

# **LTRC Annual Research Program**

*Fiscal Year July 1, 2013 - June 30, 2014*

**FHWA Part II SPR Research Program**

**FAP Number SPR-0010(34)**

**&**

**FHWA IBRD Funded Research Program**

**&**

**FHWA LTAP Funded Program**

**&**

**FHWA STP Funded Program**

**&**

**State Funded Research Program**

**&**

**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 2013





U.S. Department  
of Transportation

Federal Transit Administration  
819 Taylor Street, Suite 8A36  
Fort Worth, TX 76102  
817-978-0550  
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Federal Highway Administration  
5304 Flanders Drive, Suite A  
Baton Rouge, LA 70808  
225-757-7600  
225-757-7601 (Fax)

June 3, 2013

**In Reply Refer To:**  
HDA-LA

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

Subject: FY 2014 SPR 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 2014 SPR 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. Jamie Setze, FHWA at (225)757-7623.

Sincerely yours,

**Joe Bloise**

Joe A. Bloise  
Acting Division Administrator

Digitally signed by Joe Bloise  
DN: cn=Joe Bloise, o, ou,  
email=joe.bloise@dot.gov, c=US  
Date: 2013.06.04 07:53:47 -05'00'





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*Research, Technology Transfer, Education & Training*

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May 15, 2013

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

Attention: Ms. Mary Stringfellow

**RE: FY 2013-2014 Louisiana Transportation Research Center Work Program**

Dear Mr. Bolinger:

Enclosed please find the FY 2013-2014 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: Mr. Richard Savoie  
Mr. Mark Morvant  
Dr. Zhongie Zhang  
Mr. Bill King  
Mr. Sam Cooper



# 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	Pooled Fund External (Other Lead State)

## **Project Status**

A	Active
P	Proposed
RFP	Request for Proposal





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# FHWA SPR Work Program

## Part II

FAP Number SPR-0010(34)



## FHWA Funding

<b>SPR Research Budget Recap</b>	<b>Total</b>
Administrative Budget	\$775,000
Research Support Studies Budget	\$1,655,000
Active Studies Budget	\$3,443,260
Proposed Studies Budget	\$2,009,665
Pooled Fund Lead State Studies Budget	\$370,105
<b>Total SPR Budget</b>	<b>\$8,253,030</b>

<b>SPR External Collaboration Budget Recap</b>	<b>Total</b>
Pool Funded Studies	\$110,000
TRB Correlations	\$124,926
NCHRP	\$759,441
AASHTO Site Manager Support	\$250,000
<b>Total SPR External Collaboration Budget</b>	<b>\$1,244,367</b>

<b>IBRD Budget Recap</b>	<b>Total</b>
Active Studies Budget	\$229,319
Proposed Studies Budget	\$0
<b>Total IBRD Budget</b>	<b>\$229,319</b>

## FHWA Funding

LTAP Budget Recap	Total
LTAP	\$588,079
LTAP Program Total	\$588,079

STP: Technology Transfer Program Budget Recap	Total
Technology Transfer Program and Operations	\$1,269,941
Workforce Development Program	\$4,728,595
Student Support Programs	\$310,000
Total STP Budget	\$6,308,536

## State Funding

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State Budget Recap	Total
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Active Studies Budget	\$24,000
Proposed Studies Budget	\$0
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Total State Budget	\$24,000
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## Federal Funding

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Federal Budget Recap	Total
Active Studies Budget	\$10,000
Proposed Studies Budget	\$0
Total Federal Budget	\$10,000
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## Self-Generated Funding

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Self-Generated Budget Recap	Total
Active Studies Budget	\$324,584
Proposed Studies Budget	\$51,543
Total Self-Generated Budget	\$376,127
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## Other DOTD Sections Funding

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Other DOTD Sections Budget Recap	Total
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Active Studies Budget	\$587,659
Proposed Studies Budget	\$0
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Total Other DOTD Sections Budget	\$587,659
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# LTRC ANNUAL RESEARCH PROGRAM

Administrative

FISCAL YEAR 2013-2014

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.
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## Project Type: Administrative

SPR: TT-Fed/TT-Reg	A	ADM	30001386	14-1PM	\$775,000	\$775,000	LTRC	Mark Morvant	Program Management	7/1/2013	6/30/2014		C-2
					<b>\$775,000</b>	<b>\$775,000</b>	<b>ADMINISTRATIVE BUDGET TOTALS</b>						

## Project Type: Research Support

SPR: TT-Fed/TT-Reg	A	RS	30001387	14-1EQM	\$330,000	\$330,000	LTRC	Mark Morvant	Equipment Management	7/2/2013	6/30/2014		C-3
SPR: TT-Fed/TT-Reg	A	RS	30001388	14-1LFT	\$100,000	\$100,000	LTRC	Mark Morvant	Research Laboratory and Field Test Support	7/1/2013	6/30/2014		C-5
SPR: TT-Fed/TT-Reg	A	RS	30001389	14-1NPE	\$60,000	\$60,000	LTRC	Mark Morvant	New Products Evaluation	7/2/2013	6/30/2014		C-6
SPR: TT-Fed/TT-Reg	A	RS	30001391	14-1TA	\$340,000	\$340,000	LTRC	Mark Morvant	Technical Assistance	7/1/2013	6/30/2014		C-7
SPR: TT-Fed/TT-Reg	A	RS	30001392	14-1TRS	\$445,000	\$445,000	LTRC	Mark Morvant	Technical Research Surveillance	7/1/2013	6/30/2014		C-9
SPR: TT-Fed/TT-Reg	A	RS	30001393	14-1TTRI	\$380,000	\$380,000	LTRC	Mark Morvant	Technology Transfer and Research Implementation	7/1/2013	6/30/2014		C-10
					<b>\$1,655,000</b>	<b>\$1,655,000</b>	<b>RESEARCH SUPPORT BUDGET TOTALS</b>						

**LTRC ANNUAL RESEARCH PROGRAM**  
**SPR: TT-Fed/TT-Reg FISCAL YEAR 2013-2014**

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.
<b>Project Type: Geotechnical</b>													
SPR: TT-Fed/TT-Reg	A	GT	30000116	05-1GT	\$42,000	\$310,000	LTRC	Murad Abu-Farsakh	Field Demonstration of New Bridge Approach Slab Designs and Performance	8/1/2008	8/1/2011	9/30/2014	C-13
SPR: TT-Fed/TT-Reg	A	GT	30000480	06-3GT	\$94,329	\$264,878	LTRC	Gavin Gautreau	Field Evaluation of Roller Integrated Intelligent Compaction Monitoring	11/1/2011	10/31/2013		C-14
SPR: TT-Fed/TT-Reg	A	GT	30000114	08-3GT	\$6,000	\$380,951	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	12/31/2014	C-16
SPR: TT-Fed/TT-Reg	A	GT	30000111	10-1GERL	\$211,000	\$523,000	LTRC	Murad Abu-Farsakh	LTRC Support for Geotechnical Research at the Geotechnical Engineering Research Laboratory (GERL)	7/1/2010	6/30/2015		C-17
SPR: TT-Fed/TT-Reg	A	GT	30000099	10-3GT	\$41,630	\$193,804	LTRC	Khalil Hanifa	Design Values of Resilient Modulus of Stabilized and Non-stabilized Base	9/1/2010	2/29/2012	12/31/2013	C-18
SPR: TT-Fed/TT-Reg	A	GT	30000661	11-1GT	\$102,400	\$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-19
SPR: TT-Fed/TT-Reg	A	GT	30000134	11-2GT	\$84,000	\$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		C-21
SPR: TT-Fed/TT-Reg	A	GT	30000135	11-3GT	\$104,000	\$486,370	LTRC	Murad Abu-Farsakh	Accelerated Load Testing of Geosynthetic Base Reinforced Pavement Test Sections	12/1/2010	5/31/2012	12/31/2013	C-23
SPR: TT-Fed/TT-Reg	A	GT	30000728	13-2GT	\$19,691	\$77,839	LTRC	Gavin Gautreau	Implementation of Slag Stabilized Blended Calcium Sulfate (BCS) in a Pavement Structure	7/1/2012	6/30/2013	9/30/2013	C-25
SPR: TT-Fed/TT-Reg	A	GT	30001220	13-7GT	\$16,700	\$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-26
					<b>\$721,750</b>	<b>\$3,071,229</b>	<b>GEOTECHNICAL BUDGET TOTALS</b>						

**Project Type: Pavements**

SPR: TT-Fed/TT-Reg	A	P	30000141	10-1ALF	\$550,000	\$1,730,000	LTRC	Zhong Wu	Management and Operation of the Pavement Research Facility	7/1/2009	6/30/2015		C-27
SPR: TT-Fed/TT-Reg	A	P	30000164	10-3P	\$2,840	\$202,265	LTRC	Leticia Santos da Rocha Courville	LED Traffic Signal Lifetime Management System	11/1/2010	7/31/2013	6/30/2015	C-28
SPR: TT-Fed/TT-Reg	A	P	30000166	10-4P	\$18,905	\$267,395	ULL	Mohammad Jamal Khattak	Development of Cost-Effective Pavement Treatment Selection and Treatment Performance Models	9/1/2010	6/30/2013		C-29
SPR: TT-Fed/TT-Reg	A	P	30000160	11-3P	\$72,987	\$295,789	LTRC	Mark Martinez	The Rideability of a Deflected Bridge Approach Slab (LTRC Project 02-2GT Continuation: Phase II)	4/1/2011	3/31/2014		C-31
SPR: TT-Fed/TT-Reg	A	P	30000610	12-11P	\$104,807	\$263,502	LTRC	Mark Martinez	Field Validation of Equivalent Modulus for Stabilized Subgrade Layer	5/1/2012	4/30/2014		C-33
SPR: TT-Fed/TT-Reg	A	P	30000607	12-1P	\$72,063	\$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-34
SPR: TT-Fed/TT-Reg	A	P	30000425	12-2P	\$97,374	\$329,685	LTRC	Kevin Gaspard	Assessment of Environmental, Seasonal and Regional Variations in Pavement Base and Subgrade Properties	9/1/2011	8/31/2013	6/30/2015	C-35

LTRC ANNUAL RESEARCH PROGRAM  
SPR: TT-Fed/TT-Reg FISCAL YEAR 2013-2014

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.
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Project Type: Pavements (cont.)

SPR: TT-Fed/TT-Reg	A	P	30000729	12-3P	\$74,000	\$200,000	LTRC	Zhong Wu	Minimizing Shrinkage Cracking in Cement-Stabilized Bases Through Micro-Cracking	11/1/2012	4/30/2016		C-36
SPR: TT-Fed/TT-Reg	A	P	30000608	12-4P	\$25,500	\$160,231	LTRC	Zhong Wu	Development of DARWin-ME Design Guideline for Louisiana Pavement Design	2/1/2012	8/1/2013		C-37
SPR: TT-Fed/TT-Reg	A	P	30000609	12-5P	\$85,000	\$217,957	LTRC	Zhong Wu	Evaluation of DOT Aggregate Friction Rating Table by Field Measurements	2/1/2012	2/1/2015		C-38
SPR: TT-Fed/TT-Reg	A	P	30000682	12-7P	\$154,000	\$363,959	LTRC	Zhong Wu	Roller Compacted Concrete Over Soil Cement Under Accelerated Loading	5/1/2012	4/30/2014		C-39
					<b>\$1,257,476</b>	<b>\$4,372,242</b>	<b>PAVEMENTS BUDGET TOTALS</b>						

Project Type: Bituminous

SPR: TT-Fed/TT-Reg	A	B	30000117	07-1B	\$10,000	\$480,980	LTRC	Louay Mohammad	Evaluation of Warm Mix Asphalt Technology in Flexible Pavements	3/15/2009	8/31/2013		C-40
SPR: TT-Fed/TT-Reg	A	B	30000112	10-1EMCRF	\$130,000	\$345,000	LTRC	Louay Mohammad	Pavement Materials Research Using Special Equipment at the Engineering Materials Characterization Research Facility	7/1/2009	6/30/2015		C-41
SPR: TT-Fed/TT-Reg	A	B	30000221	10-4B	\$94,200	\$299,433	LTRC	Louay Mohammad	Development of Performance Based Specifications for Louisiana Asphalt Mixtures	4/1/2011	3/31/2014		C-42
SPR: TT-Fed/TT-Reg	A	B	30000167	11-1B	\$14,788	\$171,788	LTRC	Md. Sharear Kabir	Validity of Multiple Stress Creep Recovery Test for DOT Asphalt Binder Specification	9/1/2010	6/30/2012	9/30/2013	C-43
SPR: TT-Fed/TT-Reg	A	B	30000163	11-2B	\$19,880	\$154,880	LTV	Nazimuddin M	Evaluation of Dynamic Shear Rheometer Tests for Emulsions	9/15/2010	7/14/2012	11/14/2013	C-44
SPR: TT-Fed/TT-Reg	A	B	30000220	11-3B	\$124,000	\$263,975	LTRC	Samuel B. Cooper	Testing and Analysis of LWT and SCB Properties of Asphaltic Concrete Mixtures	4/1/2011	3/31/2013	12/31/2013	C-46
SPR: TT-Fed/TT-Reg	A	B	30001080	12-3B	\$136,422	\$238,645	LSU	William H. Daly	Chemical Characterization of Asphalts Related to their Performance	12/1/2012	11/1/2014		C-47
					<b>\$529,290</b>	<b>\$1,954,701</b>	<b>BITUMINOUS BUDGET TOTALS</b>						

Project Type: Structures

SPR: TT-Fed/TT-Reg	A	ST	30000118	10-4ST	\$30,073	\$309,117	Ocean Engineering Associates, Inc.	D. Max Sheppard	Development of Wave and Surge Atlas for the Design and Protection of Coastal Bridges in South	5/2/2011	10/1/2013		C-48
SPR: TT-Fed/TT-Reg	A	ST	30000138	10-5ST	\$100,000	\$211,919	Jannay, Wis, Associates, Inc.	Jonathan McGormley	Developing Prestressed Girder Transportation Guidelines	5/2/2011	9/1/2012	6/30/2014	C-50
SPR: TT-Fed/TT-Reg	A	ST	30000546	12-1ST	\$26,350	\$61,553	LSU	Ayman Okell	Data Collection and Evaluation of Continuity Detail for John James Audubon Bridge #2	1/3/2012	1/2/2014		C-51
SPR: TT-Fed/TT-Reg	A	ST	30000724	12-3ST	\$9,337	\$31,544	UNO	Vijaya Gopu	Morganza Floodway Bridge Bent Repair using Carbon Fiber Reinforced Polymers (CFRP)	6/1/2012	6/30/2014		C-52
					<b>\$165,760</b>	<b>\$614,133</b>	<b>STRUCTURES BUDGET TOTALS</b>						

# LTRC ANNUAL RESEARCH PROGRAM

SPR: TT-Fed/TT-Reg

FISCAL YEAR 2013-2014

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.
<b>Project Type: Special Studies</b>													
SPR: TT-Fed/TT-Reg	A	SS	30000125	10-1PLAN	\$77,000	\$358,462	LTRC	Chester Wilmot	LTRC Proposal for the Support of Research and Development in Transportation Planning	7/1/2010	6/30/2015		C-53
SPR: TT-Fed/TT-Reg	A	SS	30000140	10-6SS	\$11,069	\$124,178	LSU	Sherif Ishak	Establishing an Intelligent Transportation Systems (ITS) Lab at LTRC (Phase II)	8/20/2010	11/19/2011	8/19/2013	C-55
SPR: TT-Fed/TT-Reg	A	SS	30000700	12-1AD	\$40,000	\$30,900	LTRC	Harold 'Skip' Paul	Administration of LSU Partnership with the National Center for Intermodal Transportation for Economic Competitiveness	3/1/2012	12/31/2013		C-57
SPR: TT-Fed/TT-Reg	A	SS	30000605	12-2SS	\$64,999	\$149,999	LSU	Hak-Shul Shin	History of the Implementation of AASHTO and Louisiana DOTD Road Design Standards	8/1/2012	1/31/2014		C-58
SPR: TT-Fed/TT-Reg	A	SS	30000603	12-3SA	\$15,500	\$25,500	LSU	Brian Wolshon	DOTD Support for UTC Project: Calibration of the Louisiana Highway Safety Manual	7/1/2012	12/31/2013		C-60
SPR: TT-Fed/TT-Reg	A	SS	30000544	12-4SA	\$13,903	\$41,708	LSU	Helmut Schneider	DOTD Support for UTC Project: Development of a Tool for Documenting, Tracking, Recording, and Analyzing Improvements to Intersection Sites and Roadway	7/1/2012	12/31/2013		C-62
SPR: TT-Fed/TT-Reg	A	SS	30000606	12-4SS	\$46,000	\$51,000	UNO	John Renne	DOTD Support for UTC Project: Development of Minimum State Requirements for Local Growth Policies	7/1/2012	12/31/2013		C-63
SPR: TT-Fed/TT-Reg	A	SS	30000760	13-1SA	\$39,367	\$39,367	LSU	Sherif Ishak	DOTD Support for UTC Project: Distracted Driving and Associated Crash Risks		12/31/2013		C-65
SPR: TT-Fed/TT-Reg	A	SS	30000762	13-3SS	\$11,849	\$11,849	LSU	Peter Kelle	DOTD Support for UTC Project: Development of Performance Measurement for Freight Management	7/1/2012	12/31/2013		C-67
SPR: TT-Fed/TT-Reg	A	SS	30001140	13-4SS	\$36,000	\$89,609	LTU	Aziz Saber	Highway for Life Demonstration Project: La 511 (70th Street)	1/15/2013	6/14/2015		C-68
SPR: TT-Fed/TT-Reg	A	SS	30000763	13-5SS	\$17,795	\$53,386	LTRC	Chester Wilmot	DOTD Support for UTC Project: Improving Freight Crash Incident Management	7/1/2012	12/31/2013		C-70
SPR: TT-Fed/TT-Reg	A	SS	30000764	13-6SS	\$4,452	\$12,735	LSU	Jared Llorens	DOTD Support for UTC Project: Economic Impact Analysis of Short Line Railroads in the State of Louisiana	7/1/2012	12/31/2013		C-71
SPR: TT-Fed/TT-Reg	A	SS	30000765	13-7SS	\$18,500	\$27,000	UNO	James Amdal	DOTD Support for UTC Project: Use of Containers to Carry Bulk and Breakbulk Commodities and its Impact on Gulf Region Ports and International Trade	7/1/2012	12/31/2013		C-73
SPR: TT-Fed/TT-Reg	A	SS	30000766	13-8SS	\$22,667	\$34,000	UNO	Asaf Ashar	DOTD Support for the UTC Project: The Impact of Modifying Jones Act on the US and Louisiana	7/1/2012	12/31/2013		C-74
					<b>\$419,101</b>	<b>\$1,049,693</b>	<b>SPECIAL STUDIES BUDGET TOTALS</b>						

LTRC ANNUAL RESEARCH PROGRAM

SPR: TT-Fed/TT-Reg FISCAL YEAR 2013-2014

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.
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Project Type: Special Studies (Cont.)

SPR: TT-Fed/TT-Reg	A	C	30000680	12-4C	\$40,051	\$124,096	LTRC	Tyson Rupnow	Evaluation of Portland Cement Concrete with Internal Curing Capabilities	5/1/2012	10/30/2013		C-76
SPR: TT-Fed/TT-Reg	A	C	30000681	12-5C	\$37,151	\$119,096	LTRC	Tyson Rupnow	Comparison of Conventional and Self-Consolidating Concrete for Drilled Shaft Construction	5/1/2012	10/30/2013		C-77
SPR: TT-Fed/TT-Reg	A	C	30001122	13-1C	\$8,668	\$58,271	LTRC	Patrick Icenogle	Evaluation of MII-SCAN-T2 for Thickness Quality Control for PCC and HMA Pavements	1/1/2013	12/31/2013		C-78
					\$85,870	\$301,463	CONCRETE BUDGET TOTALS						

Project Type: Other

SPR: TT-Fed/TT-Reg	A	Other	30000169	07-1AD	\$264,013	\$1,881,239	UNO	Vijaya Gopu	Administration of LTRC External Funding Programs	1/1/2008	6/30/2009	6/30/2015	C-79
					\$264,013	\$1,881,239	OTHER BUDGET TOTALS						
					\$3,443,260	\$13,244,700	SPR: TT-FED/TT-REG ACTIVE BUDGET TOTALS						

**LTRC ANNUAL RESEARCH PROGRAM**  
**SPR: TT-Fed/TT-Reg FISCAL YEAR 2013-2014**

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	P	GT		13-3GT	\$45,000	\$150,000	LTRC	Murad Abu-Farsakh	Finite Element Analysis of the Lateral Load Test on Battered Pile Group at I-10 Twin Span Bridge	10/1/2012			C-81
SPR: TT-Fed/TT-Reg	P	GT	30000981	13-5GT	\$43,000	\$248,915	LTRC	Murad Abu-Farsakh	Monitoring of In-Service Geosynthetic Reinforced Soil (GRS) Bridge Abutments in Louisiana	6/1/2013			C-83
SPR: TT-Fed/TT-Reg	P	GT		13-6GT	\$95,000	\$150,000			Development of LADOTD Standards for GPS Elevation Accuracy	8/31/2012			C-84
SPR: TT-Fed/TT-Reg	P	GT	30001424	14-1GT	\$80,000	\$90,000			Calibration of Region-Specific Gates Equation for LRFD	7/1/2013	8/31/2014		C-85
SPR: TT-Fed/TT-Reg	P	GT	30001425	14-2GT	\$50,000	\$50,000			Predicting Driven Pile Behavior Within Pre-bored Soil - Phase I	7/1/2013	3/31/2014		C-86
SPR: TT-Fed/TT-Reg	P	GT		14-3GT	\$75,000	\$150,000			Geotechnical Information Database, Phase 3	7/1/2013			C-87
					\$388,000	\$838,915	GEOTECHNICAL BUDGET TOTALS						
Project Type: Pavements													
SPR: TT-Fed/TT-Reg	P	P	30001397	13-1TIRE	\$30,000	\$30,000	Southern University	Quinghao Meng	A Smart Asphalt Sealant	7/1/2013	6/30/2014		C-88
SPR: TT-Fed/TT-Reg	P	P		14-1P	\$50,000	\$250,000	LTRC	Kevin Gaspard	Investigation of Portland Cement Concrete Pavement Rubblization over Weak Subgrades	11/1/2013	11/1/2016		C-89
SPR: TT-Fed/TT-Reg	P	P		14-2P	\$30,000	\$50,000	LTRC	Kevin Gaspard	Assessment of Continuous Deflection Measurement Devices in Louisiana	7/1/2013	6/30/2015		C-90
SPR: TT-Fed/TT-Reg	P	P		14-3P	\$30,000	\$50,000	LSU	Mostafa Elseifi	Support Study for Assessment of Continuous Deflection Measurement Devices in Louisiana	2/3/2014	6/30/2015		C-91
					\$140,000	\$380,000	PAVEMENTS BUDGET TOTALS						
Project Type: Bituminous													
SPR: TT-Fed/TT-Reg	P	B		12-1B	\$105,000	\$205,000	LTRC	Louay Mohammad	Evaluation Of Asphalt Mixtures Containing Recycled Asphalt Shingles	7/1/2013	12/31/2015		C-92
SPR: TT-Fed/TT-Reg	P	B		12-2B	\$123,000	\$275,000	LTRC	Louay Mohammad	Develop Field Analysis Procedures for Asphalt Mixtures Containing High-RAP Contents and/or RAS	7/1/2013	12/31/2015		C-93
SPR: TT-Fed/TT-Reg	P	B		13-1B	\$80,000	\$300,000	LTRC	Louay Mohammad	Durability and Environmental Performance of Photocatalytic Asphalt Pavements: Field Study	10/1/2012			C-95
SPR: TT-Fed/TT-Reg	P	B	30001398	13-2TIRE	\$30,000	\$30,000	ULL	William Chirdon	Assessment of the Mechanical Properties of Structural Composites from Algae-Based Binders	7/1/2013	6/30/2014		C-96
SPR: TT-Fed/TT-Reg	P	B	30001399	13-3TIRE	\$30,000	\$30,000	LSU	Daniel Hayes	Development of Nanostructured, Functionalized Catalysts for Production of Long Chain Asphalt Binders from Renewable Biomass	7/1/2013	6/30/2014		C-97



**LTRC ANNUAL RESEARCH PROGRAM**  
**SPR: TT-Fed/TT-Reg FISCAL YEAR 2013-2014**

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 (Cont.)													
SPR: TT-Fed/TT-Reg	P	B		14-1B	\$135,000	\$285,000	LTRC	Louay Mohammad	Effects of Temperature Segregation on the Densification and Mechanistic Properties of Asphalt Mixtures				C-98
SPR: TT-Fed/TT-Reg	P	B		14-1SPMT	\$50,000	\$50,000	LTRC	Louay Mohammad	Center for Sustainable Pavement Materials and Technologies	7/1/2013	6/30/2016		C-99
					\$553,000	\$1,175,000	BITUMINOUS BUDGET TOTALS						
Project Type: Structures													
SPR: TT-Fed/TT-Reg	P	ST		13-1ST	\$40,000	\$75,000			Feasibility for Bridge Monitoring Network for Louisiana Bridges	12/1/2012			C-101
SPR: TT-Fed/TT-Reg	P	ST	30001123	13-2ST	\$75,000	\$200,000			Live Load Monitoring of the I-10 Twin Span Bridge	12/1/2012			C-102
SPR: TT-Fed/TT-Reg	P	ST		14-1ST	\$50,000	\$250,000			Evaluating Louisiana New Continuity Detail for Girder Bridges	7/1/2013			C-103
SPR: TT-Fed/TT-Reg	P	ST		14-2ST	\$50,000	\$150,000			Development of A Sustainable UHPC Bridge Decks For Movable Bridges	7/1/2013			C-104
					\$215,000	\$675,000	STRUCTURES BUDGET TOTALS						
Project Type: Special Studies													
SPR: TT-Fed/TT-Reg	P	SS	30001501	12-1SA	\$50,000	\$50,000	LTRC		Louisiana Transportation Safety Center	7/1/2012			C-105
SPR: TT-Fed/TT-Reg	P	SS	30000604	12-1SS	\$15,000	\$33,976	LSU	Sherif Ishak	DOTD Support for UTC Project: Traffic Counting using Existing Video Detection Cameras	7/1/2011			C-106
SPR: TT-Fed/TT-Reg	P	SS	30001396	13-2SS	\$75,263	\$104,885	LTRC	Chester Wilmot	DOTD Support for UTC Project: Travel Time Estimation Using Bluetooth	7/1/2013	6/30/2015		C-108
SPR: TT-Fed/TT-Reg	P	SS	30001400	13-4TIRE	\$30,000	\$30,000	LSU	Supratik Mukhopadhyay	Video Analytics for Effective Traffic Operations	7/1/2013	6/30/2014		C-110
SPR: TT-Fed/TT-Reg	P	SS	30001390	14-1SA	\$25,000	\$50,000	LSU	Helmut Schneider	DOTD Support For UTC Project: Drugged Driving in Louisiana	7/1/2013	6/30/2015		C-111
SPR: TT-Fed/TT-Reg	P	SS	30001394	14-1SS	\$20,000	\$35,000	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		C-112
SPR: TT-Fed/TT-Reg	P	SS		14-2SA	\$20,000	\$125,000			Factors Influencing Seatbelt and Occupant Protection Utilization in Louisiana and Strategies to Improve Usage Rate				C-113
SPR: TT-Fed/TT-Reg	P	SS	30001395	14-2SS	\$100,000	\$200,000	LSU	Peter Kelle	DOTD Support For UTC Project: A Simulation Model for Intermodal Freight Transportation in the State of Louisiana	6/1/2013	6/30/2015		C-114
SPR: TT-Fed/TT-Reg	P	SS		14-3SS	\$100,000	\$200,000	LTRC	Chester Wilmot	Development of a Mode Choice Model to Estimate Evacuation Transit Demand	7/1/2013	6/30/2015		C-115
SPR: TT-Fed/TT-Reg	P	SS	30001506	14-4SS	\$100,000	\$100,000	LTRC	Chester Wilmot	Feasibility of using Local Public Transit Resources for Evacuations and Other Unscheduled Needs	7/1/2013	6/30/2014		C-116
					\$535,263	\$928,861	SPECIAL STUDIES BUDGET TOTALS						

LTRC ANNUAL RESEARCH PROGRAM  
 SPR: TT-Fed/TT-Reg FISCAL YEAR 2013-2014

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.
<b>Project Type: Concrete</b>													
SPR: TT-Fed/TT-Reg	P	C	30001502	13-2C	\$41,311	\$79,869	LTRC	Tyson Rupnow	Laboratory Evaluation of 100% Fly Ash Cementitious Systems	1/1/2013			C-117
SPR: TT-Fed/TT-Reg	P	C	30001440	14-1C	\$100,000	\$120,000	LTRC	Tyson Rupnow	Evaluation of Non-destructive Quality Control Tools for Dowel Bar Alignment of Jointed Concrete Pavements	5/1/2013			C-118
SPR: TT-Fed/TT-Reg	P	C		14-2C	\$37,091	\$50,000	LTRC	Tyson Rupnow	Implementation of Concrete Maturity	7/1/2013			C-119
SPR: TT-Fed/TT-Reg	P	C	30001504	14-3C	\$100,000	\$200,000	LTRC	Tyson Rupnow	Investigation into the Feasibility of Continuously Reinforced Concrete Pavement (CRCP) Reinforced with Fibers Instead of Steel Rebar	7/1/2013			C-120
					<b>\$278,402</b>	<b>\$449,869</b>	<b>CONCRETE BUDGET TOTALS</b>						
					<b>\$2,109,665</b>	<b>\$4,447,645</b>	<b>SPR: TT-FED/TT-REG PROPOSED BUDGET TOTALS</b>						

# LTRC ANNUAL RESEARCH PROGRAM

SPR: Pooled Fund: TT-Fed

FISCAL YEAR 2013-2014

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.
<b>Project Type: Pooled Fund</b>													
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	8/30/2015	C-122
SPR: Pooled Fund: TT-Fed	A	PF	30000424	12-1PF	\$224,671	\$683,334	Oklahoma State University	Kelvin Wang	Traffic and Data Preparation for AASHTO MEPDG Analysis and Design	9/1/2011	8/31/2014		C-123
SPR: Pooled Fund: TT-Fed	A	PF	30000540	12-2PF	\$5,971	\$30,000	Florida International	Hesham Ali	Asphalt Surface Treatments for Pavement Preservation	6/15/2012	6/14/2013		C-125
SPR: Pooled Fund: TT-Fed	A	PF	30000542	12-4PF	\$9,463	\$29,962	Kentucky Transportation	Ronnie Clark Graves	Regional Implementation of Warm Mix Asphalt	10/1/2012	9/30/2013		C-126
					<b>\$250,105</b>	<b>\$1,043,296</b>	<b>SPR: POOLED FUND: TT-FED ACTIVE BUDGET TOTALS</b>						
SPR: Pooled Fund: TT-Fed	P	PF	30001420	14-1PF	\$30,000	\$30,000			Best Practices for Achieving and Measuring Pavement Smoothness	7/1/2013	6/30/2014		C-127
SPR: Pooled Fund: TT-Fed	P	PF	30001421	14-2PF	\$30,000	\$30,000			Real time Driver Information for Congestion Management	7/1/2013	6/30/2014		C-128
SPR: Pooled Fund: TT-Fed	P	PF	30001422	14-3PF	\$30,000	\$30,000			Transportation Funding Sources and Alternatives in the Southeastern States Now and in the Future	7/1/2013	6/30/2014		C-129
SPR: Pooled Fund: TT-Fed	P	PF	30001423	14-4PF	\$30,000	\$30,000			Mitigation Strategies for Reflective Cracking in Pavements	7/1/2013	6/30/2014		C-130
					<b>\$120,000</b>	<b>\$120,000</b>	<b>SPR: POOLED FUND: TT-FED PROPOSED BUDGET TOTALS</b>						
					<b>\$370,105</b>	<b>\$1,163,296</b>	<b>POOLED FUND BUDGET TOTALS</b>						

# LTRC ANNUAL RESEARCH PROGRAM

FHWA

FISCAL YEAR 2013-2014

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)	\$10,000	\$40,000			Evaluation of Low Cost Safety Improvements	11/1/2012	10/1/2017		C-132
SPR: Pooled Fund: TT-Fed	A	PFE		TPF-5(114)	\$25,000	\$190,000			Roadside Safety Research Program	10/1/2005	12/31/2015		C-134
SPR: Pooled Fund: TT-Fed	A	PFE		TPF-5(159)	\$5,000	\$30,000			Technology Transfer Concrete Consortium	7/1/2012			C-135
SPR: Pooled Fund: TT-Fed	A	PFE		TPF-5(228)	\$5,000	\$111,214			Superpave Regional Center	7/1/2012			C-137
SPR: Pooled Fund: TT-Fed	A	PFE		TPF-5(237)	\$15,000	\$75,000			Transportation Library Connectivity and Development	1/1/2011	12/31/2015		C-138
SPR: Pooled Fund: TT-Fed	A	PFE		TPF-5(255)	\$20,000	\$80,000			Highway Safety Manual Implementation	10/19/2011			C-140
SPR: Pooled Fund: TT-Fed	A	PFE		TPF-5(271)	\$10,000	\$30,000			Reorganization of Section 5, Concrete Structures, of the AASHTO LRFD Bridge Design Specifications	1/1/2013	12/31/2015		C-141
					\$90,000	\$556,214	POOLED FUND: EXTERNAL LEAD STATE BUDGET TOTALS						
Project Type: Pooled Fund: External Lead State													
SPR: Pooled Fund: TT-Fed	P	PFE		TPF-5(XXX)	\$20,000	\$20,000			Pooled Fund Collaboration Projects				C-142
					\$20,000	\$20,000	POOLED FUND: EXTERNAL LEAD STATE BUDGET TOTALS						
					\$110,000	\$576,214	SPR: POOLED FUND: TT-FED ACTIVE BUDGET TOTALS						

LTRC ANNUAL RESEARCH PROGRAM

IBRD: TT-Fed

FISCAL YEAR 2013-2014

Project Type: Structures														
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.	
IBRD: TT-Fed	A	ST	30000129		07-1ST	\$128,873	\$565,550	LTRC	Murad Abu-Farsakh	Structure Health Monitoring of the I-10 Twin Span Bridge Over Lake Pontchartrain	11/1/2007	10/31/2010	12/31/2013	D-2
IBRD: TT-Fed	A	ST	30000131		07-4ST	\$33,446	\$459,981	LSU	George Z. Voyiadjis	Integral Abutment Bridge for Louisiana's Soft and Stiff Soils	10/1/2007	8/31/2011	9/30/2013	D-3
IBRD: TT-Fed	A	ST	30000132		08-2ST	\$67,000	\$199,999	LSU	Steve C.S. Cai	Monitoring Bridge Scour Using Fiber Optic Sensors	1/1/2009	7/1/2011	12/30/2013	D-4
						\$229,319	\$1,225,530	STRUCTURES BUDGET TOTALS						
						\$229,319	\$1,225,530	IBRD: TT-FED ACTIVE BUDGET TOTALS						

**LTRC ANNUAL RESEARCH PROGRAM**

**LTAP: TT-Fed/TT-Reg**

**FISCAL YEAR 2013-2014**

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.
<b>Project Type: LTAP</b>													
LTAP: TT-Fed/TT-Reg	A	LTAP		12-LTAP	\$588,079	\$588,079	LTRC	Marie Walsh	Local Technical Assistance Program (LTAP)	1/1/2012	12/31/2014		E-2
					<b>\$588,079</b>	<b>\$588,079</b>	<b>LTAP BUDGET TOTALS</b>						
					<b>\$588,079</b>	<b>\$588,079</b>	<b>LTAP: TT-FED/TT-REG ACTIVE BUDGET TOTALS</b>						

**LTRC ANNUAL RESEARCH PROGRAM**

**STP: TT-Fed**

**FISCAL YEAR 2013-2014**

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.
<b>Project Type: Technology Transfer and Training</b>													
STP: TT-Fed	A	TT	30000320	08-1TSQ	\$366,917	\$366,917	LTRC	Sam Cooper	Technology Transfer Program and Operations (LSU)		6/30/2014		F-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		F-4
STP: TT-Fed	A	TT		14-1TSQ	\$493,524	\$493,524	LTRC	Sam Cooper	Technology Transfer Program and Operations (DOTD)	7/1/2013	6/30/2014		F-5
STP: TT-Fed	A	TT		14-1TT	\$37,500	\$37,500	LTRC	Sam Cooper	Support for Senior Project Courses	7/1/2013	6/30/2014		F-7
STP: TT-Fed	A	TT		14-1WD	\$1,045,088	\$1,045,088	LTRC	Sam Cooper	Workforce Development	7/1/2013	6/30/2014		F-8
STP: TT-Fed	A	TT		14-2TT	\$147,000	\$147,000	LTRC	Harold 'Skip' Paul	LTRC Student Program	7/1/2013	6/30/2014		F-10
STP: TT-Fed	A	TT		14-COOP	\$300,000	\$300,000	LTRC	Sam Cooper	LADOTD CO-OP Program	7/1/2013	6/30/2014		F-11
STP: TT-Fed	A	TT		14-TTRF	\$100,000	\$100,000	LTRC	Sam Cooper	Technology Transfer Registration Fees	7/1/2013	6/30/2014		F-12
STP: TT-Fed	A	TT		14-WDC	\$3,683,507	\$3,683,507	LTRC	Sam Cooper	Workforce Development Contracts	7/1/2013	6/30/2014		F-13
					<b>\$6,183,536</b>	<b>\$6,283,536</b>	<b>TECHNOLOGY TRANSFER AND TRAINING BUDGET TOTALS</b>						
					<b>\$6,183,536</b>	<b>\$6,283,536</b>	<b>STP: TT-FED ACTIVE BUDGET TOTALS</b>						

