LTRC Annual Research Program

Fiscal Year July 1, 2011 - June 30, 2012

FHWA Part II SPR Research Program
FAP Number SPR-0010(34)

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FHWA IBRD Funded Research Program

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FHWA LTAP Funded Program

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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 2011

LOUISIANA TRANSPORTATION RESEARCH CENTER
LTRC

Research, Technology Transfer, Education & Training

DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
DOTD

May 11, 2011

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

Attention: Ms. Mary Stringfellow

Re: FY 2011-2012 LTRC WORK PROGRAM

Dear Mr. Bolinger:

Enclosed please find the FY 2011/2012 LTRC 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, DOTD, 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.

Harold R. Paul, P.E.
Director

Enclosure
cc: Mr. Richard Savoie
Mr. Mark Morvant
Dr. Zhongie Zhang
Mr. Chris Abadie
Mr. Sam Cooper

U.S. Department of Transportation
Federal Highway Administration

Louisiana Division Office

5304 Flanders Drive, Suite A
Baton Rouge, LA 70808
225.757.7600
225.757.7601 (fax)

June 22, 2011

In Reply Refer To:
HDA-LA

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

Subject: FY 2011-2012 Part II SPR Work Program

Attention: Dr. Eric Kalivoda

Dear Ms. LeBas:

We have reviewed the subject work program and find it to be satisfactory with one change before publication. The NCHRP amount in the final document must be the same as the amount reported in the Part I Program.

Please furnish this office with three copies of the final bound printed work program. A separate request from your Federal-aid section will be needed to process the fiscal documents necessary to obligate the SPR funds.

Sincerely yours,

Mary M Stringfellow

Digitally signed by Mary Stringfellow
DN: cn=Mary Stringfellow, o, ou, email=mary.stringfellow@dot.gov, c=US
Date: 2011.06.22 15:35:51 -05'00'

Mary M. Stringfellow
Program Delivery Team Leader

cc: Connie Boudreaux, LDOTD
Harold "Skip" Paul, LTRC

Abbreviations and Acronyms

Funding

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

Project Types

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

Project Status

A	Active
P	Proposed
RFP	Request for Proposal

Table of Contents

FHWA SPR Work Program

Part II

FAP Number SPR-0010(34)

FHWA Funding

SPR Research Budget Recap	Total
Administrative Budget	$700,000
Research Support Studies Budget	$1,645,000
Active Studies Budget	$1,966,276
Proposed Studies Budget	$1,158,061
Pooled Fund Lead State Studies Budget	$243,000
Total SPR Budget	**$5,712,337**

SPR External Collaboration Budget Recap	Total
Pool Funded Studies	$130,000
TRB Correlations	$125,270
NCHRP	$759,441
Total SPR External Collaboration Budget	**$1,014,711**

IBRD Budget Recap	Total
Active Studies Budget	$473,073
Proposed Studies Budget	$250,000
Total IBRD Budget	**$723,073**

FHWA Funding

LTAP Budget Recap	Total
LTAP	$641,162
Total LTAP Budget	**$641,162**

STP: Technology Transfer Program Budget Recap	Total
Technology Transfer Program and Operations	$1,174,340
Workforce Development Program	$4,462,100
Student Support Programs	$400,000
Total STP Budget	**$6,036,440**

State Funding

State Budget Recap	Total
Active Studies Budget	$1,856,279
Proposed Studies Budget	$670,000
RFP's	$200,000
Total State Budget	**$2,726,279**

Self-Generated Funding

Self-Generated Budget Recap	Total
Active Studies Budget	$288,497
Proposed Studies Budget	$50,000
Total Self-Generated Budget	**$338,497**

Federal Funding

Federal Funding Budget Recap	Total
Active Studies Budget	$10,397
Proposed Studies Budget	$0
Total Federal Funding Budget	**$10,397**

Other DOTD Sections Funding

Other DOTD Sections Budget Recap	Total
Active Studies Budget	$7,060
Proposed Studies Budget	$50,000
Total Other DOTD Sections Budget	**$57,060**

LTRC ANNUAL RESEARCH PROGRAM

Administrative

FISCAL YEAR 2011-2012

Funding	A/P	Project Type	SIO Number	Research Number	FY Budget	Total Cost	Agency	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	Page No.
Project Type: Administrative													
SPR: TT-Fed/TT-Reg	A	ADM	30000300	12-1PM	$700,000	$700,000	LTRC	Harold 'Skip' Paul	Program Management	7/1/2011	6/30/2012		C-2
					$700,000	**$700,000**	**ADMINISTRATIVE BUDGET TOTALS**						
Project Type: Research Support													
SPR: Pooled Fund: TT-Fed	A	RS	30000306	12-1TTRI	$365,000	$365,000	LTRC	Mark Morvant	Technology Transfer and Research Implementation	7/1/2011	6/30/2012		C-3
SPR: TT-Fed/TT-Reg	A	RS	30000301	12-1EQM	$230,000	$230,000	LTRC	Mark Morvant	Equipment Management	7/1/2011	6/30/2012		C-5
SPR: TT-Fed/TT-Reg	A	RS	30000302	12-1LFT	$200,000	$200,000	LTRC	Mark Morvant	Research Laboratory and Field Test Support	7/1/2011	6/30/2012		C-7
SPR: TT-Fed/TT-Reg	A	RS	30000303	12-1NPE	$50,000	$50,000	LTRC	Mark Morvant	New Products Evaluation	7/1/2011	6/30/2012		C-9
SPR: TT-Fed/TT-Reg	A	RS	30000304	12-1TA	$375,000	$375,000	LTRC	Mark Morvant	Technical Assistance	7/1/2011	6/30/2012		C-10
SPR: TT-Fed/TT-Reg	A	RS	30000305	12-1TRS	$425,000	$425,000	LTRC	Mark Morvant	Technical Research Surveillance	7/1/2011	6/30/2012		C-12
					$1,645,000	**$1,645,000**	**RESEARCH SUPPORT BUDGET TOTALS**						

