this study is to determine the material property changes of decayed timber for timber bridges. A Louisiana Department of Transportation and Development (LADOTD) sponsored study performed over 18 years ago lead to recommendations to be used with the allowable stress design (ASD) method. To support load resistant factor design (LRFD) and load resistant factor rating (LRFR), there is a need to develop factored resistant stresses by applying reliability concept.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Task 1: Perform a literature search for the purpose of assessing test design methods; and
-Task 2: Contact other states that have significant number of timber bridges to learn about their practice in timber bridge design and rating using reliable factor.

Title:	**Rehabilitation of Deteriorated Timber Piles using Fiber Reinforced Polymer (FRP) Composites**	**Project Status:**	**Proposed**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000043**		Project Start Date:		10/1/2014
Research Project Number:	15-3ST		Completion Date	(original)	
Research Agency:			Completion Date	(revised)	
Principal Investigator:					

BUDGET STATUS

Total Budget			**Estimated 2015-2016 Budget**		
Total Cost	(original)	$150,000	**Total**		**$50,000**
	(revised)				
Est. Expended to Date			Salaries		$30,000
FY 2014 - 2015 Budget			Equipment	(expendable)	$10,000
FY Funds	(original)		Equipment	(non-expendable)	$5,000
	(revised)		Travel		$3,000
Est. FY Expenditure			Other		$2,000

PURPOSE AND SCOPE

The timber piles in the timber bridges in Louisiana are succumbing to the effects of aging. Replacing deteriorated piles is a costly process and in-situ repair of the piles with Fiber Reinforced Polymers (FRP) is an economic alternative. The purpose of this research project is to evaluate the axial load capacity of FRP strengthened deteriorated timber piles with different lengths of deterioration zone; determine the bond strength between the FRP and the in-service timber pile; develop a simplified design method for the FRP reinforcement for deteriorated timber piles; develop specifications for the materials, repair method, and evaluation for FRP strengthening of timber piles; and conduct one or two workshops that includes field demonstration and to train bridge maintenance personnel in the FRP repair methods. The successful completion of the project will provide LADOTD the tools needed to strengthen deteriorated timber piles with FRP in lieu of replacing these deteriorated piles.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

To be determined.

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	**Retrofit of Existing Statewide Louisiana Safety Walk Bridge Barrier Railing Systems**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		10/1/2015
Research Project Number:	16-1ST		Completion Date	(original)	9/30/2017
Research Agency:			Completion Date	(revised)	
Principal Investigator:					

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$200,000		**Total**		**$40,000**
	(revised)					
Est. Expended to Date				Salaries		$33,000
FY 2014 - 2015 Budget				Equipment	(expendable)	$2,000
FY Funds	(original)			Equipment	(non-expendable)	$2,000
	(revised)			Travel		$2,000
Est. FY Expenditure				Other		$1,000

PURPOSE AND SCOPE

The purpose of this study is to alternate retrofit details for the existing safety walk bridge barrier system that will, at minimum, meet Test Level 3 or 4 (TL-3 or TL-4) as required by NCHRP 350 report or AASHTO MASH criteria while allowing the use of the safety walk for maintenance activities or emergency vehicular stoppages.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Literature Search; and
-Developing alternate retrofit details.

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	**Development of a Mode Choice Model to Estimate Evacuation Transit Demand**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		7/1/2015
Research Project Number:	14-3SS		Completion Date	(original)	
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Chester Wilmot				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$182,742		**Total**		**$91,871**
	(revised)					
Est. Expended to Date				Salaries		$56,052
FY 2014 - 2015 Budget				Equipment	(expendable)	$200
FY Funds	(original)			Equipment	(non-expendable)	$1,000
	(revised)			Travel		$2,000
Est. FY Expenditure				Other		$32,619

PURPOSE AND SCOPE

To develop a mode choice/refuge type model of hurricane evacuation behavior that can be used in New Orleans and, possibly, in other environments. It will be estimated from data sets of evacuation behavior from several past hurricanes that made landfall on the eastern seaboard and gulf coast. It will be estimated on data from several locations but will be tested against observed behavior in New Orleans on hurricanes Katrina or Gustav.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Literature review;
-Identify candidate variables; and
-Data collection.

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	**Cost and Time Benefits for using Subsurface Utility Engineering in Louisiana**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000046**		Project Start Date:		7/1/2015
Research Project Number:	15-2SS		Completion Date	(original)	6/30/2016
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:					

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$75,000		**Total**		**$70,000**
	(revised)					
Est. Expended to Date				Salaries		$70,000
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

The purpose of the project is to evaluate the use of subsurface utility engineering (SUE) services on the Louisiana Department of Transportation and Development (LADOTD) past projects. The study will determine the cost and time benefits of SUE utilizing the methodology from a project conducted by Purdue University for FHWA in 2002.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Task 1 - Literature Search;
-Task 2 - Document SUE Use at LADOTD;
-Task 3 - Data Collection;
-Task 4 - SUE Evaluation Based on Purdue/FHWA Methodology;
-Task 5 – Identification and Evaluation of additional/alternative measures; and
-Task 6 - Final Report.

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	**Louisiana Trip Generation Manual**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		9/1/2015
Research Project Number:	16-1SS		Completion Date	(original)	2/28/2017
Research Agency:			Completion Date	(revised)	
Principal Investigator:					

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$125,000		**Total**		**$75,000**
	(revised)					
Est. Expended to Date				Salaries		$75,000
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

The ITE Trip Generation Manual appears to be very conservative on the number of trips that occur at developments during the peak hours when applied to Louisiana. This proposed study would take major categories out of the ITE Trip Generation Manual and do real counts here in Louisiana to confirm the numbers in the book. The data collected will be used to create a Louisiana-specific Trip Generation Manual.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

To Be Determined

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	**Evaluation and Guidance of Planning-Level Cost Estimation**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		1/1/2016
Research Project Number:	16-2SS		Completion Date	(original)	6/30/2017
Research Agency:			Completion Date	(revised)	
Principal Investigator:					

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$125,000		**Total**		**$75,000**
	(revised)					
Est. Expended to Date				Salaries		$75,000
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

Transportation agencies begin planning projects as much as 25 years into the future. The purpose of transportation planning is to identify a set of the most cost-effective projects and approaches that achieve the state goals. Planning-level cost estimates can have a significant effect on the overall transportation program and on the ability of the Louisiana Department of Transportation and Development (LADOTD) to meet the transportation needs for the state. The accuracy of planning-level or conceptual estimating can affect if and how a project will be built and the amount of other projects that can be funded and built that are to become a part of the statewide transportation improvement plan (STIP). The overall approach and management philosophy towards cost estimation needs to be consistent so that estimates more closely match the actual budget and cost of a project once construction begins. The lack of a consistent and statewide program for planning-level cost estimation can hinder the abilities of the state transportation agency and may result in projects utilizing more public funds than they should. The public perception of funds not being used efficiently can have a negative and lasting impact, making it difficult to gain legislation to collect additional public funding in the future.

This study is to survey the current practices that LADOTD uses for planning-level cost estimates for transportation projects. Further, this study will investigate other state transportation agencies (STAs) to synthesize the best practices used for planning level estimating. The collected information from LADOTD and other STAs will then be formulated into a resource guide that can be utilized by LADOTD staff throughout the state.

The obtained results can be implemented as a guide for LADOTD and its district offices to more effectively and accurately estimate transportation projects during the planning phase. A successful implementation will help to ensure a transportation project will be allotted the appropriate funds, reduce the need to rely on contingencies and eliminate potential significant increases in costs as the design of the project advances. Additionally, when using better cost planning fewer burdens are placed on LADOTD resources and staff and increased accuracy is realized between the initial planning estimate and the final engineer's estimate for much needed transportation projects.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS
FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES
To Be Determined

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	**Louisiana Highway Construction Work Zone Mobility Impact Assessment Tool**	**Project Status:**	**Proposed**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		9/1/2015
Research Project Number:	16-3SS		Completion Date	(original)	2/28/2017
Research Agency:			Completion Date	(revised)	
Principal Investigator:					

BUDGET STATUS

Total Budget			**Estimated 2015-2016 Budget**		
Total Cost	(original)	$125,000	**Total**		**$75,000**
	(revised)				
Est. Expended to Date			Salaries		$75,000
FY 2014 - 2015 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		

PURPOSE AND SCOPE

Highway work zone related traffic mobility issues include vehicle delay and queue on the road that is under construction, as well as traffic jam caused by the diverted traffic flow from highway to local roads that aims to bypass the work zone. The adverse highway mobility impacts of a work zone on its affiliated road network could be minimized if a Transportation Management Plan (TMP) is properly prepared with an accurate projection of the impacts and sufficient traffic control strategies. Many traffic simulation and analytic tools have been developed for analyzing mobility issues with some of which are specifically designed for work zones. The Louisiana Department of Transportation and Development (LADOTD) uses these tools to estimate queuing for ongoing and proposed construction projects, but does not know how accurate the estimation is when compared to actual queuing related to real world construction projects and work zones in Louisiana.

This project will develop a method for estimating highway work zone mobility impact on a regional road network. The method considers the vehicle flow on the highway segment that under construction, as well as the diverted traffic flow on the local road network. The traffic diversion behavior on each road segment is simulated as a closed system. The proposed tool will contain four major components: work zone capacity estimation, road network definition, traffic flow diversion algorithm, and mobility impact analysis on detours on the road network. A Google Earth-based graphical interface will be developed to automate the generation of a regional road network including the work zone. To embed the road and traffic data bases in the system, the tool will estimate traffic delay time and queue length in both the work zone and the local road network. In addition, the LADOTD's existing queue estimation procedures will be evaluated and compared to actual queues using video camera footage.

The project will produce following anticipated benefits: 1) providing the LADOTD with a new easy-to-use tool to conduct a quick assessment of a work zone's mobility impacts and to select a proper TMP; 2) enabling the LADOTD to comply with the FHWA's regulations; and 3) assisting the LADOTD in improving its work zone planning and management. Also, if the LADOTD's existing queue estimation procedures are found to be too conservative, then more actual construction time could be permitted to DOTD and its contractors.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS
FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES
To Be Determined

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	Dredging Louisiana's Ports	Project Status:	Proposed

Funding Source:	SPR: TT-Fed/TT-Reg	Budget Category:	FHWA

SIO:			Project Start Date:		11/1/2015
Research Project Number:	16-4SS		Completion Date	(original)	10/31/2016
Research Agency:			Completion Date	(revised)	
Principal Investigator:					

BUDGET STATUS

Total Budget			Estimated 2015-2016 Budget		
Total Cost	(original)	$100,000	**Total**		**$75,000**
	(revised)				
Est. Expended to Date			Salaries		$75,000
FY 2014 - 2015 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		

PURPOSE AND SCOPE

The U.S. Army Corps of Engineers is responsible for maintaining the navigation channels to authorized dimensions. The Corps does not have the budget capability to adequately maintain the channels. The coastal ports are losing business because the channels are not maintained. The Coastal Port Advisory Authority, within the Louisiana Department of Transportation and Development (LADOTD), is interested in knowing the costs associated with purchasing a dredge, the operation and maintenance costs and the cost of obtaining a permit from the Corps. Who should purchase (the state or ports), where the employees would be housed, and where the dredge would be based are all questions that should be answered. This should be compared to the costs of hiring a dredge company to do the work.

Compare the cost of owning a dredge and all that entails, including insurance, with hiring a company to do the dredging. The pros and cons.

If the results of owning a dredge compares favorably with hiring a dredge, then legislation may be needed. Having the ability to dredge when needed is favorable to waiting on the Corps to get funding. Navigation would be improved since channels would be reliable. Businesses would benefit in having a reliable channel.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

To be determined.