**Project Type: Other**

STP: TT-Fed	P	Other		14-PONTIS	\$125,000	\$125,000	LTRC	Sam Cooper	AASHTO PONTIS Agreement	7/1/2013	6/30/2014		F-16
					<b>\$125,000</b>	<b>\$125,000</b>	<b>OTHER BUDGET TOTALS</b>						
					<b>\$125,000</b>	<b>\$125,000</b>	<b>STP: TT-FED PROPOSED BUDGET TOTALS</b>						

LTRC ANNUAL RESEARCH PROGRAM

State: TT-Reg

FISCAL YEAR 2013-2014

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													
State: TT-Reg	A	GT	30000960	13-8GT	\$10,000	\$84,356	LSU	Joshua Kent	Bayou Corne Sinkhole: Control Measurements of State Highway 70 in Assumption Parish, Louisiana	9/19/2012	6/18/2013		G-2
Project Type: Structures					\$10,000	\$84,356		GEOTECHNICAL BUDGET TOTALS					
State: TT-Reg	A	ST	30001020	13-4ST	\$14,000	\$60,000	LSU	Ching Tsai	I-10 Girder Repair Using Post-Tensioned Steel Rods and Carbon Fiber Composite Cables (CFCO)	3/18/2013	3/17/2014		G-3
					\$14,000	\$60,000		STRUCTURES BUDGET TOTALS					
					\$24,000	\$144,356		STATE: TT-REG ACTIVE BUDGET TOTALS					

# LTRC ANNUAL RESEARCH PROGRAM

U.S. Department of Agriculture

FISCAL YEAR 2013-2014

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.
<b>Project Type: Structures</b>													
U.S. Department of Agriculture	A	ST	30000620	12-2ST	\$10,000	\$20,000	LTRC	Vijaya Gopu	Field Performance of Timber Highway Bridges: A National Study	1/3/2012	6/30/2014		H-2
					<b>\$10,000</b>	<b>\$20,000</b>		<b>STRUCTURES BUDGET TOTALS</b>					
					<b>\$10,000</b>	<b>\$20,000</b>		<b>U.S. DEPARTMENT OF AGRICULTURE ACTIVE BUDGET TOTALS</b>					



LTRC ANNUAL RESEARCH PROGRAM  
Self-Generated

FISCAL YEAR 2013-2014

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.
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Project Type: Special Studies

LOOP	A	SS	30000200	11-3SS	\$145,484	\$220,526	C-K Associates	Tre Wharton	LOOP Environmental Monitoring: 2011-2013 Beach Elevation, Beach Vegetation, Land Loss and Habitat Changes Surveys	4/12/2011	4/11/2014		I-2
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Project Type: Bituminous

					\$145,484	\$220,526	SPECIAL STUDIES BUDGET TOTALS						
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NCHRP	A	B	30000133	10-1B	\$103,100	\$500,000	Louay Mohammad	Field versus Laboratory Volumetrics and Mechanical Properties	8/1/2009	2/29/2012	12/31/2013		I-3
NCHRP	A	B	30000260	11-4B	\$40,000	\$154,037	Louay Mohammad	Modulus Based Construction Specification of Earthwork and Unbound Aggregate	10/7/2010	4/6/2013			I-4
NCHRP	A	B	30000545	12-4B	\$36,000	\$103,796	Louay Mohammad	Performance of WMA Technologies: Stage II – Long-term Field Performance	4/29/2011	7/28/2016			I-5

Project Type: Concrete

					\$179,100	\$757,833	BITUMINOUS BUDGET TOTALS						
					\$324,584	\$978,359	SELF-GENERATED ACTIVE BUDGET TOTALS						

Ceratech	P	C		13-3C	\$51,543	\$120,000	LTRC	Tyson Rupnow	Support Study for Laboratory Evaluation of 100% Fly Ash Cementitious Systems	1/1/2013			I-7
					\$51,543	\$120,000	CONCRETE BUDGET TOTALS						
					\$51,543	\$120,000	SELF-GENERATED PROPOSED BUDGET TOTALS						

# LTRC ANNUAL RESEARCH PROGRAM

Other DOTD Sections

FISCAL YEAR 2013-2014

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	\$295,472	\$350,785	LSU	Joshua Kent	CORS 911: Continuously Operating Reference Stations for the Bayou Corne Sinkhole	3/18/2013	3/17/2014		J-2
					\$295,472	\$350,785	GEOTECHNICAL BUDGET TOTALS						
Project Type: Technology Transfer and Training													
Safety	A	TT		12-LRSP	\$292,187	\$292,187	LTRC	Marie Walsh	Louisiana Local Road Safety Program	1/1/2012	12/31/2014		J-3
					\$292,187	\$292,187	TECHNOLOGY TRANSFER AND TRAINING BUDGET TOTALS						
					\$587,659	\$642,972	OTHER DOTD SECTIONS ACTIVE BUDGET TOTALS						

**FHWA**

**Part II SPR Funded  
Research Program**

**ADMINISTRATIVE LINE ITEMS  
AND  
RESEARCH SUPPORT STUDIES**

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Program Management</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	30001386		Project Start Date:		7/1/2013	
Research Project Number:	14-1PM		Completion Date		(original)	6/30/2014
Research Agency:	LTRC		Completion Date		(revised)	
Principal Investigator:	Mr. Mark Morvant					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$775,000	<b>Total</b>		<b>\$775,000</b>	
	(revised)					
Est. Expended to Date			Salaries		\$765,000	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)		Equipment		(non-expendable)	
	(revised)		Travel		\$10,000	
Est. FY Expenditure			Other			
<b>PURPOSE AND SCOPE</b>						
<p>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.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<ul style="list-style-type: none"> <li>-Managed the Louisiana Transportation Research Center's (LTRCs) research program including administrative duties, business activities and financial responsibilities;</li> <li>-Developed performance strategies for research goals and implementation of research results;</li> <li>-Participated in Transportation Research Board (TRB) activities;</li> <li>-Participated in AASHTO RAC Subcommittee and task forces;</li> <li>-Participated in the Louisiana Department of Transportation and Development (LADOTD) committees;</li> <li>-Managed the Southeast Transportation Consortium activities; and</li> <li>-Administer the University Transportation Center funding.</li> </ul>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<ul style="list-style-type: none"> <li>-Continue to manage and administer the SPR Research Program;</li> <li>-Implement the LTRC 2013 RPIC results;</li> <li>-Staff participation in External Peer Exchanges;</li> <li>-Continued support for Transportation Research Board activities;</li> <li>-Continued support for regional and national RAC task group activities;</li> <li>-Continued support for Southeast Transportation Consortium; and</li> <li>-Continued support for AASHTO RAC activities.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Equipment Management</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	30001387		Project Start Date:		7/2/2013	
Research Project Number:	14-1EQM		Completion Date		(original)	6/30/2014
Research Agency:	LTRC		Completion Date		(revised)	
Principal Investigator:	Mr. Mark Morvant					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$330,000	<b>Total</b>		<b>\$330,000</b>	
	(revised)					
Est. Expended to Date			Salaries		\$270,000	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)		Equipment		(non-expendable)	\$60,000
	(revised)		Travel			
Est. FY Expenditure			Other			
<b>PURPOSE AND SCOPE</b>						
<p>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). Special emphasis will be on automation of instrumentation systems used for data collection.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS
<p>Maintained the Louisiana Transportation Research Center (LTRC) research laboratory and field equipment:</p> <ul style="list-style-type: none"> <li>-Repair of oil leak and actuator re-sealing for MTS-55K;</li> <li>-Calibration of Asphalt Mixture Performance Tester (AMPT);</li> <li>-Replaced LVDTs for Asphalt Mixture Performance Tester;</li> <li>-Updated MTS-55K environmental chamber to use LN2 coolant;</li> <li>-Repair of PMW kneading compactor;</li> <li>-Repair servo valve and manifold of UTM Cox testing machine;</li> <li>-Replaced oil of HPS for MTS-22K;</li> <li>-United Machine Upgrade;</li> <li>-RST Instruments Horizontal and Vertical Inclinator Probe Repairs;</li> <li>-Design and fabrication of indirect tension test apparatus;</li> <li>-Design and fabrication of semi-circular bend apparatus for AMPT;</li> <li>-Installed signal conditioner for force ductility tester;</li> <li>-Maintenance of Humboldt load frame;</li> <li>-Data acquisition requirements for ASTM C1581 test;</li> <li>-Performed required safety training and reporting responsibilities;</li> <li>-FWD Calibration/maintenance;</li> <li>-Participation in LADOTD State Cooperative Testing Program;</li> <li>-Comparison LWT testing between PMW and APA Jr. devices;</li> <li>-Internal angle measuring device for Superpave Gyrotory compactor;</li> <li>-Fixation of BBR malfunctioning issues;</li> <li>-Fixation of LWT devices;</li> <li>-Water Level Meter;</li> <li>-RST Vertical Inclinator;</li> <li>-United Testing System, Hardware and Software upgrade;</li> <li>-Pavement Group: Neutron Probe;</li> <li>-AMRL Proficiency Testing; and</li> <li>-Kessler, MagRuler Reader.</li> </ul>
FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES
<p>Maintain AMRL laboratory accreditations:</p> <ul style="list-style-type: none"> <li>-Perform routine and unscheduled maintenance of LTRC research laboratory and field equipment;</li> <li>-Developed plans and prepared specifications for new lab equipment need to maintain state-of-the-art laboratory facilities;</li> <li>-Participate in State Coop and CRRL testing programs;</li> <li>-Safety Training and Reporting Duties;</li> <li>-Calibration of Profiler, FWD, Dynaflect, and Friction Tester;</li> <li>-Calibration of Mobile Imaging System;</li> <li>-Equipment controller and data acquisition for Cox and Sons;</li> <li>-Calibration of Profiler, FWD, Dynaflect, and Friction Tester; and</li> <li>-Perform routine and unscheduled maintenance of LTRC research laboratory and field equipment.</li> </ul>

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Research Laboratory and Field Test Support</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	30001388		Project Start Date:		7/1/2013	
Research Project Number:	14-1LFT		Completion Date		(original)	6/30/2014
Research Agency:	LTRC		Completion Date		(revised)	
Principal Investigator:	Mr. Mark Morvant					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$100,000	<b>Total</b>		<b>\$100,000</b>	
	(revised)					
Est. Expended to Date			Salaries		\$98,000	
<b>FY 2012 - 2013 Budget</b>			Equipment (expendable)			
FY Funds	(original)		Equipment		(non-expendable)	
	(revised)		Travel		\$2,000	
Est. FY Expenditure			Other			
<b>PURPOSE AND SCOPE</b>						
<p>The broad objectives of this study are to provide support to the Louisiana Department of Transportation and Development's (LADOTDs) request for investigative studies on new materials and/or techniques in the laboratory and/or field. The effort will be confined to materials and/or techniques considered new or unique and those of the generic type such as admixtures, modified asphalts, etc.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>-Modified Curing Procedures for Latex Modified Concrete;          -Florida Blvd, Rubbilizaton Evaluation, District 61;          -Forensic Evaluation of I-12 Covington, District 62; and          -Profiler Certification Sites.</p>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<p>Continue to respond to request for technical assistance for laboratory, field work, and forensic analysis on the LADOTD projects not related to a formal research project that require a substantial amount of time and laboratory effort.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>New Products Evaluation</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	30001389		Project Start Date:		7/2/2013	
Research Project Number:	14-1NPE		Completion Date		(original)	6/30/2014
Research Agency:	LTRC		Completion Date		(revised)	
Principal Investigator:	Mr. Mark Morvant					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$60,000	<b>Total</b>		<b>\$60,000</b>	
	(revised)					
Est. Expended to Date			Salaries		\$60,000	
<b>FY 2012 - 2013 Budget</b>			Equipment (expendable)			
FY Funds	(original)		Equipment		(non-expendable)	
	(revised)		Travel			
Est. FY Expenditure			Other			
<b>PURPOSE AND SCOPE</b>						
<p>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.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>-Darafill Dry chemical admixture;          -Darafill Liquid chemical admixture;          -Rheomac 300D chemical admixtures;          -Evaluation of JointBond , NPE Offer No. 10.084;          -Evaluation of Reclamite , NPE Offer No. 21.010;          -Evaluation of Forta-FI , NPE Offer No. 15.041;          -Lime Kiln Dust;          -LA ASH OPF 42;          -TerraCem; and          -BCS-Slag (developmental stage).</p>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<p>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.</p>						



**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Technical Assistance</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	30001391		Project Start Date:		7/1/2013	
Research Project Number:	14-1TA		Completion Date		(original)	6/30/2014
Research Agency:	LTRC		Completion Date		(revised)	
Principal Investigator:	Mr. Mark Morvant					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$340,000	<b>Total</b>		<b>\$340,000</b>	
	(revised)					
Est. Expended to Date			Salaries		\$330,000	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)		Equipment		(non-expendable)	
	(revised)		Travel		\$10,000	
Est. FY Expenditure			Other			
<b>PURPOSE AND SCOPE</b>						
<p>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).</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS
<ul style="list-style-type: none"> <li>-Pavement, base, sub base, and embankment codes for GPR data collection;</li> <li>-Friction testing on I-59, H.003398;</li> <li>-Load transfer assessment of Range Road H:008193;</li> <li>-Friction testing on US 190 in Hammond, CS 013-08 and 013-09;</li> <li>-US 90 Detour road (Lake Palourde) By Pass;</li> <li>-US 190 ramp friction evaluation, H.009182, CS 013-06;</li> <li>-Assumption Parish Sink hole project;</li> <li>-Forensic Investigation of Rubblized Concrete Pavement on Florida Blvd, H:000450.6;</li> <li>-Uretek Pilot Project on LA 378, District 07, Westlake, LA;</li> <li>-Assessment of Mitigating Traverse Joint Faulting with Polyurethane Foam on LA 1 By Pass, SPN 034-30-0023;</li> <li>-I-20 ACR Evaluation;</li> <li>-I-49 Clay Ball contaminated concrete pavement;</li> <li>-I-12 Design Build;</li> <li>-I-20 Lincoln Parish: H.003302.6;</li> <li>-US 61 shoulder BCS/slag: H.000329.6;</li> <li>-FWD on LA 3002 Range Ave.: H.008193.6;</li> <li>-US 90 detour St. Mary Parish;</li> <li>-LA1 Bypass Uretek: 034-30-0023;</li> <li>-Evaluation of Rutting Distresses on I-20 near Mound to Delta Scales, LTRC No: 13-01TA-B, SPN. 451-08-0078;</li> <li>-Conducted numerous LWT testing on behalf of DOTD districts in support for the JMF approval process according to the new LADOTD thin lift specifications;</li> <li>-Forensic Evaluation on Extracted Binders Collected from US 61 Roadway Cores, SPN 007-03-0057;</li> <li>-In house evaluation by testing 2hr/4hr/6hr aging time effects on OGFC mixtures;</li> <li>-LWT tests on OGFC roadway cores to verify specifications;</li> <li>-Test rubber modified binders supplied from several suppliers to verify specifications;</li> <li>-Volumetric testing for Asphalt Pilot projects for new specifications, LA 3235 (SP# H.009491), LA 93 (SP# H.002161), LA 519 (SP# H.009501), US 80 (SP# H.009536), and LA 16 (SP# H.002403);</li> <li>-Pile Vibration Assistance -- Covington;</li> <li>-Pile Vibration Assistance -- District 62; and</li> <li>-Sinkhole Meetings -- Emergency Operations, HQ.</li> </ul>
FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES
<ul style="list-style-type: none"> <li>-Respond to requests for laboratory, field work, and forensic analysis on LADOTD projects not related to a formal research project;</li> <li>-Field testing (Skid, FWD, Profiler, etc.) in support of District requests;</li> <li>-Respond to requests for laboratory, field work, and analysis for university requests not related to a LTRC formal research project; and</li> <li>-Provide general assistance to other public entities not related to research.</li> </ul>

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Technical Research Surveillance</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	30001392		Project Start Date:		7/1/2013	
Research Project Number:	14-1TRS		Completion Date		(original)	6/30/2014
Research Agency:	LTRC		Completion Date		(revised)	
Principal Investigator:	Mr. Mark Morvant					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$445,000	<b>Total</b>		<b>\$445,000</b>	
	(revised)					
Est. Expended to Date			Salaries		\$445,000	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)		Equipment		(non-expendable)	
	(revised)		Travel			
Est. FY Expenditure			Other			
<b>PURPOSE AND SCOPE</b>						
<p>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.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<ul style="list-style-type: none"> <li>-Initiated 30 new research contracts;</li> <li>-Managed research contracts on 64 external university/consultant contracts;</li> <li>-Provided review on draft reports for completed research projects;</li> <li>-Completed 25 projects; and</li> <li>-Published 14 final reports.</li> </ul>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<ul style="list-style-type: none"> <li>-Provide management of LTRC research project contracts;</li> <li>-Prepare new research proposals for initiation of new projects in accordance with proposed in-house projects as approved in this Annual Work Program document;</li> <li>-Participation on LTRC Project Review Committees; and</li> <li>-Participation on LTRC Report Review Committees.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Technology Transfer and Research Implementation</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	30001393		Project Start Date:		7/1/2013	
Research Project Number:	14-1TTTRI		Completion Date		(original)	6/30/2014
Research Agency:	LTRC		Completion Date		(revised)	
Principal Investigator:	Mr. Mark Morvant					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$380,000	<b>Total</b>		<b>\$380,000</b>	
	(revised)					
Est. Expended to Date			Salaries		\$360,000	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)		Equipment		(non-expendable)	
	(revised)		Travel		\$20,000	
Est. FY Expenditure			Other			
<b>PURPOSE AND SCOPE</b>						
<p>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).</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS
<ul style="list-style-type: none"> <li>-Design, Development, Testing and Deployment of additional performance measure and publication tracking modules for the Project Management Database;</li> <li>-Louisiana Transportation Conference committee assistance;</li> <li>-TRB, Transportation Research Board Annual Meeting, Washington, DC; attendance and committee participation, three committee chairs, and thirteen committee members, several presentations given;</li> <li>-Participate NCHRP research advisory panels;</li> <li>-Hosted Japanese engineers dealing with Disaster Management Techniques;</li> <li>-Hosted the Louisiana Transportation Research Center (LTRC) Seminar Series: Sustainable Materials for Pavement Infrastructure;</li> <li>-Principles of Quality Hot Mix Asphalt Pavement Construction Class;</li> <li>-Expert Task Group meetings: <ul style="list-style-type: none"> <li>&gt;Asphalt Mixture</li> <li>&gt;Asphalt Binder</li> <li>&gt;Modeling</li> <li>&gt;ProVal workshop</li> </ul> </li> <li>-Presentation on Concrete and Asphalt Materials;</li> <li>-General Asphalt Specification Presentations;</li> <li>-Seminars and Conferences;</li> <li>-Required CPTP courses;</li> <li>-Required LTRC courses;</li> <li>-Certification courses;</li> <li>-Assist Training section by demonstrating LWT testing to district lab technicians;</li> <li>-Presented and participated at Louisiana Engineering conference;</li> <li>-Participate and present at SEAUPG Annual Meeting;</li> <li>-Participate and present at LAPA Annual Meeting;</li> <li>-Participate in AAPT Annual Meeting;</li> <li>-Participated at Binder ETG meeting;</li> <li>-Participated in RPIC, PRC meetings;</li> <li>-Test masters PE review classes;</li> <li>-MSCR Task Force Webinars;</li> <li>-TD&amp;I Presentation for ASCE, November 15, 2013;</li> <li>-SWGEC/GEOSynthetics April 2013;</li> <li>-Employee Training &amp; Performance Evaluations on Test Methods;</li> <li>-SASHTO 2014 Coordination; and</li> <li>-Intelligent Compaction Showcase.</li> </ul>
FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES
<ul style="list-style-type: none"> <li>-Continue Research Implementation activities;</li> <li>-Begin development of program for 2013 Louisiana Transportation Conference;</li> <li>-Development and hosting of Technology Transfer Seminars;</li> <li>-Participate in external research/training activities: NCHRP/FHWA Panels, TRB Meetings, Technical Conferences); and</li> <li>-Continue to seek venues for our presentations that effectively communicate the Louisiana Transportation Research Center's (LTRCs) vision.</li> </ul>



**FHWA**

**Part II SPR Funded  
Research Program**

**CONTINUING RESEARCH**

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Field Demonstration of New Bridge Approach Slab Designs and Performance</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30000116</b>		Project Start Date:		8/1/2008	
Research Project Number:	05-1GT		Completion Date		(original)	8/1/2011
Research Agency:	LTRC		Completion Date		(revised)	9/30/2014
Principal Investigator:	Dr. Murad Abu-Farsakh					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$393,176	<b>Total</b>		<b>\$42,000</b>	
	(revised)	\$310,000				
Est. Expended to Date		\$287,900	Salaries		\$42,000	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)	\$39,500	Equipment		(non-expendable)	
	(revised)	\$28,000	Travel			
Est. FY Expenditure		\$28,000	Other			
<b>PURPOSE AND SCOPE</b>						
<p>This project implements the findings from two LTRC Projects: "The Rideability of a Deflected Bridge Approach Slab" (02-2GT) and "Determination of Interaction between Bridge Concrete Approach Slab and Embankment Settlement" (03-4GT). It will also study such major causes of extra settlement from the collapsible behavior of embankment soils and its relation with construction methods, the erosion control of embankment, the settlement of native ground as embankment foundation and its control, and etc. In this project, lab and field tests will be conducted for soil deformation. Field-testing sections of bridge concrete approach slabs will be built and their performance will be monitored and analyzed so that final recommendation can be made to LADOTD on the bump issue at bridge ends. These bridge approach slabs tested are based on new design from the Bridge Design Section in comply with the recommendations from the two finished research projects.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<ul style="list-style-type: none"> <li>-Conducted more literature review relevant to the research project;</li> <li>-Analyzed the collected data from two truck load tests on the approach slabs at Bayou Courtableau Bridge;</li> <li>-Designed and developed the instrumentation and testing plan for the two approach slabs at Bayou Lacassine Bridge; and</li> <li>-Purchased the instrumentations for the the Bayou Lacassine Bridge approach slab, waiting for the start of construction.</li> </ul>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<ul style="list-style-type: none"> <li>-Install the geogrid reinforcement layers and other instrumentations beneath the East and west approach slabs at Bayou Lacassine Bridge once construction started;</li> <li>-Install sister bar strain gauges within the approach slab structure at Bayou Lacassine Bridge;</li> <li>-Conducted truck load test on both approach slabs at Bayou Lacassine Bridge, and monitor collect data from all instrumentations during the test; and</li> <li>-Look for new bridge approach slab embankment sites for instrumentation and monitoring.</li> </ul>						



**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Field Evaluation of Roller Integrated Intelligent Compaction Monitoring</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30000480</b>		Project Start Date:		11/1/2011	
Research Project Number:	06-3GT		Completion Date		(original)	10/31/2013
Research Agency:	LTRC		Completion Date		(revised)	
Principal Investigator:	Mr. Gavin Gautreau					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$264,878	<b>Total</b>		<b>\$94,329</b>	
	(revised)					
Est. Expended to Date		\$55,000	Salaries		\$94,329	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)	\$169,225	Equipment		(non-expendable)	
	(revised)		Travel			
Est. FY Expenditure		\$74,896	Other			
<b>PURPOSE AND SCOPE</b>						
<p>Intelligent compaction refers to the use of instrumented rollers that record soil stiffness (vibration load/soil displacement) and GPS position. These measurements are used to create a stiffness index. Once calibrated, subsequent passes are compared against target values. The roller receives feedback from the soil based on the resistance encountered and the intelligent roller then automatically and “instantaneously” modifies its settings (force amplitude, frequency) to meet the target modulus.</p> <p>The on-board computer is used to help the operator avoid over and under compaction. This can speed the contractor's production, and benefits the department by creating a continuous record of stiffness. The goal of the technology is to ensure proper compaction is achieved while reducing delays and “pumping” problems.</p> <p>A goal is to utilize intelligent rollers to shadow the normal data collection process throughout the test section. The results (collected on soil and asphalt) will be used to help develop a performance specification.</p> <p>The project will develop draft specification and proposal to demo technology on a highway test site possibly located south of New Iberia, Louisiana, on US 90 between Darnall and LA 85 in May of 2012.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<ul style="list-style-type: none"> <li>-The specification to allow instrumented rollers on the demo project has been finalized, approved and added to the project;</li> <li>-The demo project's LET date has had setbacks, Right of Way issues pushed it four months from January, 2012 to May, 2012, which reduced the activity on the project for this fiscal year. Rain Delays also plagued the project with about 25 inches in 3 months;</li> <li>-The research field work relative to the project began in October of 2012;</li> <li>-The Louisiana Transportation Research Center (LTRC) coordinated with the district and the contractor to review and train on the selected roller; and</li> <li>-The test plan was implemented and data collected. Asphalt operations began late in the fiscal year.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>
<ul style="list-style-type: none"><li>-LTRC will continue to coordinate with the district and the contractor;</li><li>-The test plan will be continued and data collected;</li><li>-SHRP2 staff will assist with training and startup and share the data; and</li><li>-The IC Data will be analyzed and the final report compiled.</li></ul>

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Support Study to Structure Health Monitoring of the I-10 Twin Span Bridge Over Lake Pontchartrain</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30000114</b>		Project Start Date:		11/1/2007	
Research Project Number:	08-3GT		Completion Date (original)		11/1/2010	
Research Agency:	LTRC		Completion Date (revised)		12/31/2014	
Principal Investigator:	Dr. Murad Abu-Farsakh					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$88,776	<b>Total</b>		<b>\$6,000</b>	
	(revised)	\$380,951				
Est. Expended to Date		\$320,951	Salaries		\$6,000	
<b>FY 2012 - 2013 Budget</b>			Equipment (expendable)			
FY Funds	(original)	\$13,000	Equipment (non-expendable)			
	(revised)		Travel			
Est. FY Expenditure		\$13,000	Other			
<b>PURPOSE AND SCOPE</b>						
<p>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 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.</p> <p>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).</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<ul style="list-style-type: none"> <li>-Coordinated with the subcontractor to install the additional superstructure instrumentations: 12 strain gauges on concrete girders, 12 strain gauges on steel girders, and 3 OSMOS extensometers to three steel girders;</li> <li>-Ordered 6 OSMOS extensometers;</li> <li>-Coordinated with the subcontractor to re-calibrate the OSMOS WIM; and</li> <li>-Prepared final report.</li> </ul>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<ul style="list-style-type: none"> <li>-Continue coordination with the subcontractor to install the additional superstructure;</li> <li>-Continue coordination with the subcontractor to re-calibrate the OSMOS WIM; and</li> <li>-Coordinate with the subcontractor to complete and setup the long-term monitoring system.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>LTRC Support for Geotechnical Research at the Geotechnical Engineering Research Laboratory (GERL)</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30000111</b>		Project Start Date:		7/1/2010	
Research Project Number:	10-1GERL		Completion Date		(original)	6/30/2015
Research Agency:	LTRC		Completion Date		(revised)	
Principal Investigator:	Dr. Murad Abu-Farsakh					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$523,000	<b>Total</b>		<b>\$211,000</b>	
	(revised)					
Est. Expended to Date		\$476,000	Salaries		\$148,500	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	\$37,000
FY Funds	(original)	\$225,000	Equipment		(non-expendable)	
	(revised)	\$273,000	Travel		\$18,000	
Est. FY Expenditure		\$273,000	Other		\$7,500	
<b>PURPOSE AND SCOPE</b>						
<p>The objectives of this research are to:</p> <ul style="list-style-type: none"> <li>-Perform support studies to meet the beneficiary requirements for geotechnical and geosynthetic testing, technical assistance and research;</li> <li>-Advance the state-of-the-art in geotechnical and geosynthetic research;</li> <li>-Provide development, support and training of new and innovative techniques, software and equipment for advancing the performance of the transportation system; and</li> <li>-Develop problem statements and research proposals.</li> </ul>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<ul style="list-style-type: none"> <li>-Provided geotechnical testing support and technical assistance for LADOTD;</li> <li>-Published several technical papers/proceedings/reports on findings of LTRC research projects;</li> <li>-Developed potential ideas and problem statements for future LTRC research projects;</li> <li>-Developed research proposal on "In Situ Evaluation of Design Parameters and Procedures for Cementitiously Treated Weak Subgrades using Cyclic Plate Load Tests";</li> <li>-Developed research proposal on "Monitoring of In-Service Geosynthetic Reinforced Soil (GRS) Bridge Abutments in Louisiana"; and</li> <li>-Maintained and upgraded softwares related to CPT application.</li> </ul>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<ul style="list-style-type: none"> <li>-Provide geotechnical and geosynthetic testing support and technical assistance for LADOTD;</li> <li>-Provide support and training for implementation of research results;</li> <li>-Develop research proposals and problem statements for future activities;</li> <li>-Publish research findings on technical papers and reports; and</li> <li>-Maintain CPT software's.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Design Values of Resilient Modulus of Stabilized and Non-stabilized Base</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30000099</b>		Project Start Date:		9/1/2010	
Research Project Number:	10-3GT		Completion Date		(original)	2/29/2012
Research Agency:	LTRC		Completion Date		(revised)	12/31/2013
Principal Investigator:	Mr. Khalil Hanifa					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$120,985	<b>Total</b>		<b>\$41,630</b>	
	(revised)	\$193,804				
Est. Expended to Date		\$152,500	Salaries		\$41,630	
<b>FY 2012 - 2013 Budget</b>						
FY Funds	(original)	\$41,628	Equipment	(expendable)		
	(revised)		Equipment	(non-expendable)		
Est. FY Expenditure		\$26,000	Travel			
			Other			
<b>PURPOSE AND SCOPE</b>						
<p>The purpose of this research study is to determine the design values of stabilized and non-stabilized base specified by the Louisiana Department of Transportation and Development (LADOTD) through lab tests with respect to resilient modulus and other parameters used by pavement design guides.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<ul style="list-style-type: none"> <li>-Updated testing scope based on PRC meeting and survey of District Lab Engineers;</li> <li>-Retrieved base materials for lab tests from on-going construction projects; and</li> <li>-Conducted lab tests on stabilized base materials.</li> </ul>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<ul style="list-style-type: none"> <li>-Finish conducting lab tests on stabilized base materials;</li> <li>-Finalize lab results;</li> <li>-Analyze test data;</li> <li>-Make recommendations of design values that accommodate field variation during construction;</li> <li>-Draft final report;</li> <li>-Submit final report to PRC for review, comments, and editing;</li> <li>-Schedule PRC meeting to receive final comments and edits; and</li> <li>-Submit final report for editing.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>In Situ Evaluation of Design Parameters and Procedures for Cementitiously Treated Weak Subgrades using Cyclic Plate Load Tests</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:		<b>30000661</b>		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				
<b>BUDGET STATUS</b>						
<b>Total Budget</b>				<b>Estimated 2013-2014 Budget</b>		
Total Cost	(original)	\$294,679		<b>Total</b>		<b>\$102,400</b>
	(revised)					
Est. Expended to Date		\$46,000		Salaries		\$90,000
<b>FY 2012 - 2013 Budget</b>				Equipment		(expendable) \$12,400
FY Funds	(original)	\$23,000		Equipment		(non-expendable)
	(revised)			Travel		
Est. FY Expenditure		\$23,000		Other		
<b>PURPOSE AND SCOPE</b>						
<p>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, flyash)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) x 6.5 ft (width) x 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 (LFW), Geogauge, Portable Seismic Pavement Analyzer (PSPA) tests, and repeated triaxial load tests will be conducted.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<ul style="list-style-type: none"> <li>-Started performing comprehensive literature review on relevant research topics related to cementitious stabilization/treatment techniques, selection of cementatious material, performance, small-scale laboratory testing, and in-place evaluation of resilient modulus of cementitious treated subgrades;</li> <li>-Identified the different types of subgrade soils in Louisiana and the appropriate stabilization schemes based on Louisiana current practice in treated/stabilized subgrade material for those soils;</li> <li>-Start characterizing the properties of selected soils; and</li> <li>-Prepared a plan for laboratory testing of cementatios treated subgrades.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>
<ul style="list-style-type: none"><li>-Continue performing literature review on relevant research topics related to cementitious stabilization/treatment subgrades;</li><li>-Continue characterizing the properties of selected soils;</li><li>-Start conducting laboratory unconfined compression tests, resilient modulus tests;</li><li>-Start conducting Phase I repeated loading triaxial tests on treated hauled soils; and</li><li>-Start modifying the repeated plate load testing facility and purchasing instrumentation needed for phase II of research.</li></ul>

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Field Instrumentation and Testing to Study Set-Up Phenomenon of Piles Driven into Louisiana Clayey Soils</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30000134</b>		Project Start Date:		12/1/2010	
Research Project Number:	11-2GT		Completion Date		(original)	11/30/2014
Research Agency:	LTRC		Completion Date		(revised)	
Principal Investigator:	Dr. Murad Abu-Farsakh					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$489,708	<b>Total</b>		<b>\$84,000</b>	
	(revised)					
Est. Expended to Date		\$220,000	Salaries		\$71,600	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	\$12,400
FY Funds	(original)	\$67,500	Equipment		(non-expendable)	
	(revised)	\$120,000	Travel			
Est. FY Expenditure		\$120,000	Other			
<b>PURPOSE AND SCOPE</b>						
<p>Piles driven into saturated cohesive soils usually experience a time-dependant 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.</p> <p>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 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.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<ul style="list-style-type: none"> <li>-Conducted literature review on relevant research studies related to pile setup phenomenon in clayey soils;</li> <li>-Analyzed the pile setup data at Bayou Zourie Bridge site;</li> <li>-Analyzed the setup of the tested pile at Bayou Boeuf Bridge Extension, US 90;</li> <li>-Developed an instrumentation testing plan for two test piles at Bayou Lacassine Bridge;</li> <li>-Installed the pile and field instrumentations for two selected piles at Bayou Lacassine Bridge site to evaluate the pile setup phenomenon with time;</li> <li>-Tested two test piles at Bayou Lacassine Bridge site (both static and dynamic load tests) at different time after pile driving for evaluating pile setup;</li> <li>-Started analyzing the pile setup data at Bayou Lacassine Bridge site; and</li> <li>-Collected and started analyzing pile setup data from previous projects for piles PDA and CAPWAP tests several times after pile installation.</li> </ul>						



**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>
<ul style="list-style-type: none"><li>-Continue literature search on experimental and theoretical studies related to pile setup phenomenon in clayey soils;</li><li>-Continue analyzing the pile setup data at Bayou Lacassine Bridge site;</li><li>-Continue collecting and analyzing data from previous projects for piles tested several times after installation;</li><li>-Conduct laboratory tests to evaluate pile setup parameters; and</li><li>-Identify new potential sites/bridges for performing field instrumentation pile set-up tests.</li></ul>

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Accelerated Load Testing of Geosynthetic Base Reinforced Pavement Test Sections</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:		<b>30000135</b>		Project Start Date:		12/1/2010
Research Project Number:		11-3GT		Completion Date	(original)	5/31/2012
Research Agency:		LTRC		Completion Date	(revised)	12/31/2013
Principal Investigator:		Dr. Murad Abu-Farsakh				
<b>BUDGET STATUS</b>						
<b>Total Budget</b>				<b>Estimated 2013-2014 Budget</b>		
Total Cost	(original)	\$297,579		<b>Total</b>		<b>\$104,000</b>
	(revised)	\$486,370				
Est. Expended to Date		\$331,000		Salaries		\$97,800
<b>FY 2012 - 2013 Budget</b>				Equipment		(expendable) \$6,200
FY Funds	(original)	\$112,000		Equipment		(non-expendable)
	(revised)			Travel		
Est. FY Expenditure		\$112,000		Other		
<b>PURPOSE AND SCOPE</b>						
<p>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.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<ul style="list-style-type: none"> <li>-Performed literature review on the use of geosynthetic for subgrade stabilization and reinforcement of base aggregate layer in flexible pavements;</li> <li>-Conducted in-situ field testing prior and during the construction of test lane sections to characterize the in-situ strength/stiffness of the subgrade, and pavement layers;</li> <li>-Constructed the unpaved test lane sections for pre-rut tests;</li> <li>-Installed all instrumentations in the test lane sections;</li> <li>-Started the pre-rut tests for the unpaved test lane sections. (there was some delay due to rainy season); and</li> <li>-Started conducting cyclic plate load tests on in-box geosynthetic reinforced test sections.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>
<ul style="list-style-type: none"><li>-Continue conducting literature review on relevant published works;</li><li>-Repair the rutted base coarse layer and pave the 3" asphalt layer;</li><li>-Conduct laboratory resilient and permanent deformation tests to characterize subgrade and base, and dynamic test on asphalt;</li><li>-Conduct accelerated load tests on the test lane sections;</li><li>-Continue conducting cyclic plate load tests on in-box test sections;</li><li>-Conduct cyclic plate load tests on the test lane sections; and</li><li>-Start analyzing the experimental test results.</li></ul>