LTRC ANNUAL RESEARCH PROGRAM

SPR: TT-Fed/TT-Reg

FISCAL YEAR 2011-2012

Funding	A/P	Project Type	SIO Number	Research Number	FY Budget	Total Cost	Agency	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	Page No.
Project Type: Geotechnical													
SPR: TT-Fed/TT-Reg	A	GT	30000116	05-1GT	$67,000	$393,176	LTRC	Murad Abu-Farsakh	Field Demonstration of New Bridge Approach Slab Designs and Performance	8/1/2008	8/1/2011		C-14
SPR: TT-Fed/TT-Reg	A	GT	30000114	08-3GT	$68,000	$320,951	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	12/31/2012	C-16
SPR: TT-Fed/TT-Reg	A	GT	30000111	10-1GERL	$230,000	$523,000	LTRC	Murad Abu-Farsakh	LTRC Support for Geotechnical Research at the Geotechnical Engineering Research Laboratory (GERL)	7/1/2010	6/30/2011		C-18
SPR: TT-Fed/TT-Reg	A	GT	30000099	10-3GT	$79,800	$120,985	LTRC	Khalil Hanifa	Design Values of Resilient Modulus of Stabilized and Non-stabilized Base	9/1/2010	2/29/2012		C-19
SPR: TT-Fed/TT-Reg	A	GT	30000134	11-2GT	$40,000	$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-20
SPR: TT-Fed/TT-Reg	A	GT	30000135	11-3GT	$204,000	$297,579	LTRC	Murad Abu-Farsakh	Accelerated Load Testing of Geosynthetic Base Reinforced Pavement Test Sections	12/1/2010	5/31/2012		C-22
SPR: TT-Fed/TT-Reg	A	GT	30000280	11-4GT	$88,500	$72,679	LTRC	Murad Abu-Farsakh	Calibration of Resistance Factors for Drilled Shafts for the New FHWA Design Method	1/12/2011	1/11/2012		C-24
					$777,300	**$2,218,078**	**GEOTECHNICAL BUDGET TOTALS**						
Project Type: Pavements													
SPR: TT-Fed/TT-Reg	A	P	30000168	09-7P	$9,700	$98,850	LTRC	Zhong Wu	Construction and Accelerated Pavement Testing of TTI Pavement Test Sections	10/1/2009	10/1/2011		C-26
SPR: TT-Fed/TT-Reg	A	P	30000164	10-3P	$42,630	$132,144	LTRC	Leticia Santos da Rocha Courville	LED Traffic Signal Lifetime Management System	11/1/2010	7/1/2013	7/31/2013	C-27
SPR: TT-Fed/TT-Reg	A	P	30000160	11-3P	$64,340	$150,000	LTRC	Mark Martinez	The Rideability of a Deflected Bridge Approach Slab (LTRC Project 02-2GT Continuation: Phase II)	4/1/2011	3/31/2013		C-29
					$116,670	**$380,994**	**PAVEMENTS BUDGET TOTALS**						
Project Type: Bituminous													
SPR: TT-Fed/TT-Reg	A	B	30000117	07-1B	$120,442	$413,556	LTRC	Bill King	Evaluation of Warm Mix Asphalt Technology in Flexible Pavements	3/15/2009	3/15/2011	3/31/2012	C-31
SPR: TT-Fed/TT-Reg	A	B	30000112	10-1EMC	$175,218	$345,000	LTRC	Louay Mohammad	Pavement Materials Research Using Special Equipment at the Engineering Materials	7/1/2009	6/30/2012		C-32
SPR: TT-Fed/TT-Reg	A	B	30000221	10-4B	$98,698	$299,433	LTRC	Louay Mohammad	Development of Performance Based Specifications for Louisiana Asphalt Mixtures	4/1/2011	3/31/2014		C-33
SPR: TT-Fed/TT-Reg	A	B	30000167	11-1B	$102,838	$144,838	LTRC	Md. Sharear Kabir	Validity of Multiple Stress Creep Recovery Test for DOTD Asphalt Binder Specification	9/1/2010	6/30/2012		C-34
SPR: TT-Fed/TT-Reg	A	B	30000220	11-3B	$113,225	$263,975	LTRC	Bill King	Testing and Analysis of LWT and SCB Properties of Asphaltic Concrete Mixtures	4/1/2011	3/31/2013		C-35
					$610,421	**$1,466,802**	**BITUMINOUS BUDGET TOTALS**						

LTRC ANNUAL RESEARCH PROGRAM

SPR: TT-Fed/TT-Reg

FISCAL YEAR 2011-2012

Funding	A/P	Project Type	SIO Number	Research Number	FY Budget	Total Cost	Agency	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	Page No.
Project Type: Special Studies													
SPR: TT-Fed/TT-Reg	A	SS	30000126	06-2SS	$187,533	$510,839	LTRC	Chester Wilmot	Development of a Time-Dependent Hurricane Evacuation Model for the New Orleans Area - Phase 2	7/1/2008	6/30/2010	6/30/2012	C-36
SPR: TT-Fed/TT-Reg	A	SS	30000125	10-1PLA	$130,434	$358,462	LTRC	Chester Wilmot	LTRC Proposal for the Support of Research and Development in Transportation Planning	7/1/1995	6/30/1996	6/30/2012	C-37
SPR: TT-Fed/TT-Reg	A	SS	30000137	10-7SS	$53,163	$93,163	LTRC	Chester Wilmot	Support Study for Establishing an Intelligent Transportation System (ITS) Lab at LTRC	8/20/2010	8/19/2011		C-38
					$371,130	**$962,464**	**SPECIAL STUDIES BUDGET TOTALS**						
Project Type: Concrete													
SPR: TT-Fed/TT-Reg	A	C	30000153	09-5C	$50,000	$166,351	LTRC	Patrick Icenogle	Evaluation of Non-Destructive Technologies for Construction Quality Control of HMA and PCC Pavements in Louisiana	7/1/2009	9/30/2010	12/31/2011	C-39
SPR: TT-Fed/TT-Reg	A	C	30000152	10-1C	$40,755	$162,878	LTRC	Tyson Rupnow	Evaluation of the Surface Resistivity Measurements as an Alternative to the Rapid Chloride Permeability Test for Quality Assurance and Acceptance	2/1/2010	5/1/2011	5/1/2012	C-40
					$90,755	**$329,229**	**CONCRETE BUDGET TOTALS**						
					$1,966,276	**$5,357,567**	**SPR: TT-FED/TT-REG ACTIVE BUDGET TOTALS**						