Title:	**Diverted Traffic Measurement**	**Project Status:**	**Proposed**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		7/1/2015
Research Project Number:	16-5SS		Completion Date	(original)	6/30/2017
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Ravindra Gudishala				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$198,000		**Total**		**$107,000**
	(revised)					
Est. Expended to Date				Salaries		$90,800
FY 2014 - 2015 Budget				Equipment	(expendable)	$200
FY Funds	(original)			Equipment	(non-expendable)	$16,000
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

The purpose of the project is to determine the extent to which local arterials can substitute for lack of capacity on urban freeways. Motorists, and particularly motorists making local trips, are likely to use local arterials in preference to a freeway if the congestion is much higher on the freeway. This project is aimed at measuring the level of diversion that occurs when congestion levels on the I-10 freeway between the Mississippi Bridge and the I-10/I-12 split in Baton Rouge rises higher than on parallel arterials. Measurements will be aimed at identifying at what level of difference in congestion does diversion of traffic begin to occur, what is the time lag between the onset of congestion and diversionary behavior, and how stable is the behavior from event to event. Incidents on the freeway and on arterials can provide the conditions in which meaningful measurements can be made. The scope of the project will be limited to the I-10 freeway between the Mississippi Bridge and the I-10/I-12 split because the issue of increasing the capacity of the I-10 in that vicinity is not favored and alternative solutions, such as increasing the capacity of parallel arterials, could be more cost-effective.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

N/A

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

1. Identify candidate parallel arterials to the I-10 freeway between the Mississippi Bridge and the I-10/I-12 split.
2. Divide the selected arterials between those serving eastbound and those serving westbound traffic on the I-10, and select up to 4 of those arterials in each direction.
3. Identify and purchase traffic counting equipment that can be installed on the on- and off-ramps of the I-10 freeway between the Mississippi Bridge and the I-10/I-12 split and which is capable of recording the volume in 15-minute intervals.
4. Install 2 Bluetooth detection devices on each of the 4 selected arterials and on the I-10 freeway between the Mississippi Bridge and the I-10/I-12 split, in a particular direction (i.e. either eastbound or westbound).
5. Observe travel times on the I-10 and on the arterials using the Bluetooth devices and the volume of traffic on each on- and off-ramp by 15-minute time period.

Title:	**Radio-frequency Identification (RFID) Tagging for Material Tracking and Future Asset Management**	**Project Status:**	**Proposed**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		7/1/2015
Research Project Number:	16-1C		Completion Date	(original)	6/30/2016
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Tyson Rupnow				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$100,000		**Total**		**$100,000**
	(revised)					
Est. Expended to Date				Salaries		$85,000
FY 2014 - 2015 Budget				Equipment	(expendable)	$6,000
FY Funds	(original)			Equipment	(non-expendable)	$7,000
	(revised)			Travel		$2,000
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

Current Louisiana Department of Transportation and Development (LADOTD) practice allows multiple mixtures/materials to be submitted and subsequently used during the construction project. Such materials include MSE wall units, concrete, asphalt, aggregate, etc. Other items include precast elements such as girders, barrier wall, pipe, and box culverts. Tracking of these elements can get tedious and future identification of the elements in question is very difficult.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

Develop and start project.

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	Reliable Early Opening Strength for Concrete Pavements and Patch Work	Project Status:	Proposed
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		7/1/2015
Research Project Number:	16-2C		Completion Date	(original)	6/30/2016
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Tyson Rupnow				

BUDGET STATUS

Total Budget			Estimated 2015-2016 Budget		
Total Cost	(original)	$25,000	**Total**		**$25,000**
	(revised)				
Est. Expended to Date			Salaries		$25,000
FY 2014 - 2015 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		

PURPOSE AND SCOPE

Information is needed to determine the minimum reliable early opening strength for concrete. Requiring an appropriate opening strength is important to facilitate use of travel lanes by the public and to insure the integrity of the concrete. Current requirements are empirically based and not necessarily based on the mechanics of materials.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

Develop and complete the literature survey.

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	Evaluation of CFRCP: Phase II Accelerated Loading	Project Status:	Proposed
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		7/1/2015
Research Project Number:	16-3C		Completion Date	(original)	6/30/2017
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Tyson Rupnow				

BUDGET STATUS

Total Budget				Estimated 2015-2016 Budget		
Total Cost	(original)	$250,000		**Total**		**$27,000**
	(revised)					
Est. Expended to Date				Salaries		$27,000
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

The purpose of this project is to determine the fatigue failure mechanism of CFRCP under accelerated loading. Additionally, cracking patterns for long pavement sections will also be identified and documented. The performance of the sections will be determined under heavy load accelerated loading.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

N/A

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

Develop proposal, design sections, and construct sections.

Title:	**Development of a Composite Bridge System for Short and Medium-span Bridges**	**Project Status:**	**Proposed**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000069**		Project Start Date:		7/1/2015
Research Project Number:	16-1TIRE		Completion Date	(original)	6/30/2016
Research Agency:	LTU		Completion Date	(revised)	
Principal Investigator:	Mr. Fatmir Menkulasi				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$30,000		**Total**		**$30,000**
	(revised)					
Est. Expended to Date				Salaries		$28,927
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		$1,073
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

The goal of this project is to develop a bridge superstructure system for short and medium-span bridges that is structurally efficient and can be used in sites with stringent vertical clearance requirements while being able to accelerate construction.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-TASK 1: Comparison study and quantification of live load distribution factors;
-Task 2: Quantification of transverse tensile forces on transverse connections; and
-Task 3: Prepare and submit final report.

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	Easy Add-on Fuel Saver for Non-Hybrid Vehicles	Project Status:	Proposed

Funding Source:	SPR: TT-Fed/TT-Reg	Budget Category:	FHWA

SIO:	DOTLT1000070		Project Start Date:		7/1/2015
Research Project Number:	16-2TIRE		Completion Date	(original)	6/30/2016
Research Agency:	LSU		Completion Date	(revised)	
Principal Investigator:	Chandra Theegala				

BUDGET STATUS

Total Budget			Estimated 2015-2016 Budget		
Total Cost	(original)	$30,000	**Total**		**$30,000**
	(revised)				
Est. Expended to Date			Salaries		$22,169
FY 2014 - 2015 Budget			Equipment	(expendable)	$7,831
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		

PURPOSE AND SCOPE

The specific objectives that are set for this project include:
-Modify the power generation and alternator regulator circuitry of a 150 CC gasoline scooter to generate maximum wattage during the time of braking;
-Quantify the HHO gas generated from using the excess power in a electrolytic cell and compare the gas production with theoretical values based on Faraday's laws;
-Modify the engine carburetor and incorporate features that will lean the gasoline fuel intake when HHO gas is fed to the air intake;
-Evaluate the engine performance and fuel consumption of a separate 4-stroke gasoline engine with varying air/fuel/HHO mixtures using an engine testing dynamometer; and
-Based on all the optimum parameters identified by all prior experiments, evaluate the true fuel savings from a HHO supplemented scooter with a series of road tests.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

N/A

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Task 1: Procurement of test vehicle and engines;
-Task 2: Modification of power generation circuitry;
-Task 3: Design and fabrication of HHO cell and storage tank;
-Task 4: Alteration of carburetor fuel intake;
-Task 5: Engine dynamometer testing and optimization;
-Task 6: Assessing fuel savings through road;
-Task 7: Overall HHO add-on viability assessment; and
-Task 8: Prepare and submit final report.

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	**Development of High Strength Super Light Weight Concrete for Transportation Infrastructures**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000071**		Project Start Date:		7/1/2015
Research Project Number:	16-3TIRE		Completion Date	(original)	6/30/2016
Research Agency:	LTU		Completion Date	(revised)	
Principal Investigator:	Shaurav Alam				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$30,000		**Total**		**$30,000**
	(revised)					
Est. Expended to Date				Salaries		$19,421
FY 2014 - 2015 Budget				Equipment	(expendable)	$8,579
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		$1,000
Est. FY Expenditure				Other		$1,000

PURPOSE AND SCOPE

The objectives of this research are:
-A literature review of the global state-of-the-practice in applications of lightweight concrete as a construction material for the repair and/or construction of transportation structures;
-Conduct characterization tests of different mix-design following relevant ASTM and ACI standards to establish physical and mechanical properties (e.g., particle size distribution, compressive strength, flexural strength, tensile strength, elastic modulus etc.);
-Optimization of the mix-design to meet the standard ASTM C 825 requirements for materials and compressive strength, and the anticipated section capacity will be calculated;
-Barrier reinforcement cage and mold required to build a sectional barrier will be solicited from a local manufacturer of precast barrier;
-Reinforcement cage will be fitted with strain gages at critical locations to monitor the state of stress inside the barrier and the concrete barrier will be casted and cured at LA Tech;
-Vibration load will be applied on the barrier using the newly acquired servo controlled hydraulic actuator; and
-Results obtained from the strain gages and universal testing machine will be reported.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

N/A

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Task 1: Literature review
-Task 2: Establishment of mix design for lightweight concrete based on locally available materials;
-Task 3: Experimental Evaluation of Structural Response; and
-Task 4: Prepare and submit final report.

Title:	DOTD Support for UTC Project: Ductility of Extreme-Temperature Asphalt Binders by Shear and Extensional Rheology	Project Status:	Proposed
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000068**		Project Start Date:		7/1/2015
Research Project Number:	16-4B		Completion Date	(original)	9/30/2016
Research Agency:	LTU		Completion Date	(revised)	
Principal Investigator:	Nazimuddin M Wasiuddin				

BUDGET STATUS

Total Budget			Estimated 2015-2016 Budget		
Total Cost	(original)	$50,000	**Total**		**$28,977**
	(revised)				
Est. Expended to Date			Salaries		$18,031
FY 2014 - 2015 Budget			Equipment	(expendable)	$2,000
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		$8,946

PURPOSE AND SCOPE

The objective of this study is to evaluate the dynamic shear rheometer (DSR)-based parameters for the replacement of the force ductility test (AASHTO T300). Several DSR shear tests, including oscillatory and creep tests, will be performed for relationships with force ductility parameters. In addition to shear test parameters using DSR, the Sentmanat Extensional Rheometer (SER) test parameters using a SER fixture in the current DSR will be evaluated for relationships with the force ductility parameters.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

N/A

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Literature Review;
-Selection of Materials;
-Evaluation of Correlation between Oscillatory Shear Test Parameters and Force Ductility Test Parameters;
-Evaluation of Relationships between Creep Shear Test Parameters and Force Ductility Test Parameters.

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	**Performance-Based Plastic Design for Transportation Infrastructure**	**Project Status:**	**Proposed**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000072**		Project Start Date:		7/1/2015
Research Project Number:	16-4TIRE		Completion Date	(original)	6/30/2016
Research Agency:	ULL		Completion Date	(revised)	
Principal Investigator:	Matthew Fadden				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$30,000		**Total**		**$30,000**
	(revised)					
Est. Expended to Date				Salaries		$28,500
FY 2014 - 2015 Budget				Equipment	(expendable)	$1,500
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

The proposed research effort aims to develop a novel Performance-Based Plastic Design methodology to design and assess steel and concrete bridge structures. This work will improve upon the understanding of current plastic design methodologies, structural efficiency, and reliability.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

N/A

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-TASK 1: Design of Benchmark Bridge Structures;
-TASK 2: Development Performance-Based Plastic Design to Bridge Structures;
-TASK 3: Evaluation of Performance-Based Plastic Design on Benchmark Structures; and
-TASK 4: Prepare and submit final report.

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	**Development of a Simulation Test Bed for Connected Vehicles using the LSU Driving Simulator**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		7/1/2015
Research Project Number:	15-2SA		Completion Date	(original)	
Research Agency:	LSU		Completion Date	(revised)	
Principal Investigator:	Dr. Sherif Ishak				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$150,000		**Total**		**$80,000**
	(revised)					
Est. Expended to Date				Salaries		$80,000
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

The main focus of this study is to develop a driving simulator-based test bed for connected vehicles research in the areas of operation and safety. The specific objectives are to develop connected vehicle simulation test bed using a driving simulator; create some of the connected vehicle safety related applications in the driving simulator environment such as intersection movement assist, DO NOT PASS, and blind spot warning applications; create some of the emergency-related applications in the simulator environment such as eco-approach and eco-departure at signalized intersections; and test the impacts and benefits of each specific application on drivers' behavior.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Task 1: Literature Review;
-Task 2: Develop a Virtual Driving Simulator Scenario; and
-Task 3: Create Connected Vehicles in Driving Simulator Network.