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Implementation of Slag Stabilized Blended Calcium Sulfate (BCS) in a Pavement Structure.</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30000728</b>		Project Start Date:		7/1/2012	
Research Project Number:	13-2GT		Completion Date (original)		6/30/2013	
Research Agency:	LTRC		Completion Date (revised)		9/30/2013	
Principal Investigator:	Mr. Gavin Gautreau					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$77,839	<b>Total</b>		<b>\$19,691</b>	
	(revised)					
Est. Expended to Date		\$17,620	Salaries		\$19,691	
<b>FY 2012 - 2013 Budget</b>						
FY Funds	(original)	\$77,839	Equipment	(expendable)		
	(revised)		Equipment	(non-expendable)		
			Travel			
Est. FY Expenditure		\$58,148	Other			
<b>PURPOSE AND SCOPE</b>						
<p>Test sections, as requested by the Louisiana Transportation Research Center (LTRC) Project 03-8GT, will be constructed as part of this study. The application of the LTRC Project 03-8GT specification will be evaluated, and additional laboratory studies will be conducted to refine the break point of moisture stability with additional percentages of the slag additive. Actual applications will need various strength requirements, while still meeting durability requirements. The need for various strengths with varying slag percentages is needed and will aid in the implementation of slag treated BCS to provide an alternative base course material or even surface course (similar to lean concrete).</p> <p>This project will focus on the variation of strengths obtained through the stabilization of BCS with GGBFS to meet the needs of highway and other commercial needs, like local roads, driveways, etc. The project will research and document a slag-treated BCS test sections conducted by the Louisiana Transportation Research Center (LTRC).</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>Three test sections were constructed along the shoulders of US 61 (Airline Highway) just south of LA 22 in Sorrento, LA. Samples were molded and tested, along with many field tests to confirm the effectiveness of the slag stabilized BCS. We will begin to compile the final report.</p>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<p>Complete and publish the final report.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Support Study to ITRS Proposal on "An Integrated Computational and Experimental Study of Pile Setup in Soft Clays"</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:		<b>30001220</b>		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				
<b>BUDGET STATUS</b>						
<b>Total Budget</b>				<b>Estimated 2013-2014 Budget</b>		
Total Cost	(original)	\$50,000		<b>Total</b>		<b>\$16,700</b>
	(revised)					
Est. Expended to Date		\$8,000		Salaries		\$16,700
<b>FY 2012 - 2013 Budget</b>						
FY Funds	(original)	\$8,000		Equipment	(expendable)	
	(revised)			Equipment	(non-expendable)	
Est. FY Expenditure		\$8,000		Travel		
				Other		
<b>PURPOSE AND SCOPE</b>						
<p>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:</p> <ul style="list-style-type: none"> <li>-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;</li> <li>-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</li> <li>-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.</li> </ul>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<ul style="list-style-type: none"> <li>-Conducted literature review relevant to pile setup in clays;</li> <li>-Ordered the pile setup instrumentations;</li> <li>-Developed an instrumentation plan for the tested piles; and</li> <li>-Started finite element numerical modeling.</li> </ul>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<ul style="list-style-type: none"> <li>-Continue conducting literature review relevant to pile setup in clays;</li> <li>-Characterize the two field sites through field and laboratory tests; and</li> <li>-Install and start testing piles on one site.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Management and Operation of the Pavement Research Facility</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30000141</b>		Project Start Date:		7/1/2009	
Research Project Number:	10-1ALF		Completion Date		(original)	6/30/2015
Research Agency:	LTRC		Completion Date		(revised)	
Principal Investigator:	Dr. Zhong Wu					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$1,730,000	<b>Total</b>		<b>\$550,000</b>	
	(revised)					
Est. Expended to Date		\$800,000	Salaries		\$310,000	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	\$100,000
FY Funds	(original)	\$460,000	Equipment		(non-expendable)	
	(revised)	\$400,000	Travel			
Est. FY Expenditure		\$400,000	Other		\$140,000	
<b>PURPOSE AND SCOPE</b>						
<p>The 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.</p> <p>A manager, two operators and a research associate 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.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<ul style="list-style-type: none"> <li>-Construction and testing of 11-3GT geogrid test sections;</li> <li>-Construction of 12-7P RCC test sections;</li> <li>-Construction of 12-3P Microcracking test sections; and</li> <li>-Construction and testing of NCHRP 10-84 stone test sections.</li> </ul>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<ul style="list-style-type: none"> <li>-Testing of 11-3GT geogrid test sections;</li> <li>-Testing of 12-7P RCC test sections; and</li> <li>-Monitoring shrinkage cracking on 12-3P Microcracking test sections.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>LED Traffic Signal Lifetime Management System</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30000164</b>		Project Start Date:		11/1/2010	
Research Project Number:	10-3P		Completion Date		(original)	7/31/2013
Research Agency:	LTRC		Completion Date		(revised)	6/30/2015
Principal Investigator:	Dr. Leticia Santos da Rocha Courville					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$132,144	<b>Total</b>		<b>\$2,840</b>	
	(revised)	\$202,265				
Est. Expended to Date		\$152,165	Salaries		\$2,840	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)	\$36,170	Equipment		(non-expendable)	
	(revised)		Travel			
Est. FY Expenditure		\$36,170	Other			
<b>PURPOSE AND SCOPE</b>						
<p>The objective of this research is to create performance curves applied to LED circular traffic signal modules by analyzing the traffic signal samples' operation throughout 20,000 hours in order that Louisiana will be better equipped to carry out the replacement of these traffic signal modules in accordance with the Institute of Transportation Engineers (ITE)'s minimum maintained luminous intensity values.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>-Completed electrical installation of the traffic signal sample; and          -Started the measurements of the LED traffic signal modules' luminous intensity using Goniophotometer and handheld devices.</p>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<p>-Preliminary analyses of the results of these measurements.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Development of Cost-Effective Pavement Treatment Selection and Treatment Performance Models</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:		<b>30000166</b>		Project Start Date:		9/1/2010
Research Project Number:		10-4P		Completion Date	(original)	6/30/2013
Research Agency:		ULL		Completion Date	(revised)	
Principal Investigator:		Dr. Mohammad Jamal Khattak				
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$267,395	<b>Total</b>		<b>\$18,905</b>	
	(revised)					
Est. Expended to Date		\$267,078	Salaries		\$13,200	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)	\$67,317	Equipment		(non-expendable)	
	(revised)		Travel			
Est. FY Expenditure		\$67,000	Other		\$5,705	
<b>PURPOSE AND SCOPE</b>						
<p>The overall goal of this study is to develop pavement treatment performance models in support of cost-effective selection of pavement treatment type, project boundaries and time of treatment. The study has been divided into three phases consisting of nine research tasks. The scope of the study is summarized as follows:</p> <ul style="list-style-type: none"> <li>-Conduct a comprehensive review of the LADOTD state-of-the-practice regarding pavements projects and treatment selection procedures;</li> <li>-Identify the pavement treatments and treatment projects with good historical records (e.g., traffic, age, pavement structure and materials, cost data, etc.) and pavement performance data by utilizing the information stored in LADOTD's databases;</li> <li>-Perform a thorough evaluation of the performance of various pavement treatments used by all LADOTD districts. The evaluation will be based on analysis and review of the time series distress data available from the PMS database;</li> <li>-Develop treatment performance models based on the available pavement distress data. The models will make it possible to estimate the benefits and the life-cycle costs of each treatment and its impact on the pavement service life;</li> <li>-Evaluate and update the existing LADOTD treatment selection models. The updated selection models will be based on the life-cycle cost analysis and the newly developed treatment performance models;</li> <li>-Develop guidelines for the implementation of cost-effective pavement preservation strategies that would maximize the user and agency benefits and minimize their costs;</li> <li>-Develop software for pavement treatment performance, pavement selection and life cycle cost analysis models with an ability to be updated and evolved with new pavement performance data and changing costs;</li> <li>-Integrate all the models into the LADOTD PMS, Pavement Preservation system, and Pavement design system; and</li> <li>-Train the LADOTD staff to use all models developed in this study.</li> </ul>						



**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>
<p>Conducted regression analysis to develop pavement treatment models for each pavement type and distress type.</p> <ul style="list-style-type: none"><li>-Updated deduct points, pavement treatment triggers and resets based on performance data and the experience gained over time;</li><li>-Analyzed and recommend a process for identifying the optimal timing for the application of rehabilitation actions and/or preventive maintenance treatments;</li><li>-Develop Treatment Cost benefit analysis procedure for the implementation of cost-effective pavement preservation strategies that would maximize the user and agency benefits and minimize their costs; and</li><li>-Develop a framework of software for pavement treatment performance, pavement selection and life cycle cost analysis models.</li></ul>
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>
<ul style="list-style-type: none"><li>-Develop guidelines for the implementation of cost-effective pavement preservation strategies that would maximize the user and agency benefits and minimize their costs;</li><li>-Develop software for pavement treatment performance, pavement selection and life cycle cost analysis models with an ability to be updated and evolved with new pavement performance data and changing costs; and</li><li>-Integrate the models into the LADOTD Pavement Preservation and district system.</li></ul>

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>The Rideability of a Deflected Bridge Approach Slab (LTRC Project 02-2GT Continuation: Phase II)</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30000160</b>		Project Start Date:		4/1/2011	
Research Project Number:	11-3P		Completion Date		(original)	3/31/2014
Research Agency:	LTRC		Completion Date		(revised)	
Principal Investigator:	Mr. Mark Martinez					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$295,789	<b>Total</b>		<b>\$72,987</b>	
	(revised)					
Est. Expended to Date		\$146,200	Salaries		\$72,987	
<b>FY 2012 - 2013 Budget</b>						
FY Funds	(original)	\$128,818	Equipment	(expendable)		
	(revised)		Equipment	(non-expendable)		
			Travel			
Est. FY Expenditure		\$128,818	Other			
<b>PURPOSE AND SCOPE</b>						
<p>The objectives and methodology of this project have been modified such that it will no longer pursue TVTF development. This change was due to the industry's general acceptance of the 25-ft base-length method of assessing localized roughness and the need to evaluate it. In light of this, the new scope and purpose of 11-3P had to be revised. The revised objective is to gain insights into the correlation that exists between the vehicular-response based LRI approach and the 25-ft or shorter base-length method and develop the recommendation to have the best use of these two types of indices to quantify localized pavement distresses including bridge end bumps.</p> <p>Subsequent testing (see Task 4 of the 2012-2013 Accomplishments, below) was inconclusive and it was decided to evaluate the discrepancies by computer modeling (effort required project modification and extension). New tasks include:</p> <ul style="list-style-type: none"> <li>-Task 4a: Obtain proficiency in Modeling Software;</li> <li>-Task 4b: Develop mathematical model that can generate both LRI and 25' method results from user generated profile;</li> <li>-Task 4c: Develop series of forward/reverse responses (profile signal to LRI and/or 25' method; LRI and/or 25' method to profile signal) from series of generated profiles;</li> <li>-Task 4d: Run comparison analysis of results derived from Task 4c; and</li> <li>-Task 5: Generate Final Report.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

**FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS**

- Task 3: Ordered pairs have been developed for the remaining collected data referred to in the last annual report. Delays have been measured and recorded for the remaining pairs as well and have been plotted;
- Task 4: Follow-up testing was carried out on bridges having the greatest LRI/25-ft method disparity;
- Task 4a: Proficiency in Modeling Software has been obtained (Matlab/Simulink);
- Task 4b: The LRI Mathematical model has been fully developed. Programmatic material needed to develop the 25' method model has been obtained and is being put toward model development; and
- Task 4c: Series of forward responses (profile signal to LRI) have been fully developed.

**FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES**

- Task 4b: Complete review of programmatic material. Develop 25' Method model;
- Task 4c: Develop LRI to profile signal response. Develop both forward and reverse profile to 25' method signal responses;
- Task 4d: Run comparison analysis of results derived from Task 4c; and
- Task 5: Generate Final Report.

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Field Validation of Equivalent Modulus for Stabilized Subgrade Layer</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30000610</b>		Project Start Date:		5/1/2012	
Research Project Number:	12-11P		Completion Date		(original)	4/30/2014
Research Agency:	LTRC		Completion Date		(revised)	
Principal Investigator:	Mr. Mark Martinez					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$263,502	<b>Total</b>		<b>\$104,807</b>	
	(revised)					
Est. Expended to Date		\$81,578	Salaries		\$104,807	
<b>FY 2012 - 2013 Budget</b>						
FY Funds	(original)	\$140,202	Equipment	(expendable)		
	(revised)		Equipment	(non-expendable)		
			Travel			
Est. FY Expenditure		\$140,202	Other			
<b>PURPOSE AND SCOPE</b>						
<p>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.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>-Task 1: All relevant literature has been reviewed;          -Task 2: A 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; and          -Task 3: Empirical data is being compiled and theoretical projections are being developed. Preliminary comparisons have been carried out.</p>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<p>-Task 2: Canvassing of prospective rehabilitation and new construction projects will continue. DCP, cores, Shelby tubes, FWD and LFWD testing will continue to be conducted according to schedule on existing and future projects;          -Task 3: Empirical data will continue to be compiled and theoretical projections will continue to be developed. Full comparisons will be carried out as data is made available;          -Task 4: A usage model for Odemark-Boussinesq Method will be developed based on the comparison of field/lab data to theoretically derived O-B results; and          -Task 5: The final report and benefit-cost analysis will be developed.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Assessment of Pavement Distresses caused by Trees on Rural Highway</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30000607</b>		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					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$341,459	<b>Total</b>		<b>\$72,063</b>	
	(revised)					
Est. Expended to Date	\$29,000		Salaries		\$67,063	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	\$5,000
FY Funds	(original)	\$112,000	Equipment		(non-expendable)	
	(revised)	\$25,000	Travel			
Est. FY Expenditure	\$18,000		Other			
<b>PURPOSE AND SCOPE</b>						
<p>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&gt;20) are particularly vulnerable to changes in moisture content; shrinking during the drying cycles (desiccation) and swelling during wetting cycles (recharge).</p> <p>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.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>Completed literature search, instrument calibration, and survey of Districts.</p>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<p>Develop instrumentation plan, instrument sites, and begin monitoring.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Assessment of Environmental, Seasonal and Regional Variations in Pavement Base and Subgrade Properties</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30000425</b>		Project Start Date:		9/1/2011	
Research Project Number:	12-2P		Completion Date		(original)	8/31/2013
Research Agency:	LTRC		Completion Date		(revised)	6/30/2015
Principal Investigator:	Mr. Kevin Gaspard					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$262,210	<b>Total</b>		<b>\$97,374</b>	
	(revised)	\$329,685				
Est. Expended to Date	\$160,000		Salaries		\$87,374	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	\$5,000
FY Funds	(original)	\$127,000	Equipment		(non-expendable)	
	(revised)	\$80,000	Travel			
Est. FY Expenditure	\$60,000		Other		\$5,000	
<b>PURPOSE AND SCOPE</b>						
<p>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.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>The literature search was completed as well as the integration of the USDA soil unit maps into the LADOTD GIS system.</p> <ul style="list-style-type: none"> <li>-The 14 research sites were identified and 5 were instrumented;</li> <li>-Instrumentation such as soil suction gauges and TDR's were calibrated; and</li> <li>-Basic soil testing was begun on those sites as well.</li> </ul>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<ul style="list-style-type: none"> <li>-Instrument 9 sites and complete soil testing on those sites;</li> <li>-Monitor sites seasonally after they are installed; and</li> <li>-Begin working on the Interim Report.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Minimizing Shrinkage Cracking in Cement-Stabilized Bases Through Micro-Cracking</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:		<b>30000729</b>		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				
<b>BUDGET STATUS</b>						
<b>Total Budget</b>				<b>Estimated 2013-2014 Budget</b>		
Total Cost	(original)	\$200,000		<b>Total</b>		<b>\$74,000</b>
	(revised)					
Est. Expended to Date		\$27,500		Salaries		\$74,000
<b>FY 2012 - 2013 Budget</b>						
FY Funds	(original)	\$54,000		Equipment	(expendable)	
	(revised)			Equipment	(non-expendable)	
Est. FY Expenditure		\$50,000		Travel		
				Other		
<b>PURPOSE AND SCOPE</b>						
<p>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.</p> <p>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 be 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.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>-Perform literature review; and</p> <p>-Construction of ALF Microcracking test section.</p>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<p>-Monitoring of shrinkage cracking of ALF Microcracking test sections; and</p> <p>-Project selection and construction of in situ Microcracking test sections.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Development of DARWin-ME Design Guideline for Louisiana Pavement Design</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30000608</b>		Project Start Date:		2/1/2012	
Research Project Number:	12-4P		Completion Date		(original)	8/1/2013
Research Agency:	LTRC		Completion Date		(revised)	
Principal Investigator:	Dr. Zhong Wu					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$160,231	<b>Total</b>		<b>\$25,500</b>	
	(revised)					
Est. Expended to Date		\$97,000	Salaries		\$25,500	
<b>FY 2012 - 2013 Budget</b>						
FY Funds	(original)	\$92,400	Equipment	(expendable)		
	(revised)	\$75,000	Equipment	(non-expendable)		
Est. FY Expenditure		\$75,000	Travel			
			Other			
<b>PURPOSE AND SCOPE</b>						
<p>The objectives of this research study are:</p> <ul style="list-style-type: none"> <li>-To conduct a pilot mechanistic-empirical pavement design evaluation using DARWin-ME based on typical Louisiana traffic, materials and environmental information;</li> <li>-To assess the short and long-term performance of typical Louisiana pavement structures using DARWin-ME's nationally calibrated performance models; and</li> <li>-To develop implementation guidelines for future adoption of DARWin-ME in Louisiana.</li> </ul>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<ul style="list-style-type: none"> <li>-Determine Louisiana DARWin-ME Pavement Design Criteria; and</li> <li>-Analyze Louisiana Pavement Structures using DARWin-ME, including all typical flexible pavements and part of rigid pavements in Louisiana.</li> </ul>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<ul style="list-style-type: none"> <li>-Analyze the performance of rigid and overlay pavements in Louisiana using DARWin-ME;</li> <li>-Identify DARWin-ME Design Modules that can be used without local calibration;</li> <li>-Develop DARWin-ME Implementation Guidelines; and</li> <li>-Prepare the Final Report.</li> </ul>						



**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Evaluation of DOTD Aggregate Friction Rating Table by Field Measurements</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:		<b>30000609</b>		Project Start Date:		2/1/2012
Research Project Number:		12-5P		Completion Date	(original)	2/1/2015
Research Agency:		LTRC		Completion Date	(revised)	
Principal Investigator:		Dr. Zhong Wu				
<b>BUDGET STATUS</b>						
<b>Total Budget</b>				<b>Estimated 2013-2014 Budget</b>		
Total Cost	(original)	\$217,957		<b>Total</b>		<b>\$85,000</b>
	(revised)					
Est. Expended to Date		\$75,000		Salaries		\$85,000
<b>FY 2012 - 2013 Budget</b>				Equipment (expendable)		
FY Funds	(original)	\$82,000		Equipment (non-expendable)		
	(revised)			Travel		
Est. FY Expenditure		\$82,000		Other		
<b>PURPOSE AND SCOPE</b>						
<p>The objective of this research is to evaluate the current Louisiana Department of Transportation and Development (LADOTD) Coarse Aggregate Friction Rating Table and provide recommendation /revision of frictional mix design guidelines based on a new set of laboratory friction measurement devices – dynamic friction tester (DFT) and circular texture meter (CTM).</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>-Performed field testing on 20 field sites; and          -Developed preliminary relationships between frictional characteristics measured from laboratory, and field-compacted pavement surfaces.</p>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<p>-Continue performing field friction tests;          -Refine the developed preliminary relationships based on more field test results; and          -Develop a DFT-based aggregate friction specification based on 09-2B laboratory test results for DOTD's QPL requirement.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Roller Compacted Concrete Over Soil Cement Under Accelerated Loading</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30000682</b>		Project Start Date:		5/1/2012	
Research Project Number:	12-7P		Completion Date (original)		4/30/2014	
Research Agency:	LTRC		Completion Date (revised)			
Principal Investigator:	Dr. Zhong Wu					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$363,959	<b>Total</b>		<b>\$154,000</b>	
	(revised)					
Est. Expended to Date		\$120,000	Salaries		\$154,000	
<b>FY 2012 - 2013 Budget</b>			Equipment (expendable)			
FY Funds	(original)	\$127,000	Equipment (non-expendable)			
	(revised)		Travel			
Est. FY Expenditure		\$127,000	Other			
<b>PURPOSE AND SCOPE</b>						
<p>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.</p> <p>Six RCC accelerated pavement testing (APT) sections (each of 71.7-ft long and 13-ft wide) will be constructed for this research study.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>-RCC Mix Design and Laboratory Testing; and</p> <p>-Construction of six RCC test sections at ALF.</p>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<p>-Accelerated loading of RCC test sections using the ATLAS;</p> <p>-Instrumentation and performance monitoring of RCC pavement structures; and</p> <p>-Analysis of the experiment results.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Evaluation of Warm Mix Asphalt Technology in Flexible Pavements</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30000117</b>		Project Start Date:		3/15/2009	
Research Project Number:	07-1B		Completion Date		(original)	3/15/2011
Research Agency:	LTRC		Completion Date		(revised)	8/31/2013
Principal Investigator:	Dr. Louay Mohammad					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$325,420	<b>Total</b>		<b>\$10,000</b>	
	(revised)	\$480,980				
Est. Expended to Date		\$470,980	Salaries		\$10,000	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)	\$93,532	Equipment		(non-expendable)	
	(revised)		Travel			
Est. FY Expenditure		\$83,532	Other			
<b>PURPOSE AND SCOPE</b>						
<p>The objective of this research is to evaluate existing technologies that allow the reduction of mixing and compaction temperatures of asphalt mixtures and ultimately develop an innovative approach to achieve that without compromising the performance and durability of the resulting mixtures. Reduced production and paving temperatures would have beneficial environmental and economic effects. A comparison of conventional mix designs to existing Warm-Mix technologies will be conducted on Field mixtures. Chemical properties and engineering (rheological) properties of the modified asphalt binder in this study will be evaluated using standard analytical method and Superpave binder tests. Asphalt mixtures that contain different levels of additives will be characterized by a suite of fundamental engineering tests. Those tests will be aimed at characterizing the stability and durability of the asphalt mixtures.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<ul style="list-style-type: none"> <li>-Complete testing on US 61 project;</li> <li>-Finalize and evaluate data for reporting;</li> <li>-Complete Final Report writing; and</li> <li>-Hold final Project Review Committee meeting;</li> </ul>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<ul style="list-style-type: none"> <li>-Publish Final Report;</li> <li>-Complete Technical Summary;</li> <li>-Revise Implementation Assessment; and</li> <li>-Evaluate and Modify as needed current WMA specifications to satisfy final recommendations.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Pavement Materials Research Using Special Equipment at the Engineering Materials Characterization Research Facility</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30000112</b>		Project Start Date:		7/1/2009	
Research Project Number:	10-1EMCRF		Completion Date		(original)	6/30/2015
Research Agency:	LTRC		Completion Date		(revised)	
Principal Investigator:	Dr. Louay Mohammad					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$345,000	<b>Total</b>		<b>\$130,000</b>	
	(revised)					
Est. Expended to Date		\$143,000	Salaries		\$114,000	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)	\$143,000	Equipment		(non-expendable)	\$16,000
	(revised)		Travel			
Est. FY Expenditure		\$143,000	Other			
<b>PURPOSE AND SCOPE</b>						
<p>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 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 DOTD 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 DOTD, and, assists in-house LTRC investigators to develop thorough research programs.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<ul style="list-style-type: none"> <li>-Participated in the Louisiana DOTD Asphaltic Concrete Specification Committee;</li> <li>-Developed and conducted a Superpave Mixture Design and Analysis Course for the Lafayette Consolidated Government; and</li> <li>-Participated in several technical assistance Projects.</li> </ul>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<ul style="list-style-type: none"> <li>-Continue participation in the Louisiana DOTD Asphaltic Concrete Specification Committee;</li> <li>-Continue participation in technical assistance projects; and</li> <li>-Conduct workshops and seminars.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Development of Performance Based Specifications for Louisiana Asphalt Mixtures</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30000221</b>		Project Start Date:		4/1/2011	
Research Project Number:	10-4B		Completion Date		(original)	3/31/2014
Research Agency:	LTRC		Completion Date		(revised)	
Principal Investigator:	Dr. Louay Mohammad					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$299,433	<b>Total</b>		<b>\$94,200</b>	
	(revised)					
Est. Expended to Date		\$198,600	Salaries		\$92,700	
<b>FY 2012 - 2013 Budget</b>			Equipment (expendable)			
FY Funds	(original)	\$90,000	Equipment		(non-expendable)	
	(revised)		Travel		\$1,500	
Est. FY Expenditure		\$90,000	Other			
<b>PURPOSE AND SCOPE</b>						
<p>The goal of the proposed research is to develop a framework for the implementation of a performance based specification (PBS) for new and rehabilitated asphalt pavements. Specific objectives of the study include: identifying state-of-the-practice of PBS employed in highway agencies, evaluating the applicability of key PBS principles to LA pavements, developing a tailored PBS for Louisiana DOTD, and developing a framework of the PBS implementation in Louisiana.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>Worked on the following tasks:</p> <ul style="list-style-type: none"> <li>-Task 2 - Identification of Field Projects and Sample Preparation;</li> <li>-Task 3 - Conducting Laboratory and Field Experiments;</li> <li>-Task 4 – Performing Data Analyses; and</li> <li>-Task 5 – Developing a Prototype PBS.</li> </ul>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<p>Continue work on the following tasks:</p> <ul style="list-style-type: none"> <li>-Task 2 - Identification of Field Projects and Sample Preparation;</li> <li>-Task 3 - Conducting Laboratory and Field Experiments; and</li> <li>-Task 4 – Performing Preliminary Data Analyses.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Validity of Multiple Stress Creep Recovery Test for DOTD Asphalt Binder Specification</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:		<b>30000167</b>		Project Start Date:		9/1/2010
Research Project Number:		11-1B		Completion Date	(original)	6/30/2012
Research Agency:		LTRC		Completion Date	(revised)	9/30/2013
Principal Investigator:		Md. Sharear Kabir				
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$144,838	<b>Total</b>		<b>\$14,788</b>	
	(revised)	\$171,788				
Est. Expended to Date		\$65,000	Salaries		\$14,788	
<b>FY 2012 - 2013 Budget</b>						
FY Funds	(original)	\$101,788	Equipment	(expendable)		
	(revised)		Equipment	(non-expendable)		
Est. FY Expenditure		\$87,000	Travel			
			Other			
<b>PURPOSE AND SCOPE</b>						
<p>Multiple Stress Creep Recovery (MSCR) test has been used extensively to identify the elastic response in a binder at different stress levels and can be used to determine the presence of polymer in a binder. This test has already been added to the AASHTO Specifications for PG Binder. The main objective of this study is to collect asphalt binders from various sources listed in the Qualified Product List of Louisiana Department of Transportation and Development (LADOTD) and characterize their elastic responses with regard to the present AASHTO Binder Specifications. In addition, recommendations to the current LADOTD Asphalt Binder Specifications will be developed.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<ul style="list-style-type: none"> <li>-Added more literature reviews;</li> <li>-Newer binders were included to the previous test factorial. Therefore the number of test factorial grew larger and took longer than estimated to finish the test factorial;</li> <li>-Conducted Gel Permeation Chromatography tests on a partial test factorial;</li> <li>-Completed the testing according to the revised test factorial; and</li> <li>-Completed 75 percent of the data analysis.</li> </ul>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<ul style="list-style-type: none"> <li>-Complete data analysis; and</li> <li>-Submit the draft final report for review and publication.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Evaluation of Dynamic Shear Rheometer Tests for Emulsions</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30000163</b>		Project Start Date:		9/15/2010	
Research Project Number:	11-2B		Completion Date (original)		7/14/2012	
Research Agency:	LTU		Completion Date (revised)		11/14/2013	
Principal Investigator:	Nazimuddin M Wasiuddin					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$100,000	<b>Total</b>		<b>\$19,880</b>	
	(revised)	\$154,880				
Est. Expended to Date		\$135,000	Salaries		\$17,000	
<b>FY 2012 - 2013 Budget</b>			Equipment (expendable)			
FY Funds	(original)	\$2,000	Equipment (non-expendable)		\$2,000	
	(revised)	\$37,000	Travel		\$880	
Est. FY Expenditure		\$37,000	Other			
<b>PURPOSE AND SCOPE</b>						
<p>The main objective of this research is to examine MSCR test at different temperatures for emulsion residue. The specific objectives are as follows:</p> <ul style="list-style-type: none"> <li>-Determine applicable stress limits: 100Pa, 300Pa, 500Pa, 1000Pa, 5000Pa up to 30000 Pa;</li> <li>-Test the LA DOTD's available emulsions at shear stress determined in applicable stress limits and compare to force ductility and elastic recovery tested by materials lab; and</li> <li>-Set specifications for emulsions with a quick residual DSR test for emulsions.</li> </ul>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>An interim report was completed and was presented to the Project Review Committee (PRC). The PRC of Project 11-2B in a meeting on October 12, 2012 included the following additional tasks:</p> <ul style="list-style-type: none"> <li>-Increase Task 2 to further investigate the different and newer recovery methods for Emulsified Asphalts that are being used today, i.e., vacuum degassing devices;</li> <li>-In support of item 1, DSR, elastic recovery and force ductility tests will be performed on residues from at least two other recovery methods: high temperature evaporation method and recently introduced vacuum degassing method;</li> <li>-Currently, poor correlations exist between f2 and percent recovery and between f2 and phase angle. Increase task 4 to conduct other DSR tests such as constant strain test that will investigate and find better correlations between DSR and force ductility test;</li> <li>-One (or two) base binder properties will also be evaluated and then different residue recovery methods will be performed to understand how the properties of the base binder change with different recovery methods; and</li> <li>-Additional tasks a, b, and c was completed more than 60% in each case. Task d was completed about 30% as of April, 1.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>
<ul style="list-style-type: none"><li>-In 2013-2014, additional tasks a through d will be completed; and</li><li>-A draft final report will be prepared and submitted in August, 2013 to the Project Review Committee PRC.</li></ul>



**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Testing and Analysis of LWT and SCB Properties of Asphaltic Concrete Mixtures</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:		<b>30000220</b>		Project Start Date:		4/1/2011
Research Project Number:		11-3B		Completion Date	(original)	3/31/2013
Research Agency:		LTRC		Completion Date	(revised)	12/31/2013
Principal Investigator:		Mr. Samuel B. Cooper				
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$263,975	<b>Total</b>		<b>\$124,000</b>	
	(revised)					
Est. Expended to Date		\$140,975	Salaries		\$124,000	
<b>FY 2012 - 2013 Budget</b>						
FY Funds	(original)	\$113,000	Equipment	(expendable)		
	(revised)		Equipment	(non-expendable)		
			Travel			
Est. FY Expenditure		\$63,000	Other			
<b>PURPOSE AND SCOPE</b>						
<p>The Louisiana Transportation Research Center (LTRC) has been conducting Loaded Wheel Tracker (LWT) and Semi-Circular Bend (SCB) test for several years for forensic investigation and research purposes only. Recently, the state plans to develop LWT and SCB specification limits for asphaltic concrete pavement construction. Consequently, a statewide testing scheme is planned to generate a wide spread LWT and SCB database.</p> <p>The overall goal of this research is to introduce LWT (rutting) and SCB (cracking) limits that are reasonable and practical, considering the commonly used construction materials and projected traffic in the state of Louisiana.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<ul style="list-style-type: none"> <li>-A simplified SCB test Apparatus (Modify Marshall Load Frame) has been developed and is working well;</li> <li>-Field projects have been identified, sampled and tested;</li> <li>-Preliminary data analysis has been conducted; and</li> <li>-Preliminary findings were presented at the Louisiana Transportation Conference.</li> </ul>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<ul style="list-style-type: none"> <li>-Continue collecting and performing laboratory tests;</li> <li>-Conduct data analysis;</li> <li>-Submit draft Final Report for review and publication; and</li> <li>-Develop End Result Specifications for the LADOTD.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Chemical Characterization of Asphalts Related to their Performance</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30001080</b>		Project Start Date:		12/1/2012	
Research Project Number:	12-3B		Completion Date (original)		11/1/2014	
Research Agency:	LSU		Completion Date (revised)			
Principal Investigator:	Mr. William H. Daly					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$238,645	<b>Total</b>		<b>\$136,422</b>	
	(revised)					
Est. Expended to Date			Salaries		\$133,922	
<b>FY 2012 - 2013 Budget</b>			Equipment (expendable)		\$2,500	
FY Funds	(original)		Equipment (non-expendable)			
	(revised)		Travel			
Est. FY Expenditure			Other			
<b>PURPOSE AND SCOPE</b>						
<p>The objective of this study is to correlate the molecular structure of asphalt binders of conventional HMA mixtures as well as of mixtures containing high recycled asphalts content with their cracking potential. This project will be sub-divided into two phases including I development of procedures to define the percent content of polymers, asphaltenes and maltenes in polymer modified binders as well as analysis of recyclable asphalts, such as recycled asphalt pavement (RAP) and II comparative evaluations of binders for HMA mixtures in which RAP will be incorporated. Cracking potential will be evaluated using the Semi Circular B Test (SCB) test procedure.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>-First round of binder samples were acquired; and -Testing of binder samples has begun.</p>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<p>-Continue sampling and testing binder samples; -Sample and test RAP mixtures; and -Begin SCB sampling and testing.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Development of Wave and Surge Atlas for the Design and Protection of Coastal Bridges in South</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30000118</b>		Project Start Date:		5/2/2011	
Research Project Number:	10-4ST		Completion Date	(original)	10/1/2013	
Research Agency:	Ocean Engineering Associates, Inc.		Completion Date	(revised)		
Principal Investigator:	Mr. D. Max Sheppard					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$309,117	<b>Total</b>		<b>\$30,073</b>	
	(revised)					
Est. Expended to Date		\$258,040	Salaries		\$28,273	
<b>FY 2012 - 2013 Budget</b>						
FY Funds	(original)	\$128,905	Equipment	(expendable)		
	(revised)	\$95,472	Equipment	(non-expendable)		
Est. FY Expenditure		\$20,000	Travel		\$1,800	
			Other			
<b>PURPOSE AND SCOPE</b>						
<p>The objectives of the proposed research are to:</p> <ul style="list-style-type: none"> <li>-Assess the vulnerability for coastal bridges in the 100-year hurricane flood zone in south Louisiana;</li> <li>-Develop a series of site specific surge atlas for vulnerable bridges and prioritize for wave atlas development; and</li> <li>-Develop a series of site-specific wave atlas including information on wave height and wave period in the areas adjacent to a small number of most important bridge sites in south Louisiana.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS	
<ul style="list-style-type: none"><li>-Task 1: Completed Literature Survey;</li><li>-Task 2: Completed Bridge Selection and Screening Procedure;</li><li>-Task 3: Removed Bridge Vulnerability Screening;</li><li>-Task 4: Completed Interim Summary Report;</li><li>-Task 5: Compile and Purchase Data (Completed);</li><li>-Task 6: Develop Storm Surge (ADCIRC) and Wave (WAM and SWAN) Model Mesh (Completed). A new ADCIRC/SWAN mesh that has suitable resolution at existing and future bridge sites in the study area has been developed. The mesh contains more than 620,000 nodes and encompasses the Western Atlantic Ocean, the entire Caribbean Sea and the entire Gulf of Mexico;</li><li>-Task 7: Calibrate Storm Surge and Wave Models (Completed); Using wave, tide, and high water mark data collected (Task 5) the ADCIRC and SWAN model was calibrated;</li><li>-Task 8: Run Models (Projected). All 150 simulations will be completed;</li><li>-Task 9: Extract Information from Solution Files and Perform Extreme Value Analyses (Projected). Extreme value analyses will be performed on the data extracted from the simulation files;</li><li>-Task 10: Construct Storm Surge and Wave Atlas (Projected). Construction of the storm surge and wave atlas will be 50% complete;</li><li>-Task 11: Compute Surge/Wave Forces and Moments (Projected). Surge/wave forces will be 50% complete; and</li><li>-Task 13: Write and Submit Draft Final Report (Projected). The draft report will be 80% complete.</li></ul>	
FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES	
<p>All tasks will be completed in Fiscal Year 2013-2014.</p>	