LTRC ANNUAL RESEARCH PROGRAM

SPR: TT-Fed/TT-Reg

FISCAL YEAR 2011-2012

Funding	A/P	Project Type	SIO Number	Research Number	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		06-3GT	$169,225	$264,878	LTRC	Gavin Gautreau	Intelligent Compaction Technology	5/1/2011			C-42
SPR: TT-Fed/TT-Reg	P	GT		11-1GT	$35,000	$300,000	LTRC	Murad Abu-Farsakh	In Situ Evaluation of Design Parameters and Procedures for Cementitiously Treated Subgrade using Cyclic Plate Load TestsLoad Tests	10/1/2011	3/31/2013		C-43
					$204,225	**$564,878**	**GEOTECHNICAL BUDGET TOTALS**						
Project Type: Pavements													
SPR: TT-Fed/TT-Reg	P	P		12-1P	$50,000	$300,000	LTRC	Kevin Gaspard	Prevention of Extensive Desiccation Cracking on Rural Highways	8/2/2010			C-44
SPR: TT-Fed/TT-Reg	P	P		12-2P	$50,000	$500,000	LTRC	Kevin Gaspard	Assessment of Environmental, Seasonal and Regional Variations in Pavement Base and Subgrade Properties	9/24/2011	6/30/2016		C-45
SPR: TT-Fed/TT-Reg	P	P		12-3P	$45,000	$200,000	LTRC	Zhong Wu	Minimizing Shrinkage Cracking in Cement-Stabilized Bases Through the Use of Microcracking	7/1/2011	12/31/2013		C-46
SPR: TT-Fed/TT-Reg	P	P		12-4P	$68,000	$100,000	LTRC	Zhong Wu	Evaluation of DARWin-ME for Louisiana Pavement Design	7/1/2011	12/30/2012		C-47
SPR: TT-Fed/TT-Reg	P	P		12-5P	$125,000	$150,000	LTRC	Zhong Wu	Relationship between Friction Resistance Measured with Ribbed and Smooth Tire and Dynamic Friction Tester	7/1/2011	12/30/2012		C-49
SPR: TT-Fed/TT-Reg	P	P		12-6P	$10,000	$100,000	LTRC	Patrick Icenogle	User Oriented Pavement Management Interfaces and Applications	4/1/2012	6/30/2014		C-51
SPR: TT-Fed/TT-Reg	P	P		12-7P	$210,000	$210,000	LTRC	Zhong Wu	Roller Compacted Concrete Over Soil Cement Under Accelerated Loading	7/1/2011	6/30/2012		C-52
SPR: TT-Fed/TT-Reg	P	P		12-8P	$10,950	$200,000	LTRC	Zhong Wu	Thin Whitetopping Under Accelerated Loading	7/1/2011	6/30/2013		C-53
SPR: TT-Fed/TT-Reg	P	P		12-9P	$10,950	$200,000	LTRC	Zhong Wu	Roller Compacted Concrete Overlays Under Accelerated Loading	7/1/2011	6/30/2013		C-54
					$579,900	**$1,960,000**	**PAVEMENTS BUDGET TOTALS**						
Project Type: Bituminous													
SPR: TT-Fed/TT-Reg	P	B		12-1B	$95,866	$204,032	LTRC	Louay Mohammad	Evaluation Of HMA Mixtures Containing Recycled Asphalt Shingles	7/1/2011	6/30/2013		C-55
SPR: TT-Fed/TT-Reg	P	B		12-2B	$100,070	$275,000	LTRC	Louay Mohammad	Investigation of the Use of High RAP Content in Hot Mix Asphalt Mixtures	7/1/2011	6/30/2013		C-56
					$195,936	**$479,032**	**BITUMINOUS BUDGET TOTALS**						

LTRC ANNUAL RESEARCH PROGRAM

SPR: TT-Fed/TT-Reg

FISCAL YEAR 2011-2012

Funding	A/P	Project Type	SIO Number	Research Number	FY Budget	Total Cost	Agency	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	Page No.
Project Type: Special Studies													
SPR: TT-Fed/TT-Reg	P	SS		12-1SA	$25,000	$200,000	LTRC	Marie Walsh	Louisiana Transportation Safety Center	7/1/2011	6/30/2014		C-57
					$25,000	**$200,000**	**SPECIAL STUDIES BUDGET TOTALS**						
Project Type: Concrete													
SPR: TT-Fed/TT-Reg	P	C		12-1C	$60,000	$150,000	LTRC	Tyson Rupnow	Roller Compacted Concrete Field Demonstration in Haynesville Shale Area	7/1/2011	6/30/2013		C-58
SPR: TT-Fed/TT-Reg	P	C		12-2C	$93,000	$215,000	LTRC	Tyson Rupnow	High Volume Replacement of Portland Cement in Roller Compacted Concrete	7/1/2011	6/30/2013		C-59
					$153,000	**$365,000**	**CONCRETE BUDGET TOTALS**						
					$1,158,061	**$3,568,910**	**SPR: TT-FED/TT-REG PROPOSED BUDGET TOTALS**						

FISCAL YEAR 2011-2012

Funding	A/P	Project Type	SIO Number	Research Number	FY Budget	Total Cost	Agency	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	Page No.
Project Type: Pooled Fund Louisiana Lead State													
SPR: Pooled Fund: TT-Fed	A	PF	30000281	09-1PF	$113,000	$150,000	LTRC	Mark Morvant	Southeast Transportation Consortium	9/1/2009	8/30/2012		C-61
					$113,000	**$150,000**	**SPR: POOLED FUND: TT-FED ACTIVE BUDGET TOTALS**						
SPR: Pooled Fund: TT-Fed	P	PF		12-1PF	$130,000	$500,000			Traffic and Data Preparation for AASHTO MEPDG Analysis and Design	7/1/2011			C-63
					$130,000	**$500,000**	**SPR: POOLED FUND: TT-FED PROPOSED BUDGET TOTALS**						
					$243,000	**$650,000**	**POOLED FUND BUDGET TOTALS**						