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	**Investigating Safety Impacts of Centerline Rumble Strip, Lane Conversion, Roundabout and J-turn Features on Louisiana Highways**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000087**	Project Start Date:		7/1/2015
Research Project Number:	15-3SA	Completion Date	(original)	
Research Agency:	ULL	Completion Date	(revised)	
Principal Investigator:	Dr. Xiaoduan Sun			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$130,000
	(revised)	
Est. Expended to Date		
FY 2014 - 2015 Budget		
FY Funds	(original)	
	(revised)	
Est. FY Expenditure		

Estimated 2015-2016 Budget		
Total		**$60,000**
Salaries		$59,800
Equipment	(expendable)	
Equipment	(non-expendable)	
Travel		$200
Other		

PURPOSE AND SCOPE

The goal of this project is to evaluate few relatively new crash countermeasures on Louisiana highways including the centerline rumble strip, lane conversion (four to three and additional analysis on four to five lane), and the restrictive median opening on high speed corridors. Specifically, the objectives are to conduct before-and-after study and exploratory data analysis for centerline rumble-strips, the lane conversion (with or without bike lanes), roundabout and the J-turn treatment (restricted median opening) on highways in Louisiana; and perform cost-benefit analysis for all investigated safety features.

This study addresses a few relatively new crash countermeasures implemented to the Louisiana rural two-lane highways, urban and suburban roadways and high speed corridors. The study will be conducted with the data from these roadways.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Task 1- Information Review;
-Task 2- Project Identification and Crash Data Analysis; and
-Task 3- Before-and-After Crash Analysis.

Title:	**Highway Construction Work Zone Safety Performance and Improvement in Louisiana**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		9/1/2015
Research Project Number:	16-1SA		Completion Date	(original)	6/30/2017
Research Agency:			Completion Date	(revised)	
Principal Investigator:					

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$200,000		**Total**		**$80,000**
	(revised)					
Est. Expended to Date				Salaries		$64,000
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		$16,000

PURPOSE AND SCOPE

The purpose of this project is to analyze traffic incidents in Louisiana construction work zones in the last five years and conduct the following tasks: 1) identify crash patterns and characteristics of traffic incidents in Louisiana work zones under different conditions; 2) to contrast the results with similar States; 3) to conduct correlation analysis between particular safety measures and safety improvement; 4) recommend a list of best practices for improving work zone safety and mobility; and 5) to recommend potential measures to update LADOTD work zone safety programs.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

To Be Determined.

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	Calibration Factors for Highway Safety Manual (HSM) Intersection SPFs	Project Status:	Proposed
Funding Source:	SPR: TT-Fed/TT-Reg	Budget Category:	FHWA

SIO:			Project Start Date:		9/1/2015
Research Project Number:	16-2SA		Completion Date	(original)	12/31/2016
Research Agency:			Completion Date	(revised)	
Principal Investigator:					

BUDGET STATUS

Total Budget			Estimated 2015-2016 Budget		
Total Cost	(original)	$125,000	**Total**		**$90,000**
	(revised)				
Est. Expended to Date			Salaries		$75,000
FY 2014 - 2015 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		$15,000

PURPOSE AND SCOPE

The Highway Safety Manual (HSM) includes analytical tools and techniques for quantifying the safety effects of planning, design alternatives and configurations, and operations and maintenance decisions. However, the HSM was developed based on national trends and statistics and must be calibrated to represent local conditions. The main focus of this study is to develop a statewide intersection database and develop the HSM SPF calibration factors for the following: 1)Rural two-lane: three-leg intersection with stop control (3ST), four-leg intersection with stop control (4ST), four-leg signalized intersection (4SG); 2)Rural multilane: (four-lane divided or undivided roadway): three-leg intersection with stop control (3ST), four-leg intersection with stop control (4ST); four-leg signalized intersection (4SG); and 3)Urban and Suburban Arterials: three-leg intersection with stop control (3ST), three-leg signalized intersection (3SG), four-leg intersection with stop control (4ST), four-leg signalized intersection (4SG).

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

To Be Determined.

Title:	**Estimating Average Daily Traffic Counts Using Cell Phone Data**	**Project Status:**	**Proposed**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		10/1/2015
Research Project Number:	16-3SA		Completion Date	(original)	12/31/2016
Research Agency:			Completion Date	(revised)	
Principal Investigator:					

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$100,000		**Total**		**$60,000**
	(revised)					
Est. Expended to Date				Salaries		$60,000
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

The purpose of this study is to evaluate the use cellular data as a valid, cost effective method for estimating average daily traffic counts on the state and local road networks.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

To Be Determined.

FHWA

Part II SPR Funded Research Program

POOLED FUND
LOUISIANA
LEAD STATE RESEARCH

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	Southeast Transportation Consortium	Project Status:	Ongoing
Funding Source:	**SPR: Pooled Fund: TT-Fed**	**Budget Category:**	**FHWA**

SIO:	**30000281**		Project Start Date:		9/1/2009
Research Project Number:	09-1PF		Completion Date	(original)	8/30/2012
Research Agency:	LTRC		Completion Date	(revised)	8/30/2018
Principal Investigator:	Mr. Mark Morvant				

BUDGET STATUS

Total Budget			Estimated 2015-2016 Budget		
Total Cost	(original)	$150,000	**Total**		**$10,000**
	(revised)	$300,000			
Est. Expended to Date		$34,028	Salaries		
FY 2014 - 2015 Budget			Equipment	(expendable)	
FY Funds	(original)	$10,000	Equipment	(non-expendable)	
	(revised)	$10,098	Travel		$10,000
Est. FY Expenditure		$10,098	Other		

PURPOSE AND SCOPE

Southeast Transportation Consortium's (STCs) objectives are to pool financial, professional, and academic resources to coordinate research and develop improved methods of addressing common problems in the planning, design, construction, maintenance, management, and operation of transportation systems in participating states. The program is intended to supplement ongoing state, federal, and university research activities and other national programs such as the National Cooperative Highway Research Program. It is intended to reduce duplication of research and provide means for better communication of on-going research activities in the state research programs. The cooperative and collaborative objectives of the STC program are to develop synergy and provide for a more efficient use of resources. STC projects are funded individually with specific research proposals. This project funds the management and costs incurred for the annual meeting.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Managed STC pooled fund consortium;
-Presented update at the regional conference calls and Annual TRB meeting; and
-Completed STC Synthesis Projects funded individually:
• 14-1PF- Best Practices for Achieving and Measuring Pavement Smoothness
• 14-2PF Real-Time Driver Information for Congestion Management
• 14-3PF- Transportation Funding Alternatives Now and in the Future
• 14-4 PF Reflective Cracking Mitigation Strategies for Cracked Pavements
- Held STC annual meeting for which funds were expended from this project.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Present status of activities at the Annual Research Advisory Committee Meeting;
-Complete and publish final results of on-going synthesis studies;
-Initiate RFP's, and contracts for the four new synthesis projects;
-Hold kickoff meetings for synthesis projects; and
-Plan and hold STC annual meeting for 2014.

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	Design and Analysis Procedures for Asphalt Mixtures Containing High-RAP Contents and/or RAS	Project Status:	Ongoing
Funding Source:	**SPR: Pooled Fund: TT-Fed**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000002**	Project Start Date:		11/1/2014
Research Project Number:	14-5PF	Completion Date	(original)	10/31/2017
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Dr. Louay Mohammad			

BUDGET STATUS

Total Budget			Estimated 2015-2016 Budget		
Total Cost	(original)	$306,812	**Total**		**$133,410**
	(revised)				
Est. Expended to Date		$50,000	Salaries		$131,410
FY 2014 - 2015 Budget			Equipment	(expendable)	
FY Funds	(original)	$50,000	Equipment	(non-expendable)	
	(revised)		Travel		$2,000
Est. FY Expenditure		$50,000	Other		

PURPOSE AND SCOPE

Despite recent advancements in the design of asphalt mixtures containing Reclaimed Asphalt Pavement (RAP), many states are still cautious in their regulations to avoid durability problems related to the recycling process. In many states, RAP is currently not allowed in highest-class asphalt mixtures and in polymer-modified asphalt products. In addition, high percentages of RAP exceeding 25% are not commonly used in practice. On the other hand, many state agencies are taking a more aggressive approach by considering increasing the allowable percentages of RAP in asphalt mixture to take full advantage of this promising technology. For instance, up to 50% RAP has been used in some asphalt mixtures, which produced an acceptable level of performance. In addition, reclaimed asphalt shingles (RAS), defined by The American Association of State Highways and Transportation Officials (AASHTO) MP 15-09 “Standard Specification for Use of Reclaimed Asphalt Shingles as an Additive in Hot-Mix Asphalt (HMA)” as “any type of waste roofing asphalt shingles that have been processed into a recyclable product,” have become another promising candidate of recycling, also because of the high compatibility with paving asphalt mixtures. However, to ensure successful use of RAP and/or RAS, confidences in the mixture design procedure require addressing many concerns related to the interaction between virgin and recycled materials and durability of the produced mixture. Current AASHTO recommendations make it difficult to design asphalt mixtures with high-RAP and/or RAS contents. Modifications to the current specifications are needed to assure agencies that satisfactory performance will result from the use of high-RAP and/or RAS content asphalt mixes. The objectives of this study are to 1) establish mechanistic test criteria for asphalt mixtures (warm and hot) containing high-RAP content and/or reclaimed asphalt shingles (RAS); and 2) propose asphalt mixture specifications that incorporate the mechanistic test criteria as tested on plant produced specimen and/or roadway cores based on the results of the study.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS
-Task 1: Completed conduct of Literature Review; -Task 2: Identify Field Projects and Material Collection: Several communications with participating states personnel from Florida (Mr. Jim Musselman), Colorado (Mr. B. Schiebel, Dr. Aziz Khan, Mr. Roberto Dedios), and Louisiana (Mr. Bill King) were initiated. The purpose of these communications is to provide assistance and guidance in identifying two field projects from each state as per the test factorial; and -Task 3 – Laboratory Experiment: Completed equipment set up and calibration of fatigue/fracture tests as per the test factorial.
FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES
-Task 2: Continue identification of field projects and material collection from participating states; and -Task 3: Perform laboratory experiment on mixtures collected from participation states as per test factorial.

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	Prep-ME Software Implementation and Enhancement	Project Status:	Proposed

Funding Source:	SPR: Pooled Fund: TT-Fed	Budget Category:	FHWA

SIO:	DOTLT1000057		Project Start Date:		4/1/2015
Research Project Number:	15-1PF		Completion Date	(original)	12/31/2016
Research Agency:	Oklahoma State University		Completion Date	(revised)	
Principal Investigator:	Dr. Joshua Li				

BUDGET STATUS

Total Budget				Estimated 2015-2016 Budget		
Total Cost	(original)	$142,202		**Total**		**$78,799**
	(revised)					
Est. Expended to Date				Salaries		$49,027
FY 2014 - 2015 Budget				Equipment	(expendable)	$375
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		$6,943
Est. FY Expenditure				Other		$22,454

PURPOSE AND SCOPE

Pavement ME Design (previously MEPDG/DARWin-ME) is a significant advancement in pavement design, but requires much more inputs from various sources. Through the transportation pooled fund study TPF-5(242), the Phase II final deliverable Prep-ME software is capable of pre-processing, importing, checking the quality of raw Weigh-In-Motion (WIM) traffic data, and generating three levels of traffic data inputs with in-built clustering analysis methods for Pavement ME Design. This software complies with FHWA Traffic Monitoring Guide (TMG) and TMAS for quality assurance and quality control (QA/QC), and can be used by state highway agencies for the QA/QC of traffic data collection, analysis of truck loading data, and preparation of input for AASHTO Pavement ME software.

The objective of proposed Phase III project is to assist participating state DOTs on the full implementation of Prep-ME software for traffic data collection and Pavement ME Design and to deliver new generation of Prep-ME software with enhanced and customized features for each individual state. The proposed tasks to be performed in Phase III include:
-Task 1 - Provide On-Site and Webinar Training for Participating States;
-Task 2 - Develop Portable Version of Prep-ME for Field Data Collection and WIM Calibration;
-Task 3 - Enhance Existing Traffic Module in Prep-ME; and
-Task 4 - Provide Technical Support to Meet State Needs.