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Developing Prestressed Girder Transportation Guidelines</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30000138</b>		Project Start Date:		5/2/2011	
Research Project Number:	10-5ST		Completion Date		(original)	9/1/2012
Research Agency:	Wiss, Janney, Elstner Associates, Inc.		Completion Date		(revised)	6/30/2014
Principal Investigator:	Mr. Jonathan McGormley					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$199,961	<b>Total</b>		<b>\$100,000</b>	
	(revised)	\$211,919				
Est. Expended to Date		\$85,000	Salaries		\$72,600	
<b>FY 2012 - 2013 Budget</b>						
FY Funds	(original)	\$100,000	Equipment	(expendable)	\$6,000	
	(revised)	\$111,958	Equipment	(non-expendable)	\$7,400	
Est. FY Expenditure		\$10,000	Travel		\$8,000	
			Other		\$6,000	
<b>PURPOSE AND SCOPE</b>						
<p>The purpose of the study is to develop (or review and update) the transportation guidelines for prestressed girders. This will be done by assessing and analyzing the effects of stresses that transported girders are subject to and providing recommendations that would ensure that girders being transported from the plant to the bridge site would not be damaged.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>-Instrumented girder could not be transported to bridge site since severe difficulties were encountered in driving the piles and erecting the substructure for the bridge; and          -Initiated creep study to assist with determining in-situ stresses of instrumented girder that has been in precast yard since November 2011.</p>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<p>-Complete installation of instrumentation on first trial girder and monitor during transport;          -Review collected data and revise the instrumentation plan for the second girder to capture selected behaviors of girder;          -Install the instrumentation on the second girder and monitor it during transport;          -Analyze data and examine in conjunction with girder buckling and cracking analysis;          -Complete creep study for first girder concrete; and          -Draft interim report summarizing field testing results.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Data Collection and Evaluation of Continuity Detail for John James Audubon Bridge #2</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30000546</b>		Project Start Date:		1/3/2012	
Research Project Number:	12-1ST		Completion Date		(original)	1/2/2014
Research Agency:	LSU		Completion Date		(revised)	
Principal Investigator:	Dr. Ayman Okeil					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$61,553	<b>Total</b>		<b>\$26,350</b>	
	(revised)					
Est. Expended to Date		\$24,000	Salaries		\$13,000	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)	\$31,000	Equipment		(non-expendable)	
	(revised)	\$28,000	Travel		\$350	
Est. FY Expenditure		\$28,000	Other		\$13,000	
<b>PURPOSE AND SCOPE</b>						
<p>The main objective of this project is to continue data collection from an already existing monitoring system with the goal of evaluating the performance of the positive moment detail that is employed in Bridge #2 of the James Audubon Bridge project under long-term effects. The ultimate goal of the project is to provide the Louisiana Department of Transportation and Development (LADOTD) with information on the performance of this detail, which is widely used in the John James Audubon Project Bridges. Furthermore, assessment of a repair that took place to one of the girders in the monitored segment will be conducted.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<ul style="list-style-type: none"> <li>-Data Collection continued throughout FY 2012-2013;</li> <li>-Two site visits took place in early Aug. 2012 (hot weather) and early Mar. 2013 (cold weather);</li> <li>-Visual inspection revealed two new cracks during the August 2012 visit. No new cracks were found during the March 2013 visit;</li> <li>-Conducted system maintenance for one multiplexer; and</li> <li>-Data processing, analysis, and interpretation continued during the covered period.</li> </ul>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<ul style="list-style-type: none"> <li>-Continue data collection;</li> <li>-Perform last visual inspection of bridge during hot summer month;</li> <li>-Data procession, analysis, and interpretation;</li> <li>-Transfer of monitoring system to the Louisiana Transportation Research Center; and</li> <li>-Submit final report.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Morganza Floodway Bridge Bent Repair using Carbon Fiber Reinforced Polymers (CFRP)</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30000724</b>		Project Start Date:		6/1/2012	
Research Project Number:	12-3ST		Completion Date (original)		6/30/2014	
Research Agency:	UNO		Completion Date (revised)			
Principal Investigator:	Dr. Vijaya Gopu					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$31,544	<b>Total</b>		<b>\$9,337</b>	
	(revised)					
Est. Expended to Date		\$12,100	Salaries		\$7,188	
<b>FY 2012 - 2013 Budget</b>			Equipment (expendable)			
FY Funds	(original)	\$10,107	Equipment (non-expendable)			
	(revised)		Travel			
Est. FY Expenditure		\$10,107	Other		\$2,149	
<b>PURPOSE AND SCOPE</b>						
<p>The primary objective of the proposed retrofit is to prevent the delamination of the repair material by confinement using high modulus carbon composite. The retrofit operation will be carried out as part of demonstration of the use of high strength composites for transportation infrastructures, under the sponsorship of LTRC.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>Field implementation was completed under the supervision of Professors Balaguru and Gopu. Three graduate students assisted in the field application of the carbon fiber composite. All the repair materials and equipment needed were brought from Rutgers. Contractor working at the bridge site provided water, generator and scaffolding. An initial report on the repair of the pile cap was submitted within 2 weeks after completion of the repair. The contents of this initial report will be integrated into the final report at a later date.</p> <p>The first inspection was carried out in in November,'12, by Drs. Balaguru and Gopu. The repair area, the carbon fibers and the inorganic matrix were observed to be functioning as expected and no distress or cracks were observed in the concrete pile cap or the inorganic coating/carbon fiber composite material used in the repair. An initial report after the inspection was submitted by Dr. Balaguru.</p>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<ul style="list-style-type: none"> <li>-The laboratory tests will be completed at Rutgers and the test results will be included in the next semi-annual progress report;</li> <li>-The bridge pile cap will be monitored on a semi-annual basis and a report on the performance of the composite material utilized in the repair and condition of the pile cap will be presented after each monitoring visit; and</li> <li>-Material needed for inclusion in the final report is being collected and the report will be published in accordance with the schedule planned for this project.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>LTRC Proposal for the Support of Research and Development in Transportation Planning</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30000125</b>		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					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$358,462	<b>Total</b>		<b>\$77,000</b>	
	(revised)					
Est. Expended to Date		\$360,000	Salaries		\$74,000	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)	\$442,987	Equipment		(non-expendable)	
	(revised)		Travel		\$3,000	
Est. FY Expenditure		\$360,000	Other			
<b>PURPOSE AND SCOPE</b>						
<p>This project provides long-term professional assistance to the Louisiana Department of Transportation and Development (LADOTD) on transportation planning and other matters, has supported the management responsibility of the Special Studies section of the Louisiana Transportation Research Center (LTRC), and permits teaching of courses in the Department of Civil and Environmental Engineering at the Louisiana State University (LSU) on a case by case basis depending on the work schedule. Such exposure encourages graduate students to participate in the LTRC research program and affords LTRC the opportunity to support the enhancement of higher education. The Principal Investigator 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.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<ul style="list-style-type: none"> <li>-Conducted a study investigating the privatization of civil engineering operations in LADOTD;</li> <li>-Managed project 13-9SS, "Improving Freight Crash Incident Management";</li> <li>-Conducted research on the transferability of hurricane evacuation models developed at LTRC;</li> <li>-Taught CE 7621, Mass Transit Systems, in Fall 2012;</li> <li>-Taught CE 7600, Data Collection Methods, in Spring 2013;</li> <li>-Prepared research proposal for UTC on the use of Bluetooth technology in measuring travel time in urban areas;</li> <li>-Prepared research proposal for LTRC on the development of a mode choice model to estimated evacuation transit demand; and</li> <li>-Assisted with RPIC.</li> </ul>						



**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>
<ul style="list-style-type: none"><li>-Continue to manage project 13-9SS, "Improving Freight Crash Incident Management";</li><li>-Conduct research on UTC project "Travel Time Estimation Using Bluetooth";</li><li>-Conduct research on LTRC project "Development of a Mode Choice Model to Estimate Evacuation Transit Demand";</li><li>-Teach CE 7640, Transportation Policy and Planning, in Fall 2013;</li><li>-Teach CE 7641, Urban Transportation Planning Models, in Spring 2014; and</li><li>-Continue interaction with the Corps of Engineers with respect to their involvement in hurricane evacuation preparedness and mitigation.</li></ul>

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Establishing an Intelligent Transportation Systems (ITS) Lab at LTRC (Phase II)</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30000140</b>		Project Start Date:		8/20/2010	
Research Project Number:	10-6SS		Completion Date		(original)	11/19/2011
Research Agency:	LSU		Completion Date		(revised)	8/19/2013
Principal Investigator:	Dr. Sherif Ishak					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$87,474	<b>Total</b>		<b>\$11,069</b>	
	(revised)	\$124,178				
Est. Expended to Date		\$109,702	Salaries		\$11,069	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)	\$25,544	Equipment		(non-expendable)	
	(revised)	\$25,544	Travel			
Est. FY Expenditure		\$14,475	Other			
<b>PURPOSE AND SCOPE</b>						
<p>In the next phase, the research team would like to further explore and develop the data query, data analysis, and data visualization functions in this system. Specifically, the next phase will develop programs that can effectively process relevant information to the users according to different analysis tasks, as well as provide visualization capabilities of the results on a web-based interactive GUI. One main visualization engine to build up can be developed on the Google map API. This can be accomplished by associating the data collected at different sensors with their geographical locations, upon which much more powerful online data queries and analysis can be performed.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS
<p>-Task 1: Set Up and Literature Review We are in the process of studying the programming environment and manuals for transportation map information visualization and are using the OpenLayer API software. We have already gotten familiar with the programming environment and set up. The following shows two maps when we are using Yahoo! Mapping API and Microsoft's mapping API in the OpenLayer JavaScript programming. This task is 90% complete. There is still room for improvement other than using the third party layer.</p> <p>-Task 2: Spatial Data Query and Visualization Some simple visualization has been implemented and tested. The following figure gives a snapshot of our programming results. First different colors show different traffic speed on I-10/I12: the yellow indicates the speed &lt;30, the green indicates the speed is between 30 and 70, and the red indicates the speed &gt;70. Second this interface supports the user to input two sensors ID, and then it computes and visualizes the shortest path between these two IDs. This task is now 60% complete. Our next step is to improve these visualizations to make them more clear and allow interactive editing.</p> <p>-Task 3: Data Analysis and Testing We already implemented some traffic analysis programming using SQL programming. And now we are able to get the speed, lane volumes and lane occupancies at each sensor. This task is 55% complete. The further step is to visualize these results in the GUI interface and quantify the congestion delays along the freeway corridors.</p> <p>-Task 4: Prepare Progress and Final Reports A report documenting the work and results will be submitted in May 2013. Final progress report is due August 2013.</p>
FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES
<p>-Proposed activities next period; -Environment setting will be going on; and -Better GUI interface designing and the visualization of the data analysis results will be going on.</p>

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Administration of LSU Partnership with the National Center for Intermodal Transportation for Economic Competitiveness</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30000700</b>		Project Start Date:		3/1/2012	
Research Project Number:	12-1AD		Completion Date		(original)	12/31/2013
Research Agency:	LTRC		Completion Date		(revised)	
Principal Investigator:	Mr. Harold 'Skip' Paul					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$30,900	<b>Total</b>		<b>\$40,000</b>	
	(revised)					
Est. Expended to Date		\$16,000	Salaries		\$40,000	
<b>FY 2012 - 2013 Budget</b>						
FY Funds	(original)	\$15,450	Equipment	(expendable)		
	(revised)		Equipment	(non-expendable)		
			Travel			
Est. FY Expenditure		\$16,000	Other			
<b>PURPOSE AND SCOPE</b>						
<p>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 DOTD has committed to providing the matching funds.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<ul style="list-style-type: none"> <li>-Contracted with the Principal Investigator for seven research projects for 1.2 million</li> <li>-Held Project Review Committee meetings with Principal Investigators;</li> <li>-Planning activities for the development of the research projects funded for Year 2 of the NCITEC;</li> <li>-Developed priority problem statements for Year 2 of NCITEC;</li> <li>-Worked with Principal Investigators to develop proposals for Year 2 funding; and</li> <li>-UTC presentations at 2013 Louisiana Transportation Conference.</li> </ul>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<ul style="list-style-type: none"> <li>-Provide support for the administration of the UTC;</li> <li>-Initiate new projects; and</li> <li>-Continued progress monitoring of existing projects.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>History of the Implementation of AASHTO and Louisiana DOTD Road Design Standards</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30000605</b>		Project Start Date:		8/1/2012	
Research Project Number:	12-2SS		Completion Date	(original)	1/31/2014	
Research Agency:	LSU		Completion Date	(revised)		
Principal Investigator:	Mr. Hak-Shul Shin					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$149,999	<b>Total</b>		<b>\$64,999</b>	
	(revised)					
Est. Expended to Date		\$17,563	Salaries		\$38,000	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)	\$97,628	Equipment		(non-expendable)	
	(revised)		Travel		\$2,500	
Est. FY Expenditure		\$85,000	Other		\$24,499	
<b>PURPOSE AND SCOPE</b>						
<p>The research objectives of this study are to:</p> <ul style="list-style-type: none"> <li>-Identify national and state road design standards applied in Louisiana over the last 90 years;</li> <li>-Determine state and federal laws that have a bearing on road design in Louisiana;</li> <li>-Identify internal directives, policies, and practice applied to road standards in the Louisiana Department of Transportation (LADOTD) over the last 90 years; and</li> <li>-Develop a document library of files in Access, Excel, or Word format listing the standards in chronological order.</li> </ul> <p>Scope of Work</p> <p>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.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

**FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS**

**-TASK 1: Literature Review:**

The Literature review is 90% complete. All the possible documents were collected. These documents includes 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 70% 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 PRC with Interim Report**

Planning to present the interim report at the end of April, 2013.

**FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES**

**-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.

**-TASK 5: Internal Review**

The main objective of this task is to get more information about the history of road design guidelines 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 is prepared, so it will be executed soon.

**-TASK 6: Establish Appropriate Format to Document the Information**

Finally a single PDF file will be prepared for all the scanned documents. The file will include 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 will also be prepared.

**-TASK 7: Prepare Progress and Final Report**

Final progress report is due Dec.2013.

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>DOTD Support for UTC Project: Calibration of the Louisiana Highway Safety Manual</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30000603</b>		Project Start Date:		7/1/2012	
Research Project Number:	12-3SA		Completion Date	(original)	12/31/2013	
Research Agency:	LSU		Completion Date	(revised)		
Principal Investigator:	Dr. Brian Wolshon					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$25,500	<b>Total</b>		<b>\$15,500</b>	
	(revised)					
Est. Expended to Date			Salaries		\$15,500	
<b>FY 2012 - 2013 Budget</b>						
FY Funds	(original)	\$25,500	Equipment	(expendable)		
	(revised)		Equipment	(non-expendable)		
Est. FY Expenditure		\$10,000	Travel			
			Other			
<b>PURPOSE AND SCOPE</b>						
<p>The overall objective of this project is to determine the applicability of the Safety calibrate the Part C predictive model Performance Functions in as outlined in Appendix A of the Highway Safety Manual to Louisiana for the following roadway segments within the Louisiana, roadway system specifically, Rural Two-Lane,- Two- Way Roads; Rural Multilane Highways; and Urban and Suburban Arterials. A single calibration for each of the aforementioned roadway segments will be conducted and applicable to the entire state of Louisiana.</p> <p>In order to achieve the research objective a comparative analysis will be conducted to compare the SPFs developed specifically for Louisiana versus to the SPFs determined as a result of calibrating the current HSM SPFs models to Louisiana conditions. The development of the Louisiana specific SPFs will be performed by others and is not part of this scope of work. Among the outcomes of this research is research that will be to recommend whether the Louisiana Department of Transportation and Development (LADOTD) should develop use the state specific SPFs or the calibrated SPFs the existing HSM models for future projects.</p> <p>At a minimum, the following tasks will be completed to satisfy the research objectives:</p> <ul style="list-style-type: none"> <li>-Literature and State-of-the-Practice Review;</li> <li>-Data Collection and Analysis;</li> <li>-Prepare and present the project review committee with an interim report;</li> <li>-HSM Calibration;</li> <li>-Comparative Analysis; and</li> <li>-Final Report.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

**FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS**

**-Task 1: Literature and State-of-the-Practice Review**

The search for, review of, and documentation of literature related to this project continues to progress as new information sources of relevance to this project are identified. Currently, the two areas of primary importance to this project have been documented including the determination of strategies, difficulties, and outcomes of the calibration efforts in North Carolina, Florida, Utah, Georgia, and Kansas to determine whether jurisdiction-specific SPFs or calibrating the HSM SPFs provides more reliable results.

**-Task 2: Data Collection and Analysis**

The two main sources of data of relevance to this project have been identified and acquired. These include the Louisiana Statewide Crash database for 2009 - 2011 and the LADOTD statewide roadway description GIS files for the facility types in this research. Because there are several different versions of these databases (and they are updated regularly), one of the difficulties is making sure that the most-correct and most-up-to-date version were being used for the analyses.

The next steps will be to:

- Filter out road sections that do not fit research profile;
- Divide the segments into homogenous sections; and
- Integrate these crash database and road characteristic database into a single data set to match the crashes to their locations.

**FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES**

**-Task 4: HSM Calibration**

Using the preliminary data gathered and integrated thus far, a first attempt to use the HSM process to compute calibration factors for four-lane rural roads has been attempted.



**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>DOTD Support for UTC Project: Development of a Tool for Documenting, Tracking, Recording, and Analyzing Improvements to Intersection Sites and Roadway</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:		<b>30000544</b>		Project Start Date:		7/1/2012
Research Project Number:		12-4SA		Completion Date	(original)	12/31/2013
Research Agency:		LSU		Completion Date	(revised)	
Principal Investigator:		Dr. Helmut Schneider				
<b>BUDGET STATUS</b>						
<b>Total Budget</b>				<b>Estimated 2013-2014 Budget</b>		
Total Cost	(original)	\$41,708		<b>Total</b>		<b>\$13,903</b>
	(revised)					
Est. Expended to Date		\$27,805		Salaries		\$13,903
<b>FY 2012 - 2013 Budget</b>						
FY Funds	(original)	\$27,806		Equipment	(expendable)	
	(revised)			Equipment	(non-expendable)	
Est. FY Expenditure		\$27,805		Travel		
				Other		
<b>PURPOSE AND SCOPE</b>						
<p>Provide the Louisiana Transportation Research Center (LTRC) staff support for the UTC project "Development of a Tool for Documenting, Tracking, Recording, and Analyzing Improvements to Intersection Site and Roadway Departures". One of the SHSP emphasis areas is Infrastructure and Operations which is comprised of "intersection crashes" and "roadway departure crashes". To address intersection safety the Department of Transportation and Development (LADOTD) used extensive data analysis and research to develop an intersection safety improvement program. An interactive electronic tool to identify and document the sites, types and characteristics of the facilities, and the improvements installed, as well as calculate the results in terms of crash reductions associated with the targeted improvements, is needed. This research would build and populate the tool and train LADOTD personnel on data input methods. It would also result in preliminary analyses. To the extent possible, the crash results at the improved sites would be compared to unimproved sites with the same or similar characteristics to control for potential regression to the mean.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>-Task 1: Literature Search; and -Task 2: Requirements Gathering and Analysis.</p>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<p>-Task 3: Programming and/or Software Preparation (9 Months); -Task 4: Data is Gathering and Input (2 Months); and -Task 5: Final Report (1 Month).</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>DOTD Support for UTC Project: Development of Minimum State Requirements for Local Growth Policies</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30000606</b>		Project Start Date:		7/1/2012	
Research Project Number:	12-4SS		Completion Date	(original)	12/31/2013	
Research Agency:	UNO		Completion Date	(revised)		
Principal Investigator:	Dr. John Renne					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$51,000	<b>Total</b>		<b>\$46,000</b>	
	(revised)					
Est. Expended to Date		\$2,521	Salaries		\$46,000	
<b>FY 2012 - 2013 Budget</b>						
FY Funds	(original)	\$17,000	Equipment	(expendable)		
	(revised)		Equipment	(non-expendable)		
			Travel			
Est. FY Expenditure		\$5,000	Other			
<b>PURPOSE AND SCOPE</b>						
<p>The proposed research entails the development of minimum requirements for local growth management policies for use in Louisiana. This study will be a mixed methods approach that includes both quantitative and qualitative methods of data collection and analysis.</p> <p>The major goals of this project include:</p> <ul style="list-style-type: none"> <li>-Conduct a literature review;</li> <li>-Conduct a survey to identify current state-of-practice and legal framework in Louisiana;</li> <li>-Conduct a socioeconomic and demographic analysis of population trends obtained from last US census data at the Parish level across the State of Louisiana;</li> <li>-Conduct a statewide poll of opinions and issues related to growth management and policies;</li> <li>-Hold meetings with stakeholder agencies;</li> <li>-Develop a list of growth management policies or guidelines for managing growth for both rural and urban transportation networks;</li> <li>-Demonstrate the effectiveness of the guidelines by modeling consequences of one or more policies or guidelines developed;</li> <li>-Develop Return on Investment analysis for implementation of guidelines;</li> <li>-Develop draft Growth Management Guidelines for Louisiana;</li> <li>-Hold meetings with stakeholder agencies to present findings, solicit comments, and establish a consensus-building approach; and</li> <li>-Develop final report documenting entire research effort and outlining potential policy approaches for local, regional, and state governments to implement growth management.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

**FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS**

During the 2012-2013 Fiscal Year, the following activities were accomplished:

- An extensive selection of literature related to growth management was analyzed, and the literature review has been drafted (expected final delivery: May 2013);
- A subcontractor was hired to complete an analysis of the legal framework for growth management in Louisiana (expected completion: April 2013);
- A demographic analysis of the State and each Louisiana Parish was completed (Pending final review);
- Two surveys were developed and will be deployed targeting the general public and government employees, pending final revisions;
- The first stakeholder meeting/focus group was held on March 11th, 2013 in New Orleans. Ten people (in addition to UNOTI staff) participated, including planners, the Louisiana Department of Transportation and Development (LADOTD) and local engineers, elected officials, attorneys, advocates, and elected officials. Additional meetings have been postponed until FY 2013-2014.

**FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES**

All remaining activities within the project scope are expected to be completed in FY 2013-2014. Specifically, this includes:

- Completion of the remaining stakeholder focus groups in Baton Rouge, Lafayette, Alexandria, Shreveport, and Houma and a summary of the outcomes of those meetings;
- Analysis of the results of both online surveys;
- Development of a preliminary list of policies;
- Completion of an interim report documenting the results of tasks 1-6;
- Completion of scenario modeling and ROI analysis to evaluate potential impacts and costs of policy implementation for select policies;
- Development of draft guidelines for growth management, and series of stakeholder meetings to discuss draft document and incorporate feedback; and
- Development of final growth management blueprint document and final LTRC research report.

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>DOTD Support for UTC Project: Distracted Driving and Associated Crash Risks</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30000760</b>		Project Start Date:		7/1/2012	
Research Project Number:	13-1SA		Completion Date	(original)	12/31/2013	
Research Agency:	LSU		Completion Date	(revised)		
Principal Investigator:	Dr. Sherif Ishak					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$39,367	<b>Total</b>		<b>\$39,367</b>	
	(revised)					
Est. Expended to Date			Salaries		\$39,367	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)	\$31,463	Equipment		(non-expendable)	
	(revised)		Travel			
Est. FY Expenditure			Other			
<b>PURPOSE AND SCOPE</b>						
<p>In order to effectively evaluate the level of driver distraction on the road, a set of criteria must be first established to quantify the level of distraction associated with certain type of cognitive activities. The main objectives of this research are:</p> <ul style="list-style-type: none"> <li>-Conduct a thorough literature review on driver distraction and roadway safety, including the cause and extent of distraction associated with driving tasks;</li> <li>-Identify a set of cognitive tasks that are believed to have the most impact on driver distraction;</li> <li>-Establish a set of performance measures for the type and level of distraction based on the driving behavior;</li> <li>-Design and conduct simulation experiments involving a sample of human subjects;</li> <li>-Compare using appropriate statistical techniques the driving behavior of the human subjects with and without the identified distraction factors; and</li> <li>-Analyze the results and make conclusions.</li> </ul> <p>The scope of this study is limited to the use of the newly acquired driving simulator at the Louisiana State University (LSU) to measure the level of driver distraction. Experimental work will be conducted with the simulator using human subjects as drivers. Volunteers will be sought from the LSU community of students and staff members to participate in the experimental work. No monetary compensation will be provided for participants.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

**FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS**

**-Task 1: Literature Review**

The literature review is 100% complete. It consists of summaries of recent studies undertaken on distracted driving using the driving simulator. Emphasis was placed on the distraction type, and the performance measures for which data were collected.

**-Task 2: Identify a Set of Cognitive Tasks**

This task is 100% complete. A number of tasks, including but not limited to cognitive tasks, have been identified to be used as secondary tasks for the distracted driving experiment. These are: manually tuning a radio, operating a navigation device, accessing a phonebook contact, engaging in a phone conversation with a handheld cell device, receiving and responding to a text message using a handheld cell phone, and engaging in a front seat passenger conversation.

**-Task 3: Identifying a Set of Performance Measures**

This task is 100% complete even though it has a scheduled completion date of February, 2013. NHTSA recommends using two performance measures: number of lane exceedance (to account for lateral control) and the standard deviation of time headway (to account for longitudinal control). These two performance measures will be used to quantify the distracting effect of the secondary tasks identified in Task 2.

**-Task 4: Experimental Work**

This task has a scheduled task start date of October, 2012 and a completion date of June, 2013. It is 20% complete. A pilot study has been completed using thirteen participants from the LSU community. The pilot study gave the research team the opportunity to become familiar with the experimental set-up and procedure. The actual experiment will be designed in January, 2013, participants recruited in February, 2013, and experiment conducted in March, 2013.

**-Task 5: Data Analysis**

This task is 0% complete. It has a scheduled start date of May, 2013.

**-Task 6: Final Report**

This task is 0% complete. It has a scheduled start date of August, 2013.

**FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES**

-Complete Task 4: Undertake all experimental work on driver distraction; and

-Begin Task 5: Undertake at least 50% of the statistical data analysis of the collected data from the experimental work.

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>DOTD Support for UTC Project: Development of Performance Measurement for Freight Management</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:		<b>30000762</b>		Project Start Date:		7/1/2012
Research Project Number:		13-3SS		Completion Date	(original)	12/31/2013
Research Agency:		LSU		Completion Date	(revised)	
Principal Investigator:		Dr. Peter Kelle				
<b>BUDGET STATUS</b>						
<b>Total Budget</b>				<b>Estimated 2013-2014 Budget</b>		
Total Cost	(original)	\$11,849		<b>Total</b>		<b>\$11,849</b>
	(revised)					
Est. Expended to Date		\$4,000		Salaries		\$9,556
<b>FY 2012 - 2013 Budget</b>						
FY Funds	(original)			Equipment	(expendable)	
	(revised)			Equipment	(non-expendable)	
				Travel		
Est. FY Expenditure		\$7,849		Other		\$2,293
<b>PURPOSE AND SCOPE</b>						
<p>This study will develop standardized measurements that can be used to compare the performance of different modes of transportation, as well as multimodal networks, to each other. Federal grants are emphasizing the need to demonstrate improved performance from transportation investments. Identify indicators of performance common to each transportation mode that measure desirable improvements to the transportation system, such as, but not limited to, system capacity, efficiency, and environmental impact. The indicators should be comparable between modes to be capable of evaluating complex multimodal transportation networks. Methodology for collecting data will be developed to provide the highest level of accuracy and lowest probability of error. Where appropriate, levels of acceptable and unacceptable performance will also be identified.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>The team has finished Task 1 of summarizing existing intermodal freight transportation measures and Task 2 of identification of performance measures using systems engineering approaches. A report summarizing the performance measurement system for freight management from Tasks 1 and 2 will be submitted by the end of April, 2013 to the Louisiana Transportation Research Center (LTRC).</p>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<p>Conduct Task 3 of procedure development for calculation, data collection, and application and Task 4 of case Study, demonstration, and technology transfer. The project is planned to be completed by December 31, 2013.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Highway for Life Demonstration Project: La 511 (70th Street)</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30001140</b>		Project Start Date:		1/15/2013	
Research Project Number:	13-4SS		Completion Date		(original)	6/14/2015
Research Agency:	LTU		Completion Date		(revised)	
Principal Investigator:	Dr. Aziz Saber					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$89,609	<b>Total</b>		<b>\$36,000</b>	
	(revised)					
Est. Expended to Date		\$1,200	Salaries		\$12,000	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)	\$16,000	Equipment		(non-expendable)	
	(revised)		Travel		\$1,200	
Est. FY Expenditure		\$6,500	Other		\$22,800	
<b>PURPOSE AND SCOPE</b>						
<p>The objective of this project is to determine user satisfaction with the new innovations installed in the LA 511 road project sponsored by FHWA Highways for Life program. The researchers will work with the local homeowners associations and businesses along the project to survey those most affected by the improvements to LA 511. The surveys would be used to assess users' before and after satisfaction with LA 511, based on factors such as pavement condition, roadway congestion, safety, traffic noise and disruption due to construction. Surveys would be constructed on a five-point Likert Scale with a performance goal of 4 or higher as suggested in the HFL goal. The Louisiana Department of Transportation and Development (LADOTD) will also use Facebook and twitter to obtain user feedback for the public and increase participation in the survey.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>-The researchers collected and analyzing the Pre-construction user satisfaction survey data. The Louisiana Transportation Research Center (LTRC) performed and analyzing Pre-construction noise measurements using Larson Davis Model 824 sound meter in accordance with the FHW A Highway Program Manual;</p> <p>-The researchers are evaluating the user satisfaction with the existing facility. The researchers are working with the local homeowners associations and businesses along the project and surveyed those most affected by the improvements to LA 511. The Pre-construction surveys are used to assess users' satisfaction with LA 511 before construction, based on factors including pavement condition, roadway congestion, safety, traffic noise and disruption due to construction. The surveys were constructed on a five-point Likert scale with a performance goal of 4 or higher as suggested in the HfL goal; and</p> <p>-The LADOTD are using Facebook and Twitter to obtain user feedback for the public and increase participation in the survey.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>
<ul style="list-style-type: none"><li>-The researchers will examine and review the project details including the Hfl program, Hfl proposal, project construction proposal, project cost estimates, bid alternates, project safety, traffic, and pavement condition history. All pre- and post- construction project data shall be provided by LTRC/LADOTD. The researchers will collect and analyze the user satisfaction survey data as discussed below;</li><li>-The researchers will submit an interim report to the Project Review Committee (PRC) for review and approval. The interim report will summarize the project history, details, initial customer satisfaction survey, project schedule and data needs;</li><li>-The researchers will visit the construction site periodically to document progress of implementation of Hfl innovations;</li><li>-The researchers will analyze pre- and post- construction data for safety, congestion, smoothness, noise, speed of construction and user satisfaction; and</li><li>-The researchers will assist LADOTD plans to highlight the FHWA Highways for LIFE program and the features of LADOTD application in various venues. The researchers will participate and document technology transfer event presenting project results.</li></ul>



**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>DOTD Support for UTC Project: Improving Freight Crash Incident Management</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:		<b>30000763</b>		Project Start Date:		7/1/2012
Research Project Number:		13-5SS		Completion Date	(original)	12/31/2013
Research Agency:		LTRC		Completion Date	(revised)	
Principal Investigator:		Dr. Chester Wilmot				
<b>BUDGET STATUS</b>						
<b>Total Budget</b>				<b>Estimated 2013-2014 Budget</b>		
Total Cost	(original)	\$53,386		<b>Total</b>		<b>\$17,795</b>
	(revised)					
Est. Expended to Date		\$10,000		Salaries		\$17,795
<b>FY 2012 - 2013 Budget</b>						
FY Funds	(original)	\$35,591		Equipment	(expendable)	
	(revised)			Equipment	(non-expendable)	
Est. FY Expenditure		\$10,000		Travel		
				Other		
<b>PURPOSE AND SCOPE</b>						
<p>The purpose of this project is to determine the most effective way of the state to mitigate the impact of major freight crash incidents on the Interstate system in Louisiana. The scope of the project is limited to data collected on Interstate roads in the Baton Rouge area.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<ul style="list-style-type: none"> <li>-Literature review and review of practice in other states (80% complete);</li> <li>-Identification of Louisiana laws and processes for managing freight incidents (20% complete); and</li> <li>-Three-year inventory of freight crash incidents on the Interstate system in Louisiana (20% complete).</li> </ul>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<ul style="list-style-type: none"> <li>-Identify laws/processes needed to support quick clearance;</li> <li>-Evaluate laws/processes for support of quick clearance;</li> <li>-Identify methodologies to calculate the cost of delay;</li> <li>-Develop benefit cost analysis for laws/processes; and</li> <li>-Recommend laws/processes for support of quick clearance.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>DOTD Support for UTC Project: Economic Impact Analysis of Short Line Railroads in the State of Louisiana</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30000764</b>		Project Start Date:		7/1/2012	
Research Project Number:	13-6SS		Completion Date	(original)	12/31/2013	
Research Agency:	LSU		Completion Date	(revised)		
Principal Investigator:	Dr. Jared Llorens					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$12,735	<b>Total</b>		<b>\$4,452</b>	
	(revised)					
Est. Expended to Date	\$8,283		Salaries		\$3,952	
<b>FY 2012 - 2013 Budget</b>						
FY Funds	(original)	\$8,283	Equipment	(expendable)		
	(revised)		Equipment	(non-expendable)		
			Travel			
Est. FY Expenditure	\$8,283		Other		\$500	
<b>PURPOSE AND SCOPE</b>						
<p>The primary goal of this research project is to assess the economic impact of Short Line rail operations in the State of Louisiana. Short Line (Class III) rail is defined as those rail operations with revenues of \$31.9 million or less and those handling terminal and switching operations. Short Line rail operations function in tandem with larger regional (Class II) and national (Class I) rail operations, and according to the American Short Line and Regional Rail Association (ASLRRA) approximately 8 million carloads of goods, ranging from coal to manufacturing products, were shipped over Class III Short Line rail in 2010 (ASLRRA, 2012). In terms of scope, there are an estimated 537 Class III rail operations across the United States which employ approximately 12,000 workers (23 on average) and generate combined revenue of \$2.1 billion annually. In Louisiana alone, a total of eleven Class III rail operations (8 freight and 3 switching and terminal) maintain approximately 829 miles of track, representing nearly a quarter of the state's total rail mileage (Association of American Railroads, 2011a).</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>Phase I:</p> <ul style="list-style-type: none"> <li>-All Class III rail operations within the state were identified and classified by region and scope of rail operations;</li> <li>-A prototype Class III rail survey instrument was developed which will be used to collect data on key performance metrics including, but not limited to, the following key areas: immediate rail employment, existing customer impact, potential customer impact and annual revenues.</li> </ul> <p>Phase II: In Progress</p> <ul style="list-style-type: none"> <li>-During Phase II, the survey instrument developed in Phase I will be distributed to all identified customers and Class III rail operators. Next, this phase of the research project will be followed up by in-depth, qualitative interviews with Class III operators, customers of Class III operators and local community leaders in those areas serviced by Class III operators; and</li> <li>-Research collected during this phase of the project will also include the evaluation of the economic state of those communities where Class III rail operations are currently in place. Specifically, the research team will seek to determine the extent to which certain local communities rely upon employers supported by Class III rail and the potential costs to these communities that would result from a loss of Class III rail access.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>
<p>Phase III: (July 2013-December 2013)</p> <ul style="list-style-type: none"><li>-The third and final phase of the research project will entail the analysis of collected survey and qualitative interview data, as well as the composition of the final project report;</li><li>-Ultimately, the results of this research project will directly contribute to existing research on the scope and importance of short line rail in rural communities. Additionally, it is expected that this research project will serve as a worthwhile resource for local and state policymakers seeking to explore potential targets for economic development investments in rural communities; and</li><li>-Last, the results of the analysis provided in the project will be made available to stakeholders in three primary formats; (1) a formal report provided to the UTC; (2) related conference presentations; and (3) a condensed executive summary to be provided to interested policymakers.</li></ul>

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>DOTD Support for UTC Project: Use of Containers to Carry Bulk and Breakbulk Commodities and its Impact on Gulf Region Ports and International Trade</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:		<b>30000765</b>		Project Start Date:		7/1/2012
Research Project Number:		13-7SS		Completion Date	(original)	12/31/2013
Research Agency:		UNO		Completion Date	(revised)	
Principal Investigator:		Mr. James Amdal				
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$27,000	<b>Total</b>		<b>\$18,500</b>	
	(revised)					
Est. Expended to Date		\$8,000	Salaries		\$18,000	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)	\$18,500	Equipment		(non-expendable)	
	(revised)	\$18,500	Travel		\$500	
Est. FY Expenditure		\$18,500	Other			
<b>PURPOSE AND SCOPE</b>						
<p>Determine the probable impact to Gulf Coast and Louisiana ports of the Panama Canal Expansion (PCE), the consequent introduction of mega-container ships to the Gulf of Mexico and the US East Coast with a particular emphasis on needed support infrastructure required to handle increasing numbers of containers containing Bulk and Breakbulk commodities.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>Extensive data collection, literature review and spreadsheet representing North, Central and South American Container Port Improvement Programs in response to the PCE, scheduled for completion in April, 2015. Ongoing activities include daily review and update of relevant articles on infrastructure improvements in the Americas. Industry and port personnel outreach and interviews ongoing.</p>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<p>Utilize a Project Advisory Committee (PAC) to review and comment on infrastructure improvements under development or consideration at container ports within the Americas. An emphasis will be on the major Gulf Coast ports (Houston, New Orleans, Mobile and Tampa) as well as pending federal legislation developed in response to the PCE.</p> <p>It is anticipated that the PAC will meet 3 times during the 2013-2014 period. A final written report will be developed and submitted to the PAC and LTRC upon completion.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>DOTD Support for the UTC Project: The Impact of Modifying Jones Act on the US and Louisiana</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30000766</b>		Project Start Date:		7/1/2012	
Research Project Number:	13-8SS		Completion Date		(original)	12/31/2013
Research Agency:	UNO		Completion Date		(revised)	
Principal Investigator:	Dr. Asaf Ashar					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$34,000	<b>Total</b>		<b>\$22,667</b>	
	(revised)					
Est. Expended to Date		\$9,800	Salaries		\$22,667	
<b>FY 2012 - 2013 Budget</b>						
FY Funds	(original)	\$11,333	Equipment	(expendable)		
	(revised)		Equipment	(non-expendable)		
			Travel			
Est. FY Expenditure		\$11,333	Other			
<b>PURPOSE AND SCOPE</b>						
<p>The Jones Act, or Section 27 of the Merchant Marine Act of 1920, relates to goods and passengers transported by water between US ports, hereafter referred to as domestic shipping or cabotage. The Jones Act specifically mandates that all domestic shipping shall be exclusively provided by US-flag ships: i.e., defined as ships fulfilling four stipulations: (a) owned by US citizens; (b) crewed by US citizens or permanent residents; (c) constructed by US shipyards; and (d) operated under US laws and regulations. The Jones Act has four provisions related to ownership, construction, regulations, and labor. This study is not concerned with the repeal of Jones Act, which has been exhaustively studied, but with modifying some of its provisions that we deem more realistic. The first modification would allow the re-reflagging of foreign-built ships. The second modification is adjusting the size and composition of US crews serving on re-flagged ships according to the technical requirements of the ship, and in line with foreign crews on these ships prior to the re-flagging. Altogether, these two modifications are expected to substantially reduce the capital and operating costs of US-flagged ships. This research focuses on coastal services, both for domestic and international (feeder) freight of containers and trailers.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>The first accomplishment includes refocusing the original study scope which also includes the off-shore services involving Puerto Rico. This redefinition, which was requested by the steering committee, where timely since, it is unrealistic to assume that Jones Act for these services will be modified following Tote's \$300 million order placed with NASCO shipyard in Long Beach, CA, for new Jones Act ships to be deployed on this route.</p> <p>The second accomplishment was an extensive review of more than 30(!) on short-seas and coastal shipping which directly or indirectly address Jones Act. In this respect it should be noted that the most comprehensive study on coastal shipping was recently completed by the US Maritime Administration as part of its American Marine Highway project – but was not released yet. In addition to the extensive review studies, we conducted a series of in-depth interviews with various authors. We also attended a workshop on the subject supported by George Mason University following a major study by this university.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

**FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES**

While reviewing previous studies (see above) we realized that most of them coalesced on several typical applications of coastal shipping, those identified by these studies' authors as most promising. Accordingly, our first activity, which at the time of writing this report (April 2013) is almost completed, will be selection of typical applications of coastal shipping services for more detailed analysis, including the assessment of Jones Act's US-built exemption. At this point we selected three applications: (a) Long Coastal Route, between Philadelphia, PA and Jacksonville, FL, provided by ships similar to Design 04 of AMH; (b) Short Coastal Route, between New York, NY and Boston, MA provided by Design 01; and (c) Short International Feeder, between New York, NY and Boston, MA, provided by Design 21. It should be noted, in this respect, that chartering older ships on the international market is considered unviable because these ships do not comply with upcoming limiting emission of SO<sub>x</sub>, NO<sub>x</sub> and particulate matter in Environmental Coastal Area (<200 miles). Accordingly, the sulfur content of marine fuels in coastal areas should be less than 0.1% in 2015 (currently the content varies 1.5% - 4.5% pending on country). The EAC stipulation was the main reason underlying Tote new shipbuilding program.