Funding	A/P	Project Type	SIO Number	Research Number	FY Budget	Total Cost	Agency	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	Page No.
Project Type: Pooled Fund: External Lead State													
SPR: Pooled Fund: TT-Fed	A	PFE		TPF-5(114)	$0	$165,000			Roadside Safety Research Program	7/1/2008	12/31/2011		C-66
SPR: Pooled Fund: TT-Fed	A	PFE		TPF-5(159)	$5,000	$25,000			Technology Transfer Concrete Consortium	2/5/2008	2/4/2012		C-68
SPR: Pooled Fund: TT-Fed	A	PFE		TPF-5(228)	$20,000	$60,000			Superpave Regional Center				C-70
SPR: Pooled Fund: TT-Fed	A	PFE		TPF-5(237)	$15,000	$15,000			Transportation Library Connectivity & Development	1/1/2011	12/31/2015		C-72
					$40,000	**$265,000**	**POOLED FUND: EXTERNAL LEAD STATE BUDGET TOTALS**						
Project Type: Pooled Fund: External Lead State													
SPR: Pooled Fund: TT-Fed	P	PFE			$90,000	$90,000			Pooled Fund Collaboration Projects				C-73
					$90,000	**$90,000**	**POOLED FUND: EXTERNAL LEAD STATE BUDGET TOTALS**						
					$130,000	**$355,000**	**SPR: POOLED FUND: TT-FED ACTIVE BUDGET TOTALS**						

LTRC ANNUAL RESEARCH PROGRAM

IBRD: TT-Fed

FISCAL YEAR 2011-2012

Funding	A/P	Project Type	SIO Number	Research Number	FY Budget	Total Cost	Agency	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	Page No.
Project Type: Structures													
IBRD: TT-Fed	A	ST	30000129	07-1ST	$153,073	$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	7/31/2012	D-2
IBRD: TT-Fed	A	ST	30000130	07-3ST	$30,000	$140,019	LSU	Steve C.S. Cai	Repairing/Strengthening of Bridges with Post-Tensioned FRP Strands and Performance Evaluation	10/1/2007	4/1/2010	8/31/2011	D-4
IBRD: TT-Fed	A	ST	30000131	07-4ST	$130,000	$418,102	LSU	George Z. Voyiadjis	Integral Abutment Bridge for Louisiana's Soft and Stiff Soils	10/1/2007	8/31/2011		D-5
IBRD: TT-Fed	A	ST	30000132	08-2ST	$60,000	$199,999	LSU	Steve C.S. Cai	Monitoring Bridge Scour Using Fiber Optic Sensors	1/1/2009	7/1/2011		D-7
IBRD: TT-Fed	A	ST	30000204	10-1ST	$100,000	$250,000	LTU	Aziz Saber	Monitoring System for Bridges Subject to Heavy Loads	3/15/2010	3/31/2012	6/30/2012	D-8
					$473,073	**$1,573,670**	**STRUCTURES BUDGET TOTALS**						
					$473,073	**$1,573,670**	**IBRD: TT-FED ACTIVE BUDGET TOTALS**						
Project Type: Structures													
IBRD: TT-Fed	P	ST		10-2ST	$125,000	$250,000	LTU	Aziz Saber	Use of Geosynthetic Reinforced Soil for Bridge Abutments	7/1/2011			D-11
IBRD: TT-Fed	P	ST		10-3ST	$125,000	$270,000	LTU	Aziz Saber	Elimination of Deck Joints using a Corrosion Resistant FRP Grid	7/1/2010			D-12
					$250,000	**$520,000**	**STRUCTURES BUDGET TOTALS**						
					$250,000	**$520,000**	**IBRD: TT-FED PROPOSED BUDGET TOTALS**						

LTRC ANNUAL RESEARCH PROGRAM

LTAP: TT-Fed/TT-Reg

FISCAL YEAR 2011-2012

Funding	A/P	Project Type	SIO Number	Research Number	FY Budget	Total Cost	Agency	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	Page No.
Project Type: LTAP													
LTAP: TT-Fed/TT-Reg	A	LTAP	30000087	11-LTAP	$641,162	$641,162	LTRC	Marie Walsh	Local Technical Assistance Program (LTAP)	1/1/2011	12/31/2013		E-2
					$641,162	**$641,162**	**LTAP BUDGET TOTALS**						
					$641,162	**$641,162**	**LTAP: TT-FED/TT-REG ACTIVE BUDGET TOTALS**						

LTRC ANNUAL RESEARCH PROGRAM

STP: TT-Fed

FISCAL YEAR 2011-2012

Funding	A/P	Project Type	SIO Number	Research Number	FY Budget	Total Cost	Agency	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	Page No.
Project Type: Technology Transfer and Training													
STP: TT-Fed	A	TT	30000320	08-1TSQ	$351,746	$340,917	LTRC	Sam Cooper	Technology Transfer Program and Operations (LSU)	7/1/2010	6/30/2011		F-2
STP: TT-Fed	A	TT	30000313	12-1TSQ	$518,094	$518,094	LTRC	Sam Cooper	Technology Transfer Program and Operations DOTD)	7/1/2011	6/30/2012		F-4
STP: TT-Fed	A	TT	30000315	12-1TT	$37,500	$37,500			Support for Senior Project Courses	7/1/2011	6/30/2012		F-6
STP: TT-Fed	A	TT	30000314	12-1WD	$1,126,109	$1,126,109	LTRC	Sam Cooper	Workforce Development	7/1/2011	6/30/2012		F-7
STP: TT-Fed	A	TT	30000316	12-2TT	$147,000	$147,000	LTRC	Harold 'Skip' Paul	LTRC Student Program	7/1/2011	6/30/2012		F-8
STP: TT-Fed	A	TT	30000317	12-3TT	$20,000	$110,000	LTRC	Mark Morvant	Technology Transfer & Research Implementation Support for Louisiana Universities	1/1/2010	12/31/2013		F-9
STP: TT-Fed	A	TT	30000318	12-COOP	$400,000	$400,000	LTRC	Sam Cooper	LADOTD CO-OP PROGRAM	7/1/2011	6/30/2012		F-11
STP: TT-Fed	A	TT	30000319	12-TTRF	$100,000	$100,000	LTRC	Sam Cooper	Technology Transfer Registration Fees	7/1/2011	6/30/2012		F-12
STP: TT-Fed	A	TT		12-WDC	$3,335,991	$3,335,991	LTRC	Sam Cooper	Workforce Development Contracts	7/1/2011	6/30/2012		F-13
					$6,036,440	**$6,115,611**	**TECHNOLOGY TRANSFER AND TRAINING BUDGET TOTALS**						
					$6,036,440	**$6,115,611**	**STP: TT-FED ACTIVE BUDGET TOTALS**						