Upon completion of this project, participating state DOTs will have a software and database tool set used not only by pavement design engineers to prepare input for Pavement ME Design, but also traffic data collection engineers to collect better traffic data and manage those data for other applications.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

There are three months (April to June) in Fiscal year 2014 - 2015. All proposed tasks including training, software development, and technical support will be commenced during these periods. By the end of this fiscal year, the preparation of on-site and webinar training for participating states (Task 1 of this project) will be mostly completed. Technical support (Task 4) is provided on a need basis during the implementation of Prep-ME for daily traffic data collection and ME based pavement design. Any special needs arose from participating states will be addressed on a timely manner. The research team starts developing desired enhancement of particular software features or modules as identified in Task 2 and Task 3 with close consultation with the participating states.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

In fiscal year 2015-2016, the proposed activities of this project include:
-Task 1: aim to complete on-site training for the six states (Louisiana, Michigan, North Carolina, Wisconsin, Kentucky, New Hampshire) identified in the project proposal, and online webinar training for to all participating states and other users;
-Task 2: finish developing portable version of Prep-ME for field data collection and WIM calibration, and deliver the new software to participating states for testing;
-Task 3: finish the software development of enhancing existing traffic capabilities and deliver the new software to participating states for testing; and
-Task 4: Continue providing technical support on a need basis during the implementation of Prep-ME for daily traffic data collection and ME based pavement design. Any special needs arose from participating states will be addressed on a timely manner.

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	**Best Management Practices and Guidelines for Determining the Value of Research Results**	**Project Status:**	**Proposed**

Funding Source:	**SPR: Pooled Fund: TT-Fed**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		7/1/2015
Research Project Number:	16-1PF		Completion Date	(original)	3/30/2017
Research Agency:			Completion Date	(revised)	
Principal Investigator:					

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$150,000		**Total**		**$90,000**
	(revised)					
Est. Expended to Date				Salaries		$89,000
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		$1,000
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

The primary objective of this project is the development of a guidebook to be used by Southeast Transportation Consortium (STC) research sections which allows a consistent approach of all members for measuring and documenting the value of research from the results found on a completed research project. Research is very diverse with multiple research categories and subcategories. The research project will develop a format for measuring and documenting the value of the research knowing that it cannot be all inclusive of every possible type of research project and measures. The goal will be to develop a set of measures in an easily understandable format that will enable the research sections to evaluate the majority of the research typically conducted in State Transportation research programs. The process for determining the measures will be done in a format that permits maximum coverage of the most researched categories and be universally accepted between categories. Because of the uniqueness of this project, multiple steps will be taken that allow the STC to evaluate phases before moving on to the next phase. All the preliminary steps lead into the development of a guidebook that provides guidelines and worked examples for use of the STC members.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

To Be Determined.

FHWA

Part II SPR Funded Research Program

POOLED FUND EXTERNAL LEAD STATE RESEARCH

Title:	**Evaluation of Low Cost Safety Improvements**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: Pooled Fund: TT-Fed**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		11/1/2012
Research Project Number:	TPF-5(099)		Completion Date	(original)	10/1/2017
Research Agency:			Completion Date	(revised)	
Principal Investigator:					

BUDGET STATUS

Total Budget			**Estimated 2015-2016 Budget**		
Total Cost	(original)	$40,000	**Total**		**$5,000**
	(revised)				
Est. Expended to Date		$15,000	Salaries		
FY 2014 - 2015 Budget			Equipment	(expendable)	
FY Funds	(original)	$5,000	Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure		$5,000	Other		$5,000

PURPOSE AND SCOPE

FHWA has initiated the Low Cost Safety Improvements Pooled Funds Study to encompass safety-effectiveness evaluations of priority strategies from the NCHRP Report 500. The goal of the proposed research is to develop reliable estimates of the safety effectiveness of safety improvements identified as strategies in the NCHRP Report 500 Guidebooks through scientifically rigorous “Before”-”After” (B/A) evaluations of sites within the U.S. where these strategies are being implemented. The data for the study will be gathered from those states that implement the strategies throughout the US. The methodology utilized will typically be an Empirical Bayes evaluation or other appropriate method, using B/A data to help determine their effectiveness in reducing the number and severity of crashes. The data will be collected, and evaluation studies performed, as the strategies are implemented over the course of several years. LADOTD is committing to the project already underway.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

Information is posted on FHWA website http://www.pooledfund.org/browse/

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

Information is posted on FHWA website http://www.pooledfund.org/browse/

Title:	**Roadside Safety Research Program**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: Pooled Fund: TT-Fed**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		7/1/2008
Research Project Number:	TPF-5(114)		Completion Date	(original)	12/31/2011
Research Agency:			Completion Date	(revised)	
Principal Investigator:					

BUDGET STATUS

Total Budget			**Estimated 2015-2016 Budget**		
Total Cost	(original)	$190,000	**Total**		**$25,000**
	(revised)				
Est. Expended to Date		$265,000	Salaries		
FY 2014 - 2015 Budget			Equipment	(expendable)	
FY Funds	(original)	$25,000	Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure		$25,000	Other		$25,000

PURPOSE AND SCOPE

Background: In 2005, a consortium of states joined together to pool resources to identify common research needs addressing the design, analysis, testing and evaluation of crashworthy structures including bridge rails, guardrails, transitions, median barriers , break away support structures, etc. Together, they developed about $1 million in research funding over a three year period to fund 14 projects that are in various stages of completion. Texas Transportation Institute (TTI) is under contract to conduct the research for these projects. This research has provided cost effective and timely information to participating states. This solicitation invites other states to join the Roadside Safety Committee and to participate in developing research projects for the FFY09 and FFY10 program.
Objectives: This solicitation achieves the original objective to continue the cooperative approach to developing research proposals on roadside safety through FFY2010, thus realizing cost efficiency in projects and consensus on various priorities and approaches.
Scope of Work: The research projects that are currently under contract with TTI will be paid for with existing funding commitments. This solicitation is for new roadside safety research projects that will be identified and approved by the Roadside Safety Committee. The specific scopes of work are identified in problem statements or proposals that are developed by individual member states. The Committee then ranks and selects the projects that are funded and the work is carried out by Texas Transportation Institute. Member states may also develop and fund research projects that are not selected by the Roadside Safety pooled fund states to take advantage of the reduced overhead costs offered under the agreement.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

The results of all research conducted under this pooled fund program and a description of ongoing and new projects can be found at the Roadside Safety website located at : http://ttiresearch.tamu.edu/l-bullard/

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

The results of all research conducted under this pooled fund program and a description of ongoing and new projects can be found at the Roadside Safety website located at : http://ttiresearch.tamu.edu/l-bullard/

Title:	**Technology Transfer Concrete Consortium**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: Pooled Fund: TT-Fed**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		2/5/2008
Research Project Number:	TPF-5(159)		Completion Date	(original)	2/4/2012
Research Agency:			Completion Date	(revised)	2/14/2018
Principal Investigator:					

BUDGET STATUS

Total Budget			**Estimated 2015-2016 Budget**		
Total Cost	(original)	$40,000	**Total**		**$10,000**
	(revised)	$50,000			
Est. Expended to Date		$40,000	Salaries		
FY 2014 - 2015 Budget			Equipment	(expendable)	
FY Funds	(original)	$10,000	Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure		$10,000	Other		$10,000

PURPOSE AND SCOPE

Background: Increasingly, state departments of transportation (DOTs) are challenged to design and build longer life concrete pavements that result in a higher level of user satisfaction for the public. One of the strategies for achieving longer life pavements is to use innovative materials and construction optimization technologies and practices. In order to foster new technologies and practices, experts from state DOTs, Federal Highway Administration (FHWA), academia and industry must collaborate to identify and examine new concrete pavement research initiatives. The purpose of this pooled fund project is to identify, support, facilitate and fund concrete research and technology transfer initiatives.
Objectives: The proposed project is for the establishment of a pooled fund for state representatives to continue the collaborative effort begun in TPF-5(066) Materials and Construction Optimization. The TTCC will be open to any state desiring to be a part of new developments in concrete paving leading to the implementation of new technologies which will lead to longer life pavements through the use of the innovative testing, construction optimization technologies and practices, and technology transfer.
Scope of Work: It is envisioned this partnership will be part of the Track Team for the CP Road Map Mix Design and Analysis Track. The Track Team will include state representatives along with FHWA representatives, industry representatives (from ACPA, ACPA chapters, and material suppliers), consultants, and academic representatives. This pooled fund will be the opportunity for all states interested in the Mix Design and Analysis Track to become part of that endeavor.
TTCC will begin by meeting in conjunction with MCC, twice a year, as the MCO has done in the past. It may be advantageous for MCC in the future to consider melding itself into, and becoming part of the TTCC.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

Accomplishments may be found at study website: http://www.cptechcenter.org/t2/ttcc_ncc_meeting.cfm

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

Proposed Activities may be found at study website: http://www.cptechcenter.org/t2/ttcc_ncc_meeting.cfm

Title:	**Southeast Transportation Consortium**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: Pooled Fund: TT-Fed**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		9/1/2009
Research Project Number:	TPF-5(212)		Completion Date	(original)	8/31/2012
Research Agency:			Completion Date	(revised)	8/31/2018
Principal Investigator:					

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$15,000		**Total**		**$10,000**
	(revised)	$60,000				
Est. Expended to Date		$30,000		Salaries		
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)	$5,000		Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure		$5,000		Other		$10,000

PURPOSE AND SCOPE

This Louisiana lead RAC Region II pooled fund project is a collaborative research program called the Southeast Transportation Consortium and was created to encourage coordination among member states and provide resources and management of collaborative studies. The consortium intends to address high priority transportation research topics of common interest to the RAC II Region states and for which expertise exists within the region.

Its purpose is to pool the financial, professional, and academic resources of the region to conduct research and develop improved methods of dealing with common problems in the planning, design, construction, maintenance, management and operation of transportation systems in the participating states.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

Accomplishments may be found at the following link: http://www.ltrc.lsu.edu/stc/

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

Proposed activities may be found at the following link: http://www.ltrc.lsu.edu/stc/

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	Superpave Regional Center	Project Status:	Ongoing
Funding Source:	**SPR: Pooled Fund: TT-Fed**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		
Research Project Number:	TPF-5(228)		Completion Date	(original)	
Research Agency:			Completion Date	(revised)	
Principal Investigator:					

BUDGET STATUS

Total Budget				Estimated 2015-2016 Budget		
Total Cost	(original)	$125,000		**Total**		**$10,000**
	(revised)	$165,224				
Est. Expended to Date		$150,224		Salaries		
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)	$15,000		Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure		$15,000		Other		$10,000

PURPOSE AND SCOPE

Objectives of the Center are:
1. Conduct training in regard to Superpave binders, mix design, and performance testing, and provide
2. Perform research, both cooperatively and agency-specific, sponsored by members of the pooled-fund.
3. Perform precision and bias testing for asphalt-related performance test equipment.
4. Conduct noise studies in an effort to develop quieter pavements.
5. Perform forensic evaluations on materials or projects that have experienced premature distress.
6. Prepare and give presentations and reports of research activities at local, state, and national meetings when invited.
7. Prepare research articles of regional and national interest.
8. Support agency personnel who attend regional and national meetings for the purpose of technology transfer or participation in special committees or task force groups.
9. Work in close association with the Southeastern Asphalt User/Producer Group to promote technology transfer from research to implementation.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

Accomplishments may be found at http://www.pooledfund.org/Details/Study/456

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

Proposed activities may be found at http://www.pooledfund.org/Details/Study/456

Title:	**Transportation Library Connectivity & Development**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: Pooled Fund: TT-Fed**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		1/1/2011
Research Project Number:	TPF-5(237)		Completion Date	(original)	12/31/2015
Research Agency:			Completion Date	(revised)	
Principal Investigator:					