For each of these designs we intend to develop a cost model based on data gathered from AMH's various studies. However, AMH designs involved dual-use ships, or ships that are designed according to the special requirements of US Navy. Hence, the first modifications we intend to undertake, with the supports of the naval architects who took part in the original design, will be to "demilitarize" AMH's ship designs by removing all items deem unnecessary for a pure commercial service. This, for example, could include removal of on-board ramps, since shore-based ramp are much more cost effective and substantial speed reduction. Next, we will assess, again with the support of naval architects, the construction cost of the modified designs in foreign shipyard, mainly in South Korea. A preliminary findings is the a large part of these savings will be mitigated by the higher capital cost (financing) incurred by foreign commercial ship owners relative to the subsidized financing provided by the various programs of the US Federal Government. Our third adjustment will involve crewing cost, especially for the Short Coastal Route. Here we intend to take advantage of existing Coast Guard rules and labor union agreements for Off-Shore Supply Vessels (OSV) and ocean-going tugs. The port cost will then be calculated, based on consultation with existing port operators and AMH's model. The total port-to-port cost will include vessel, port and administration costs and, when adjusted to reflect expected occupancy, will result in the Required Freight Rates (RFR).

The RFR of the three applications will be compared to relevant land-based freight rates: intermodal rail for the Long Domestic Service and all-truck for the Short Domestic Service. Since all-truck rates are door-to-door, terminal drayage costs at the origin and destination ports will be added to the Short Domestic. In the case of Feeder, the comparative land-based mode will also be all-truck except that only one drayage will be added at the destination port.

General observations and conclusions regarding the impact of Jones Act exemptions on coastal shipping will then be derived based on the results of the above cost comparisons.

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Evaluation of Portland Cement Concrete with Internal Curing Capabilities</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:		<b>30000680</b>		Project Start Date:		5/1/2012
Research Project Number:		12-4C		Completion Date	(original)	10/30/2013
Research Agency:		LTRC		Completion Date	(revised)	
Principal Investigator:		Dr. Tyson Rupnow				
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$124,096		<b>Total</b>		<b>\$40,051</b>
	(revised)					
Est. Expended to Date		\$84,045		Salaries		\$40,051
<b>FY 2012 - 2013 Budget</b>						
FY Funds	(original)	\$76,831		Equipment	(expendable)	
	(revised)			Equipment	(non-expendable)	
				Travel		
Est. FY Expenditure		\$76,831		Other		
<b>PURPOSE AND SCOPE</b>						
<p>Proper curing is a key to durable and sustainable concrete structures. When a concrete mixture is designed, delivered, poured, and consolidated, curing is the last and the most critical part for a quality final product. Insufficient curing of concrete will cause cracking in the concrete and in turn leads to a non-durable and sustainable concrete structure. Current Louisiana specification requires all concrete decks to be water cured for 10 days, based on the field experience this is a very expensive operation and the most difficult one to enforce and monitor. Therefore, there is a great need to develop a new concrete mix that has the self-curing capability, which will reduce the time demand for water curing, minimize or eliminate cracks in the concrete deck, and help achieve durability and sustainability in concrete structures.</p> <p>The objective of this research is to investigate internally cured concrete produced for bridge structures in Louisiana's environment to improve or guarantee the quality of concrete structures. This research will investigate the use of differing percentages of lightweight aggregate for internal curing benefits as well as other internal curing agents such as super-absorbent polymer additives.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<ul style="list-style-type: none"> <li>-Developed mix designs and test matrix;</li> <li>-Ordered and assembled ring molds for ring shrinkage test;</li> <li>-Laboratory testing performed: slump, air, unit weight, set time, compression, flexure, modulus, surface resistivity, and ring shrinkage; and</li> <li>-Analyzed data.</li> </ul>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<ul style="list-style-type: none"> <li>-Finish laboratory testing and data analysis;</li> <li>-Complete draft report; and</li> <li>-Complete final report.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Comparison of Conventional and Self-Consolidating Concrete for Drilled Shaft Construction</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30000681</b>		Project Start Date:		5/1/2012	
Research Project Number:	12-5C		Completion Date	(original)	10/30/2013	
Research Agency:	LTRC		Completion Date	(revised)		
Principal Investigator:	Dr. Tyson Rupnow					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$119,096	<b>Total</b>		<b>\$37,151</b>	
	(revised)					
Est. Expended to Date		\$81,954	Salaries		\$37,151	
<b>FY 2012 - 2013 Budget</b>			Equipment	(expendable)		
FY Funds	(original)	\$76,831	Equipment	(non-expendable)		
	(revised)		Travel			
Est. FY Expenditure		\$76,831	Other			
<b>PURPOSE AND SCOPE</b>						
<p>Significant anomalies have been observed in many of the recent drilled shaft constructions throughout Louisiana. The anomalies typically occur in the form of honeycombing within the zones of heavy reinforcement or sometimes at the shaft bottom. Self-Consolidating Concrete (SCC) has shown great potential of overcome the difficulties noted in some pilot studies. As an example, SCC was used in the drilled shafts for the Huey P. Long Bridge in New Orleans, Louisiana, and performed satisfactorily. Contrast to the Huey P. Long Bridge, conventional concrete was used for the Audubon Bridge. Problems were noted in the construction as well as the shaft resistance. Both projects consist of large size shafts constructed in the Mississippi River in similar conditions. One possible explanation of the differences in shaft performance is the concrete mixture design.</p> <p>The objective of this research project is to study the suitability of SCC in the drilled shaft construction. The research should include studying the effect of different types of drilling slurries to the effectiveness of SCC. The research will introduce the use of an "L" which tests the turbidity of the concrete during placement under water. A full scale load test of a drilled shaft constructed using the two types of concrete should be conducted to determine any improvement.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<ul style="list-style-type: none"> <li>-Mix designs and test matrix developed to compare control (non-SCC) mixtures against various designs of SCC mixtures (admixtures, modifiers, dosage rates);</li> <li>-Laboratory testing performed: slump, air, unit weight, set time, compression, flexure, modulus, surface resistivity, inverted cone, and L-Box test; and</li> <li>-Performed data analysis.</li> </ul>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<ul style="list-style-type: none"> <li>-Finish laboratory testing and data analysis;</li> <li>-Complete draft report; and</li> <li>-Complete final report.</li> </ul>						



**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Evaluation of MIT-SCAN-T2 for Thickness Quality Control for PCC and HMA Pavements</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:		<b>30001122</b>		Project Start Date:		1/1/2013
Research Project Number:		13-1C		Completion Date	(original)	12/31/2013
Research Agency:		LTRC		Completion Date	(revised)	
Principal Investigator:		Mr. Patrick Icenogle				
<b>BUDGET STATUS</b>						
<b>Total Budget</b>				<b>Estimated 2013-2014 Budget</b>		
Total Cost	(original)	\$58,271		<b>Total</b>		<b>\$8,668</b>
	(revised)					
Est. Expended to Date		\$49,603		Salaries		\$8,668
<b>FY 2012 - 2013 Budget</b>				Equipment (expendable)		
FY Funds	(original)	\$49,603		Equipment (non-expendable)		
	(revised)			Travel		
Est. FY Expenditure		\$49,603		Other		
<b>PURPOSE AND SCOPE</b>						
<p>The objective of this research is to evaluate the MIT-SCAN-T2 as a non-destructive pavement thickness measuring device for quality control purposes. A ruggedness study will be performed using the apparatus to determine influencing factors that affect the thickness measurements. These factors include: depth to target (8" and 13"), target surface area (large and small), target dimension (circular and square), target source (manufacturer supplied and locally fabricated), orientation of target (square only), placement of target (flat and askew), and presence of steel-toed boots.</p> <p>A one mile test section on three PCC pavements and three HMA pavements will be used for field evaluation. Thirty reflective targets will be placed in each mile and a minimum of six cores will be collected directly over targets for thickness verification measurements in accordance with the Louisiana Department of Transportation and Development (LADOTD) TR 225.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<ul style="list-style-type: none"> <li>-Ordered equipment;</li> <li>-Completed ruggedness study; and</li> <li>-began field evaluation (3 PCC and 3 HMA projects).</li> </ul>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<ul style="list-style-type: none"> <li>-Complete field evaluation;</li> <li>-Perform data analysis;</li> <li>-Complete draft report; and</li> <li>-Complete final report.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Administration of LTRC External Funding Programs</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30000169</b>		Project Start Date:		1/1/2008	
Research Project Number:	07-1AD		Completion Date (original)		6/30/2009	
Research Agency:	UNO		Completion Date (revised)		6/30/2015	
Principal Investigator:	Dr. Vijaya Gopu					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$211,428	<b>Total</b>		<b>\$264,013</b>	
	(revised)	\$1,881,239				
Est. Expended to Date		\$210,000	Salaries		\$253,513	
<b>FY 2012 - 2013 Budget</b>			Equipment (expendable)			
FY Funds	(original)	\$251,942	Equipment (non-expendable)			
	(revised)		Travel		\$10,500	
Est. FY Expenditure		\$225,000	Other			
<b>PURPOSE AND SCOPE</b>						
To cover administrative costs handled under contract to support the LTRC research, development and technology transfer expansion funding programs						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<ul style="list-style-type: none"> <li>-Collaborated in submission of UTC-Tier I proposal to RITA;</li> <li>-Coordinated the funding and submission of UTC (Yr.1) projects with LTRC matching;</li> <li>-Coordinated TIRE Research Program;</li> <li>-Coordinated the repair and rehabilitation of Morganza Spillway bent repair project;</li> <li>-Coordinated and conducted inspection of timber bridges in Louisiana, Alabama and North Carolina;</li> <li>-Served on several NSF Proposal Review Panels and Site Visit Teams of NEES Equipment Sites on three Campuses;</li> <li>-Held a LTRC Town Hall meeting at the University of New Orleans; and</li> <li>-Coordinated submission of a UTC-Tier 1 project in collaboration with Univ. of West Virginia and Rutgers University.</li> </ul>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<ul style="list-style-type: none"> <li>-Continue coordination of UTC (Year 1 and Year 2) project efforts;</li> <li>-Continue coordination of TIRE program;</li> <li>-Coordinate the establishment of a state-wide Master of Engineering degree program;</li> <li>-Coordinate a NHI instructor training program for potential instructors;</li> <li>-Hold LTRC Town Hall meetings on a few campuses across the state; and</li> <li>-Seek external funds from federal agencies by establishing collaborative teams.</li> </ul>						

**FHWA**

**Part II SPR Funded  
Research Program**

**PROPOSED RESEARCH**

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Finite Element Analysis of the Lateral Load Test on Battered Pile Group at I-10 Twin Span Bridge</b>				<b>Project Status:</b>	<b>Proposed</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:			Project Start Date:		10/1/2012	
Research Project Number:	13-3GT		Completion Date		(original)	
Research Agency:	LTRC		Completion Date		(revised)	
Principal Investigator:	Dr. Murad Abu-Farsakh					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$150,000	<b>Total</b>		<b>\$45,000</b>	
	(revised)					
Est. Expended to Date			Salaries		\$39,000	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	\$6,000
FY Funds	(original)		Equipment		(non-expendable)	
	(revised)		Travel			
Est. FY Expenditure			Other			
<b>PURPOSE AND SCOPE</b>						
<p>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 representing 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 continua 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 LPI 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.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS	
FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES	
<ul style="list-style-type: none"><li>-Start literature review on the finite element numerical modeling of the lateral behavior of single and group of piles;</li><li>-Start developing the finite element model to analyze the lateral load test on M19 pier of I-10 Twin Span Bridge; and</li><li>-Start evaluating the constitutive models and corresponding.</li></ul>	

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Monitoring of In-Service Geosynthetic Reinforced Soil (GRS) Bridge Abutments in Louisiana</b>				<b>Project Status:</b>	<b>Proposed</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:		<b>30000981</b>		Project Start Date:		6/1/2013
Research Project Number:		13-5GT		Completion Date	(original)	
Research Agency:		LTRC		Completion Date	(revised)	
Principal Investigator:		Dr. Murad Abu-Farsakh				
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$248,915		<b>Total</b>		<b>\$43,000</b>
	(revised)					
Est. Expended to Date				Salaries		\$30,600
<b>FY 2012 - 2013 Budget</b>						
FY Funds	(original)			Equipment	(expendable)	\$12,400
	(revised)			Equipment	(non-expendable)	
Est. FY Expenditure				Travel		
				Other		
<b>PURPOSE AND SCOPE</b>						
<p>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.</p> <p>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.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<ul style="list-style-type: none"> <li>-Conduct literature search relevant to geosynthetic reinforced soil and its application for bridge abutments;</li> <li>-Prepare an instrumentation plan for monitoring the GRS bridge abutment at the selected Maree Michel Bridge GRS abutment; and</li> <li>-Install the instruments in the GRS abutment at critical locations to obtain reliable and meaningful important measurements.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Development of LADOTD Standards for GPS Elevation Accuracy</b>				<b>Project Status:</b>	<b>Proposed</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:			Project Start Date:		8/31/2012	
Research Project Number:		13-6GT	Completion Date		(original)	
Research Agency:			Completion Date		(revised)	
Principal Investigator:						
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$150,000	<b>Total</b>		<b>\$95,000</b>	
	(revised)					
Est. Expended to Date			Salaries		\$75,000	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)		Equipment		(non-expendable)	\$20,000
	(revised)		Travel			
Est. FY Expenditure			Other			
<b>PURPOSE AND SCOPE</b>						
<p>This research will establish LADOTD standards for GPS data collection and accuracy, as well as, implement training for LADOTD users (personnel and contractors). This project will primarily focus on GPS devices, capable of sub-foot accuracy and the various types of field data collected to meet Department needs. Another concurrent LADOTD/LTRC research project will investigate levels of GPS accuracies (~3 cm. and below) for Pavement Management System (PMS) and other applications requiring higher standards of accuracy.</p> <p>This research will evaluate handheld GPS technologies, their accuracy (positional correctness) and precision (number of decimal places) using different protocols (residence time, laser range-finders, etc.), develop training programs, and implement the training to ensure GPS technologies are properly utilized by Departmental personnel and contractors. The training will focus on quality measurements and safe data collection.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>The project has not begun. Once started the tasks of the proposal will begin to address the outlined tasks.</p>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<p>The project has not begun. Once started the tasks of the proposal will begin to address the outlined tasks.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Calibration of Region-Specific Gates Equation for LRFD</b>				<b>Project Status:</b>	<b>Proposed</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	30001424		Project Start Date:		7/1/2013	
Research Project Number:	14-1GT		Completion Date (original)		8/31/2014	
Research Agency:			Completion Date (revised)			
Principal Investigator:						
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$90,000	<b>Total</b>		<b>\$80,000</b>	
	(revised)					
Est. Expended to Date			Salaries		\$80,000	
<b>FY 2012 - 2013 Budget</b>			Equipment (expendable)			
FY Funds	(original)		Equipment (non-expendable)			
	(revised)		Travel			
Est. FY Expenditure			Other			
<b>PURPOSE AND SCOPE</b>						
<p>The objective of this project is to recalibrate the Gates equation using Louisiana data and update the resistance factor of LRFD using the modified Gates equation.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<p>The proposed research needs to compile relevant pile driving data into a database (The database would include end-of-drive, restrike, and static load test information such as driving resistances, CAPWAP capacities, pile set, etc.); compare Gates equation capacity predictions to CAPWAP and other methods; and use LRFD methods to calibrate the resistance factor for the Gates equation. If trends exist, develop resistance factors for relevant categories such as location, geology, friction piles vs. end bearing piles, etc.</p>						



**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Predicting Driven Pile Behavior Within Pre-bored Soil - Phase I</b>				<b>Project Status:</b>	<b>Proposed</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	30001425		Project Start Date:		7/1/2013	
Research Project Number:	14-2GT		Completion Date		(original)	3/31/2014
Research Agency:			Completion Date		(revised)	
Principal Investigator:						
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$50,000	<b>Total</b>		<b>\$50,000</b>	
	(revised)					
Est. Expended to Date			Salaries		\$50,000	
<b>FY 2012 - 2013 Budget</b>						
FY Funds	(original)		Equipment	(expendable)		
	(revised)		Equipment	(non-expendable)		
Est. FY Expenditure			Travel			
			Other			
<b>PURPOSE AND SCOPE</b>						
Develop a guideline for using pre-bored technology in pile design and construction.						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
-Develop a testing plan for field data collection and select multiple pile driving sites representing different soil strengths (e.g., a "hard" site, a "very stiff" site, and a "medium stiff" site) as Phase I; -In phase II, drive multiple test piles at each site using differently sized pre-drill holes. Also drive each pile through a zone with no predrilling for comparison; -Perform monitoring during driving, restrikes, and static load tests using PDA as well as strain gage instrumentation; and -Establish relationships among prebore hole diameter, general soil consistency, pile resistance capacity, and pile drivability.						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Geotechnical Information Database, Phase 3</b>				<b>Project Status:</b>	<b>Proposed</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:			Project Start Date:		7/1/2013	
Research Project Number:	14-3GT		Completion Date		(original)	
Research Agency:			Completion Date		(revised)	
Principal Investigator:						
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$150,000	<b>Total</b>		<b>\$75,000</b>	
	(revised)					
Est. Expended to Date			Salaries		\$70,000	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)		Equipment		(non-expendable)	
	(revised)		Travel		\$5,000	
Est. FY Expenditure			Other			
<b>PURPOSE AND SCOPE</b>						
<p>This is a follow up project to LTRC Project No. 10-2GT, Geotechnical Information Database, Phase 2. The project was met with great success and the PRC and RPIC committees see the need to continue the effort.</p> <p>This phase will focus on concepts discovered during Phase 2, including DCP data, links to Materials Manager, and templates for the subgrade soil survey information.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<p>Select an investigator to focus on concepts discovered during Phase 2, including DCP data, links to Materials Manager, and templates for the subgrade soil survey information.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>A Smart Asphalt Sealant</b>				<b>Project Status:</b>	<b>Proposed</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	30001397		Project Start Date:		7/1/2013	
Research Project Number:	13-1TIRE		Completion Date (original)		6/30/2014	
Research Agency:	Southern University		Completion Date (revised)			
Principal Investigator:	Quinghao Meng					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$30,000	<b>Total</b>		<b>\$30,000</b>	
	(revised)					
Est. Expended to Date			Salaries		\$30,000	
<b>FY 2012 - 2013 Budget</b>						
FY Funds	(original)		Equipment	(expendable)		
	(revised)		Equipment	(non-expendable)		
Est. FY Expenditure			Travel			
			Other			
<b>PURPOSE AND SCOPE</b>						
<p>The purpose of this project is to modify standard Asphaltic concrete sealants with Shape Memory Polymers (AC-SMP) with the intention of developing a sealant with expansion/contraction properties similar to Asphaltic Concrete Pavements. A comprehensive laboratory program will be conducted to obtain the properties of the AC-SMP sealants and a field program will be conducted at two sites on the Southern University Campus.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<p>Develop AC-SMP sealants, conduct and complete Lab and field programs, and write final report.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Investigation of Portland Cement Concrete Pavement Rubblization over Weak Subgrades</b>				<b>Project Status:</b>	<b>Proposed</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:			Project Start Date:		11/1/2013	
Research Project Number:	14-1P		Completion Date (original)		11/1/2016	
Research Agency:	LTRC		Completion Date (revised)			
Principal Investigator:	Mr. Kevin Gaspard					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$250,000	<b>Total</b>		<b>\$50,000</b>	
	(revised)					
Est. Expended to Date			Salaries		\$50,000	
<b>FY 2012 - 2013 Budget</b>			Equipment (expendable)			
FY Funds	(original)		Equipment (non-expendable)			
	(revised)		Travel			
Est. FY Expenditure			Other			
<b>PURPOSE AND SCOPE</b>						
<p>The proposed research will consist of a detailed investigation of the two projects in Louisiana where failures occurred during rubblization, constructing test sections at ALF, constructing field test sections, determining the pavement fracturing guidelines utilized by other State agencies, applying those methods to projects previously evaluated by the Louisiana Transportation Research Center (LTRC), documenting 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.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<p>-Conduct a literature search;          -Obtain and analyze data from projects where failures occurred; and          -Data mine the PMS data base to determine the historical performance of PCC pavements that have been rubblized or broke and seated.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Assessment of Continuous Deflection Measurement Devices in Louisiana</b>				<b>Project Status:</b>	<b>Proposed</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:			Project Start Date:		7/1/2013	
Research Project Number:	14-2P		Completion Date		(original)	6/30/2015
Research Agency:	LTRC		Completion Date		(revised)	
Principal Investigator:	Mr. Kevin Gaspard					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$50,000	<b>Total</b>		<b>\$30,000</b>	
	(revised)					
Est. Expended to Date			Salaries		\$30,000	
<b>FY 2012 - 2013 Budget</b>						
FY Funds	(original)		Equipment	(expendable)		
	(revised)		Equipment	(non-expendable)		
Est. FY Expenditure			Travel			
			Other			
<b>PURPOSE AND SCOPE</b>						
<p>The purpose of this project is to build correlations between two continuous deflection measurement devices with the Falling Weight Deflectometer.</p> <p>Correlations were previously developed on roadways in District 05 with ARA's Rolling Wheel Deflectometer (RWD). The Federal Highway Administration (FHWA) is currently conducting a study with the RWD and another continuous deflection measurement device. FHWA would like to use both devices on some of the roadways previously assessed with the RWD. The Louisiana Transportation Research Center (LTRC) will conduct FWD and profiler tests on the roadways. LTRC will have a support study to analyze the data from the continuous deflection measurement devices, FWD, and profiler which will be tabulated in a report. Once that is complete, the data will be made available to FHWA's consultant.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<p>-FHWA will conduct continuous deflection measurement tests on selected roadways from District 05;</p> <p>-LTRC will simultaneously conduct FWD and Profiler testing; and</p> <p>-The data will be made available to LTRC's selected agent to compose a report.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Support Study for Assessment of Continuous Deflection Measurement Devices in Louisiana</b>				<b>Project Status:</b>	<b>Proposed</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:			Project Start Date:		2/3/2014	
Research Project Number:		14-3P	Completion Date		(original)	6/30/2015
Research Agency:		LSU	Completion Date		(revised)	
Principal Investigator:		Dr. Mostafa Elseifi				
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$50,000	<b>Total</b>		<b>\$30,000</b>	
	(revised)					
Est. Expended to Date			Salaries		\$30,000	
<b>FY 2012 - 2013 Budget</b>						
FY Funds	(original)		Equipment	(expendable)		
	(revised)		Equipment	(non-expendable)		
			Travel			
Est. FY Expenditure			Other			
<b>PURPOSE AND SCOPE</b>						
<p>The Louisiana Transportation Research Center (LTRC) in conjunction with the Federal Highway Administration's (FHWA's) agent will conduct testing on select roadways in District 05 with continuous deflection measurement devices, the Falling Weight Deflectometer (FWD), and profiler. The purpose of this study is to build corrections between both continuous measurement devices and the FWD and produce a formal report detailing all findings.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<p>Begin data analysis.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Evaluation Of Asphalt Mixtures Containing Recycled Asphalt Shingles</b>				<b>Project Status:</b>	<b>Proposed</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:			Project Start Date:		7/1/2013	
Research Project Number:		12-1B	Completion Date		(original)	12/31/2015
Research Agency:		LTRC	Completion Date		(revised)	
Principal Investigator:		Dr. Louay Mohammad				
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$205,000	<b>Total</b>		<b>\$105,000</b>	
	(revised)					
Est. Expended to Date			Salaries		\$78,000	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)		Equipment		(non-expendable)	
	(revised)		Travel		\$2,000	
Est. FY Expenditure			Other		\$25,000	
<b>PURPOSE AND SCOPE</b>						
<p>The primary 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. .</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<ul style="list-style-type: none"> <li>-Characterize the rheological and mechanical properties of asphalt binders and aggregates extracted from three contrasting sources of RAS;</li> <li>-Prepare RAS modified asphalt binder blends using a wet process and measure the rheological properties of prepared asphalt blends; and</li> <li>-Determine the mechanical properties of asphalt/aggregate mixtures with and without RAS.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Develop Field Analysis Procedures for Asphalt Mixtures Containing High-RAP Contents and/or RAS</b>				<b>Project Status:</b>	<b>Proposed</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:			Project Start Date:		7/1/2013	
Research Project Number:	12-2B		Completion Date		(original)	12/31/2015
Research Agency:	LTRC		Completion Date		(revised)	
Principal Investigator:	Dr. Louay Mohammad					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$275,000	<b>Total</b>		<b>\$123,000</b>	
	(revised)					
Est. Expended to Date			Salaries		\$96,000	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)		Equipment		(non-expendable)	
	(revised)		Travel		\$2,000	
Est. FY Expenditure			Other		\$25,000	
<b>PURPOSE AND SCOPE</b>						
<p>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 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.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						



**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>
<ul style="list-style-type: none"><li>-Conduct a thorough literature review;</li><li>-Develop a laboratory and field experiments; and</li><li>-Conduct Laboratory experiment.</li></ul>

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Durability and Environmental Performance of Photocatalytic Asphalt Pavements: Field study</b>				<b>Project Status:</b>	<b>Proposed</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:			Project Start Date:		10/1/2012	
Research Project Number:		13-1B	Completion Date		(original)	
Research Agency:		LTRC	Completion Date		(revised)	
Principal Investigator:		Dr. Louay Mohammad				
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$300,000	<b>Total</b>		<b>\$80,000</b>	
	(revised)					
Est. Expended to Date			Salaries		\$38,000	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)		Equipment		(non-expendable)	
	(revised)		Travel			
Est. FY Expenditure			Other		\$42,000	
<b>PURPOSE AND SCOPE</b>						
<p>Integrating Nano Titanium dioxide in asphalt pavements can create a new generation of photo catalytic pavements that are capable of reducing pollution from traffic and purifying the ambient air. Laboratory studies as well as preliminary field results are showing that TiO<sub>2</sub> can be used to abate pollutants from traffic emissions including NO<sub>x</sub>, SO<sub>2</sub> and VOC. This study proposes to quantify the durability of photo catalytic titanium dioxide (TiO<sub>2</sub>) pavement under accelerated pavement testing conditions and to model the photo catalytic reaction and the effects of operating and environmental conditions on the pollutants removal efficiency. The environmental impacts of the by-products of the technology using life cycle assessment will be quantified. The objectives of this research are (1) validate the effectiveness of photo catalytic compounds in the field; (2) determine the influence of environmental and operating conditions on photo catalytic efficiency; (3) assess the durability of the TiO<sub>2</sub> layer in the field and its influence on the pavement skid resistance. And 4) Quantify the environmental impacts of by-products.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<p>The following tasks will be performed:</p> <ul style="list-style-type: none"> <li>-Task 1 – Construction of a photo catalytic Asphalt test section in the Alf Facility and a control section</li> <li>-Task 2 – Instrument the field site with environmental monitoring equipment;</li> <li>-Task 3 – Determining the photo catalytic degradation efficiency based on NO<sub>x</sub> reduction and nitrate accumulation;</li> <li>-Task 4 – Skid resistance testing of the photo catalytic pavement;</li> <li>-Task 5 – Accelerated loading testing of the photo catalytic pavement;</li> <li>-Task 6 – Determining the photo catalytic degradation efficiency based on NO<sub>x</sub> reduction and nitrate accumulation after accelerated loading; and</li> <li>-Task 6 – Quantification of the environmental impacts of the technology and LCA.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Assessment of the Mechanical Properties of Structural Composites from Algae-Based Binders</b>				<b>Project Status:</b>	<b>Proposed</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	30001398		Project Start Date:		7/1/2013	
Research Project Number:	13-2TIRE		Completion Date		(original)	6/30/2014
Research Agency:	ULL		Completion Date		(revised)	
Principal Investigator:	Dr. William Chirdon					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$30,000	<b>Total</b>		<b>\$30,000</b>	
	(revised)					
Est. Expended to Date			Salaries		\$30,000	
<b>FY 2012 - 2013 Budget</b>			Equipment (expendable)			
FY Funds	(original)		Equipment		(non-expendable)	
	(revised)		Travel			
Est. FY Expenditure			Other			
<b>PURPOSE AND SCOPE</b>						
<p>This project involves the creation of a new class of "green" structural composite materials which utilizes a binder synthesized from the large-volume by product of biodiesel from algae with conventional aggregates. A range of binder-to-aggregate ratios will be tested from 0.1 to 0.5. The composites will be tested in tension, compression and cyclic loading tests to determine mechanical properties. Based on these results, recommendations will be made for applications of the structural composites.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<ul style="list-style-type: none"> <li>-Sample Preparation Tests;</li> <li>-Prepare Samples;</li> <li>-Compressive Testing;</li> <li>-Tensile Testing;</li> <li>-Dynamic Mechanical Testing;</li> <li>-Data Analysis; and</li> <li>-Publication/Final Report.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Development of Nanostructured, Functionalized Catalysts for Production of Long Chain Asphalt Binders from Renewable Biomass</b>				<b>Project Status:</b>	<b>Proposed</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:		30001399		Project Start Date:		7/1/2013
Research Project Number:		13-3TIRE		Completion Date	(original)	6/30/2014
Research Agency:		LSU		Completion Date	(revised)	
Principal Investigator:		Daniel Hayes				
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$30,000		<b>Total</b>		<b>\$30,000</b>
	(revised)					
Est. Expended to Date				Salaries		\$30,000
<b>FY 2012 - 2013 Budget</b>						
FY Funds	(original)			Equipment	(expendable)	
	(revised)			Equipment	(non-expendable)	
Est. FY Expenditure				Travel		
				Other		
<b>PURPOSE AND SCOPE</b>						
<p>The promise of biomass-derived transportation fuels and specialty chemicals is based on the premise that complex organic molecules in readily available bio mass can be converted via a biochemical or thermochemical platform into much simpler molecular building blocks.</p> <p>The purpose is to test the hypothesis that an induction heating pyrolysis system can be synergistically coupled with rationally designed hydrodeoxygenation Nano catalyst on supported metallic cores for direct production of a drop in bio-oil compatible with existing refining infrastructure.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<ul style="list-style-type: none"> <li>-Design metal &amp; ceramic catalyst synthesis and characterization;</li> <li>-Conduct Biomass pyrolysis and upgrading using induction heating;</li> <li>-Condense Upgraded vapors into bio-oil;</li> <li>-Analyze Data;</li> <li>-Numerical Modeling; and</li> <li>-Final Report.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Effects of Temperature Segregation on the Densification and Mechanistic Properties of Asphalt Mixtures</b>				<b>Project Status:</b>	<b>Proposed</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:			Project Start Date:			
Research Project Number:		14-1B	Completion Date		(original)	
Research Agency:		LTRC	Completion Date		(revised)	
Principal Investigator:		Dr. Louay Mohammad				
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$285,000	<b>Total</b>		<b>\$135,000</b>	
	(revised)					
Est. Expended to Date			Salaries		\$83,000	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)		Equipment		(non-expendable)	
	(revised)		Travel		\$2,000	
Est. FY Expenditure			Other		\$50,000	
<b>PURPOSE AND SCOPE</b>						
<p>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.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<ul style="list-style-type: none"> <li>-Conduct Literature Review;</li> <li>-Develop an Experiment Design and Identify Field Projects;</li> <li>-Conduct Temperature Measurement for Selected Field Projects;</li> <li>-Secure Cores from Selected Field Projects;</li> <li>-Perform Density and Mechanistic Tests; and</li> <li>-Conduct Preliminary Data Analysis.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Center for Sustainable Pavement Materials and Technologies</b>				<b>Project Status:</b>	<b>Proposed</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:			Project Start Date:		7/1/2013	
Research Project Number:	14-1SPMT		Completion Date		(original)	6/30/2016
Research Agency:	LTRC		Completion Date		(revised)	
Principal Investigator:	Dr. Louay Mohammad					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$50,000	<b>Total</b>		<b>\$50,000</b>	
	(revised)					
Est. Expended to Date			Salaries		\$50,000	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)		Equipment		(non-expendable)	
	(revised)		Travel			
Est. FY Expenditure			Other			
<b>PURPOSE AND SCOPE</b>						
<p>The transportation infrastructure in Louisiana includes 60,925 miles of streets, roads, and highways, as well as more than 13,426 bridges. Annually, freight transportation in this system carries over 360 million tons of goods valued at approximately 96 billion dollars; 49% of these goods are transported by trucks. The State economy relies completely on our ability to move goods, fuel, and people freely and inexpensively to every corner of our State. Therefore, efficient operation of the highway network is critical for the viability of the State economy and its growth and productivity. The inadequacy of many of the existing roads and the escalating costs of materials and energy provide a great motivation for exploring new innovative techniques and methods for design, building, and preserving roads that ensure its sustainability. In recent years, many state agencies and the Federal Highway Administration (FHWA) have emphasized the importance of pavement sustainability and recycling. The recent increase in energy prices and the gradual depletion of natural resources have also pressed the need to conserve energy in highway construction activities and to adopt methodologies that would be beneficial to the environment, to the users, and to the industry. Using recycled materials and sustainable methodologies will not only reduce help to overcome the current rapid escalation of the costs for building with new virgin highway materials, but it will also maximize the usage of our existing pavement assets in our rehabilitation strategies. In addition, by incorporating sustainable and recyclable materials and technologies into transportation infrastructure, those structures will have a significant impact on the viability and longevity of our society. The use of sustainable and recycled materials will reduce the amount of materials to be quarried, processed, and transported and protect the environment and scarce natural resources. In addition, energy consumption and greenhouse gas emission are also reduced as a result of the use of sustainable alternatives. Therefore, the proposed center will focus on conducting research into the concepts of sustainable material development and how it can be applied to the practice of pavement design, engineering, and construction.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS	
FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES	
<ul style="list-style-type: none"><li>-Establishment of the Center for Sustainable Pavement Materials and Technologies;</li><li>-Develop proposals for external funding for the center;</li><li>-Conduct research relevant to the Center theme and DOTD need; and</li><li>-Develop and Promote effective Sustainable Pavement Technologies for managing and preserving the Infrastructure.</li></ul>	