LTRC ANNUAL RESEARCH PROGRAM

State: TT-Reg

FISCAL YEAR 2011-2012

Funding	A/P	Project Type	SIO Number	Research Number	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	30000201	10-2GT	$140,000	$200,000	Dataforensics, LLC	Scott Deaton	Geotechnical Information Database – Phase 2	3/10/2011	9/9/2012		G-2
					$140,000	**$200,000**		**GEOTECHNICAL BUDGET TOTALS**					
Project Type: Pavements													
State: TT-Reg	A	P	30000143	09-2P	$41,330	$135,101	LSU	Mostafa Elseifi	Implementation of the Rolling Wheel Deflectometer (RWD) in PMS and Pavement Preservation	7/1/2009	9/30/2010	12/31/2011	G-4
State: TT-Reg	A	P	30000141	10-1ALF	$420,000	$1,730,000	LTRC	Zhong Wu	Management and Operation of the Pavement Research Facility	7/1/2009	6/30/2012		G-5
State: TT-Reg	A	P	30000166	10-4P	$120,215	$267,395	ULL	Mohammad Jamal Khattak	Development of Cost-Effective Pavement Treatment Selection and Treatment Performance Models	9/1/2010	6/30/2013		G-6
State: TT-Reg	A	P	30000159	11-1P	$130,000	$219,774	Nichols Consulting Engineers	Margot Yapp	LaDOTD Pavement Management System (PMS) for Project Level Applications	5/23/2011	5/22/2013		G-8
State: TT-Reg	A	P	30000162	11-2P	$19,525	$49,600	Inner Corridor Technologies	Jennifer Harrison	Development of a DOTD GPS Technology Management Plan	3/1/2011	8/31/2011		G-9
					$731,070	**$2,401,870**		**PAVEMENTS BUDGET TOTALS**					
Project Type: Bituminous													
State: TT-Reg	A	B	30000142	10-6B	$109,038	$255,438	LSU	William H. Daly	Implementation of GPC Characterization of Asphalt Binders at Louisiana Materials Laboratory	6/1/2010	12/1/2011		G-10
State: TT-Reg	A	B	30000163	11-2B	$46,000	$100,000	LTU	Nazimuddin M. Wasiuddin	Evaluation of Dynamic Shear Rheometer Tests for Emulsions.	9/15/2010	7/14/2012		G-11
					$155,038	**$355,438**		**BITUMINOUS BUDGET TOTALS**					

LTRC ANNUAL RESEARCH PROGRAM

State: TT-Reg

FISCAL YEAR 2011-2012

Funding	A/P	Project Type	SIO Number	Research Number	FY Budget	Total Cost	Agency	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	Page No.
Project Type: Structures													
State: TT-Reg	A	ST	30000145	08-3ST	$28,562	$200,004	LSU	Gouping Zhang	Evaluation of Design Methods to Determine Scour Depths for Bridge Structures	4/1/2009	4/1/2011	9/30/2011	G-12
State: TT-Reg	A	ST	30000172	09-5ST	$30,050	$72,750	LSU	Guoqiang Li	Support Study for A Shape Memory Polymer based Self-healing Sealant for Expansion Joint	5/1/2009	11/1/2010	7/31/2011	G-13
State: TT-Reg	A	ST	30000118	10-4ST	$100,000	$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		G-14
State: TT-Reg	A	ST	30000138	10-5ST	$100,000	$199,961	Wiss, Janney, Elstner	Jonathan McGormley	Developing Prestressed Girder Transportation Guidelines	5/2/2011	9/1/2012		G-15
					$258,612	**$781,832**		**STRUCTURES BUDGET TOTALS**					
Project Type: Special Studies													
State: TT-Reg	A	SS	30000149	08-3SS	$68,087	$178,087	ULL	Xiaoduan Sun	Developing Louisiana Crash Reduction Factors	11/1/2009	10/31/2011		G-16
State: TT-Reg	A	SS	30000203	10-3SS	$65,000	$130,000	Cambridge Systematics	Susan Herbel	Automated Enforcement and Highway Safety	6/1/2011	5/31/2013		G-17
State: TT-Reg	A	SS	30000202	10-4SS	$64,378	$99,396	GEC, Inc.	Lucy Kimbeng	Truck Facility Access Design Guidelines	4/25/2011	4/24/2013		G-18
State: TT-Reg	A	SS	30000240	10-5SS	$55,179	$100,000	LSU	Helmut Schneider	Developing Inexpensive Crash Countermeasures for Louisiana Local Roads	1/17/2011	1/16/2013		G-19
State: TT-Reg	A	SS	30000140	10-6SS	$28,031	$98,634	LSU	Sherif Ishak	Establishing an Intelligent Transportation Systems (ITS) Lab at LTRC (Phase II)	8/20/2010	11/19/2011		G-21
State: TT-Reg	A	SS	30000177	11-2SS	$50,000	$99,999	LSU	Sherif Ishak	Measuring Effectiveness of Ramp Metering Strategies on I-12	4/1/2011	3/31/2013		G-22
					$330,675	**$706,116**		**SPECIAL STUDIES BUDGET TOTALS**					
Project Type: Other													
State: TT-Reg	A	Other	30000169	11-1AD	$240,884	$1,088,594	LTRC	Vijaya Gopu	Research Expansion Program	11/1/2006	11/1/2009	6/30/2012	G-23
					$240,884	**$1,088,594**		**OTHER BUDGET TOTALS**					
					$1,856,279	**$5,533,850**		**STATE: TT-REG ACTIVE BUDGET TOTALS**					