BUDGET STATUS

Total Budget			**Estimated 2015-2016 Budget**		
Total Cost	(original)	$15,000	**Total**		**$15,000**
	(revised)	$90,000			
Est. Expended to Date		$75,000	Salaries		
FY 2014 - 2015 Budget			Equipment	(expendable)	
FY Funds	(original)	$15,000	Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure		$15,000	Other		$15,000

PURPOSE AND SCOPE

The Transportation Library Connectivity Pooled Fund Study is a grassroots effort by librarians and information professionals in 22 state departments of transportation, two university transportation centers and a metropolitan transportation authority.
Since 2005 members have been pooling their talents, energy and resources to develop better ways to serve practitioners in transportation agencies. A full-time consultant provides technical assistance to member libraries and carries out a ten-point annual work plan aimed at improving information access throughout the transportation community.
FISCAL

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

Details may be found at http://www.pooledfund.org/Details/Study/466

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

Details may be found at http://www.pooledfund.org/Details/Study/466

Title:	**Traffic and Data Preparation for AASHTO MEPDG Analysis and Design**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: Pooled Fund: TT-Fed**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		9/1/2011
Research Project Number:	TPF-5(242)		Completion Date	(original)	8/31/2014
Research Agency:			Completion Date	(revised)	8/31/2016
Principal Investigator:					

BUDGET STATUS

Total Budget			**Estimated 2015-2016 Budget**		
Total Cost	(original)	$60,000	**Total**		**$10,000**
	(revised)				
Est. Expended to Date		$40,000	Salaries		
FY 2014 - 2015 Budget			Equipment	(expendable)	
FY Funds	(original)	$10,000	Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure		$10,000	Other		$10,000

PURPOSE AND SCOPE

This is a Louisiana lead pooled fund study. The objective of study is to assist state DOTs in the data preparation for MEPDG input data bu improving PrepMEsoftware and to make the MEPDG software more accessible. PrepMEsoftware can be used as a critical tool for calibrating and implementing the MEPDG as well. The software and services need to be expanded to:
(1) recognize the differences in loading patterns or traffic groups and estimate the full axle load spectrum data occurring under different conditions based on large amounts of WIM data, such as the LTPP data;
(2) develop advanced algorithms to examine raw WIM data for quality and conduct data repair operations to salvage usable information in WIM data for MEPDG and other purposes. A portable version of quality checks for traffic data can be available to the field data collection crew;
(3) Add more functions based on the consensus of participating states;
(4) Customize PrepME for participating states;
(5) Prepare and conduct training for the personnel of participating states; and,
(6) Provide participating states technical support throughout the three year period.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

Accomplishments may be found in the quarterly reports posted on the FHWA pooled fund website:
http://www.pooledfund.org/Details/Study/470

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

Proposed activities may be found in the quarterly reports posted on the FHWA pooled fund website:
http://www.pooledfund.org/Details/Study/470

Title:	**Design and Analysis Procedures for Asphalt Mixtures Containing High-RAP Contents and/or RAS**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: Pooled Fund: TT-Fed**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		11/1/2014
Research Project Number:	TPF-5(294)		Completion Date	(original)	10/31/2017
Research Agency:			Completion Date	(revised)	
Principal Investigator:					

BUDGET STATUS

Total Budget			**Estimated 2015-2016 Budget**		
Total Cost	(original)	$84,000	**Total**		**$28,000**
	(revised)				
Est. Expended to Date		$28,000	Salaries		
FY 2014 - 2015 Budget			Equipment	(expendable)	
FY Funds	(original)	$28,000	Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure		$28,000	Other		$28,000

PURPOSE AND SCOPE

This is a Louisiana lead pooled fund study. The objectives of this study are to 1) establish mechanistic test criteria for asphalt mixtures (warm and hot) containing high-RAP content and/or reclaimed asphalt shingles (RAS); and 2) propose asphalt mixture specifications that incorporate the mechanistic test criteria as tested on plant produced specimen and/or roadway cores based on the results of the study.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

The accomplishments may be found in the quarterly reports found on the FHWA pooled fund website: http://www.pooledfund.org/Details/Study/536

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

The accomplishments may be found in the quarterly reports found on the FHWA pooled fund website: http://www.pooledfund.org/Details/Study/536

Title:	**Partnership for the Transformation of Traffic Safety Culture**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: Pooled Fund: TT-Fed**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		10/1/2014
Research Project Number:	TPF-5(309)		Completion Date	(original)	
Research Agency:			Completion Date	(revised)	
Principal Investigator:					

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$50,000		**Total**		**$10,000**
	(revised)					
Est. Expended to Date		$20,000		Salaries		
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)	$10,000		Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure		$10,000		Other		$10,000

PURPOSE AND SCOPE

This pooled fund program is a cooperative effort of participating state DOTs and other (traditional and non-traditional) organizations with a vested interest in traffic safety. This long-term partnership will support an evolving and integrated project portfolio developed and revised each year by the partners, and complimentary to other related research activities, such as NCHRP 17-69: A Strategic Approach to transforming Traffic Safety Culture to reduce Deaths and Injuries. Together, these projects will accelerate the development and delivery of tools and services to transform the national, state, and community level traffic safety culture. The goal of this transformation is to support the Toward Zero Deaths (TZD) vision with sustainable traffic safety solutions.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

Accomplishments may be found at following link:
http://www.mdt.mt.gov/research/projects/trafficsafety.shtml

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

Proposed activities may be found at following link:
http://www.mdt.mt.gov/research/projects/trafficsafety.shtml

FHWA

LTAP Funded Program

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	**Local Technical Assistance Program (LTAP)**	**Project Status:**	**Ongoing**

Funding Source:	**LTAP: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		12/31/2014
Research Project Number:	15-LTAP		Completion Date	(original)	12/31/2015
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Marie Walsh				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$848,068		**Total**		**$848,068**
	(revised)	$5,711,991				
Est. Expended to Date				Salaries		$848,068
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

To provide cost effective transfer of technology and workforce development opportunities to Louisiana's parish and municipality public transportation and public works agencies through training, technical assistance and information dissemination.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

N/A

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Complete development and implementation of final LPA training module and develop certification and tracking program;
-Implement project to de4velop local road safety plans for priority parishes; and
-Link roadway characteristic data being collected by DOTD to local safety and pavement preservation initiatives.

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	**Local Technical Assistance Program (LTAP)**	**Project Status:**	**Ongoing**

Funding Source:	**LTAP: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**DOTDLT1000078**		Project Start Date:		1/1/2015
Research Project Number:	16-LTAP		Completion Date	(original)	12/31/2016
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Marie Walsh				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$560,790		**Total**		**$560,790**
	(revised)					
Est. Expended to Date				Salaries		$250,937
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		$23,313
Est. FY Expenditure				Other		$286,540

PURPOSE AND SCOPE

To provide cost effective transfer of technology and workforce development opportunities to Louisiana's parish and municipality public transportation and public works agencies through training, technical assistance and information dissemination.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Coordinated the application process for the project funding and increased the number of applications by 150% by changing application schedule and promoting the new process;
-Competed in a national application and selection process of FHWA's Accelerating Safety Activity Project and received funding for a Louisiana local road peer exchange;
-Participated in the state Strategic Highway Safety Plan Implementation Team, Focus Area Team and Regional Safety Coalitions as a voting member and/or for technical assistance;
-Served as a member of the Louisiana Traffic Records Coordinating Committee and on the Executive Committee;
-Worked with DOTD Sections to facilitate the roadway network certification effort and collection of Fundamental Safety Data Elements for local roads;
-Assisted LTRC in implementing new Louisiana Center for Transportation Safety; and
-Improved and streamlined LRSP project management and tracking using DOTD systems and supporting databases.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES
-Implement pilot project for systemic improvement on horizontal curves based on the "Top 20 Parishes" and the Louisiana Highway Safety Research Group. data analysis using risk-based factors coupled with crash data and traffic volume in partnership with DOTD; -Engage local infrastructure safety stakeholders in the SHSP planning at the regional coalition level via the planned LRSP peer exchange and scheduled coalition meetings; -Expand marketing, outreach and advocacy efforts at the regional and local levels and include a safety message in all communication with local stakeholders; -Providing assistance to LPA's in developing city or parish local road safety plans as part of the DOTD retainer contracts; -Conduct 20% more local road safety assessment and field visits across the state; -Participate as a member of the Louisiana Center for Transportation Safety Team; and -Provide local input to the SHSP update process.

FHWA

STP Funded

Technology Transfer
and
Education Program

Title:	**Technology Transfer Program and Operations (LSU)**	**Project Status:**	**Ongoing**

Funding Source:	**STP: TT-Fed**	**Budget Category:**	**FHWA**

SIO:	**30000320**		Project Start Date:		7/1/2015
Research Project Number:	08-1TSQ		Completion Date	(original)	6/30/2016
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Samuel B. Cooper				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$353,904		**Total**		**$353,904**
	(revised)					
Est. Expended to Date				Salaries		$312,904
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	$15,000
	(revised)			Travel		$6,000
Est. FY Expenditure				Other		$20,000

PURPOSE AND SCOPE

The objectives of this study are to:
-Disseminate information on new technologies and methodologies to Louisiana Department of Transportation and Development (LADOTD) and other transportation-oriented agencies;
-Improve communications on technical, transportation-related issues between the department and other agencies;
-Encourage implementation of new procedures and technologies; and
-Disseminate information on transportation subjects to appropriate managers and engineers in the department.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Assisted in registration for LTRC Seminar Series – Tack Coat Best Practices – Baton Rouge;
-Assisted in registration for SASHTO – New Orleans;
-Assisted in registration for 2014 National Transportation Training Directors Conference – Muscle Shoals, AL;
-Attended and chaired publication committee – SASHTO 2014 – New Orleans;
-Developed and maintained SASHTO 2014 Website;
-Published 2 Tech Today Articles;
-Published 2014 Annual Report;
-Set up registration for 25 NHI/other training, 6 LTAP training classes, 1 seminar series;
-Photographed all LTRC events;
-Produced SASHTO 2014 video; and
-Filmed and produced State of LADOTD – fall and spring;

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES
-Chair publication committee for 2016 Transportation Conference; -Sponsorship coordinator for 2016 Transportation Conference; -Assist all 2016 Transportation Conference committees; -Continue development of all LTC 2016 publications, website, registration, e-commerce and mobile device development; -Continue maintenance of LTRC website; -Develop LTRC app for mobile device; -Assist Secretary's office in development of 4 promotional videos; -Continue to edit and distribute project capsules, technical summaries, final reports, and technical assistance reports; -Publish 2 Tech Today newsletters; -Photograph all LTRC events; and -Video all LTRC events.

Title:	**Technology Transfer & Research Implementation Support for Louisiana Universities**	**Project Status:**	**Ongoing**

Funding Source:	**STP: TT-Fed**	**Budget Category:**	**FHWA**

SIO:	**30000241**		Project Start Date:		1/1/2010
Research Project Number:	10-4AD		Completion Date	(original)	12/31/2013
Research Agency:	LTRC		Completion Date	(revised)	6/30/2016
Principal Investigator:	Mr. Mark Morvant				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$110,000		**Total**		**$10,000**
	(revised)					
Est. Expended to Date		$33,315		Salaries		
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)	$10,000		Equipment	(non-expendable)	
	(revised)			Travel		$10,000
Est. FY Expenditure		$2,800		Other		

PURPOSE AND SCOPE

The purpose of the project is to provide travel funds to university research principal investigators for dissemination of research results at various technology transfer events. This project provides a mechanism to fund technology transfer travel for university faculty to deliver research results to state and national audiences such as Transportation Research Board (TRB) Annual Meeting, Louisiana Transportation Conference (LTC), Louisiana Transportation Research Center (LTRC) Seminar Series, and Louisiana Department of Transportation and Development (LADOTD) Implementation meetings and training. Travel funds are dispersed on a case by case basis as it applies to providing a benefit to Louisiana.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

N/A

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

Continue to provide support technology transfer travel for university faculty to deliver research results to state and national audiences.