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Feasibility for Bridge Monitoring Network for Louisiana Bridges</b>				<b>Project Status:</b>	<b>Proposed</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:			Project Start Date:		12/1/2012	
Research Project Number:	13-1ST		Completion Date		(original)	
Research Agency:			Completion Date		(revised)	
Principal Investigator:						
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$75,000	<b>Total</b>		<b>\$40,000</b>	
	(revised)					
Est. Expended to Date			Salaries		\$30,000	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	\$2,000
FY Funds	(original)		Equipment		(non-expendable)	\$3,000
	(revised)		Travel		\$3,000	
Est. FY Expenditure			Other		\$2,000	
<b>PURPOSE AND SCOPE</b>						
<p>With the continuance of research in bridges in Louisiana, the number of instrumented bridges is fast increasing. Currently all instrumented bridges that are parts of ongoing studies are being monitored by their respective principal investigators. Monitoring instrumented bridges can provide bridge designers with a quantitative level of distress at a bridge should it experience an unforeseen event. This will provide the designer with an early warning to mitigate the problem.</p> <p>The purpose of this study is to investigate the establishment of a network to monitor instrumented bridges after research projects are completed and bridges.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
N/A						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<ul style="list-style-type: none"> <li>-Perform an extensive literature search to learn about bridge monitoring networks available supplier/user;</li> <li>-Decide on where collected data will be housed;</li> <li>-How can data be downloaded, modem vs. online access;</li> <li>-Party responsible for data download and analysis; and</li> <li>-Prepare several bridge monitoring network scenarios.</li> </ul>						



**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Live Load Monitoring of the I-10 Twin Span Bridge</b>				<b>Project Status:</b>	<b>Proposed</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30001123</b>		Project Start Date:		12/1/2012	
Research Project Number:	13-2ST		Completion Date		(original)	
Research Agency:			Completion Date		(revised)	
Principal Investigator:						
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$200,000	<b>Total</b>		<b>\$75,000</b>	
	(revised)					
Est. Expended to Date			Salaries		\$70,000	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	\$1,000
FY Funds	(original)		Equipment		(non-expendable)	
	(revised)		Travel		\$1,000	
Est. FY Expenditure			Other		\$3,000	
<b>PURPOSE AND SCOPE</b>						
<p>Louisiana has several instrumented bridges and new ones are added every year. One of those instrumented bridges is the I-10 Twin Span Bridge. One span of this structure has all its components instrumented, including a weigh-in-motion-WIM, deck, girder, diaphragms, bent caps, columns, and piers. The purpose of this study is to collect and analyze data when subject to heavy live loads, or wind loads, as well as impact loads to its piers (wave fore or ship collision). This will help the designer in identifying the stress level in those instrumented components and take necessary actions, if need may be.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<ul style="list-style-type: none"> <li>-Gain familiarity with the monitoring system installed on the I-10 Twin Span Bridge;</li> <li>-Select a location where the collected data be housed;</li> <li>-Perform a trial run by downloading and analyzing data for a certain event; and</li> <li>-Submit a summary report regarding the analyzed data.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Evaluating Louisiana New Continuity Detail for Girder Bridges</b>				<b>Project Status:</b>	<b>Proposed</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:			Project Start Date:		7/1/2013	
Research Project Number:	14-1ST		Completion Date		(original)	
Research Agency:			Completion Date		(revised)	
Principal Investigator:						
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$250,000	<b>Total</b>		<b>\$50,000</b>	
	(revised)					
Est. Expended to Date			Salaries		\$39,000	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	\$5,000
FY Funds	(original)		Equipment		(non-expendable)	\$5,000
	(revised)		Travel		\$1,000	
Est. FY Expenditure			Other			
<b>PURPOSE AND SCOPE</b>						
<p>The Louisiana Transportation Research Center (LTRC) funded a study that implemented the finding from NCHRP Report 519 regarding the use of a new continuity details for bridge structures. Findings from the study revealed the inadequacy of the connection detail. As such, The Louisiana Department of Transportation and Development (LADOTD,) has decided to forgo extensive continuity details and use link slabs instead.</p> <p>The purpose of this proposed study is to assess the performance of this detail when used on Louisiana bridges. The study will include the instrumentation of a bridge. Assessing the performance and behavior of the link slab.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
N/A						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<ul style="list-style-type: none"> <li>-Perform a literature search;</li> <li>-Modeling of the bridge;</li> <li>-Prepare instrumentation plan of a bridge with link slab; and</li> <li>-Collect and analyze data.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Development of A Sustainable UHPC Bridge Decks For Movable Bridges</b>				<b>Project Status:</b>	<b>Proposed</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:			Project Start Date:		7/1/2013	
Research Project Number:	14-2ST		Completion Date		(original)	
Research Agency:			Completion Date		(revised)	
Principal Investigator:						
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$150,000	<b>Total</b>		<b>\$50,000</b>	
	(revised)					
Est. Expended to Date			Salaries		\$39,000	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	\$5,000
FY Funds	(original)		Equipment		(non-expendable)	\$5,000
	(revised)		Travel		\$1,000	
Est. FY Expenditure			Other			
<b>PURPOSE AND SCOPE</b>						
<p>In this proposal, Ultra High Performance Concrete (UHPC), will be utilized in the development of a light-weight alternative decking system for movable bridges. The new system will explore the use of UHPC as a topping in a composite system that is complemented with bottom reinforcement. Both reinforced as well as pre-stressed steel will be investigated. It is expected that the research would ultimately deliver:</p> <ul style="list-style-type: none"> <li>-a composite system with a UHPC topping and reinforced or pre-stressed bottom;</li> <li>-results from laboratory testing of two alternatives under static and fatigue loading;</li> <li>-a design charts for various girder spacing; and</li> <li>-comparison between noise emissions from the proposed system and steel gratings.</li> </ul>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
N/A						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<ul style="list-style-type: none"> <li>-Perform a literature on the use of UHPC and light weigh aggregate for bridge decks;</li> <li>-Design an UHPC deck for a movable bridge; and</li> <li>-Instrument the deck and collect data.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Louisiana Transportation Safety Center</b>				<b>Project Status:</b>	<b>Proposed</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	30001501		Project Start Date:		7/1/2012	
Research Project Number:	12-1SA		Completion Date		(original)	
Research Agency:	LTRC		Completion Date		(revised)	
Principal Investigator:						
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$50,000	<b>Total</b>		<b>\$50,000</b>	
	(revised)					
Est. Expended to Date			Salaries		\$50,000	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)		Equipment		(non-expendable)	
	(revised)		Travel			
Est. FY Expenditure			Other			
<b>PURPOSE AND SCOPE</b>						
<p>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.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<p>-Develop a proposal to establish the Louisiana Transportation Safety Center; and -Develop a Business Plan for the Louisiana Transportation Safety Center.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>DOTD Support for UTC Project: Traffic Counting using Existing Video Detection Cameras</b>				<b>Project Status:</b>	<b>Proposed</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30000604</b>		Project Start Date:		7/1/2011	
Research Project Number:	12-1SS		Completion Date		(original)	
Research Agency:	LSU		Completion Date		(revised)	
Principal Investigator:	Dr. Sherif Ishak					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$33,976	<b>Total</b>		<b>\$15,000</b>	
	(revised)					
Est. Expended to Date			Salaries		\$15,000	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)		Equipment		(non-expendable)	
	(revised)		Travel			
Est. FY Expenditure			Other			
<b>PURPOSE AND SCOPE</b>						
<p>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:</p> <ul style="list-style-type: none"> <li>-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;</li> <li>-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;</li> <li>-Select sample of intersections from the inventory. The sample size will be determined based on the factors outlined in objective 2;</li> <li>-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;</li> <li>-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.);</li> <li>-Determine the accuracy of the video detection system through a comparison with the ground truth data; and</li> <li>-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.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS	
The project has not yet started	
FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES	
<p>-Task 1: In this task, the research team will conduct a search for studies on the evaluation of video detection systems in other states with the purpose of gaining the state of the art knowledge on the subject matter. Published reports and journal manuscripts will be thoroughly reviewed to expand on the preliminary literature search presented in this proposal. Special attention will be given to video detection systems currently used and their ability to retrieve, edit, and analyze data. This task is expected to be completed within the first three months of the project.</p> <p>-Task 2: In this task, the research team will compile an inventory of intersections in the Baton Rouge Metropolitan Area that currently have video detection systems installed, and obtain the technical specifications of the different systems used including the names of the manufacturers and the owner agency. Information on the intersections conditions including geometric characteristics, number of lanes, lighting information, mounting system, and turning movements will also be compiled. This information will be obtained with help from LADOTD and the city of Baton Rouge. This task will be completed by the end of the first four months.</p> <p>-Task 3: The research team will group the intersections with video detection systems based on factors that are believed to influence their traffic counting performance under different traffic conditions. A sample of intersections will be selected, based on the inventory, representing a cross section of the video camera manufacturers and intersection traffic conditions in terms of traffic volume, number of lanes, presence of tuning lanes, lighting condition, number and orientation of cameras, etc. The sample size will be determined based on statistical procedures. Using the information collected from the inventory, the research team will obtain detailed information on the video detection system(s) in order to identify their main features and the type of traffic data that can be collected. The team will then request approval from the operators of the video detection systems at each intersection access to the system data for a specific time period. Ground truth data will also be collected at the sample intersections using appropriate methods such as inductive loop detectors, video recording, manual counts, etc. This task will be completed by the end of month 8.</p> <p>-Task 4: From the information collected in the previous tasks, the research team will assess the ability of the existing video detection system(s) to provide the data needed in this project. Specifically, emphasis will be made on whether the video detection system is capable of gathering traffic count data such as 15-minute counts, individual lane flows, and turning movements continuously over periods in excess of one year. In this task the research team will also conduct traffic counts using video recording for specific number of hours for specific days of the week during day and night times. Then, a comparison between the ground truth data collected by appropriate methods such as video recording, inductive loops, or manual counts and the data collected by each video detection system will be conducted to assess the accuracy of each video detection system. This task will be completed by the end of month 13.</p>	

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>DOTD Support for UTC Project: Travel Time Estimation Using Bluetooth</b>				<b>Project Status:</b>	<b>Proposed</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	30001396		Project Start Date:		7/1/2013	
Research Project Number:	13-2SS		Completion Date	(original)	6/30/2015	
Research Agency:	LTRC		Completion Date	(revised)		
Principal Investigator:	Dr. Chester Wilmot					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$104,885	<b>Total</b>		<b>\$75,263</b>	
	(revised)					
Est. Expended to Date			Salaries		\$24,435	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)		Equipment		(non-expendable)	\$50,000
	(revised)		Travel		\$828	
Est. FY Expenditure			Other			
<b>PURPOSE AND SCOPE</b>						
<p>This study will use probe detection systems capable of detecting Bluetooth devices to measure travel time on freeways and major arterials. The study will include a literature review, identification of the current state-of-the-practice in the US regarding the measurement of travel time, a review of secondary sources of travel time in urban areas, determination of the instruments needed to collect data, purchase of the hardware, formulation of a deployment strategy of instruments to measure congestion at hotspots, actual deployment of instruments at a sample of sites, collection of travel time data using the deployed instruments, estimation of travel time using the collected data, and expression of the results in terms of measures or indices.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

**FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES**

**-Task 1:**

Conduct a literature review, identify secondary sources of travel time information, and locate survey agencies that are currently using Bluetooth probe detection systems to estimate travel time and review their state-of-practice. Also identify the metrics used to measure travel time in an urban area (e.g. total, range, variability, mean, and mode) and the period over which it is measured (e.g. an entire day, peak period, season).

**-Task 2:**

Determine the instrumentation needed to collect Bluetooth data, identify potential vendors of Bluetooth probe detection systems and finally purchase the instrumentation needed at a competitive price. In addition, private vendors who provide travel time data will be contacted to compare the cost of purchasing travel time data from them as an alternative to measuring travel time using the Bluetooth detection system, and to compare the similarity of the data from the two sources.

The main activity of this task is to determine the type of hardware and the number of instruments needed to collect Bluetooth data. The vendors who sell and provide support services for Bluetooth hardware will be identified and contacted to obtain a quote for Bluetooth probe detection systems. Finally, the Bluetooth probe detection systems will be acquired at a competitive price.

**-Task 3:**

Identify the most congested major and minor arterials in Baton Rouge using historical traffic speed data available on Google maps and then deploy Bluetooth detection system using a planned deployment strategy on the identified arterials. The main purpose of this task is identification of potential sites where hardware can be installed and formulation of a deployment strategy. The deployment strategy consists of decisions related to amount of time a sample site will be used for data collection, the number of instruments at each site, and their position. The freeway sections and arterials that will be investigated for measurement of travel time are the I-10, the portion of the I-10 between the bridge and the I-10/I-12 split, I-110, Airline Highway, Essen Lane, Florida Blvd, Nicholson Drive, Perkins Road, Bluebonnet Boulevard, Highland Road, Siegen Lane, and finally Plank Road.

**-Task 4:**

Deploy the hardware at selected sampled sites using the deployment strategy developed in Task 3 and start collecting travel time data along with traffic volume data to allow computation of congestion indices. The potential roadways selected in Task 3 will be scouted for locations where the devices can be secured either to a public utility pole, guardrail or other physical infrastructure. This task will also involve contacting people in various government agencies or private sector agencies to obtain permission for accessing public utility poles or other physical infrastructure for placement of the Bluetooth instruments. Bluetooth travel time data is currently being collected by LADOTD on I-12 between I-10/I-12 split and Walker South Road exit. This data will also be accessed and utilized for computing congestion indices.

**-Task 5:**

Establish an agreement with the private vendor INRIX to acquire travel time data for selected roadways and of limited mileage. Use the data to validate the travel time data collected using Bluetooth equipment and to compare the cost of data collection with the two methods.



**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Video Analytics for Effective Traffic Operations</b>				<b>Project Status:</b>	<b>Proposed</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	30001400		Project Start Date:		7/1/2013	
Research Project Number:	13-4TIRE		Completion Date (original)		6/30/2014	
Research Agency:	LSU		Completion Date (revised)			
Principal Investigator:	Supratik Mukhopadhyay					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$30,000	<b>Total</b>		<b>\$30,000</b>	
	(revised)					
Est. Expended to Date			Salaries		\$30,000	
<b>FY 2012 - 2013 Budget</b>			Equipment (expendable)			
FY Funds	(original)		Equipment (non-expendable)			
	(revised)		Travel			
Est. FY Expenditure			Other			
<b>PURPOSE AND SCOPE</b>						
To develop a framework for automatically tracking moving objects and recognizing activities performed by them in full motion videos (FMV) obtained from traffic cameras.						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
-Develop Image Stabilization Module; -Develop Algorithm for Automatic Starting Tracks; -Develop algorithm for tracking moving objects in streaming videos; -Develop algorithms for recognizing activities of interest in streaming videos; -Experimentation with system for deployment in the real world; and -Prepare final report.						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>DOTD Support For UTC Project: Drugged Driving in Louisiana</b>				<b>Project Status:</b>	<b>Proposed</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
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)	
Principal Investigator:	Dr. Helmut Schneider					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$50,000	<b>Total</b>		<b>\$25,000</b>	
	(revised)					
Est. Expended to Date			Salaries		\$25,000	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)		Equipment		(non-expendable)	
	(revised)		Travel			
Est. FY Expenditure			Other			
<b>PURPOSE AND SCOPE</b>						
<p>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; Identify training and other resource needs for law enforcement and prosecutors; Provide initial baseline information of the drugged driving contribution to 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.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
To be determined.						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>DOTD Support For UTC Project: Development of an Optimal Ramp Metering Control Strategy for I-12</b>				<b>Project Status:</b>	<b>Proposed</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
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)	
Principal Investigator:	Dr. Sherif Ishak					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$35,000	<b>Total</b>		<b>\$20,000</b>	
	(revised)					
Est. Expended to Date			Salaries		\$20,000	
<b>FY 2012 - 2013 Budget</b>						
FY Funds	(original)		Equipment		(expendable)	
	(revised)		Equipment		(non-expendable)	
			Travel			
Est. FY Expenditure			Other			
<b>PURPOSE AND SCOPE</b>						
<p>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.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
The project has not yet started.						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<p>-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;</p> <p>-Identify and collect the geometric and traffic data required to simulate the I-12 corridor under the selected ramp metering strategies;</p> <p>-Select a microscopic simulation platform and build the simulation network for the study corridor; and</p> <p>-Calibrate the selected simulation model with the collected data to replicate the actual traffic conditions on the study corridor.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Factors Influencing Seatbelt and Occupant Protection Utilization in Louisiana and Strategies to Improve Usage Rate</b>				<b>Project Status:</b>	<b>Proposed</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:			Project Start Date:			
Research Project Number:		14-2SA	Completion Date		(original)	
Research Agency:			Completion Date		(revised)	
Principal Investigator:						
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$125,000	<b>Total</b>		<b>\$20,000</b>	
	(revised)					
Est. Expended to Date			Salaries		\$20,000	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)		Equipment		(non-expendable)	
	(revised)		Travel			
Est. FY Expenditure			Other			
<b>PURPOSE AND SCOPE</b>						
<p>The research will include a thorough description and analysis of seat belt use rate and characteristics of users and non-users by demographic groups to provide a representative characterization of at risk groups and priority geographic areas. Analysis of existing data will provide a foundation and additional data may be collected through additional surveys, focus groups, etc. Research activities may include a comparison of Louisiana to other below average use rate states as well as those with higher rates to identify opportunities to develop initiatives to improve usage rates. Best practices from high performing states will be identified and evaluated for potential application in Louisiana. Short and long term methodologies and strategies will be developed.</p> <p>The results of this research will serve to guide the comprehensive implementation of the Louisiana Strategic Highway Safety Plan by LA DOTD and the Highway Safety Plan by the Louisiana Highway Safety Commission and other safety stakeholders in its implementation of the NHTSA program requirements per MAP-21. The usage profiles will be useful at a regional and local level for safety coalitions, safety advocates and other groups working to increase seat belt and occupant protection use. A specific example might be to examine ideas related to belt use behavior by pickup drivers and passengers. Determine who, when, where, and why pickup drivers and passengers in Louisiana do not buckle up and what is most likely to affect their behavior.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
To be determined.						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>DOTD Support For UTC Project: A Simulation Model for Intermodal Freight Transportation in the State of Louisiana</b>				<b>Project Status:</b>	<b>Proposed</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	30001395		Project Start Date:		6/1/2013	
Research Project Number:	14-2SS		Completion Date		(original)	6/30/2015
Research Agency:	LSU		Completion Date		(revised)	
Principal Investigator:	Dr. Peter Kelle					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$200,000	<b>Total</b>		<b>\$100,000</b>	
	(revised)					
Est. Expended to Date			Salaries		\$40,000	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)		Equipment		(non-expendable)	
	(revised)		Travel			
Est. FY Expenditure			Other		\$60,000	
<b>PURPOSE AND SCOPE</b>						
<p>Louisiana plays an important role in U.S. freight transportation with a strong intermodal transportation network because of the Mississippi River and the Port of New Orleans. The freight traffic in the State is expected to significantly increase, especially after the Panama Canal expansion and with the increased trade with Latin America. In order to improve freight flow efficiency and therefore support economic development in the State, it is necessary to have a systematic tool to study the freight flow over all three major surface modes and their connections and, in turn, to help the Louisiana Department of Transportation and Development (LADOTD) identify the best way to increase freight transportation capacity and improve flow efficiency. The purpose of this project is to develop a system-level intermodal simulation model that includes highways, railways, and waterways because all three modes, working together, play significant roles in Louisiana freight flows.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>This project has not started yet.</p>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<p>-Task 1: Summarization of existing intermodal freight transportation simulation;          -Task 2: Development of the simulation framework and selection of the simulation platform; and          -Task 3: Development of the simulation model.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Development of a Mode Choice Model to Estimate Evacuation Transit Demand</b>				<b>Project Status:</b>	<b>Proposed</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:				Project Start Date:		7/1/2013
Research Project Number:		14-3SS		Completion Date	(original)	6/30/2015
Research Agency:		LTRC		Completion Date	(revised)	
Principal Investigator:		Dr. Chester Wilmot				
<b>BUDGET STATUS</b>						
<b>Total Budget</b>				<b>Estimated 2013-2014 Budget</b>		
Total Cost	(original)	\$200,000		<b>Total</b>		<b>\$100,000</b>
	(revised)					
Est. Expended to Date				Salaries		\$97,000
<b>FY 2012 - 2013 Budget</b>				Equipment (expendable)		
FY Funds	(original)			Equipment (non-expendable)		
	(revised)			Travel		\$3,000
Est. FY Expenditure				Other		
<b>PURPOSE AND SCOPE</b>						
<p>The purpose of this research project is to develop a model that establishes the mode of transport evacuees will choose when evacuating from a hurricane.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<p>-Conduct a literature review;          -Determine the type of data needed to estimate a mode choice model and assess available data for its suitability; and          -Identify factors influencing mode choice from the literature review and other sources and ascertain whether they are present in the data sets available.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Feasibility of using Local Public Transit Resources for Evacuations and Other Unscheduled Needs</b>				<b>Project Status:</b>	<b>Proposed</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	30001506		Project Start Date:		7/1/2013	
Research Project Number:	14-4SS		Completion Date	(original)	6/30/2014	
Research Agency:	LTRC		Completion Date	(revised)		
Principal Investigator:	Dr. Chester Wilmot					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$100,000	<b>Total</b>		<b>\$100,000</b>	
	(revised)					
Est. Expended to Date			Salaries		\$100,000	
<b>FY 2012 - 2013 Budget</b>						
FY Funds	(original)		Equipment	(expendable)		
	(revised)		Equipment	(non-expendable)		
			Travel			
Est. FY Expenditure			Other			
<b>PURPOSE AND SCOPE</b>						
<p>The purpose of this project is to investigate the feasibility of using local public transit resources for emergency purposes. The study is limited to local public transit within the state of Louisiana.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<ul style="list-style-type: none"> <li>-Identify all local public transit agencies in the state of Louisiana;</li> <li>-Identify the conditions under which each public transit agency operates;</li> <li>-Determine the feasibility of getting the cooperation of some of the agencies in serving emergency needs if the need arises;</li> <li>-Assess the feasibility; and</li> <li>-Prepare report.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Laboratory Evaluation of 100% Fly Ash Cementitious Systems</b>				<b>Project Status:</b>	<b>Proposed</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	30001502		Project Start Date:		1/1/2013	
Research Project Number:	13-2C		Completion Date		(original)	
Research Agency:	LTRC		Completion Date		(revised)	
Principal Investigator:	Dr. Tyson Rupnow					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$79,869	<b>Total</b>		<b>\$41,311</b>	
	(revised)					
Est. Expended to Date			Salaries		\$41,311	
<b>FY 2012 - 2013 Budget</b>						
FY Funds	(original)		Equipment		(expendable)	
	(revised)		Equipment		(non-expendable)	
			Travel			
Est. FY Expenditure			Other			
<b>PURPOSE AND SCOPE</b>						
<p>The purpose of this study is to evaluate production of 100% fly ash concrete. Fresh and hardened characteristics will be determined. First, second, and third level interactions will be identified for all response variables for about 45 mixtures. Main effects will also be determined for the same 45 mixtures. Fresh and hardened characteristics of about 15 additional mixtures of interest will also be identified.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<ul style="list-style-type: none"> <li>-Obtain materials from Ceratech;</li> <li>-Purchase additional molds and supplies;</li> <li>-Follow mix design and test factorial agreed upon with Ceratech; and</li> <li>-Began laboratory testing: surface resistivity, compressive strength, air, unit weight, set time, flexural strength, free shrinkage, autogenous shrinkage, chloride ponding, rapid chloride permeability, and freeze-thaw durability.</li> </ul>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<ul style="list-style-type: none"> <li>-Finish laboratory testing: surface resistivity, compressive strength, air, unit weight, set time, flexural strength, free shrinkage, autogenous shrinkage, chloride ponding, rapid chloride permeability, and freeze-thaw durability;</li> <li>-Perform statistical analysis;</li> <li>-Develop implementation plan for LADOTD, if applicable; and</li> <li>-Begin preparation of draft report.</li> </ul>						



**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Evaluation of Non-destructive Quality Control Tools for Dowel Bar Alignment of Jointed Concrete Pavements</b>				<b>Project Status:</b>	<b>Proposed</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	30001440		Project Start Date:		5/1/2013	
Research Project Number:	14-1C		Completion Date		(original)	
Research Agency:	LTRC		Completion Date		(revised)	
Principal Investigator:	Dr. Tyson Rupnow					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$120,000	<b>Total</b>		<b>\$100,000</b>	
	(revised)					
Est. Expended to Date		\$20,000	Salaries		\$30,000	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)		Equipment		(non-expendable)	\$70,000
	(revised)		Travel			
Est. FY Expenditure			Other			
<b>PURPOSE AND SCOPE</b>						
<p>Recent concerns of misaligned dowel bars led to a technical assistance project to investigate the roadways in question. A MIT-SCAN-2 device was borrowed from FHWA and proved to work exceptionally well for the investigation, but it was only on loan for a month. This project will continue the investigation requested by the Louisiana Department of Transportation and Development (LADOTD) construction engineers, as well as, inspect the alignment dowels of older pavements to determine the impact on service life of misaligned dowel bars.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<ul style="list-style-type: none"> <li>-Performed blind test to locate end of dowel bars using MIT-SCAN-2;</li> <li>-Began investigation of dowel bar alignment using borrowed MIT-SCAN-2 from FHWA; and</li> <li>-Completed TA report for roadways tested.</li> </ul>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<ul style="list-style-type: none"> <li>-Purchase MIT-SCAN-2;</li> <li>-Continue investigation of recent construction requested;</li> <li>-Prepare TA report as required by requesting engineers;</li> <li>-Locate and collect data for pavements in different age categories: &lt;=5 years, 6-10 years, 11-20 years, &gt;20 years;</li> <li>-Perform statistical analysis;</li> <li>-Complete draft report; and</li> <li>-Complete final report.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Implementation of Concrete Maturity</b>				<b>Project Status:</b>	<b>Proposed</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:			Project Start Date:		7/1/2013	
Research Project Number:	14-2C		Completion Date		(original)	
Research Agency:	LTRC		Completion Date		(revised)	
Principal Investigator:	Dr. Tyson Rupnow					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$50,000	<b>Total</b>		<b>\$37,091</b>	
	(revised)					
Est. Expended to Date			Salaries		\$36,091	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	\$500
FY Funds	(original)		Equipment		(non-expendable)	\$500
	(revised)		Travel			
Est. FY Expenditure			Other			
<b>PURPOSE AND SCOPE</b>						
<p>Concrete maturity is a well know practice and currently allowed in many states. This project will perform laboratory and field testing to determine the best applications for implementation in Louisiana. Using maturity removes the need for cylinder and even cores for quality control strength testing. Maturity better captures the in-place concrete conditions and provides earlier results.</p> <p>Also, a current study at the Louisiana Transportation Research Center (LTRC) is evaluating the MIT-SCAN-T2 as a non-destructive thickness and measuring cast cylinders for strengths has been suggested to reduce coring. Implementation of concrete maturity will supplement implementation of this device very well.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>-#13 on research advisory committee ranking; and</p> <p>-Literature review.</p>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<p>-Perform laboratory simulations on typical Louisiana concrete mixtures;</p> <p>-Select field projects to develop maturity curves at contractors plant;</p> <p>-Compare maturity measurements to field cylinders/cores used for QC/QA;</p> <p>-Develop implementation plan;</p> <p>-Develop training documentation for LADOTD and contractor personnel; and</p> <p>-Begin preparation of draft report.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Investigation into the Feasibility of Continuously Reinforced Concrete Pavement (CRCP) Reinforced with Fibers Instead of Steel Rebar</b>				<b>Project Status:</b>	<b>Proposed</b>
<b>Funding Source:</b>	<b>SPR: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:		30001504		Project Start Date:		7/1/2013
Research Project Number:		14-3C		Completion Date	(original)	
Research Agency:		LTRC		Completion Date	(revised)	
Principal Investigator:		Dr. Tyson Rupnow				
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$200,000		<b>Total</b>		<b>\$100,000</b>
	(revised)					
Est. Expended to Date				Salaries		\$47,000
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	\$3,000
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		\$50,000
<b>PURPOSE AND SCOPE</b>						
<p>In traditional jointed plain concrete pavement (JPCP), the joint is where the majority of problems first arise with faulting and spalling, and joint sealant failure leading to increased IRI and a deteriorated pavement structure. Common fixes for this include partial and full depth repair of the joints as well as concrete and asphalt overlays. Other remediation may include DBR and diamond grinding to improve load transfer and improve ride quality. CRCP has a distinct advantage over JPCP in that there are no joints to maintain. The main disadvantage of CRCP is the cost of all the steel reinforcement. This project aims to look at the feasibility of producing concrete for pavements with fiber reinforcement that will compare to CRCP, but at a much lower associated first construction cost.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>- #5 in research advisory committee ranking.</p>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<p>This project will investigate the feasibility of Portland cement concrete produced with structural fibers for placement and performance as a continuously fiber reinforced concrete pavement (CFRCP) system. A laboratory study will be undertaken to determine the fresh and hardened characteristics of the CFRCP material. An effort will be made to include fatigue characteristics as well in the laboratory setting. Once verified in a laboratory setting, a full scale test section will be developed at the LTRC pavement research facility to determine the response of the CFRCP under full scale loading. The full scale loading test sections will include at least one type or fiber reinforcement as well as a control JPCP and CRCP section (If feasible to construct).</p>						



**FHWA**

**Part II SPR Funded  
Research Program**

**POOLED FUND  
LOUISIANA  
LEAD STATE RESEARCH**

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Southeast Transportation Consortium</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: Pooled Fund: TT-Fed</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30000281</b>		Project Start Date:		9/1/2009	
Research Project Number:	09-1PF		Completion Date		(original)	8/30/2012
Research Agency:	LTRC		Completion Date		(revised)	8/30/2015
Principal Investigator:	Mr. Mark Morvant					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$150,000	<b>Total</b>		<b>\$10,000</b>	
	(revised)	\$300,000				
Est. Expended to Date	\$50,000		Salaries		\$3,000	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)	\$10,000	Equipment		(non-expendable)	
	(revised)		Travel		\$7,000	
Est. FY Expenditure	\$10,000		Other			
<b>PURPOSE AND SCOPE</b>						
<p>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.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<ul style="list-style-type: none"> <li>-Hosted STC Annual Meeting in Baton Rouge, March 2013;</li> <li>-Managed on-going STC Synthesis Projects: <ul style="list-style-type: none"> <li>&gt;Best Practices for Determining Value of Research Results;</li> <li>&gt;Asphalt Surface Treatments for Pavement Preservation;</li> <li>&gt;Water Quality Management at Construction Sites; and</li> <li>&gt;Regional Implementation of Warm Mix Asphalt.</li> </ul> </li> <li>-Timber Bridge Inspection Demonstration Project sponsored by the US Dept. of Agriculture. Louisiana is the southeast regional research partner working through the STC to demonstrate the technology: <ul style="list-style-type: none"> <li>&gt;Louisiana, Georgia, Alabama, North Carolina have participated in demonstration of the technology.</li> </ul> </li> <li>-Continued update and maintenance of STC project database; and</li> <li>-Presented update at the 2012 Annual TRB meeting.</li> </ul>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<ul style="list-style-type: none"> <li>-Present status of activities at the Annual Research Advisory Committee Meeting;</li> <li>-Complete and publish final results of on-going synthesis studies;</li> <li>-Initiate RFP's, and contracts for the four new synthesis projects;</li> <li>-Hold kickoff meetings for synthesis projects; and</li> <li>-Begin planning STC annual meeting for 2014.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Traffic and Data Preparation for AASHTO MEPDG Analysis and Design</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: Pooled Fund: TT-Fed</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30000424</b>		Project Start Date:		9/1/2011	
Research Project Number:	12-1PF		Completion Date		(original)	8/31/2014
Research Agency:	Oklahoma State University		Completion Date		(revised)	
Principal Investigator:	Dr. Kelvin Wang					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$366,667	<b>Total</b>		<b>\$224,671</b>	
	(revised)	\$683,334				
Est. Expended to Date		\$360,000	Salaries		\$224,671	
<b>FY 2012 - 2013 Budget</b>						
FY Funds	(original)	\$345,527	Equipment	(expendable)		
	(revised)	\$345,527	Equipment	(non-expendable)		
Est. FY Expenditure		\$345,527	Travel			
			Other			
<b>PURPOSE AND SCOPE</b>						
<p>Background: The Mechanistic Empirical Pavement Design Guide (MEPDG) is a significant advancement in pavement design, but requires significantly more inputs from designers. Many data sets need to be pre-processed before their use in the MEPDG procedure, such as Weigh-In-Motion (WIM) traffic data. Under contract with the Federal Highway Administration (FHWA) and the Office of Pavement Technology, and co-sponsored by the Arkansas Highway Department, the University of Arkansas recently developed a software program called Prep-ME with comprehensive database features to store and process climate, traffic and materials data and to: (1) identify all the required inputs and analysis parameters; (2) develop algorithms and procedures to locate the available data sets, pre-process raw data, check data quality, and import the traffic and other data sets to the designed database tables, including conducting quality checks on both weight and classification WIM data based on LTPP and FHWA methods; (3) implement database algorithms for uploading, data checking, and generating the required data files for the MEPDG software; and, (4) develop a user-friendly software interface, Prep-ME, to generate the required input files for the MEPDG software.</p> <p>Objectives: The objective of the Prep-ME software is to assist state DOTs in the data preparation and improve the management and workflow of the MEPDG input data to make the MEPDG software more accessible. Additionally, it can be used as a critical tool for calibrating and implementing the MEPDG as well.</p> <p>Scope of Work: In order to make Prep-ME full production software assist states use the MEPDG, the software and services need to be expanded to:</p> <ul style="list-style-type: none"> <li>-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;</li> <li>-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;</li> <li>-Add more functions based on the consensus of participating states;</li> <li>-Customize Prep-ME for participating states;</li> <li>-Prepare and conduct training for the personnel of participating states; and</li> <li>-Provide participating states technical support throughout the three year period.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

**FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS**

Approved Task Lists:

- By the end of fiscal year 2013, two face-to-face meeting have been held. The kick-off meeting held on March 29 to 30 2011 in New Orleans determined the task list (old task list) was approved for the pooled fund study project.
- The second face-to-face meeting was held in Detroit from September 4 to 6 2012 with representatives from the participating states, FHWA, and the OSU team. At the meeting, the OSU research team demonstrated the new Prep-ME software, reviewed completed work and future schedules, and gained feedback from participating states as additional future tasks (new task list).

Accomplishments:

- The project was started late in FY 2011-2012. During that time period, the OSU team has completed the work integrating Prep-ME with DARWin-ME, which is Task 1 in the original proposal. Substantial amount of work has been completed during FY 2012 to FY 2013. In particular, the following tasks are completed:
  - Improve computation efficiency of Prep-ME;
  - The OSU research team has investigated and implemented run time efficiency algorithms that can be realized to improve the speed of execution of the numerical engines in Prep-ME;
  - Prep-ME GUI and database work; and
  - The GUI has also been redesigned and this effort will continue during the execution of the project.

Completed Tasks:

- In FY 2013, the following tasks in the original proposal have been completed and programmed in the interface of Prep-ME:
  - Task 2: Survey participating states for state polices on SQL Server/Oracle and GIS/Arch information transition and management;
  - Task 3: Preprocess raw WIM data for individual states, QC for Weight & Classification Data;
  - Task 4: Accept quality-checked traffic data without processing;
  - Task 5:(original list) - Provide three levels of traffic data input for DARWin-ME;
  - Task 5:(new task list) Develop import functionalities for short-term data and classification only data;
  - Task 8:(original list) - Make traffic QC more flexible so states can choose not to use certain features;
  - Task 6: Group and characterize pre-clustered WIM sites;
  - Task 7: Separate analysis on Directional and lane data using TMAS 2.0 rules for daily checks;
  - Task 9: Include options on how to use incomplete data or short-term data that don't cover an entire year from January to December, such as using four seasons' data, factoring up monthly data, borrowing data from stations that have same TTC grouping, etc.;
  - Task 11: Expand the WIM station's identifier so that it accepts not only numeric but also other formats;
- In addition, the first draft of the technical documentation of Prep-ME has been completed and distributed to participating states. The updated version of Prep-ME that is compatible with DARWin-ME has been distributed to the participating agencies.

**FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES**

During the coming FY 2013 to FY 2014, the following are to be carried out:

- To complete the remaining tasks in both the original task list and the new task list;
- An on-going task is to document progress made in each quarter as part of the project report. The major effort to write the final report is toward the end of the project in 2014. The updates and the technical documentation of the new functionalities completed have been documented at a regular basis;
- It is anticipated that in 2013 to 2014, more training will be conducted, including training during the planned face-to-face meeting in 2013, and training with individual states;
- The team started internal testing on regular basis due to the addition of staff. This process will continue from now on and throughout the project period; and
- A production level Prep-ME software for Pavement ME Design will be delivered to individual states.



**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Asphalt Surface Treatments for Pavement Preservation</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: Pooled Fund: TT-Fed</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30000540</b>		Project Start Date:		6/15/2012	
Research Project Number:	12-2PF		Completion Date	(original)	6/14/2013	
Research Agency:	Florida International University		Completion Date	(revised)		
Principal Investigator:	Dr. Hesham Ali					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$30,000	<b>Total</b>		<b>\$5,971</b>	
	(revised)					
Est. Expended to Date		\$24,029	Salaries		\$5,971	
<b>FY 2012 - 2013 Budget</b>						
FY Funds	(original)	\$30,000	Equipment	(expendable)		
	(revised)	\$30,000	Equipment	(non-expendable)		
Est. FY Expenditure		\$24,029	Travel			
			Other			
<b>PURPOSE AND SCOPE</b>						
<p>To develop an Asphalt Surface Treatment Synthesis Report.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>-Literature Review was completed;          -Survey was developed and sent to Southeast States; and          -Final report is 20% Complete. We are still awaiting the results of the survey to finalize the report.</p>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<p>Once all Survey responses are received, they will be analyzed and presented in a statistical and graphical format and included in the Final Report. The Draft Final Report will be completed and sent to the Louisiana Transportation Research Center (LTRC) for review.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Regional Implementation of Warm Mix Asphalt</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: Pooled Fund: TT-Fed</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30000542</b>		Project Start Date:		10/1/2012	
Research Project Number:	12-4PF		Completion Date		(original)	9/30/2013
Research Agency:	Kentucky Transportation Center		Completion Date		(revised)	
Principal Investigator:	Mr. Ronnie Clark Graves					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$29,962	<b>Total</b>		<b>\$9,463</b>	
	(revised)					
Est. Expended to Date		\$2,990	Salaries		\$7,763	
<b>FY 2012 - 2013 Budget</b>						
FY Funds	(original)	\$29,692	Equipment	(expendable)		
	(revised)		Equipment	(non-expendable)		
Est. FY Expenditure		\$20,500	Travel		\$1,700	
			Other			
<b>PURPOSE AND SCOPE</b>						
<p>Warm Mix Asphalt (WMA) is the generic name for any of several technologies currently used to reduce the mixing and placement temperatures of hot mix asphalt by 50-100 degrees F. The number of states piloting and evaluating WMA projects is growing each year and WMA technology is becoming more prevalent in routine roadway construction across the country.</p> <p>Syntheses are Technical Summaries of research performed and state-of-the-practice reports prepared under contract by outside individuals or firms. These reports are oriented toward practical solutions of specific transportation problems. This synthesis will summarize the results of warm mix research completed to date, state pilot projects and implementation status. Deliverables should include recommended implementation tools and/or additional research if needed to enhance implementation of this technology in the region.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>-The survey of state agencies will be completed and the results summarized; and</p> <p>-The literature search of current and past research activities will be completed, the preliminary findings will be presented to the study committee for review.</p>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<p>-The project will be finalized and presented to the study advisory committee;</p> <p>-A draft final report will be developed and submitted for review; and</p> <p>-The project final report will be completed and submitted.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Best Practices for Achieving and Measuring Pavement Smoothness</b>				<b>Project Status:</b>	<b>Proposed</b>
<b>Funding Source:</b>	<b>SPR: Pooled Fund: TT-Fed</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	30001420		Project Start Date:		7/1/2013	
Research Project Number:	14-1PF		Completion Date		(original)	6/30/2014
Research Agency:			Completion Date		(revised)	
Principal Investigator:						
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$30,000	<b>Total</b>		<b>\$30,000</b>	
	(revised)					
Est. Expended to Date			Salaries		\$28,000	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)		Equipment		(non-expendable)	
	(revised)		Travel		\$2,000	
Est. FY Expenditure			Other			
<b>PURPOSE AND SCOPE</b>						
<p>Many new specifications now require all mainline paving meet surface tolerance using the International Roughness Index (IRI) for quality control requirements. Including surface tolerance requirements in specifications allows for an additional payment incentive or penalty based on the contractor's performance. Some contractors struggled to meet 100% payment with the new IRI specifications without excessive grinding. Each state has its own method of IRI collection and specifications for construction acceptance. This synthesis will summarize existing practices for achieving the desired IRI during asphalt and concrete paving. The goals of this synthesis are to document:</p> <ul style="list-style-type: none"> <li>-Ongoing and completed research in this area;</li> <li>-States' technologies and practices for IRI collection and processing;</li> <li>-States' criteria for smoothness;</li> <li>-Educational and training best practices for DOT and contractor personnel; and</li> <li>-Best construction techniques for achieving required smoothness.</li> </ul>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
To be determined by contractor.						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Real time Driver Information for Congestion Management</b>				<b>Project Status:</b>	<b>Proposed</b>
<b>Funding Source:</b>	<b>SPR: Pooled Fund: TT-Fed</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	30001421		Project Start Date:		7/1/2013	
Research Project Number:	14-2PF		Completion Date		(original)	6/30/2014
Research Agency:			Completion Date		(revised)	
Principal Investigator:						
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$30,000	<b>Total</b>		<b>\$30,000</b>	
	(revised)					
Est. Expended to Date			Salaries		\$28,000	
<b>FY 2012 - 2013 Budget</b>			Equipment (expendable)			
FY Funds	(original)		Equipment		(non-expendable)	
	(revised)		Travel		\$2,000	
Est. FY Expenditure			Other			
<b>PURPOSE AND SCOPE</b>						
<p>State DOTs have programs to provide information to drivers on current travel conditions. These programs typically rely on a network of point sensors, like inductive loops or side fire radar, and closed circuit television cameras to detect congestion and incidents on roads. Information is then typically disseminated to drivers through a variety of means, including variable message signs, highway advisory radio, websites, 511, and commercial media outlets. While DOTs have had these programs in place for a number of years, they are primarily concentrated on major urban freeways, and data are often limited on arterials or rural roads. Furthermore, significant shifts in technology are occurring that may fundamentally alter the manner in which traveler information is generated and delivered to drivers. The goals of the synthesis project are to better understand:</p> <ul style="list-style-type: none"> <li>-The capabilities and limitations of emerging technologies;</li> <li>-The current state of research in this area; and</li> <li>-The ultimate potential of these technologies to mitigate congestion by changing driver decisions.</li> </ul>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
To be determined by contractor once selected.						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Transportation Funding Sources and Alternatives in the Southeastern States Now and in the Future</b>				<b>Project Status:</b>	<b>Proposed</b>
<b>Funding Source:</b>	<b>SPR: Pooled Fund: TT-Fed</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	30001422		Project Start Date:		7/1/2013	
Research Project Number:	14-3PF		Completion Date		(original)	6/30/2014
Research Agency:			Completion Date		(revised)	
Principal Investigator:						
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$30,000	<b>Total</b>		<b>\$30,000</b>	
	(revised)					
Est. Expended to Date			Salaries		\$28,000	
<b>FY 2012 - 2013 Budget</b>			Equipment (expendable)			
FY Funds	(original)		Equipment		(non-expendable)	
	(revised)		Travel		\$2,000	
Est. FY Expenditure			Other			
<b>PURPOSE AND SCOPE</b>						
<p>According to AASHTO, the majority of surface transportation funding in the U.S. is derived from public sources at the federal, state, and local levels. Upwards of \$200 billion per year is invested in surface transportation, most of which is revenue from various taxes and fees. Taxes on motor fuel are a significant source, as are vehicle taxes and fees, sales taxes and property taxes. Other sources of funding may include appropriations from general funds, tolls, and fares. Notably, of the approximately \$187 billion available to transportation annually, the vast majority is provided not by the federal government, but instead by state and local governments.</p> <p>As traditional sources of transportation revenue continue to decline in adequacy to fund surface transportation, in most states the gas tax rate remains constant. In addition, state gas tax revenues have fallen dramatically relative to the rising cost of asphalt, concrete, labor and other transportation costs. Proposals to raise the gas tax are common; however, very few of these measures have been passed by state legislatures in recent years. Other proposals include vehicle miles traveled (VMT) tax, public/private partnerships, and increased use of tolling. The goal of this synthesis is to:</p> <ul style="list-style-type: none"> <li>-Summarize relevant research related to projected transportation revenues and needs;</li> <li>-Identify the funding sources that each state in the southeast uses to fund its transportation system;</li> <li>-Determine what changes to funding levels and practices have been proposed, and</li> <li>-Identify which practices have been or are anticipated to be successful in the southeastern states.</li> </ul>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
To be determined by contractor once selected.						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Mitigation Strategies for Reflective Cracking in Pavements</b>				<b>Project Status:</b>	<b>Proposed</b>
<b>Funding Source:</b>	<b>SPR: Pooled Fund: TT-Fed</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	30001423		Project Start Date:		7/1/2013	
Research Project Number:	14-4PF		Completion Date		(original)	6/30/2014
Research Agency:			Completion Date		(revised)	
Principal Investigator:						
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$30,000	<b>Total</b>		<b>\$30,000</b>	
	(revised)					
Est. Expended to Date			Salaries		\$28,000	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)		Equipment		(non-expendable)	
	(revised)		Travel		\$2,000	
Est. FY Expenditure			Other			
<b>PURPOSE AND SCOPE</b>						
<p>Problems with reflective cracking in asphalt concrete (AC) overlays on cracked pavements have been observed for many years in Southeastern states. This includes asphalt overlays on 1) composite pavements; and 2) asphalt pavements. Left untreated, such cracks can significantly shorten the service life of the asphalt overlay. The intrusion of water into the subgrade and/or base material hastens the deterioration process, leading to early and costly failure of the whole pavement structure. Therefore, it is in the economic interest of state highway agencies (SHAs) to investigate methods that reduce or, at the very least, retard reflective cracking in AC overlays.</p> <p>Numerous studies have shown the advantages of overlaying flexible pavements with a system that consists of AC and an intermediate layer. Due to the increased need to mitigate reflective cracking in the national highway network, various interlayer products and techniques have been developed in recent years. SHAs have tried out these products and techniques with different degrees of evaluation and success. As a result, these investigations have not allowed reliable comparisons of the different products and techniques. Moreover, the critical question is whether or not the improved performance that is due to the inclusion of an interlayer system warrants the associated cost increase. There is a need to compile state-of-the-practice results from different states so that results can be shared.</p> <p>The synthesis will include a survey of the practices of the southeastern states with regard to the types of cracking mitigation strategy used, selection criteria for the different strategies, construction methods employed to implement the strategies, experiences with the strategies and constructed systems, benefit/cost analysis, and guidelines for selecting appropriate strategies and constructing the chosen treatment system.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
To be determined by contractor after selected.						

**FHWA**

**Part II SPR Funded  
Research Program**

**POOLED FUND EXTERNAL  
LEAD STATE RESEARCH**

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Evaluation of Low Cost Safety Improvements</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: Pooled Fund: TT-Fed</b>		<b>Budget Category:</b>		<b>FHWA</b>	
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:						
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$40,000	<b>Total</b>		<b>\$10,000</b>	
	(revised)					
Est. Expended to Date			Salaries		\$10,000	
<b>FY 2012 - 2013 Budget</b>			Equipment (expendable)			
FY Funds	(original)		Equipment (non-expendable)			
	(revised)		Travel			
Est. FY Expenditure			Other			
<b>PURPOSE AND SCOPE</b>						
<p>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.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<ul style="list-style-type: none"> <li>- The Development of Crash Modification Factors (DCMF) study for low, medium, and higher cost safety improvements proposal was awarded in November of 2012;</li> <li>- Conducted DCMF kick off meeting;</li> <li>- Developed technical working plan, and Marketing, Outreach, and Communication Plan (MCOP) for the DCMF;</li> <li>- Started feasibility study for the Phase VII; and</li> <li>- The DCMF started (November, 2012) evaluation of the ELCSI-PFS, Phase VII for following strategies: <ul style="list-style-type: none"> <li>- Pedestrian signals, signs, and markings;</li> <li>- Active intersection conflict warning systems/dynamic signing;</li> <li>- Driver feedback signs; and</li> <li>- Pavement marking types and characteristics.</li> </ul> </li> </ul> <p>The above strategies were selected as high priorities for 2012 Annual TAC Meeting balloting process.</p>						



**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>
<ul style="list-style-type: none"><li>- Arrange the 2013 ELCSI-PFS Annual TAC meeting;</li><li>- Conduct a presentation for the TRB, Crash Modification Factor Subcommittee in January, 16, 2013;</li><li>- Conduct Phase VI risk assessment in February 2013; and</li><li>- Conduct in-house feasibility studies for future low cost evaluations.</li></ul>

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Roadside Safety Research Program</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: Pooled Fund: TT-Fed</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:			Project Start Date:		10/1/2005	
Research Project Number:	TPF-5(114)		Completion Date		(original)	12/31/2015
Research Agency:			Completion Date		(revised)	
Principal Investigator:						
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$190,000	<b>Total</b>		<b>\$25,000</b>	
	(revised)					
Est. Expended to Date			Salaries		\$25,000	
<b>FY 2012 - 2013 Budget</b>						
FY Funds	(original)		Equipment	(expendable)		
	(revised)		Equipment	(non-expendable)		
			Travel			
Est. FY Expenditure			Other			
<b>PURPOSE AND SCOPE</b>						
<p>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 that are developed by participating member state representatives. 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.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>Project progress can be viewed at <a href="http://www.RoadsidePooledFund.org">http://www.RoadsidePooledFund.org</a></p>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<p>Proposed activities can be viewed at <a href="http://www.RoadsidePooledFund.org">http://www.RoadsidePooledFund.org</a></p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Technology Transfer Concrete Consortium</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: Pooled Fund: TT-Fed</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:			Project Start Date:		7/1/2012	
Research Project Number:	TPF-5(159)		Completion Date		(original)	
Research Agency:			Completion Date		(revised)	
Principal Investigator:						
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$25,000	<b>Total</b>		<b>\$5,000</b>	
	(revised)	\$30,000				
Est. Expended to Date		\$25,000	Salaries		\$3,000	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)	\$5,000	Equipment		(non-expendable)	
	(revised)		Travel		\$2,000	
Est. FY Expenditure		\$5,000	Other			
<b>PURPOSE AND SCOPE</b>						
<p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>-Interaction with Technical Monitor and/or Project Advisory Committee;</p> <p>-Frequent conference calls with Planning Committee; and</p> <p>-Summary of research activities pertaining to the project may be found on TTCC website.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES
Plan and conduct TTCC Fall meeting.

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Superpave Regional Center</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: Pooled Fund: TT-Fed</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:			Project Start Date:		7/1/2012	
Research Project Number:	TPF-5(228)		Completion Date		(original)	
Research Agency:			Completion Date		(revised)	
Principal Investigator:						
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$111,214	<b>Total</b>		<b>\$5,000</b>	
	(revised)					
Est. Expended to Date		\$60,000	Salaries		\$5,000	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)	\$60,000	Equipment		(non-expendable)	
	(revised)		Travel			
Est. FY Expenditure		\$60,000	Other			
<b>PURPOSE AND SCOPE</b>						
<p>Objectives of the Center are:</p> <ul style="list-style-type: none"> <li>-Conduct training in regard to Superpave binders, mix design, and performance testing, and provide training on special topics as requested by participating agencies;</li> <li>-Perform research, both cooperatively and agency-specific, sponsored by members of the pooled-fund;</li> <li>-Perform precision and bias testing for asphalt-related performance test equipment;</li> <li>-Conduct noise studies in an effort to develop quieter pavements;</li> <li>-Perform forensic evaluations on materials or projects that have experienced premature distress;</li> <li>-Prepare and give presentations and reports of research activities at local, state, and national meetings when invited;</li> <li>-Prepare research articles of regional and national interest;</li> <li>-Support agency personnel who attend regional and national meetings for the purpose of technology transfer or participation in special committees or task force groups; and</li> <li>-Work in close association with Southeastern Asphalt User/Producer Group to promote technology transfer from research to implementation.</li> </ul>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
Accomplishment should be found on the Federal Highway Administration (FHWA) Pooled Fund website.						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
Follow up will be made on several research ideas discussed at the annual SSC Management Committee meeting.						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Transportation Library Connectivity and Development</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: Pooled Fund: TT-Fed</b>		<b>Budget Category:</b>		<b>FHWA</b>	
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:						
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$75,000	<b>Total</b>		<b>\$15,000</b>	
	(revised)					
Est. Expended to Date		\$45,000	Salaries		\$15,000	
<b>FY 2012 - 2013 Budget</b>						
FY Funds	(original)	\$15,000	Equipment	(expendable)		
	(revised)		Equipment	(non-expendable)		
			Travel			
Est. FY Expenditure		\$15,000	Other			
<b>PURPOSE AND SCOPE</b>						
<p>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.</p> <p>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.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>-Annual meeting materials (presentations, minutes, project outlines) were finalized and distributed to TAC and posted to web site <a href="http://libraryconnectivity.org/meetings/">http://libraryconnectivity.org/meetings/</a>;</p> <p>-Annual meeting (September 19-20, 2012 in St. Louis) meeting and travel expenses were reimbursed;</p> <p>-Twelve-month contract extension was approved with contractor HS InFocus LLC;</p> <p>-TAC approved;</p> <p>-FFY2013 Work plan and budget;</p> <p>-FFY13 Special projects were scoped, proposed and selected by the TAC, five were chosen: Marketing and outreach;</p> <p>-Toolkit, Technical documentation page (reports) review and update, Improving distribution of reports, Multistate cataloging project, TKN web development and hosting (extension); and</p> <p>-Managed development of Valuation Toolkit project – draft and review content, manage graphics, copyediting and print subcontracts. Final web version was completed late December, files sent to printer.</p> <p>Additional information may be found on project website.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>
<ul style="list-style-type: none"><li>-Secure RDA product for Library of Congress cataloging subscriptions, negotiate discount/prorated subscription, present to TAC for approval;</li><li>-Manage marketing campaign of ASCE Library with materials and other promotions. Run quarterly usage reports and distributor to TAC, post in Members Only section of website;</li><li>-Finalize Valuation Toolkit project – approve proof, send to printer, distribute web PDF, broadcast availability on Tranlib, send print copies to members and others with promotional piece. Use as outreach opportunity for TKNs and pooled fund;</li><li>-Continue developing website, including project progress reports, updates and librarian resources and other resources;</li><li>-Conduct IHS trial, negotiate discount for consortium;</li><li>-Continue facilitating and managing selected individual member and group projects, including subcontracts and vendor relations.</li></ul> <p>Additional information may be found on project website</p>

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Highway Safety Manual Implementation</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: Pooled Fund: TT-Fed</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:				Project Start Date:		10/19/2011
Research Project Number:		TPF-5(255)		Completion Date		(original)
Research Agency:				Completion Date		(revised)
Principal Investigator:						
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$80,000	<b>Total</b>		<b>\$20,000</b>	
	(revised)					
Est. Expended to Date		\$40,000	Salaries		\$20,000	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)	\$20,000	Equipment		(non-expendable)	
	(revised)		Travel			
Est. FY Expenditure		\$20,000	Other			
<b>PURPOSE AND SCOPE</b>						
<p>The objectives of the study are (1) to advance ongoing efforts by lead states to implement the HSM, and (2) to expand implementation to all states. This study would be coordinated with other ongoing and planned implementation activities sponsored by AASHTO, FHWA, and TRB, including NCHRP Project 17-50 "Lead States Initiative for Implementing the Highway Safety Manual" It will also be coordinated with projects that develop content for future editions of the HSM including NCHRP Project 17-45 "Enhanced Safety Prediction Methodology and Analysis Tool for Freeways and Interchanges" NCHRP Project 17-54 "Consideration of Roadside Features in the Highway Safety Manual" and Transportation Pooled-Fund Study TPF-5(099) "Evaluation of Low Cost Safety Improvements."</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<ul style="list-style-type: none"> <li>-Host Annual meeting in Washington, DC;</li> <li>-Submit executive summary of the SPF Guides;</li> <li>-Held monthly call with participating states in February, 2013; and</li> <li>-Revised SPF Guides and Alternative resource tool report for SPFs.</li> </ul>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<ul style="list-style-type: none"> <li>-Hold monthly call with participating states;</li> <li>-Update work plan with projects needed in FY13-14;</li> <li>-Finalized SPF Guides and Select a resource tool for SPFs based on States input; and</li> <li>-Secure funding transfers for next tasks in work plan.</li> </ul>						



**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Reorganization of Section 5, Concrete Structures, of the AASHTO LRFD Bridge Design Specifications</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>SPR: Pooled Fund: TT-Fed</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:			Project Start Date:		1/1/2013	
Research Project Number:		TPF-5(271)	Completion Date		(original)	12/31/2015
Research Agency:			Completion Date		(revised)	
Principal Investigator:						
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$30,000	<b>Total</b>		<b>\$10,000</b>	
	(revised)					
Est. Expended to Date		\$10,000	Salaries		\$10,000	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)		Equipment		(non-expendable)	
	(revised)		Travel			
Est. FY Expenditure			Other			
<b>PURPOSE AND SCOPE</b>						
<p>The purpose of this project is to reorganize Section 5, Concrete Structures, of the AASHTO LRFD Bridge Design Specification so that Section 5 is logically organized, and philosophically and technically consistent. The entire LRFD Bridge Design Specification and AASHTO Bridge Construction Specification must be reviewed and updated as necessary to maintain consistency.</p> <p>Progress</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>Contract was signed with AASHTO</p>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<p>Survey stakeholders - Stakeholders will be identified and surveyed via conference calls and in-person meetings (for example, during the various T-10 meetings through the year) to identify the needs for returning Section 5 to its original consistency of organization, philosophy and technique. Stakeholders will include AASHTO technical committee T-10, practicing bridge-design engineers, and bridge-design researchers, among others.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Pooled Fund Collaboration Projects</b>				<b>Project Status:</b>	<b>Proposed</b>
<b>Funding Source:</b>	<b>SPR: Pooled Fund: TT-Fed</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:				Project Start Date:		
Research Project Number:		TPF-5(XXX)		Completion Date	(original)	
Research Agency:				Completion Date	(revised)	
Principal Investigator:						
<b>BUDGET STATUS</b>						
<b>Total Budget</b>				<b>Estimated 2013-2014 Budget</b>		
Total Cost	(original)	\$20,000		<b>Total</b>		<b>\$20,000</b>
	(revised)					
Est. Expended to Date				Salaries		\$20,000
<b>FY 2012 - 2013 Budget</b>				Equipment (expendable)		
FY Funds	(original)			Equipment (non-expendable)		
	(revised)			Travel		
Est. FY Expenditure				Other		
<b>PURPOSE AND SCOPE</b>						
<p>The Transportation Pooled Fund (TPF) Program allows federal, state, and local agencies and other organizations to combine resources to support transportation research studies. The objective of this work program item is to provide SPR funding for LADOTD to participate in upcoming pooled fund projects in which LTRC is not the lead state</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<p>Select and fund research pooled fund projects that would provide benefits to the Louisiana transportation network.</p>						

**FHWA**

**IBRD Funded  
Research Program**

**CONTINUING RESEARCH**

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Structure Health Monitoring of the I-10 Twin Span Bridge Over Lake Pontchartrain</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	IBRD: TT-Fed		<b>Budget Category:</b>		FHWA	
SIO:	30000129		Project Start Date:		11/1/2007	
Research Project Number:	07-1ST		Completion Date		(original)	10/31/2010
Research Agency:	LTRC		Completion Date		(revised)	12/31/2013
Principal Investigator:	Dr. Murad Abu-Farsakh					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$449,925	<b>Total</b>		<b>\$128,873</b>	
	(revised)	\$565,550				
Est. Expended to Date		\$503,600	Salaries			
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	\$128,873
FY Funds	(original)	\$153,073	Equipment		(non-expendable)	
	(revised)		Travel			
Est. FY Expenditure		\$24,200	Other			
<b>PURPOSE AND SCOPE</b>						
<p>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).</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<ul style="list-style-type: none"> <li>-Coordinated with the subcontractor to install the additional superstructure instrumentations: 12 strain gauges on concrete girders, 12 strain gauges on steel girders, and 3 OSMOS extensometers to three steel girders;</li> <li>-Ordered 6 OSMOS extensometers;</li> <li>-Coordinated with the subcontractor to re-calibrate the OSMOS WIM; and</li> <li>-Prepared final report.</li> </ul>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<ul style="list-style-type: none"> <li>-Continue coordination with the subcontractor to install the additional superstructure;</li> <li>-Continue coordination with the subcontractor to re-calibrate the OSMOS WIM; and</li> <li>-Coordinate with the subcontractor to complete and setup the long-term monitoring system.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Integral Abutment Bridge for Louisiana's Soft and Stiff Soils</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>IBRD: TT-Fed</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30000131</b>		Project Start Date:		10/1/2007	
Research Project Number:	07-4ST		Completion Date		(original)	8/31/2011
Research Agency:	LSU		Completion Date		(revised)	9/30/2013
Principal Investigator:	Dr. George Z. Voyiadjis					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$400,000	<b>Total</b>		<b>\$33,446</b>	
	(revised)	\$459,981				
Est. Expended to Date		\$377,630	Salaries		\$24,446	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)	\$108,364	Equipment		(non-expendable)	
	(revised)		Travel		\$1,000	
Est. FY Expenditure		\$47,924	Other		\$8,000	
<b>PURPOSE AND SCOPE</b>						
<p>The proposed project is to use embedded instrumentation to monitor a full Integral Abutment Bridge for Louisiana's soft and stiff soil condition. This will be used to evaluate the long-term performance of the Integral Abutment Bridges. The project incorporates the use of smart materials or embedded instrumentation for future continuous monitoring of operational performance of such bridges. This study has been approved and is federally funded through the Innovative Bridge Research and Deployment Program (IBRD) program.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>Instrumentation and Testing Plan for the Caminada Bridge:</p> <ul style="list-style-type: none"> <li>-Data gathering from the monitoring system;</li> <li>-Complete analysis using the finite element modeling of the bridge abutment; and</li> <li>-Comparison of the model predictions with the data obtained from the sensors.</li> </ul> <p>Instrumentation and Testing Plan for the Bodcau Bayou Bridge:</p> <ul style="list-style-type: none"> <li>-Data gathering from the monitoring system;</li> <li>-Complete modeling of the bridge using the finite element method for several piers of the substructure; and</li> <li>-Comparison of the model predictions with the data obtained from the sensors.</li> </ul>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<p>-Writing the Final Report and submitting it with appropriate recommendations</p> <p>Instrumentation and Testing Plan for the Caminada Bridge:</p> <ul style="list-style-type: none"> <li>-Data gathering from the monitoring system will be continued; and</li> <li>-Comparison of the model predictions with the data obtained from the sensors.</li> </ul> <p>Instrumentation and Testing Plan for the Bodcau Bayou Bridge:</p> <ul style="list-style-type: none"> <li>-Data gathering from the monitoring system will be continued;</li> <li>-Complete modeling of the bridge using the finite element method for several piers of the substructure; and</li> <li>-Comparison of the model predictions with the data obtained from the sensors.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Monitoring Bridge Scour Using Fiber Optic Sensors</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	IBRD: TT-Fed		<b>Budget Category:</b>		FHWA	
SIO:	30000132		Project Start Date:		1/1/2009	
Research Project Number:	08-2ST		Completion Date		(original)	7/1/2011
Research Agency:	LSU		Completion Date		(revised)	12/30/2013
Principal Investigator:	Dr. Steve C.S. Cai					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$199,999	<b>Total</b>		<b>\$67,000</b>	
	(revised)					
Est. Expended to Date		\$125,000	Salaries		\$55,000	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)	\$70,000	Equipment		(non-expendable)	
	(revised)	\$50,000	Travel		\$2,000	
Est. FY Expenditure		\$32,000	Other		\$10,000	
<b>PURPOSE AND SCOPE</b>						
<p>The purpose of this research project is to develop a scour monitoring system for bridge piers. The developed system will collect field data that can be used to verify the applicability and accuracy of the various design procedures in Louisiana and eventually to result in improving existing scour prediction methods. The scope of work includes laboratory test and field applications.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>Task 3: Development of Scour Monitoring Methodology          -Monitoring methodology to monitor the scour has been developed and improved; and a bridge identified previously has been discarded and a new bridge has been identified. Analysis on the third selected bridge has been conducted.</p> <p>Task 4: Test of Monitoring Methodology in Laboratory          -The concept of monitoring the scour has been further investigated in lab.</p> <p>Task 6 and Task 7 - Documentation          -Documentation has been conducted towards a final report. In addition, a journal manuscript titled "Scour effect on a single pile and development of corresponding scour monitoring methods" has been accomplished.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>
<p>Task 5: Installation and Field Testing</p> <ul style="list-style-type: none"><li>-The developed system will be installed in field and data will be collected.</li></ul> <p>Task 6 Guideline for Long-Term Monitoring of Scour</p> <ul style="list-style-type: none"><li>-A guideline and/or strategy for long-term monitoring of bridge scour, including the user manual of the scour measurement, will be developed for LADOTD engineers for future long-term monitoring.</li></ul> <p>Task 7 Final Report</p> <ul style="list-style-type: none"><li>-The final report will document the results of the entire research effort including evaluation of previous methods, methodology used in the present study, experimental and analytical findings, conclusions, and recommendations. In addition, information dissemination through publication in journals and conference presentations will be conducted.</li></ul>





# **FHWA**

## **LTAP Funded Program**

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Local Technical Assistance Program (LTAP)</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>LTAP: TT-Fed/TT-Reg</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	30000581		Project Start Date:		1/1/2012	
Research Project Number:	12-LTAP		Completion Date		(original)	12/31/2014
Research Agency:	LTRC		Completion Date		(revised)	
Principal Investigator:	Dr. Marie Walsh					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$588,079	<b>Total</b>		<b>\$588,079</b>	
	(revised)					
Est. Expended to Date			Salaries		\$270,257	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)		Equipment		(non-expendable)	
	(revised)		Travel		\$24,000	
Est. FY Expenditure			Other		\$293,822	
<b>PURPOSE AND SCOPE</b>						
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.						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>-Coordinated and promoted local road inventory and certification project in partnership with the Louisiana Department of Transportation and Development (LADOTD) through the Police Jury Association, Louisiana Municipal Association, and other stakeholders;</p> <p>-Coordinated local public agency (LPA) related activities with new DOTD program manager including input to new manual and development of outreach and training programs for local agencies and stakeholders that use federal or state aid;</p> <p>-Implemented first phase of local transportation Asset Management initiative including evaluation and selection of TAM system for local agencies;</p> <p>-Supported local road projects and local agency participation in the regional coalitions being established statewide in Louisiana;</p> <p>-Supported professional development of local engineers through planning and participation in two statewide conferences of the Louisiana Parish Engineers and Supervisors Association; 2 leadership development sessions for the Deep South ITE Chapters; annual Louisiana APWA conference; as well as serving as Board members and chairs of Education Committees for stakeholder organization;</p> <p>-Participated in planning activities for the 2014 National Association of County Engineers (NACE) which will be hosted by the Louisiana Parish Engineers and Supervisors Association in Baton Rouge, Louisiana;</p> <p>-Continued to provide traditional work program of transportation and safety related training to local public agencies; and</p> <p>-Presented 67 classes or workshops: 6 Worker Safety Classes; 28 Highway Safety Classes; 21 Infrastructure Management Classes; and 12 Workforce Development Classes.</p> <p>**11287 hours of training      ***1892 program participants</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>
<ul style="list-style-type: none"><li>-Continue implementation of local Transportation Asset Management Program; and</li><li>-Coordinate local agency participation in Louisiana Department of Transportation and Development (LADOTD) preparation of LA Public Roads Inventory.</li></ul>



**FHWA**

**STP Funded**

**Technology Transfer  
and  
Education Program**

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Technology Transfer Program and Operations (LSU)</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>STP: TT-Fed</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30000320</b>		Project Start Date:		7/1/2013	
Research Project Number:	08-1TSQ		Completion Date		(original)	6/30/2014
Research Agency:	LTRC		Completion Date		(revised)	
Principal Investigator:	Mr. Sam Cooper					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$366,917	<b>Total</b>		<b>\$366,917</b>	
	(revised)					
Est. Expended to Date			Salaries		\$327,219	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)		Equipment		(non-expendable)	\$13,698
	(revised)		Travel		\$6,000	
Est. FY Expenditure			Other		\$20,000	
<b>PURPOSE AND SCOPE</b>						
<p>The objectives of this study are to:</p> <ul style="list-style-type: none"> <li>-Disseminate information on new technologies and methodologies to Louisiana Department of Transportation and Development (LADOTD) and other transportation-oriented agencies;</li> <li>-Improve communications on technical, transportation-related issues between the department and other agencies;</li> <li>-Encourage implementation of new procedures and technologies; and</li> <li>-Disseminate information on transportation subjects to appropriate managers and engineers in the department.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS
<ul style="list-style-type: none"> <li>-Assisted in registration for LTRC Seminar Series: Sustainable Materials for Pavement Infrastructure: Use of Waste Tires in Asphalt Mixtures – Baton Rouge, LA;</li> <li>-Assisted in registration for LTRC Seminar Series: Congestion Management – Baton Rouge, LA;</li> <li>-Produced website and program for National Transportation Training Directors Conference held in Seattle, Washington;</li> <li>-Assisted in registration for National Transportation Training Directors Conference held in Seattle, Washington;</li> <li>-Develop and Maintain 2013 Transportation Conference Website;</li> <li>-Assisted in registration for the 2013 Transportation Conference held in Baton Rouge, LA;</li> <li>-Coordinate sponsorship for the 2013 LTC;</li> <li>-Published 2 Tech Todays;</li> <li>-Published 2012 annual report;</li> <li>-Photographed all LTRC events;</li> <li>-Set up online registration for NHI/training courses (13-9NHI, 4 Other);</li> <li>-Edited and distributed 10 project capsules, 18 technical summaries, 18 final reports, 4 fact sheets and 1 implementation impact;</li> <li>-Filmed and produced LADOTD Bridge Inspection video;</li> <li>-Filmed and produced State of DOTD video; and</li> <li>-Filmed and Produced Partners in Leadership.</li> </ul>
FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES
<ul style="list-style-type: none"> <li>-Develop registration and program for Intelligent Compaction - LTRC Seminar Series – New Iberia, LA;</li> <li>-Develop registration and program for RAC 2013 Annual Meeting – Baton Rouge, LA;</li> <li>-Develop and Maintain RAC 2013 Annual Meeting Website;</li> <li>-Chair publications committee for the SASHTO 2014 – New Orleans, LA;</li> <li>-Develop website, registration and program for SASHTO 2014 – New Orleans, LA;</li> <li>-Coordinate online registration and e-commerce capabilities for all LTRC events;</li> <li>-Develop, process and assist in registration for all LTAP and LTRC events;</li> <li>-Participate in development of LPA civil engineering and inspection class;</li> <li>-Produce website, program and registration for 2013 National Transportation Training Directors Conference held in Boston, MA;</li> <li>-Editing and distribute Project Capsules, Technical Summaries, Final Reports and Technical Assistance Reports;</li> <li>-Create content and publish Tech Today (2);</li> <li>-Implement new design of LTRC website;</li> <li>-Photograph all LTRC events; and</li> <li>-Available to video any LTRC event.</li> </ul>

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Technology Transfer &amp; Research Implementation Support for Louisiana Universities</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>STP: TT-Fed</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:	<b>30000241</b>		Project Start Date:		1/1/2010	
Research Project Number:	10-4AD		Completion Date	(original)	12/31/2013	
Research Agency:	LTRC		Completion Date	(revised)		
Principal Investigator:	Mr. Mark Morvant					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$110,000	<b>Total</b>		<b>\$10,000</b>	
	(revised)					
Est. Expended to Date			Salaries			
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)		Equipment		(non-expendable)	
	(revised)		Travel		\$10,000	
Est. FY Expenditure		\$4,357	Other			
<b>PURPOSE AND SCOPE</b>						
<p>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.</p> <p>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.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>This project provided support for travel for presentation of the following papers developed from LTRC research projects:</p> <ul style="list-style-type: none"> <li>-Developing Crash Modification Factors;</li> <li>-Development of Wave and Surge Atlases for the Design; and</li> <li>-Development of Cost-Effective Pavement Treatment Selection and Treatment Performance Models.</li> </ul>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
Continue to provide support technology transfer travel for university faculty to deliver research results to state and national audiences.						