LTRC ANNUAL RESEARCH PROGRAM

State: TT-Reg

FISCAL YEAR 2011-2012

Funding	A/P	Project Type	SIO Number	Research Number	FY Budget	Total Cost	Agency	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	Page No.
Project Type: Pavements													
State: TT-Reg	P	P		12-10P	$50,000	$150,000	LTRC	Sherif Ishak	Addressing Traffic Data Requirements for Development of Axle Load Spectra and Implementation of MEPDG in Louisiana (Phase II)	12/1/2011			G-27
					$50,000	**$150,000**		**PAVEMENTS BUDGET TOTALS**					
Project Type: Bituminous													
State: TT-Reg	P	B		12-3B	$50,000	$200,000			Chemical Characterization of Asphalts Related to their Performance	4/1/2012	4/1/2014		G-28
					$50,000	**$200,000**		**BITUMINOUS BUDGET TOTALS**					
Project Type: Structures													
State: TT-Reg	P	ST	30000310	11-2TIRE	$30,000	$30,000	LSU	Gefu Ji	A Novel Fire Resistant FRP for Externally Bonded Concrete Repair	7/1/2011			G-29
State: TT-Reg	P	ST	30000311	11-3TIRE	$30,000	$30,000	LTU	Arun Jaganathan	An Ultra Low Cost Wireless Sensor Network for Real-Time Monitoring of Strands in Cable Stay Bridges	7/1/2011			G-30
State: TT-Reg	P	ST	30000312	11-4TIRE	$30,000	$30,000	LTU	Erez Allouche	Design, Fabrication and Testing of a Low Cost, Highly Durable, "Green" Median Barrier	7/1/2011			G-31
					$90,000	**$90,000**		**STRUCTURES BUDGET TOTALS**					
Project Type: Special Studies													
State: TT-Reg	P	SS		12-1SS	$50,000	$150,000			Traffic Counting using Existing Video Detection Cameras	7/1/2011	6/30/2013		G-32
State: TT-Reg	P	SS		12-2SA	$50,000	$50,000			Creation of a Strategic Plan for Highway Safety Research	7/1/2011	6/30/2012		G-33
State: TT-Reg	P	SS		12-2SS	$80,000	$250,000			History of the Implementation of AASHTO and Louisiana DOTD Road Design Standards	7/1/2011	6/30/2013		G-34
State: TT-Reg	P	SS		12-3SA	$100,000	$200,000			Calibration of the Louisiana Highway Safety Manual(Phase 1)	7/1/2011			G-35
State: TT-Reg	P	SS		12-3SS	$50,000	$20,000			Development of a Model to Guide the Number of Staff Resources Needed for Quality Assurance on Construction Projects	7/1/2011	6/30/2013		G-36
State: TT-Reg	P	SS		12-4SA	$50,000	$200,000			A Tool for Documenting, Tracking, Recording, and Analyzing Intersection Site Improvements	7/1/2011			G-37
State: TT-Reg	P	SS		12-4SS	$70,000	$250,000			Development of Minimum State Requirements for Local Growth management Policies-Phase 1	7/1/2000	6/30/2013		G-38
					$450,000	**$1,120,000**		**SPECIAL STUDIES BUDGET TOTALS**					

Funding	A/P	Project Type	SIO Number	Research Number	FY Budget	Total Cost	Agency	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	Page No.
Project Type: Concrete													
State: TT-Reg	P	C	30000309	11-1TIRE	$30,000	$30,000	LSU	Marwa Hassan	Photocatalytic Previous Concrete for Ambient Air Purification and Water Quality Improvement	7/1/2011	6/30/2012		G-39
					$30,000	**$30,000**		**CONCRETE BUDGET TOTALS**					
					$670,000	**$1,590,000**		**STATE: TT-REG PROPOSED BUDGET TOTALS**					

LTRC ANNUAL RESEARCH PROGRAM

Self-Generated

FISCAL YEAR 2011-2012

Funding	A/P	Project Type	SIO Number	Research Number	FY Budget	Total Cost	Agency	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	Page No.
Project Type: Special Studies													
LOOP	A	SS	30000200	11-3SS	$50,000	$136,247	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		H-2
					$50,000	**$136,247**	**SPECIAL STUDIES BUDGET TOTALS**						
Project Type: Bituminous													
NCHRP	A	B	30000133	10-1B	$153,247	$500,000	LTRC	Louay Mohammad	Field versus Laboratory Volumetrics and Mechanical Properties	8/1/2009	2/29/2012		H-3
NCHRP	A	B	30000260	11-4B	$70,250	$154,037	LTRC	Louay Mohammad	Modulus Based Construction Specification of Earthwork and Unbound Aggregate	10/7/2010	4/6/2013		H-4
					$223,497	**$654,037**	**BITUMINOUS BUDGET TOTALS**						
Project Type: Structures													
NCHRP	A	ST	30000171	09-4ST	$15,000	$135,000	LSU	Guoqiang Li	A Shape Memory Polymer based Self-healing Sealant for Expansion Joint	5/1/2009	11/1/2010	7/31/2011	H-5
					$15,000	**$135,000**	**STRUCTURES BUDGET TOTALS**						
					$288,497	**$925,284**	**SELF-GENERATED ACTIVE BUDGET TOTALS**						
Project Type: Bituminous													
NCHRP	P	B		12-4B	$50,000	$103,796	LTRC	Louay Mohammad	Performance of WMA Technologies: Stage II – Long-term Field Performance	4/7/2011	10/6/2013		H-7
					$50,000	**$103,796**	**BITUMINOUS BUDGET TOTALS**						
					$50,000	**$103,796**	**SELF-GENERATED PROPOSED BUDGET TOTALS**						