Title:	**Workforce Development Support For Safety Center**	**Project Status:**	**Ongoing**
Funding Source:	**STP: TT-Fed**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000026**		Project Start Date:		7/1/2014
Research Project Number:	15-1WDSC		Completion Date	(original)	12/31/2017
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dortha Cummins				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$250,000		**Total**		**$102,823**
	(revised)					
Est. Expended to Date		$62,000		Salaries		$96,323
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)	$52,725		Equipment	(non-expendable)	
	(revised)			Travel		$2,000
Est. FY Expenditure		$10,000		Other		$4,500

PURPOSE AND SCOPE

The Louisiana Center for Transportation Safety (LCTS) will provide a structure for Louisiana's research universities to collaborate on safety related projects and leverage resources. Supported by research and technology transfer, the LCTS will provide enhanced technical assistance to federal, state and local transportation agencies and will be available to work to meet other state and regional needs. An expanded training and education program which includes the new multi-disciplinary highway safety professional curriculum being developed by the Transportation Research Board (TRB) will be made available to transportation professionals on a national basis. The Louisiana Department of Transportation and Development (LADOTD), Louisiana Transportation Research Center (LTRC), and the Transportation Training and Education Center (TTEC) in Baton Rouge, Louisiana will serve as the nucleus for these activities.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Staffed the LCTS;
-Moved the Local Road Safety Program into the LCTS;
-Worked closely with LTAP to transition safety related activities to the LCTS;
-Surveyed SHSP Regional Coalitions for training and workforce development needs; and
-Worked with LADOTD Highway Safety Section 82 to conduct a GIS Peer Exchange

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Develop a Workforce Development Plan.

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	DOTD Staff Support for Workforce Development	Project Status:	Ongoing
Funding Source:	**STP: TT-Fed**	**Budget Category:**	**FHWA**

SIO:	**DOTDLT1000079**		Project Start Date:		7/1/2015
Research Project Number:	16-1SWD		Completion Date	(original)	6/30/2016
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Samuel B. Cooper				

BUDGET STATUS

Total Budget			Estimated 2015-2016 Budget		
Total Cost	(original)	$1,520,000	**Total**		**$1,520,000**
	(revised)				
Est. Expended to Date			Salaries		$1,520,000
FY 2014 - 2015 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		

PURPOSE AND SCOPE

The purpose of this study is to provide for the strategic planning, program development and delivery management of the workforce development programs for the Louisiana Department of Transportation and Development (LADOTD) personnel by non-LTRC employees. This project will not be utilized by LTRC Section 19 or Section 33.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

N/A

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Course development and delivery of LPA training;
-LADOTD employee structured training;
-Human Resource training, maintenance related training; and
-Meetings involvements related to LADOTD's Transportation Training Curriculum council.

Title:	**Technology Transfer Program and Operations (DOTD)**	**Project Status:**	**Ongoing**
Funding Source:	**STP: TT-Fed**	**Budget Category:**	**FHWA**

SIO:	**DOTDLT1000075**	Project Start Date:		7/1/2015
Research Project Number:	16-1TSQ	Completion Date	(original)	6/30/2016
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Mr. Samuel B. Cooper			

BUDGET STATUS

Total Budget			**Estimated 2015-2016 Budget**		
Total Cost	(original)	$522,245	**Total**		**$522,245**
	(revised)				
Est. Expended to Date			Salaries		$522,245
FY 2014 - 2015 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		

PURPOSE AND SCOPE

The objectives of this study are to:
-Disseminate information on new technologies and methodologies to the Louisiana Department of Transportation and Development (LADOTD) and other transportation-oriented agencies;
-Improve communications on technical, transportation-related issues between the department and other agencies;
-Encourage implementation of new procedures and technologies; and
-Disseminate information on transportation subjects to appropriate managers and engineers in the department.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Assisted in registration for LTRC Seminar Series – Tack Coat Best Practices – Baton Rouge;
-Assisted in registration for SASHTO – New Orleans;
-Assisted in registration for 2014 National Transportation Training Directors Conference – Muscle Shoals, AL.;
-Attended and chaired publication committee – SASHTO 2014 – New Orleans;
-Developed and maintained SASHTO 2014 Website;
-Published 2 Tech Today Articles;
-Published 2014 Annual Report;
-Set up registration for 25 NHI/other training, 6 LTAP training classes, 1 seminar series;
-Photographed all LTRC events;
-Produced SASHTO 2014 video; and
-Filmed and produced State of DOTD – fall and spring.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES
-Chair publication committee for 2016 Transportation Conference; -Sponsorship coordinator for 2016 Transportation Conference; -Assist all 2016 Transportation Conference committees; -Continue development of all LTC 2016 publications, website, registration, e-commerce and mobile device development; -Continue maintenance of LTRC website; -Develop LTRC app for mobile device; -Assist Secretary's office in development of 4 promotional videos; -Continue to edit and distribute project capsules, technical summaries, final reports, and technical assistance reports; -Publish 2 Tech Today newsletters; -Photograph all LTRC events; and -Video all LTRC events.

Title:	**Support for Senior Project Courses**	**Project Status:**	**Ongoing**
Funding Source:	**STP: TT-Fed**	**Budget Category:**	**FHWA**

SIO:	**DOTDLT1000080**		Project Start Date:		7/1/2015
Research Project Number:	16-1TT		Completion Date	(original)	6/30/2016
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Samuel B. Cooper				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$37,500		**Total**		**$37,500**
	(revised)					
Est. Expended to Date				Salaries		
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		$37,500

PURPOSE AND SCOPE

To provide support for senior project engineering courses up to a maximum of $7,500 / university / year.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

One university participated in this program this reporting period:
-Louisiana Tech University

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

Continue to provide support for senior project engineering courses.

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	**Workforce Development**	**Project Status:**	**Ongoing**

Funding Source:	**STP: TT-Fed**	**Budget Category:**	**FHWA**

SIO:	**DOTDLT1000073**		Project Start Date:	7/1/2015
Research Project Number:	16-1WD		Completion Date (original)	6/30/2016
Research Agency:	LTRC		Completion Date (revised)	
Principal Investigator:	Mr. Samuel B. Cooper			

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$1,028,548		**Total**		**$1,028,548**
	(revised)					
Est. Expended to Date				Salaries		$1,018,548
FY 2014 - 2015 Budget				Equipment	(expendable)	$10,000
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

The purpose of this study is to provide for the strategic planning, program development and delivery management of the workforce development programs for the Louisiana Department of Transportation and Development (LADOTD) personnel. The scope of this study also includes the development, delivery and administration of the Louisiana Transportation Research Center's (LTRCs) transportation outreach program.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Transferred all training records to LEO/LSO;
-Revision of Structured Training Programs completed;
-Implemented 20 Structured Training Programs;
-Scheduled, registered, and subscribed employees for leadership, management, supervisory, computer training, NHI, CADD/GIS and other specialty courses;
-Completed 3 training videos for test procedures;
-237 construction certifications awarded;
-Implemented revised Soils Exploration-Shallow Borings web-based course; and
-Designed and implemented new training tracking site for industry employees.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Implement remaining Structured Training Programs;
-Implement Structured training Program tracking in LEO/LSO and train users;
-Continue to meet with principal customers to prioritize needs to develop training course, performance evaluations, and safe operating check lists;
-Continue to develop Construction, Materials, and Maintenance Courses; and
-Continue to develop web-based courses where appropriate.

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	**LTRC Student Program**	**Project Status:**	**Ongoing**

Funding Source:	**STP: TT-Fed**	**Budget Category:**	**FHWA**

SIO:	**DOTDLT1000084**		Project Start Date:		7/1/2015
Research Project Number:	16-2TT		Completion Date	(original)	6/30/2016
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Harold 'Skip' Paul				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$147,000		**Total**		**$147,000**
	(revised)					
Est. Expended to Date				Salaries		$147,000
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

To pay for salaries for undergraduate students employed to provide support to various Louisiana Transportation Center (LTRC) projects.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

Thirty (30) undergraduate students were employed by LTRC to provide support in fulfilling necessary job tasks on various LTRC projects.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

Continue to pay for salaries for undergraduate students employed to provide support to various LTRC projects.

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	**LADOTD CO-OP Program**	**Project Status:**	**Ongoing**

Funding Source:	**STP: TT-Fed**	**Budget Category:**	**FHWA**

SIO:	**DOTDLT1000083**	Project Start Date:		7/1/2015
Research Project Number:	16-COOP	Completion Date	(original)	6/30/2016
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Mr. Samuel B. Cooper			

BUDGET STATUS

Total Budget			**Estimated 2015-2016 Budget**		
Total Cost	(original)	$200,000	**Total**		**$200,000**
	(revised)				
Est. Expended to Date			Salaries		$200,000
FY 2014 - 2015 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		

PURPOSE AND SCOPE

The Louisiana Department of Transportation and Development (LADOTD) CO-OP program is a cooperative endeavor between the LADOTD and Louisiana Universities, providing practical experience to junior and senior level undergraduates through part-time employment in public transportation engineering work. This program is intended to enhance the educational process by providing opportunities for participants to explore their interest in transportation engineering through practical experience. This program also provides opportunities for LADOTD to evaluate participants of this program as potential employees.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-20 students participated in CO-OP at various LADOTD sections throughout Louisiana.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Place CO-OP approximately 30 students in various LADOTD Sections across the state;
-Continue end of semester presentations; and
-Retain students in CO-OP.

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	**AASHTO PONTIS Agreement**	**Project Status:**	**Ongoing**

Funding Source:	**STP: TT-Fed**	**Budget Category:**	**FHWA**

SIO:	**DOTDLT1000082**	Project Start Date:		7/1/2015
Research Project Number:	16-PONTIS	Completion Date	(original)	6/30/2016
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Mr. Samuel B. Cooper			

BUDGET STATUS

Total Budget			**Estimated 2015-2016 Budget**		
Total Cost	(original)	$125,000	**Total**		**$125,000**
	(revised)				
Est. Expended to Date			Salaries		
FY 2014 - 2015 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		$125,000

PURPOSE AND SCOPE

AASHTO PONTIS Agreement

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

AASHTO PONTIS Agreement

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

AASHTO PONTIS Agreement

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	**Technology Transfer Registration Fees**	**Project Status:**	**Ongoing**

Funding Source:	**STP: TT-Fed**	**Budget Category:**	**FHWA**

SIO:	**DOTDLT1000081**		Project Start Date:		7/1/2015
Research Project Number:	16-TTRF		Completion Date	(original)	6/30/2016
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Samuel B. Cooper				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$100,000		**Total**		**$100,000**
	(revised)					
Est. Expended to Date				Salaries		
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		$100,000

PURPOSE AND SCOPE

To provide cost effective transfer of technology and workforce development opportunities to Louisiana's parish and municipality public transportation and public works agencies through training, technical assistance and information dissemination.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

Provided cost effective transfer of technology and workforce development opportunities to Louisiana's parish and municipality public transportation and public works agencies through training, technical assistance and information dissemination.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

Continue to provide cost effective transfer of technology and workforce development opportunities to Louisiana's parish and municipality public transportation and public works agencies through training, technical assistance and information dissemination.