**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Technology Transfer Program and Operations (DOTD)</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>STP: TT-Fed</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:				Project Start Date:		7/1/2013
Research Project Number:		14-1TSQ		Completion Date	(original)	6/30/2014
Research Agency:		LTRC		Completion Date	(revised)	
Principal Investigator:		Mr. Sam Cooper				
<b>BUDGET STATUS</b>						
<b>Total Budget</b>				<b>Estimated 2013-2014 Budget</b>		
Total Cost	(original)	\$493,524		<b>Total</b>		<b>\$493,524</b>
	(revised)					
Est. Expended to Date				Salaries		\$493,524
<b>FY 2012 - 2013 Budget</b>				Equipment (expendable)		
FY Funds	(original)			Equipment (non-expendable)		
	(revised)			Travel		
Est. FY Expenditure				Other		
<b>PURPOSE AND SCOPE</b>						
<p>The objectives of this study are to:</p> <ul style="list-style-type: none"> <li>-Disseminate information on new technologies and methodologies to the Louisiana Department of Transportation and Development (LADOTD) and other transportation-oriented agencies;</li> <li>-Improve communications on technical, transportation-related issues between the department and other agencies;</li> <li>-Encourage implementation of new procedures and technologies; and</li> <li>-Disseminate information on transportation subjects to appropriate managers and engineers in the department.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS
<ul style="list-style-type: none"> <li>-Assisted in registration for LTRC Seminar Series: Sustainable Materials for Pavement Infrastructure: Use of Waste Tires in Asphalt Mixtures – Baton Rouge, LA;</li> <li>-Assisted in registration for LTRC Seminar Series: Congestion Management – Baton Rouge, LA;</li> <li>-Produced website and program for National Transportation Training Directors Conference held in Seattle, Washington;</li> <li>-Assisted in registration for National Transportation Training Directors Conference held in Seattle, Washington;</li> <li>-Develop and Maintain 2013 Transportation Conference Website;</li> <li>-Assisted in registration for the 2013 Transportation Conference held in Baton Rouge, LA;</li> <li>-Coordinate sponsorship for the 2013 LTC;</li> <li>-Published 2 Tech Todays;</li> <li>-Published 2012 annual report;</li> <li>-Photographed all LTRC events;</li> <li>-Set up online registration for NHI/training courses (13-9NHI, 4 Other);</li> <li>-Edited and distributed 10 project capsules, 18 technical summaries, 18 final reports, 4 fact sheets and 1 implementation impact;</li> <li>-Filmed and produced LADOTD Bridge Inspection video;</li> <li>-Filmed and produced State of DOTD video; and</li> <li>-Filmed and Produced Partners in Leadership.</li> </ul>
FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES
<ul style="list-style-type: none"> <li>-Develop registration and program for Intelligent Compaction - LTRC Seminar Series – New Iberia, LA;</li> <li>-Develop registration and program for RAC 2013 Annual Meeting – Baton Rouge, LA;</li> <li>-Develop and Maintain RAC 2013 Annual Meeting Website;</li> <li>-Chair publications committee for the SASHTO 2014 – New Orleans, LA;</li> <li>-Develop website, registration and program for SASHTO 2014 – New Orleans, LA;</li> <li>-Coordinate online registration and e-commerce capabilities for all LTRC events;</li> <li>-Develop, process and assist in registration for all LTAP and LTRC events;</li> <li>-Participate in development of LPA civil engineering and inspection class;</li> <li>-Produce website, program and registration for 2013 National Transportation Training Directors Conference held in Boston, MA;</li> <li>-Editing and distribute Project Capsules, Technical Summaries, Final Reports and Technical Assistance Reports;</li> <li>-Create content and publish Tech Today (2);</li> <li>-Implement new design of LTRC website;</li> <li>-Photograph all LTRC events; and</li> <li>-Available to video any LTRC event.</li> </ul>

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Support for Senior Project Courses</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>STP: TT-Fed</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:			Project Start Date:		7/1/2013	
Research Project Number:	14-1TT		Completion Date		(original)	6/30/2014
Research Agency:	LTRC		Completion Date		(revised)	
Principal Investigator:	Mr. Sam Cooper					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$37,500	<b>Total</b>		<b>\$37,500</b>	
	(revised)					
Est. Expended to Date			Salaries			
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)		Equipment		(non-expendable)	
	(revised)		Travel			
Est. FY Expenditure			Other		\$37,500	
<b>PURPOSE AND SCOPE</b>						
To provide support for senior project engineering courses up to a maximum of \$7,500 / university / year.						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>Four universities participated in this program this reporting period:</p> <ul style="list-style-type: none"> <li>-McNeese State University;</li> <li>-Louisiana Tech University;</li> <li>-University of Louisiana at Lafayette; and</li> <li>-Louisiana State University.</li> </ul>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
Continue to provide support for senior project engineering courses.						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Workforce Development</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>STP: TT-Fed</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:			Project Start Date:		7/1/2013	
Research Project Number:		14-1WD	Completion Date		(original)	6/30/2014
Research Agency:		LTRC	Completion Date		(revised)	
Principal Investigator:		Mr. Sam Cooper				
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$1,045,088	<b>Total</b>		<b>\$1,045,088</b>	
	(revised)					
Est. Expended to Date			Salaries		\$1,035,088	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	\$10,000
FY Funds	(original)		Equipment		(non-expendable)	
	(revised)		Travel			
Est. FY Expenditure			Other			
<b>PURPOSE AND SCOPE</b>						
<p>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.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>-Developed 11 training courses: 3 Pavia courses; 2 videos of lab procedures; video tutorial for SMM; power point and handouts for LPA/LTAP; 4 other courses - 2 have been fully implemented;          -142 recertification test given, 150 specialty area tests given, 94 certifications awarded;          -Scheduled, registered, and subscribed students for leadership, management, supervisory, computer based training courses, NHI, CADD/GIS and other specialty courses;          -Implemented Management and Development Structured Training Program;          -Transferred Management, HR, and Loss Prevention training into LEO/LSO;          -Began using Test.com on-line testing – 705 employees tested since 5/1/2012; 298 prior to that date;          -Revised 60 Structured Training Programs;          -Revised PPM 59; and          -Coordinated the activities of 19 CO-OP students and 8 ERDP participants. 6 of the 8 ERDP participants were previous CO-OP students.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>
<ul style="list-style-type: none"><li>-Implement revised PPM 59;</li><li>-Implement revised Structured Training Programs;</li><li>-Continue to meet with principal customers to prioritize needs to develop training courses ,performance evaluations, and safe operating checklists;</li><li>-Manage PC and CAAD software, leadership, technical skills training, and professional development and continuing education;</li><li>-Continue the program of safety training;</li><li>-Maintain and build library collection in support of workforce development and research activities;</li><li>-Continue coordinating activities of ERDP participants and co-op students; and</li><li>-Continuing development and revision of construction and maintenance training courses.</li></ul>

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>LTRC Student Program</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>STP: TT-Fed</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:			Project Start Date:		7/1/2013	
Research Project Number:	14-2TT		Completion Date	(original)	6/30/2014	
Research Agency:	LTRC		Completion Date	(revised)		
Principal Investigator:	Mr. Harold 'Skip' Paul					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$147,000	<b>Total</b>		<b>\$147,000</b>	
	(revised)					
Est. Expended to Date			Salaries		\$147,000	
<b>FY 2012 - 2013 Budget</b>						
FY Funds	(original)		Equipment	(expendable)		
	(revised)		Equipment	(non-expendable)		
Est. FY Expenditure			Travel			
			Other			
<b>PURPOSE AND SCOPE</b>						
To pay for salaries for undergraduate students employed to provide support to various Louisiana Transportation Center (LTRC) projects.						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
Thirty five (35) undergraduate students were employed by LTRC to provide support in fulfilling necessary job tasks on various LTRC projects.						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
Continue to pay for salaries for undergraduate students employed to provide support to various LTRC projects.						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>LADOTD CO-OP Program</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>STP: TT-Fed</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:			Project Start Date:		7/1/2013	
Research Project Number:	14-COOP		Completion Date		(original)	6/30/2014
Research Agency:	LTRC		Completion Date		(revised)	
Principal Investigator:	Mr. Sam Cooper					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$300,000	<b>Total</b>		<b>\$300,000</b>	
	(revised)					
Est. Expended to Date			Salaries		\$300,000	
<b>FY 2012 - 2013 Budget</b>						
FY Funds	(original)		Equipment	(expendable)		
	(revised)		Equipment	(non-expendable)		
Est. FY Expenditure			Travel			
			Other			
<b>PURPOSE AND SCOPE</b>						
<p>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.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>-19 students participated in CO-OP at various LADOTD sections throughout Louisiana; and -6 CO-OP students were hired by LADOTD upon graduation.</p>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<p>-Place CO-OP approximately 30 students in various LADOTD Sections across the state; -Continue end of semester presentations; and -Retain students in CO-OP.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Technology Transfer Registration Fees</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>STP: TT-Fed</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:				Project Start Date:		7/1/2013
Research Project Number:		14-TTRF		Completion Date	(original)	6/30/2014
Research Agency:		LTRC		Completion Date	(revised)	
Principal Investigator:		Mr. Sam Cooper				
<b>BUDGET STATUS</b>						
<b>Total Budget</b>				<b>Estimated 2013-2014 Budget</b>		
Total Cost	(original)	\$100,000		<b>Total</b>		<b>\$100,000</b>
	(revised)					
Est. Expended to Date				Salaries		
<b>FY 2012 - 2013 Budget</b>				Equipment (expendable)		
FY Funds	(original)			Equipment (non-expendable)		
	(revised)			Travel		
Est. FY Expenditure				Other		
				\$100,000		
<b>PURPOSE AND SCOPE</b>						
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.						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
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.						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
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 2013-2014

<b>Title:</b>	<b>Workforce Development Contracts</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>STP: TT-Fed</b>		<b>Budget Category:</b>		<b>FHWA</b>	
SIO:			Project Start Date:		7/1/2013	
Research Project Number:		14-WDC	Completion Date		(original)	6/30/2014
Research Agency:		LTRC	Completion Date		(revised)	
Principal Investigator:		Mr. Sam Cooper				
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$3,683,507	<b>Total</b>		<b>\$3,683,507</b>	
	(revised)					
Est. Expended to Date			Salaries		\$913,721	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	\$40,000
FY Funds	(original)		Equipment		(non-expendable)	
	(revised)		Travel		\$25,000	
Est. FY Expenditure			Other		\$2,704,786	
<b>PURPOSE AND SCOPE</b>						
<p>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.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

**FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS**

- Conducted courses as follows:
    - >Highway Safety Manual - 35 Participants;
    - >Percheron Real Estate Planning - 10 Participants;
    - >Northwestern Traffic Engineering - 28 Participants;
    - >Northwestern Crash Reconstruction - 28 Participants;
    - >Designing for Pedestrian Accessibility - 35 Participants;
    - >ELMOD 6 - 15 Participants;
    - >PE Review - 62 Participants;
    - >LSU CADD: 8 classes held - 80 Participants;
    - >UNO: 112 classes held - 1200 Participants;
    - >NHI Workshops: 12 classes held - 302 Participants;
    - >Individual Registrations: 89 classes held - 328 Participants;
    - >Foundations of Leadership Development: 25 classes held - 475 Participants;
    - >Emotional Intelligence: 5 Pilot classes held - 44 Participants;
    - >Emotional Intelligence: 5 classes held - 75 Participants; and
    - >TRAC and RIDES Workshop - 21 Participants.
  - Roadside Safety System Design Mentor and Guardrail Designer Training - 127 Participants;
  - FHWA Roadway Departure Technology Transfer: Roadside Safety System Installer Training - 97 participants;
  - Sustainable Materials for Pavement Infrastructure: Use of Waste Tires in Asphalt Mixtures - Crumb Rubber - 127 participants;
  - 2012 National Transportation Training Directors (NTTD) Conference - 80 participants;
  - Moveable Bridge Inspection Workshop - 83 participants;
  - Louisiana Transportation Conference - 1500 participants;
  - Southeast Transportation Consortium Meeting - 20 Participant's;
  - Intelligent Compaction Showcase - 100 participants;
  - LA, NV, and UT Safety Peer Exchange - 60 participants;
  - Secured site for SASHTO 2014 at New Orleans Sheraton – New Orleans, LA;
  - Three-year appointment to the TRB Technology Transfer Committee;
  - Appointment to NCHRP 20-07/Task 340 National Training: Challenges and Opportunities;
  - Continued appointment to the TRB Committee on Library and Information Science for Transportation;
  - Delivered 22 classes of the "Foundations of Leadership Development" course to 417 Transportation employees;
  - Developed "Emotional Intelligence" course for the Leadership Development Program;
  - Switched District 8 from analog to digital video in both conference rooms. This includes electronic design, installation and programming of District 8 equipment;
  - Revised controller graphics on AV equipment in conference room 101 at TTEC;
  - Committee member on video conference committee for LADOTD;
  - Received \$80,600 U.S. Department of Transportation OJT/SS grant to initiate AASHTO TRAC and RIDES program for 10 local area schools;
  - Conducted two-day TRAC and RIDES workshops preparing teachers to use the program in their schools; and
  - Initiated TRAC and RIDES assessment program in collaboration with LSU College of Education to study long term efficacy of TRAC and RIDES problem based learning and possible change in perception of STEM and transportation related careers among K-12 students in study group.
- \*\*Approximately 5300 total participants in 270+ training courses and events.

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>
<ul style="list-style-type: none"><li>-2013 National Research Advisory Committee/TRB State Representative Meeting;</li><li>-Transportation Safety Conference, Manage leadership, management, and supervisory training contracts;</li><li>-Deploy "Emotional Intelligence" course to all DOTD personnel needing leadership developing training;</li><li>-Develop method of meaningful evaluation of the program;</li><li>-Develop and pilot test "Transformational Leadership" course;</li><li>-Develop and pilot test "Organizational Culture" course;</li><li>-Market Leadership Development Program (Create Website or Webpage);</li><li>-Conduct 5-Day National Transportation Training Directors Conference;</li><li>-Deliver the PE Review Workshop;</li><li>-DOTD Leadership Institute;</li><li>-DOTD Management Development Workshops;</li><li>-Other External Training Contracts and Workshops;</li><li>-Work with districts to change audio/visual equipment from analog to digital; and</li><li>-Switch all TTEC audio/visual equipment to digital versus analog.</li></ul>

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	AASHTO PONTIS Agreement				<b>Project Status:</b>	Proposed
<b>Funding Source:</b>	STP: TT-Fed		<b>Budget Category:</b>		FHWA	
SIO:			Project Start Date:		7/1/2013	
Research Project Number:	14-PONTIS		Completion Date	(original)	6/30/2014	
Research Agency:	LTRC		Completion Date	(revised)		
Principal Investigator:	Mr. Sam Cooper					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$125,000	<b>Total</b>		<b>\$125,000</b>	
	(revised)					
Est. Expended to Date			Salaries			
<b>FY 2012 - 2013 Budget</b>			Equipment	(expendable)		
FY Funds	(original)		Equipment	(non-expendable)		
	(revised)		Travel			
Est. FY Expenditure			Other		\$125,000	
<b>PURPOSE AND SCOPE</b>						
AASHTO PONTIS Agreement						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
AASHTO PONTIS Agreement						

# **State Funded Research Program**

**CONTINUING RESEARCH**

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Bayou Corne Sinkhole: Control Measurements of State Highway 70 in Assumption Parish, Louisiana</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>State: TT-Reg</b>		<b>Budget Category:</b>		<b>State</b>	
SIO:	<b>30000960</b>		Project Start Date:		9/19/2012	
Research Project Number:	13-8GT		Completion Date	(original)	6/18/2013	
Research Agency:	LSU		Completion Date	(revised)		
Principal Investigator:	Dr. Joshua Kent					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$84,356	<b>Total</b>		<b>\$10,000</b>	
	(revised)					
Est. Expended to Date	\$45,796		Salaries		\$10,000	
<b>FY 2012 - 2013 Budget</b>			Equipment	(expendable)		
FY Funds	(original)	\$84,356	Equipment	(non-expendable)		
	(revised)		Travel			
Est. FY Expenditure	\$74,356		Other			
<b>PURPOSE AND SCOPE</b>						
<p>The fundamental objective of this proposal is to assess the stability of the portion of Hwy 70 that is potentially vulnerable to the Assumption Parish sinkhole. Accordingly the Center for GeoInformatics (C4G) proposes to collect horizontal and vertical control measurements using GPS enhanced by real-time network of continuously operating reference stations (CORS) maintained by the Center.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>Measurements were collected on a weekly basis then shifted to a monthly basis. Efforts were also focused on longer term monitoring, including the installation of Continually Operating Reference Stations (CORS). The CORS effort will be covered under a separate research project.</p>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<p>The CORS effort will be covered under a separate research project, however this research will likely continue until the CORS 911 system is fully operational.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>I-10 Girder Repair Using Post-Tensioned Steel Rods and Carbon Fiber Composite Cables (CFCC)</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>State: TT-Reg</b>		<b>Budget Category:</b>		<b>State</b>	
SIO:		<b>30001020</b>		Project Start Date:		3/18/2013
Research Project Number:		13-4ST		Completion Date	(original)	3/17/2014
Research Agency:		LTRC		Completion Date	(revised)	
Principal Investigator:		Mr. Ching Tsai				
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$60,000	<b>Total</b>		<b>\$14,000</b>	
	(revised)					
Est. Expended to Date			Salaries		\$14,000	
<b>FY 2012 - 2013 Budget</b>			Equipment (expendable)			
FY Funds	(original)	\$46,000	Equipment (non-expendable)			
	(revised)		Travel			
Est. FY Expenditure			Other			
<b>PURPOSE AND SCOPE</b>						
<p>Due to the corrosive environment of the subject bridge, there is a concern of continuing deterioration of the bridge girders and to be installed reinforcing steel bars and carbon fiber composite cables (CFCCs). Continuous monitoring for the followings throughout the life time of this bridge is desirable.</p> <p>The scope of this research is to continuously monitor the stress changes in all external reinforcement to ensure the safety of the bridge structure. This monitoring effort will provide the Louisiana Department of Transportation and Development (LADOTD) on decision making on the future operation of the bridge. In addition, since both the traditional steel reinforcement and CFCC will be used, comparisons of the long-term performance of the two materials will be made.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>-Attending the pre-construction conference when called for;</p> <p>-Ascertaining the damage-free inspection of the CFCC shipment after it was received; and</p> <p>-Preparing an instrumentation plan for the CFCCs.</p>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<p>-Installing of the instrumentation on the cables</p> <p>-Data collection and Analysis; and</p> <p>-Preparation of the final report.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014  
**2013 RPIC PROBLEM STATEMENTS**

FINAL RANKING	PROBLEM STATEMENT TITLE
1	Geotechnical Database - Phase 3
2	Evaluating Louisiana New Continuity Detail for Girder Bridges
3	Development of a Sustainable UHPC Bridge Deck for Movable Bridges
4	Cost and Time Benefits for using Subsurface Utility Engineering Before Road Construction
5	Investigation into the Feasibility of Continuously Reinforced Concrete Pavement (CRCP) Reinforced with Fibers Instead of Steel Rebar
6	Region-Specific Gates Equation Calibration for LRFD
7	A Simulation Model for Intermodal Freight Transportation in the State of Louisiana
8	Investigation of PCC pavement rubblization over weak subgrades
9	Factors influencing Seatbelt and Occupant Protection Utilization in Louisiana and Strategies to Improve Usage Rate
10	Material property changes of decayed timber for timber bridges
11	Right-sizing truck registration and overweight permits fees.
12	Predicting Driven Pile Behavior Within Prebored Soil
13	Implementation of Concrete Maturity
14	Automated Material Delivery, Tracking, and Long-Term Monitoring
15	Remote Monitoring of Instrumented Bridges in Louisiana
16	Comparison of Granulated vs. Hydrated Lime for Treatment of In-Situ Soils
17	Effects of Temperature Segregation on the Volumetric and Mechanistic Properties of Asphalt Mixtures
18	Identify all local public transit resources for evacuations and other needs
19	Evaluation Non-destructive Quality Control Tools for Joint Construction in Jointed Concrete Pavements
20	Emergency Power Supply Systems Applied to Signalized Intersections
21	Mitigating Damage of Shale Gas Exploration and Mining Efforts
22	Quantifying the LaDOTD Roadway Safety Investment Impact on Crash Reduction
23	Development of new mechanical test to evaluate moisture sensitivity of Asphalt Mixtures
24	Infrastructure damage cost recovery associated with oil and gas exploration and production.
25	Increased Cleanliness and Reduction of Maintenance Costs for Structures
26	Study the Safety Effects of Access Management Techniques for Driveway Density, Driveway-Related Design Factors and Effects of Median Treatments on Roadways in the State of Louisiana
27	Project Risk versus increased Railroad Protective Liability Insurance
28	Drugged Driving in Louisiana: Quantification of its Impact on Impaired Driving crashes and deaths and the Legal, Enforcement and Public Health Implications and Potential Strategies
29	Consistency of Crumb Rubber Asphalt Cement and Asphalt Mixtures
30	Development of a New Travel Time Reliability Measure as an Indicator of Level of Service
31	Development of a Test Bed for Connected Vehicles using LSU Driving Simulator



# **Federal Funded Projects**

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Field Performance of Timber Highway Bridges: A National Study</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>U.S. Department of Agriculture</b>		<b>Budget Category:</b>		<b>Federal</b>	
SIO:	<b>30000620</b>		Project Start Date:		1/3/2012	
Research Project Number:	12-2ST		Completion Date		(original)	6/30/2014
Research Agency:	LTRC		Completion Date		(revised)	
Principal Investigator:	Dr. Vijaya Gopu					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$20,000	<b>Total</b>		<b>\$10,000</b>	
	(revised)					
Est. Expended to Date			Salaries		\$10,000	
<b>FY 2012 - 2013 Budget</b>			Equipment (expendable)			
FY Funds	(original)	\$10,000	Equipment		(non-expendable)	
	(revised)		Travel			
Est. FY Expenditure		\$10,000	Other			
<b>PURPOSE AND SCOPE</b>						
Purpose—further knowledge about timber as a structural bridge material and its durability Objective—to assess the condition of timber highway bridges in various climatic regions. Scope—evaluate more than 30 timber bridges in the Southeast region that meet selection criteria. Outcome—consolidate findings into an FPL report and enter into FHWA's Bridge Portal database; develop models for service life predictions.						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
-Meetings were held with the bridge maintenance and inspection staff at the DOTs in Alabama, Georgia, Louisiana and North Carolina to discuss the scope and purpose of the national study and the advanced inspection tools that will be used in the study; -List of candidate bridges from all the participating states -- AL, GA, LA and NC -- was collected and provided to the national project leader at the US Forest Products Laboratory in Madison, WI; -Held meetings with the project leader to finalize the candidate bridges for inclusion in the study; -A demonstration of the use of the advanced inspection tools was held for the Louisiana DOT inspectors and bridge engineers in Baton Rouge, LA and the demonstration was video-taped for distribution to the other participating DOTs; and -A schedule has been developed for conducting the inspections and it is anticipated that most, if not all, of the bridges targeted in the study will be inspected by June 30, 2013.						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
-Conduct and coordinate timber bridge inspections in La, AL, GA & NC for a FHWA/FPL collaborative study. The inspection of bridges in the various states involved will continue till completion; -All data, documents and audio-visual material collected during the inspections will be uploaded to the project website; and -Principal Investigator will participate in the FPL final review meeting to be held in Madison, WI, and provide review and comments on the final report developed by FPL.						

# **Self Generated Funded Research Program**

**CONTINUING RESEARCH**

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>LOOP Environmental Monitoring: 2011-2013 Beach Elevation, Beach Vegetation, Land Loss and Habitat Changes Surveys</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>LOOP</b>		<b>Budget Category:</b>		<b>Self-Generated</b>	
SIO:		<b>30000200</b>		Project Start Date:		4/12/2011
Research Project Number:		11-3SS		Completion Date	(original)	4/11/2014
Research Agency:		C-K Associates		Completion Date	(revised)	
Principal Investigator:		Ms. Tre Wharton				
<b>BUDGET STATUS</b>						
<b>Total Budget</b>				<b>Estimated 2013-2014 Budget</b>		
Total Cost	(original)	\$136,247		<b>Total</b>		<b>\$145,484</b>
	(revised)	\$220,526				
Est. Expended to Date		\$75,042		Salaries		\$145,484
<b>FY 2012 - 2013 Budget</b>						
FY Funds	(original)	\$75,145		Equipment	(expendable)	
	(revised)			Equipment	(non-expendable)	
Est. FY Expenditure		\$45,000		Travel		
				Other		
<b>PURPOSE AND SCOPE</b>						
<p>The purpose of the LOOP Environmental Monitoring Program is to monitor the effects of of the LOOP pipeline to the coastal environment. The scope of work includes 3-year studies to monitor beach vegetation and elevation and also a remote sensing study to monitor habitat change and land loss.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>The 2012 fiscal year included a beach elevation survey which was completed in May of 2012. A beach vegetation survey was not covered in the 2012-2013 fiscal year scope. The aerial imagery classification and orthorectification was completed. A PRC meeting was conducted in December of 2012 to provide the PRC an update on the project. Also, the monitoring after a catastrophic event phase was initialized due to the landfall of Hurricane Issac in August of 2012. A site visit to the beach crossing was conducted in January 2013 to document the effects of the hurricane. The aerial imagery was flown again to capture the effects of the hurricane in February of 2013.</p>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<p>In May of 2013, the final beach elevation and vegetation surveys will be conducted. The post-Issac imagery classification and rectification will also be completed. All data collected from 2011-2013 will be summarized and a final report will be given in the fall of 2013 and presented to the PRC.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Field versus Laboratory Volumetrics and Mechanical Properties</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>NCHRP</b>		<b>Budget Category:</b>		<b>Self-Generated</b>	
SIO:	<b>30000133</b>		Project Start Date:		8/1/2009	
Research Project Number:	10-1B		Completion Date		(original)	2/29/2012
Research Agency:	LTRC		Completion Date		(revised)	12/31/2013
Principal Investigator:	Dr. Louay Mohammad					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$500,000	<b>Total</b>		<b>\$103,100</b>	
	(revised)					
Est. Expended to Date		\$496,900	Salaries		\$60,100	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)	\$121,125	Equipment		(non-expendable)	
	(revised)		Travel		\$3,000	
Est. FY Expenditure		\$121,125	Other		\$40,000	
<b>PURPOSE AND SCOPE</b>						
<p>The objectives of this study are (1) quantify sources and causes of variability in the measurements of volumetric and mechanical properties of dense-graded asphalt mixtures for three types of specimens that may be encountered in QA and mix design activities (laboratory mixed and compacted [LL], plant mixed and laboratory compacted [PL], and plant mixed and field compacted [PF]), and (2) develop a recommended practice for state DOTs to incorporate these results in specifications and criteria for (a) quality assurance; (b) mix design and verification or validation, and (c) structural design and forensic studies.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>Performed The Following Task: -Task 4: Conduct Laboratory Experiments approved in Task 3.</p>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<p>Continue work on the Following Tasks: -Task 4: Conduct Laboratory Experiments approved in Task 3 -Task 5: Based on the results of Tasks 2 and 4, prepare a recommended practice for state agencies that  (1) discusses the cause and magnitude of variability in measured volumetric and mechanical properties with the three specimen types of interest; and  (2) provides guidance on incorporating these results into specifications and criteria for  (a) mix design verification or validation;  (b) quality control and acceptance; and  (c) structural design and forensic studies.  -Task 6: Prepare draft final report that will summarize findings, draw conclusions, document results, and present recommended procedures to test the proposed limits with independently generated data sets.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Modulus Based Construction Specification of Earthwork and Unbound Aggregate</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>NCHRP</b>		<b>Budget Category:</b>		<b>Self-Generated</b>	
SIO:	<b>30000260</b>		Project Start Date:		10/7/2010	
Research Project Number:	11-4B		Completion Date		(original)	4/6/2013
Research Agency:	LTRC		Completion Date		(revised)	
Principal Investigator:	Dr. Louay Mohammad					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$154,037	<b>Total</b>		<b>\$40,000</b>	
	(revised)					
Est. Expended to Date	\$96,700		Salaries		\$38,000	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)	\$72,000	Equipment		(non-expendable)	\$2,000
	(revised)		Travel			
Est. FY Expenditure	\$72,000		Other			
<b>PURPOSE AND SCOPE</b>						
<p>The objective of this research is to develop a modulus-based construction specification for compaction of earthwork and unbound aggregate.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>Performed the following task:</p> <ul style="list-style-type: none"> <li>-Task 7: Conduct the work plan approved in Task 6;</li> <li>-Constructed lanes at the ALF facility as per the test factorial; and</li> <li>-Conducted physical and mechanistic in-situ tests on the constructed lanes.</li> </ul>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<p>Continue work on the following tasks:</p> <ul style="list-style-type: none"> <li>-Task 7: Conduct the work plan approved in Task 6; and</li> <li>-Task 8: Using the results of Task 7, prepare a draft modulus-based construction specification for compaction of earthwork and unbound aggregate.</li> </ul>						

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Performance of WMA Technologies: Stage II – Long-term Field Performance</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>NCHRP</b>		<b>Budget Category:</b>		<b>Self-Generated</b>	
SIO:	<b>30000545</b>		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					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$103,796	<b>Total</b>		<b>\$36,000</b>	
	(revised)					
Est. Expended to Date	\$67,000		Salaries		\$34,000	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)	\$40,000	Equipment		(non-expendable)	
	(revised)		Travel		\$2,000	
Est. FY Expenditure	\$40,000		Other			
<b>PURPOSE AND SCOPE</b>						
<p>The objectives of this research are to:</p> <ul style="list-style-type: none"> <li>-Identify the material and engineering properties of WMA pavements that are significant determinants of their long-term field performance; and</li> <li>-Recommend best practices for the use of WMA technologies.</li> </ul>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>Completed the Following Tasks:</p> <ul style="list-style-type: none"> <li>-Task 1: Conduct of the survey and literature review; and</li> <li>-Task 2: Preparation of Phase I interim report.</li> </ul> <p>Performed work on:</p> <ul style="list-style-type: none"> <li>-Task 3: Conduct of field characterization of the WMA projects.</li> </ul>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<p>Continue to perform the following tasks:</p> <ul style="list-style-type: none"> <li>-Task 3: Conduct of field characterization of the WMA projects;</li> <li>-Task 4: Conduct of laboratory characterization of the WMA projects; and</li> <li>-Task 5: Preparation of Phase II interim report.</li> </ul>						





# **Self Generated Funded Research Program**

## **PROPOSED RESEARCH**

**LTRC Annual Research Program**  
Fiscal Year 2013-2014

<b>Title:</b>	<b>Support Study for Laboratory Evaluation of 100% Fly Ash Cementitious Systems</b>				<b>Project Status:</b>	<b>Proposed</b>
<b>Funding Source:</b>	<b>Ceratech</b>		<b>Budget Category:</b>		<b>Self-Generated</b>	
SIO:	30001500		Project Start Date:		1/1/2013	
Research Project Number:	13-3C		Completion Date		(original)	
Research Agency:	LTRC		Completion Date		(revised)	
Principal Investigator:	Dr. Tyson Rupnow					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$120,000	<b>Total</b>		<b>\$51,543</b>	
	(revised)					
Est. Expended to Date			Salaries		\$45,743	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	\$1,800
FY Funds	(original)		Equipment		(non-expendable)	\$4,000
	(revised)		Travel			
Est. FY Expenditure			Other			
<b>PURPOSE AND SCOPE</b>						
<p>The purpose of this study is to evaluate production of 100% fly ash concrete. Fresh and hardened characteristics will be determined. First, second, and third level interactions will be identified for all response variables for about 45 mixtures. Main effects will also be determined for the same 45 mixtures. Fresh and hardened characteristics of about 15 additional mixtures of interest will also be identified.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<ul style="list-style-type: none"> <li>-Obtain materials from Ceratech;</li> <li>-Purchase additional molds and supplies;</li> <li>-Follow mix design and test factorial agreed upon with Ceratech; and</li> <li>-Began laboratory testing: surface resistivity, compressive strength, air, unit weight, set time, flexural strength, free shrinkage, autogenous shrinkage, chloride ponding, rapid chloride permeability, and freeze-thaw durability.</li> </ul>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<ul style="list-style-type: none"> <li>-Finish laboratory testing: surface resistivity, compressive strength, air, unit weight, set time, flexural strength, free shrinkage, autogenous shrinkage, chloride ponding, rapid chloride permeability, and freeze-thaw durability;</li> <li>-Perform statistical analysis;</li> <li>-Develop implementation plan for LADOTD, if applicable; and</li> <li>-Begin preparation of draft report.</li> </ul>						

# **Other DOTD Funded Projects**

**LTRC Annual Research Program**  
Fiscal Year 2012-2013

<b>Title:</b>	<b>CORS 911: Continuously Operating Reference Stations for the Bayou Corne Sinkhole</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	emergency fund		<b>Budget Category:</b>		<b>Other DOTD Sections</b>	
SIO:	<b>30000980</b>		Project Start Date:		3/18/2013	
Research Project Number:	13-9GT		Completion Date (original)		3/17/2014	
Research Agency:	LSU		Completion Date (revised)			
Principal Investigator:	Dr. Joshua Kent					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$350,785	<b>Total</b>		<b>\$295,472</b>	
	(revised)					
Est. Expended to Date			Salaries		\$156,472	
<b>FY 2012 - 2013 Budget</b>			Equipment (expendable)			
FY Funds	(original)		Equipment (non-expendable)		\$63,000	
	(revised)		Travel		\$6,000	
Est. FY Expenditure			Other		\$70,000	
<b>PURPOSE AND SCOPE</b>						
<p>The Sinkhole near Bayou Corne has affected the area and continues to grow in size. The Louisiana Department of Transportation and Development (LADOTD) is concerned with the public safety on the nearby LA 70 Highway. To alert LADOTD and other emergency coordinators this research will install CORS stations at the existing bridges and along LA 70.</p> <p>These CORS stations will collect measurements 24/7 and send messages should established thresholds be reached.</p>						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<p>Road measurements were collected with the related LTRC project 13-8GT. This project began under emergency conditions and three CORS stations were ready and in the process of being installed.</p>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<p>Install all CORS stations and ensure accurate monitoring and reporting procedures are maintained.</p>						

**LTRC Annual Research Program**  
Fiscal Year 2012-2013

<b>Title:</b>	<b>Louisiana Local Road Safety Program</b>				<b>Project Status:</b>	<b>Ongoing</b>
<b>Funding Source:</b>	<b>Safety</b>		<b>Budget Category:</b>		<b>Other DOTD Sections</b>	
SIO:			Project Start Date:		1/1/2012	
Research Project Number:	12-LRSP		Completion Date		(original)	12/31/2014
Research Agency:	LTRC		Completion Date		(revised)	
Principal Investigator:	Dr. Marie Walsh					
<b>BUDGET STATUS</b>						
<b>Total Budget</b>			<b>Estimated 2013-2014 Budget</b>			
Total Cost	(original)	\$292,187	<b>Total</b>		<b>\$292,187</b>	
	(revised)					
Est. Expended to Date			Salaries		\$227,635	
<b>FY 2012 - 2013 Budget</b>			Equipment		(expendable)	
FY Funds	(original)		Equipment		(non-expendable)	
	(revised)		Travel		\$8,000	
Est. FY Expenditure			Other		\$56,552	
<b>PURPOSE AND SCOPE</b>						
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.						
<b>FISCAL YEAR 2012 - 2013 ACCOMPLISHMENTS</b>						
<ul style="list-style-type: none"> <li>-Coordinated local public agency (LPA) related activities with new DOTD program manager including input to new manual and development of outreach and training programs for local agencies and stakeholders that use federal or state aid;</li> <li>-Participated in critical process documentation of Local Road Safety Program project election and administration through LADOTD and FHWA Highway Safety Improvement Program funding process;</li> <li>-Administered and promoted the Local Road Safety Program as part of the implementation of the Louisiana Strategic Highway Safety Plan;</li> <li>-Worked with local agencies and regional coalitions to analyze data; conduct Road Safety Assessments; and develop regional projects for inclusion in the Local Road Safety Program in accordance with Louisiana's SHSP;</li> <li>-Continued to provide traditional work program of transportation and safety related training;</li> <li>-Conducted driver impaired workshops; and</li> <li>-Presented 67 classes or workshops: 6 Worker Safety Classes; 28 Highway Safety Classes; 21 Infrastructure Management Classes; and 12 Workforce Development Classes.</li> </ul> <p>**11287 hours of training;      **1892 program participants</p>						
<b>FISCAL YEAR 2013-2014 PROPOSED ACTIVITIES</b>						
<ul style="list-style-type: none"> <li>-Coordinate local agency participation in Louisiana Department of Transportation and Development (LADOTD) preparation of LA Public Roads Inventory;</li> <li>-Manage current Local Road Safety Program and projects; and</li> <li>-Provide training for implementation of the new Federal sign retro-reflectivity requirements to local agencies.</li> </ul>						