LTRC ANNUAL RESEARCH PROGRAM

Federal Funded

FISCAL YEAR 2011-2012

Funding	A/P	Project Type	SIO Number	Research Number	FY Budget	Total Cost	Agency	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	Page No.
Project Type: NSF													
Federal Funded	A	SS	30000148	09-2SS	$10,397	$50,050	ULL	Chester Wilmot	Enhancing Calibrated Peer Review for Improved Engineering Communication Education	9/1/2008	9/1/2011	8/31/2012	I-2
					$10,397	**50,050**	**SPECIAL STUDIES BUDGET TOTALS**						
					$10,397	**50,050**	**FEDERAL FUNDED ACTIVE BUDGET TOTALS**						

FISCAL YEAR 2011-2012

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: Pavements													
Safety	A	P	200004880	07-7P	$7,060	$107,060	ULL	Xiaoduan Sun	Safety Improvement from Edge Lines of Rural Two-Lane Highway	9/1/2007	8/31/2010	8/31/2011	J-2
					$7,060	**$107,060**	**PAVEMENTS BUDGET TOTALS**						
					$7,060	**$107,060**	**OTHER DOTD SECTIONS ACTIVE BUDGET TOTALS**						
Project Type: Geotechnical													
Operations	P	GT		11-6GT	$50,000	$50,000	LSU	Roy Dokka	Quantifying the Key Factors that Create Road Flooding				J-3
					$50,000	**$50,000**	**GEOTECHNICAL BUDGET TOTALS**						
					$50,000	**$50,000**	**OTHER DOTD SECTIONS PROPOSED BUDGET TOTALS**						

FHWA

Part II SPR Funded Research Program

ADMINISTRATIVE LINE ITEMS AND RESEARCH SUPPORT STUDIES

LTRC Annual Research Program
Fiscal Year 2011-2012

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

SIO:	**30000300**		Project Start Date:		7/1/2011
Research Project Number:	12-1PM		Completion Date	(original)	6/30/2012
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Harold 'Skip' Paul				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$700,000		**Total**		**$700,000**
	(revised)					
Est. Expended to Date				Salaries		$700,000
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

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

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

- Managed the LTRC research program including administrative duties, financial responsibilities;
- Conducted LTRC 2011 Research Project Identification Committee (RPIC) activities;
- Participated in Transportation Research Board Activities;
- Participated on region and national RAC task groups.; and
- Managed Southeast Transportation Research Consortium Activities.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Continue to manage the SPR Research Program;
- Implement LTRC 2011 RPIC results;
- Staff participation in External Peer Exchanges;
- Continued support for Transportation Research Board Activities;
- Continued support for region and national RAC task group activities; and
- Continued support for Southeast Transportation Consortium.

LTRC Annual Research Program
Fiscal Year 2011-2012

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

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

SIO:	**30000306**		Project Start Date:		7/1/2011
Research Project Number:	12-1TTRI		Completion Date	(original)	6/30/2012
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Mark Morvant				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$365,000		**Total**		**$365,000**
	(revised)					
Est. Expended to Date				Salaries		$350,000
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		$15,000
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

To cover costs incurred in providing research implementation activities, technology transfer seminars and participation in external research/training activities (NCHRP/FHWA panels, TRB meetings, technical conferences, and research review committees).

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

- Design, Development, Testing and Deployment of various computer software such as Project Management Modules, DCP Project, Bridge Scour Program for DOTD, Excel Macros done earlier for pavement group, etc.;
- Presenting at Louisiana Transportation Conference;
- Presenting at Ohio bridge preservation conference;
- 2011 Southwest Geotechnical Engineering Conference (SWGEC);
- Louisiana Transportation Conference committee assistance;
- TRB, Transportation Research Board Annual Meeting, Washington, DC; attendance and committee participation, three committee chairs, and thirteen committee members, several presentations given.
- Participate NCHRP research advisory panels (two);
- Total 36 presentation on Concrete Materials and 42 presentations on Asphalt Materials;
- Provided an aggregate workshop to the industry (1 presentation);
- Provided concrete training to industry (20 presentations across 6 cities);
- Provided concrete training to DOTD (4 presentations in Lafayette);
- Provided 2 lunch and learn sessions (DOTD and Consulting Engineers);
- Invited to speak at CSI winter seminar (2 Presentations);
- Presented for ACPA Meganar (1 Presentation);
- Presented narrow joints research results at international conference (1 presentation);
- 1 presentation to TTCC/NCC members;
- 1 presentation to UNO ASCE Group;
- 3 presentations for implementation and reporting the results on 10-1C;
- 8 Presentations on Warm Mix Research, LAPA, Lafayette, Alexandria LES, ASCE;
- 6 Crumb Rubber Presentations;
- 6 General Asphalt Specification Presentations;
- 10 Invited presentations by EMCRF;
- 5 TRB presentations;
- Pavement management user group assistance and presentation;
- Seminars and Conferences;
- Required CPTP courses;
- Required LTRC courses; and
- Certification courses.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Continue Research Implementation Activities;
- Began development of program for 2011 Transportation Conference;
- Development and hosting of Technology Transfer Seminars;
- Participation in external research/training activities: NCHRP/FHWA panels, TRB meetings, technical conferences); and
- Continue to seek venues for our presentations that effectively communicate LTRC's vision.