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	**Workforce Development Contracts**	**Project Status:**	**Ongoing**

Funding Source:	**STP: TT-Fed**	**Budget Category:**	**FHWA**

SIO:	**DOTDLT1000076**		Project Start Date:		7/1/2015
Research Project Number:	16-WDC		Completion Date	(original)	6/30/2016
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Samuel B. Cooper				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$3,438,462		**Total**		**$3,438,462**
	(revised)					
Est. Expended to Date				Salaries		$965,208
FY 2014 - 2015 Budget				Equipment	(expendable)	$125,000
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		$35,000
Est. FY Expenditure				Other		$2,313,254

PURPOSE AND SCOPE

The purpose of this study is to provide contractual services through federal, university and private sector suppliers for continuing education, professional development, technical skills, software, leadership, management, supervisory training. The scope of this project also includes providing individual registration fees for Louisiana Department of Transportation and Development (LADOTD) employees to attend workshops, courses and conferences to enhance their professional and technical development.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Member of TRB Committee ABG30;
-Member of TRB Committee ABG20;
-Member of TRAC and RIDES Advisory Board;
-Vice President of National Transportation Training Directors;
-Lead author on journal article "A measure of precision regarding procedural tasks of non-traditional, adult learners in an immersive virtual learning environment." Article accepted for publication in The International Journal of Transportation;
-FHWA Grant awarded in the amount of: $75,786. Implementation and evaluation of TRAC and RIDES Programs in Schools in the State of Louisiana. Federally funded grant. 8/1/2014-12/31/2014;
-Installation of MCU (multipoint control unit) this was bought and installed to connect all rooms at TTEC. The purpose was to eliminate the need for the controller, video switch and associated items needed to connect all rooms from a central location. Now all connections made to rooms via the CODECs located in the room and the MCU;
-With the installation of the new MCU, we replaced the old MCU that connected sites on the DOTD network. The new MCU has up to date software that enables us to send content along with HD video to districts. As the video equipment is replaced at the districts, they will be able to fully use all features that the new MCU offers;
-The new MCU will also be connected to the internet. This will allow us to have guest speakers from outside of DOTD to present or collaborate with engineers on the DOTD network;
-Installation of new video recorder. The out of date video recorder has been replaced with a network recorder. The new recorder is able to connect to all rooms in TTEC as with the old recorder. The new recorder can also connect to any video conferencing equipment at any District for recording of classes. The recorder is now able to be started by the presenter and does not have to have the AV person involved. The stream of the recorder can be seen by mobile devices as well as desktops;
-Digital video equipment has been purchased to replace all analog equipment in one of our classrooms. We are now in the process of programming the equipment and testing;
-Created webpage with LTRC Media Team for the leadership development program;
-Developing training videos for the leadership development institute;
-Statewide Transportation Plan Update (LA DOTD Office of Transportation Planning) October 2014 – Baton Rouge Marriott – Baton Rouge, LA. Sent out RFP and negotiated hotel for meeting space - 70 participants;
-Secured hotel contract for overnight hotel accommodations for the 2016 Louisiana Transportation Conference – February/March 2016 – Baton Rouge Hilton – Baton Rouge, LA 75 overnight rooms;
-Secured hotel contract for meeting space and overnight hotel accommodations for the 2016 Louisiana Transportation Conference - February/March 2016 – Belle of Baton Rouge Hotel – Baton Rouge, LA - 750 overnight rooms;
-Secured contract for meeting space for the 2016 Louisiana Transportation Conference February/March 2016 – Baton Rouge River Center - Baton Rouge, LA. Approximately 1300 participants;
-Southeastern Association of State Highway and Transportation Officials (SASHTO) 2014 Conference - August 23-27, 2014 - New Orleans Sheraton – New Orleans, LA. Approximately 1,100 participants and 90 vendors;
-2014 National Transportation Training Directors (NTTD) Conference October 26-30, 2015 – Marriott Shoals - Muscles Shoals, AL - 75 participants and 10 vendors;
-Semi Circular Bend Training Workshop (LTRC – Section 19) April 16, 2015 – TTEC Facility – Baton Rouge, LA Anticipated attendance: 55 participants;
-Tack Coat Best Practices Workshop May 20, 2015 – TTEC Facility – Baton Rouge, LA. AM Session – Anticipated attendance: 126 (total includes attendees and video conferencing) PM Session – Anticipated attendance: 30 (total includes attendees and video conferencing);
-Bridge Deck Non-Destructive Testing Seminar/Demonstration (LA DOTD – Section 51) June 9-10, 2015 – TTEC Facility – Baton Rouge, LA. Anticipated attendance: 15 participants;
-Precast Concrete Pavement Workshop (FHWA – LA Division and LA DOTD Section 24) June 16-17, 2015 – TTEC Facility – Baton Rouge, LA. Anticipated attendance: 50-60 participants;
-2015 – 2017 Louisiana Chapter of SGMP Board of Directors President;
-2015 – 2017 Louisiana Chapter of SGMP Board of Directors Secretary;
-Secretary to the Group Benefits Policy and Planning Board;
-Member of TRB Subcommittee B0002(1) (Transportation Research Thesaurus Subcommittee);
-Member of Eastern Transportation Knowledge Network;
-Member of Special Libraries Association Transportation Division; and
-Conducted 293+ classes and events - 4476 Participants.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES
-Conduct Louisiana Transportation Conference February-March, 2016 – Baton Rouge River Center – Baton Rouge, LA Approximately 1,200 participants and 75 vendors; -Conduct 5-Day National Transportation Training Directors conference in Salt Lake City, Utah for approximately 75 participants and 10 vendors; -Complete development of "Being a Change Agent" for Section 17, QCIP; -Complete development of "Crucial Conversations" (title to change) for Janice Williams, Office of Engineering; -41 total classes in the Leadership Development Institute with 615 students impacted; -Program and install the digital equipment being tested in room 123; -Upgrade software on Tandberg CODECs in all rooms; -Installation of a Tandberg CODEC in room 160. The signage software and programming will need to be upgraded in the near future; -Major software upgrade on recording and MCU equipment just recently purchased. This upgrade will be covered under normal service contract; -Planning renovations to all classrooms (from analog to digital); -Procure new laptops for TTEC; -Adding cameras to security system; and -Working with districts to upgrade VTC equipment.

State Funded
Research Program

CONTINUING RESEARCH

Title:	**I-10 Girder Repair Using Post-Tensioned Steel Rods and Carbon Fiber Composite Cables (CFCC)**	**Project Status:**	**Ongoing**
Funding Source:	**State: TT-Reg**	**Budget Category:**	**State**

SIO:	**30001020**		Project Start Date:		3/18/2013
Research Project Number:	13-4ST		Completion Date	(original)	3/17/2014
Research Agency:	LTRC		Completion Date	(revised)	3/16/2016
Principal Investigator:	Mr. Ching Tsai				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$60,000		**Total**		**$30,000**
	(revised)					
Est. Expended to Date				Salaries		$10,000
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)	$30,000		Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		$20,000

PURPOSE AND SCOPE

Monitor and study the behavior of the externally CFCC reinforced girders.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Construction was completed in July 2014;
-The contractor granted the Louisiana Department of Transportation and Development (LADOTD) to access the on-site data acquisition system on October 8, 2014;
-Set up a web based monitoring system in November 2014;
-Started collecting monitoring results on October 8, 2014; and
-Two of the sensors are not functional. Request the contractor the repair the unresponsive sensors.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Continue collecting data and analyze data;
-Report preliminary results to Project Review Committee (PRC); and
-Prepare the final report.

LTRC Annual Research Program

Fiscal Year 2015-2016

2015 RPIC PROBLEM STATEMENTS

FINAL RANKING	PROBLEM STATEMENT TITLE
1	Highway Construction Work Zone Safety Performance and Improvement in Louisiana
2	Retrofit of Existing Statewide Louisiana Safety Walk Bridge Barrier Railing Systems
3	Pipe Material Zones in Coastal Louisiana
4	Calibration Factors for HSM Intersection SPFs
5	When is the use of AST Interlayers Over Soil Cement Justifiable
6	Louisiana Trip Generation Manual
7	A Highway Construction Work Zone Mobility Impact Assessment Tool
8	Quality control / Quality Assurance on Base Course and Embankments using the Dynamic Cone Pentrometer
9	Estimating Average Daily Traffic Counts Using Cell Phone Data
10	Development of New Software Solutions for Pile Design in Louisiana
11	Radio-frequency Identification (RFID) Tagging for Material Tracking and Future Asset Management
12	Evaluation and Guidance of Planning-Level Cost Estimation
13	Reliable Early Opening Strength for Concrete Pavements and Patch Work
14	Develop a Cost Effective Perpetual Pavement Design and Evaluation of the Structural Coefficient of Asphalt Mixtures
15	Development of Geotechnical Manual for LADOTD
16	Development of a 4.75mm (No. 4) Nominal Maximum Size Mixture
17	Development of Prediction Models and Design Guides for RCC Pavements
18	Overheight Impact Avoidance and Incident Detection System
19	Development of Splices for Precrast Concrete Piles
20	Research and Recommend the Appropriate Type of Dredge Required to Dredge Louisiana's Coastal Ports
21	Mix Specification to Improve Roadway Density
22	Hurricane Evacuation Modeling Package (HEMP)
23	Enhancing Durability of Reinforced Concrete Elements in Louisiana Using Corrosion-Resistant FRP Bars
24	A State-of-the-Art Virtual Environment for Highway Work Zone Construction Safety Research, and Training
25	Pedestrians and Bicyclists Count
26	Feasibility and Advantages of Acceptance of Concrete Beyond 28 Days
27	The Potential Safety Impacts to the State Aviation Transportation System Through the use of Unmanned Aerial Systems (USA) Operations
28	Impermeable Treatments Over Cracked AC Pavements in High Water Table Areas
29	Geotechnical Asset Management
30	Development of a New Travel Time Reliability Measure as an Indicator of Level of Service
31	To Determine the Feasibility of Utilizing Aerial Drones as a Platform for Traffic Cameras
32	Field Implementation of Handheld FTIR Spectrometer for Polymer Content Determination and for Quality Control of RAP Mixes

Self-Generated Funded Research Program

CONTINUING RESEARCH

Title:	**Calibration of LRFD Geotechnical Axial (Tension and Compression) Resistance Factors (φ) for California**	**Project Status:**	**Ongoing**
Funding Source:	**CALTRANS**	**Budget Category:**	**Self-Generated**

SIO:	**DOTLT1000055**		Project Start Date:		1/16/2015
Research Project Number:	15-3GT		Completion Date	(original)	1/15/2017
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Murad Abu-Farsakh				

BUDGET STATUS

Total Budget			**Estimated 2015-2016 Budget**		
Total Cost	(original)	$70,598	**Total**		**$26,500**
	(revised)				
Est. Expended to Date		$20,000	Salaries		$26,500
FY 2014 - 2015 Budget			Equipment	(expendable)	
FY Funds	(original)	$25,000	Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure		$20,000	Other		

PURPOSE AND SCOPE

The objective of this research project is to recommend revisions to the California Amendments to the AASHTO LRFD Specifications and Caltrans technical documents pertaining to resistance factors used in design and evaluation of deep foundations.

To achieve the objectives of this study, geotechnical information, design report of deep foundation, and load test data, pile driving records and PDA etc. will be collected by working with the Caltrans Foundation Testing Branch (FTB). The collected data will be digitized and compiled into excel files using a standard template for further design capacity analysis including static analysis, dynamic and PDA. The measured nominal resistance can be determined using static load test data or PDA analysis depending on the available load test data. The obtained load test database will be grouped into several subgroups in according to their pile type, soil type, bearing type (axial compression or tension). If enough data is available, resistance factors for each classification group will be calibrated. The predicted and measured resistance will be determined according to the methods provided in the California Amendments. Statistical analyses will be performed to evaluate the performance of each design method. LRFD calibration of resistance factors will be performed using the calibration procedure outlined by the TRB transportation research circular No. E-C079. Each design method will be assessed for the safety and serviceability risks.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Conducted literature review to relevant to LRFD calibration of driven piles and drilled shafts;
-Started collecting drilled shaft cases from California and other states; and
-Started analyzing the predicted and measured load carrying capacity of drilled shafts.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES
-Continue literature review to relevant to LRFD calibration of driven piles and drilled shafts; -Continue collecting drilled shaft cases from California and other states; -Continue analyzing the predicted and measured load carrying capacity of drilled shafts; and -Prepare database for regression and reliability analysis.

Title:	**Performance of WMA Technologies: Stage II – Long-term Field Performance**	**Project Status:**	**Ongoing**
Funding Source:	**NCHRP**	**Budget Category:**	**Self-Generated**

SIO:	**30000545**		Project Start Date:		4/29/2011
Research Project Number:	12-4B		Completion Date	(original)	7/28/2016
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Louay Mohammad				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$103,796		**Total**		**$5,000**
	(revised)					
Est. Expended to Date		$98,544		Salaries		$5,000
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)	$8,000		Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure		$8,000		Other		

PURPOSE AND SCOPE

The objectives of this research are to identify the material and engineering properties of WMA pavements that are significant determinants of their long-term field performance, and recommend best practices for the use of WMA technologies.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

Conducted LWT tests from new and existing field projects as per the project test factorials.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

Continue LWT tests from new and existing field projects as per the project test factorials.

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	**Field Implementation of the Louisiana Interface Shear Strength Test**	**Project Status:**	**Ongoing**

Funding Source:	**NCHRP**	**Budget Category:**	**Self-Generated**

SIO:	**30001505**		Project Start Date:		8/9/2013
Research Project Number:	14-2B		Completion Date	(original)	8/8/2015
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Louay Mohammad				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$186,407		**Total**		**$90,000**
	(revised)					
Est. Expended to Date		$98,676		Salaries		$87,500
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)	$70,000		Equipment	(non-expendable)	
	(revised)			Travel		$2,500
Est. FY Expenditure		$70,000		Other		

PURPOSE AND SCOPE

The objective of this research is to evaluate the test method developed in NCHRP Project 9-40 in actual field projects to augment their potential implementation. These measurements will be used to validate the proposed test method and criteria, and to relate observed tack coat field performance to the outcomes of these tests. To achieve this objective, field projects will be selected across the United States to represent different climatic and traffic conditions and will be monitored for a period of twelve months. .

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Task 2: Conducted the approved experimental plan of Task 1; and
-Task 3: Monitored field performance.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Task 2: Continue the conduct of the approved experimental plan of Task 1; and
-Task 3: Monitor field performance.

Other
DOTD Funded Projects

Title:	**CORS 911: Continuously Operating Reference Stations for the Bayou Corne Sinkhole**	**Project Status:**	**Ongoing**
Funding Source:	**Emergency Fund**	**Budget Category:**	**Other DOTD Sections**

SIO:	**30000980**		Project Start Date:		3/18/2013
Research Project Number:	13-9GT		Completion Date	(original)	3/17/2014
Research Agency:	LSU		Completion Date	(revised)	9/30/2015
Principal Investigator:	Dr. Joshua Kent				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$350,785		**Total**		**$10,152**
	(revised)	$424,677				
Est. Expended to Date		$338,200		Salaries		$10,152
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)	$90,152		Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure		$80,000		Other		

PURPOSE AND SCOPE

The fundamental objective of this project is to provide long-term monitoring of portions of HWY-70 potentially vulnerable to the Assumption Parish sinkhole. The project includes fabrication, deployment, and maintenance of five (5) continuously operating reference stations (CORS) of GPS receivers and antennae designed to actively monitor and measure surface motions of the route and its bridges. If monitoring reveals movement, implementation of remedial actions may be warranted. However, no implementation activity is currently anticipated.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

Part I Principal Investigator:
-The CORS911 project provides real-time, 24/7 measurements along LA Hwy 70 near the Bayou Corne Sinkhole. Four stations have been collecting data for the last year. The data and reports are available via secure web access (for real-time) and as daily reports accessible via FTP. CORS 1-4 are located along the right-of-way of Highway 70 nearest the sinkhole in Assumption Parish. A fifth CORS site was installed in December 2014;
-CORS 1: Located in the right-of-way of Hwy70 at Bayou Corne, CORS1 was installed on Monday, April 1, 2013. Integrity monitors and reporting tools are active;
-CORS 2: Located in the southern right-of-way of Hwy70 at Texas Brine, CORS2 was installed on Tuesday, July 17, 2013. Integrity monitors and reporting tools are active;
-CORS 3: Located in the south right-of-way of Hwy70 at the Grand Bayou bridge, CORS3 was installed on Monday, April 8, 2013. Integrity monitors and reporting tools are active;
-CORS 4: Located in the north right-of-way of Hwy70 at the Bayou Choupique bridge, CORS4 was installed on Tuesday, April 9, 2013. Integrity monitors and reporting tools are active; and
-CORS 5: Located in the acquired servitude at the corner of Gumbo Street and Saucse Piquante Lane; CORS5 was installed on Monday, December 14, 2014. Integrity monitors and reporting tools are active.

ACTIVITY:
-Daily reports from the active CORS sites are published daily and provided online ftp://mimir.lsu.edu|anonymous:user@mimir.lsu.edu:2123). Reports cover the previous 24-hour, 72-hour, and 168-hour time periods;
-Credentials for securely accessing CORS911 sites via web site were distributed on 4/29/13. (http://loki.lsu.edu/trimblepivotweb);
-Email notification systems were established in Late October, 2013. Email alert and warning thresholds were coordinated with LADOTD monitoring and geotechnical advisory group;
-Robust geodetic analysis and post-processing is currently underway. Daily positional solutions are processed to provide a time-series;
-The project has installed five CORS along LA 70 to assist with the monitoring of the highway; and
-Efforts are also coordinated with the Emergency Operations Center (EOC) staff at the Louisiana Department of Transportation and Development (LADOTD) Headquarters regarding the alert thresholds, email notifications, and a website outlining all monitoring efforts by the LADOTD.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

Project is scheduled to end in Fiscal year 2015-2016, but may be extended based on the continuing problem of the sinkhole.

Title:	**Economic Evaluation of Applicants to the Port Construction and Development Priority Program**	**Project Status:**	**Ongoing**
Funding Source:	**Port Priority Program**	**Budget Category:**	**Other DOTD Sections**

SIO:	**30001180**		Project Start Date:		1/2/2013
Research Project Number:	13-10SS		Completion Date	(original)	7/1/2014
Research Agency:	LSU		Completion Date	(revised)	12/31/2015
Principal Investigator:	Dr. James Richardson				

BUDGET STATUS

Total Budget				**Estimated 2015-2016 Budget**		
Total Cost	(original)	$72,000		**Total**		**$24,000**
	(revised)	$146,117				
Est. Expended to Date		$72,000		Salaries		$24,000
FY 2014 - 2015 Budget				Equipment	(expendable)	
FY Funds	(original)	$48,000		Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

The objective of the project is to perform research and analysis of the port priority program application to ensure the State is receiving the required minimum rate of return on the State's investment.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Reviewed applications.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Preliminary meetings with project sponsoring ports;
-Preliminary review of applications;
-Benefit Cost Validity Check;
-Benefit Cost Calculations; and
-Development of Quarterly Reports.

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	Louisiana Local Road Safety Program	Project Status:	Ongoing

Funding Source:	Safety	Budget Category:	Other DOTD Sections

SIO:	DOTDLT1000077	Project Start Date:		1/1/2015
Research Project Number:	15-LRSP	Completion Date	(original)	12/31/2016
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Dr. Marie Walsh			

BUDGET STATUS

Total Budget			Estimated 2015-2016 Budget		
Total Cost	(original)	$287,280	**Total**		**$287,280**
	(revised)				
Est. Expended to Date			Salaries		$113,490
FY 2014 - 2015 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		$8,687
Est. FY Expenditure			Other		$165,103

PURPOSE AND SCOPE

To work in cooperation with LADOTD's Highway Safety Office to implement and manage the Local Road Safety Program (LRSP) in addition to providing support to other statewide road safety initiatives at both the state and local levels.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Coordinated the application process for the project funding and increased the number of applications by 150% by changing application schedule and promoting the new process;
-Competed in a national application and selection process of FHWA's Accelerating Safety Activity Project and received funding for a Louisiana local road peer exchange;
-Participated in the state Strategic Highway Safety Plan Implementation Team, Focus Area Team and Regional Safety Coalitions as a voting member and/or for technical assistance;
-Served as a member of the Louisiana Traffic Records Coordinating Committee and on the Executive Committee;
-Worked with DOTD Sections to facilitate the roadway network certification effort and collection of Fundamental Safety Data Elements for local roads;
-Assisted LTRC in implementing new Louisiana Center for Transportation Safety; and
-Improved and streamlined LRSP project management and tracking using DOTD systems and supporting databases.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES
-Implement pilot project for systemic improvement on horizontal curves based on the "Top 20 Parishes" data analysis using risk-based factors coupled with crash data and traffic volume in partnership with DOTD and the Louisiana Highway Safety Research Group; -Engage local infrastructure safety stakeholders in the SHSP planning at the regional coalition level via the planned LRSP peer exchange and scheduled coalition meetings; -Expand marketing, outreach and advocacy efforts at the regional and local levels and include a safety message in all communication with local stakeholders; -Providing assistance to LPA's in developing city or parish local road safety plans as part of the DOTD retainer contracts; -Conduct 20% more local road safety assessment and field visits across the state; -Participate as a member of the Louisiana Center for Transportation Safety Team; and -Provide local input to the SHSP update process.

LTRC Annual Research Program
Fiscal Year 2015-2016

Title:	FHWA Safety Transfer Fund Support for LCTS	Project Status:	Proposed
Funding Source:	**Safety**	**Budget Category:**	**Other DOTD Sections**

SIO:			Project Start Date:		7/1/2015
Research Project Number:	16-1STFS		Completion Date	(original)	12/31/2017
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dortha Cummins				

BUDGET STATUS

Total Budget			**Estimated 2015-2016 Budget**		
Total Cost	(original)	$1,263,287	**Total**		**$482,451**
	(revised)				
Est. Expended to Date			Salaries		$371,451
FY 2014 - 2015 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	$6,000
	(revised)		Travel		$25,000
Est. FY Expenditure			Other		$80,000

PURPOSE AND SCOPE

The Louisiana Transportation Safety Center will provide a structure for Louisiana's research universities to collaborate on safety related projects and leverage resources. Supported by research and technology transfer, the Safety Center will provide enhanced technical assistance to federal, state and local transportation agencies and will be available to work to meet other state and regional needs. An expanded training and education program which includes the new multi-disciplinary highway safety professional curriculum being developed by the Transportation Research Board will be made available to transportation professionals on a national basis. The Louisiana Department of Transportation and Development (LADOTD), Louisiana Transportation Research Center (LTRC) and the Transportation Training and Education Center (TTEC) in Baton Rouge, Louisiana will serve as the nucleus for these activities.

FISCAL YEAR 2014 - 2015 ACCOMPLISHMENTS

-Staffed the LCTS;
-Working closely with LTAP to transition safety related activities to the LCTS;
-Surveyed SHSP Regional Coalitions for training and workforce development needs;
-Worked with LADOTD Highway Safety to conduct a GIS Peer Exchange;
-Worked with LADOTD Highway Safety to present a poster session at the 2015 TRB Conference;
-Co-chaired the Strategic Highway Safety Plan Occupant Protection Statewide Emphasis Area;
-Participated in the state Strategic Highway Safety Plan Implementation Team, Focus Area Teams and Regional Safety Coalitions as a voting member and/or for technical assistance; and
-Moved the Local Road Safety Program (LRSP) into the LCTS

LRSP Accomplishments
-Coordinated the application process for the project funding and increased the number of applications by 150% by changing application schedule and promoting the new process;
-Competed in a national application and selection process of FHWA's Accelerating Safety Activity Project and received funding for a Louisiana local road peer exchange;
-Participated in the state Strategic Highway Safety Plan Implementation Team, Focus Area Team and Regional Safety Coalitions as a voting member and/or for technical assistance;
-Served as a member of the Louisiana Traffic Records Coordinating Committee and on the Executive Committee; and
-Worked with DOTD Sections to facilitate the roadway network certification effort and collection of Fundamental Safety Data Elements for local roads.

FISCAL YEAR 2015-2016 PROPOSED ACTIVITIES

-Develop Strategic Plan for LCTS;
-Develop Business Plan for LCTS
-Develop Workforce Development Plan for LCTS; and
-Expand marketing and outreach of LCTS across state.

Goals for LRSP
-Implement pilot project for systemic improvement on horizontal curves based on the "Top 20 Parishes" data analysis using risk-based factors coupled with crash data and traffic volume in partnership with DOTD and the Louisiana Highway Safety Research Group;
-Engage local infrastructure safety stakeholders in the SHSP planning at the regional coalition level via the planned LRSP peer exchange and scheduled coalition meetings;
-Expand marketing, outreach and advocacy efforts at the regional and local levels and include a safety message in all communication with local stakeholders;
-Provide assistance to LPA's in developing city or parish local road safety plans as part of the DOTD retainer contracts;
-Conduct 20% more local road safety assessment and field visits across the state; and
-Provide local input to the SHSP update process.