LTRC Annual Research Program
Fiscal Year 2011-2012

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

SIO:	**30000301**		Project Start Date:		7/1/2011
Research Project Number:	12-1EQM		Completion Date	(original)	6/30/2012
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Mark Morvant				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$230,000		**Total**		**$230,000**
	(revised)					
Est. Expended to Date				Salaries		$170,000
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	$60,000
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

To cover costs incurred to provide support for the purchase, fabrication, evaluation, and maintenance of rolling equipment, special equipment, and instrumentation for research projects. To provide for participation in standardized testing programs for laboratory certification (Co-Op, AMRL, CRRL). Special emphasis will be on automation of instrumentation systems used for data collection.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

- Maintained LTRC research laboratory and field equipment;
- Calibration of Profiler, FWD, Dynaflect, and Friction Tester;
- Participated in AMRL laboratory proficiency testing;
- Participated in State Cooperative Testing Program (Co-Op);
- Maintained AMRL accreditation of asphalt laboratory;
- Maintained AMRL accreditation of concrete laboratory;
- CCRL Certification submittal and Technician Certification through ACI;
- Calibration of Mobile Imaging System;
- Laboratory Equipment Maintenance and repair of Asphalt Binder, Mixture equipment; and
- Performed required safety training and reporting responsibilities.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Maintain AMRL laboratory accreditation;
- Perform routine and unscheduled maintenance of LTRC research laboratory and field equipment;
- Developed plans and prepared specifications for new lab equipment need to maintain state-of-the –art laboratory facilities;
- Participate in State Coop and CRRL testing programs;
- Safety Training and Reporting Duties;
- Calibration of Profiler, FWD, Dynaflect, and Friction Tester;
- Calibration of Mobile Imaging System;
- Equipment controller and data acquisition for Cox and Sons;
- Calibration of Profiler, FWD, Dynaflect, and Friction Tester; and
- Perform routine and unscheduled maintenance of LTRC research laboratory and field equipment.

LTRC Annual Research Program
Fiscal Year 2011-2012

Title:	**Research Laboratory and Field Test Support**	**Project Status:**	**Ongoing**

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

SIO:	**30000302**		Project Start Date:		7/1/2011
Research Project Number:	12-1LFT		Completion Date	(original)	6/30/2012
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Mark Morvant				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$200,000		**Total**		**$200,000**
	(revised)					
Est. Expended to Date				Salaries		$200,000
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

The broad objectives of this study are to provide support to the department's 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.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

- Collected and processed Dynaflect deflection data, and reported the test results in terms of structural number and subgrade modulus as well as occasional projects which field and laboratory support is needed;
- Rerun of LA 1 ByPass Uritek project for faulting and IRI;
- Fog Seal and Microsurfacing Friction;
- Support to Materials Section in developing the profiler spec and operations manual;
- Forensic evaluation of slip failures and debonding on I-10; found low bond strengths in all areas for this;
- Forensic evaluation of Crumb Rubber modified SMA on I-12, raveling;
- Investigation of bond strength for thin bonded overlay, LA 20;
- Bond strength evaluation of Ultrafuse hot applied trackless tack coat on US 190;
- Evaluation of Microsurfacing and Cold Mixtures, LA 16 and lab work for maintenance applications; and
- In- situ testing of miscellaneous projects, PSPA and LFWD.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES
• Continue to respond to request for technical assistance for laboratory, field work, and forensic analysis on DOTD projects not related to a formal research project that requires a substantial amount of time and laboratory effort.

LTRC Annual Research Program
Fiscal Year 2011-2012

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

SIO:	**30000303**		Project Start Date:		7/1/2011
Research Project Number:	12-1NPE		Completion Date	(original)	6/30/2012
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Mark Morvant				

BUDGET STATUS

Total Budget				Estimated 2011-2012 Budget		
Total Cost	(original)	$50,000		**Total**		**$50,000**
	(revised)					
Est. Expended to Date				Salaries		$50,000
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

To support evaluation of products for LADOTD New Products Evaluation Committee. To provide general evaluation of new products or technologies not associated with a research project.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

New Product Evaluations:
- Terracem Evaluation (cement & cement kiln dust blend), Manufacturer: LaFarge;
- LKD Evaluation (lime kiln dust), Manufacturer: Omni Materials
- Super Slurry (cement slurry), Manufacturer: TXI;
- Rosphalt 50 LT;
- Joint Bond; and
- Reclamite Fog Seal.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Continue managing the necessary evaluations of new products submitted to LTRC by the LADOTD new product evaluation committees including on-going evaluations;
- Evaluate environmentally friendly prime coats;
- Evaluation of jointbond; and
- Evaluation of skidabrador and fog seal system for preservation.

LTRC Annual Research Program
Fiscal Year 2011-2012

Title:	**Technical Assistance**	**Project Status:**	**Ongoing**

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

SIO:	**30000304**		Project Start Date:		7/1/2011
Research Project Number:	12-1TA		Completion Date	(original)	6/30/2012
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Mark Morvant				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$375,000		**Total**		**$375,000**
	(revised)					
Est. Expended to Date				Salaries		$375,000
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

To cover costs incurred in providing laboratory, field testing and forensic analysis in direct response to departmental inquiries for assistance on DOTD 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 LTRC.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

- Friction testing on Project #450-11-0056 I-10 in Ascension Parish;
- LA 46 Flood Gate Rdwy Friction Evaluation;
- IRI measurements for Courtableau Bridge;
- Friction evaluation of A033 aggregate in District 04;
- Rerun of LA 1 ByPass Uritek project for faulting and IRI;
- Fog Seal and Microsurfacing Friction;
- LA 38 Crosslope Investigation;
- US 61 OGFC Reflective Cracking Investigation;
- PCC faulting investigation on I-49;
- Warranties evaluation of Joor Road (LA-946) ;
- I-12 Covington Forensic Investigation (PG82-2 crm liquid);
- Support to Materials Section in developing the profiler spec and operations manual;
- Evaluation of US 165 Columbia - La 847 SP 015-07-0043 (premature failure);
- Superpave evaluation effort (work on I-12, US 61, 450-03-0037, 454-02-0026, 450-04-0069 and 450-04-0065);
- LA 182 cement treated subbase investigation;
- Involvement in Prep-ME Pooled fund study – beta testing of software;
- Handled GPR request for 022-06-0040 Jonesville, LA.;
- Ran skid numbers on I-12 westbound within +/- 1.0 mile of Milepost 56 for an LSP investigation;
- Collected images for S.P. 052-03-0028 - LA 1 Morganza Spillway Bridge - Deck Evaluation;
- Morganza Spillway Bridge TA Report;
- Haynesville Shale data assistance;
- Internal automated templates and data storage for loaded wheel test, semi-circular bend, flow number, temperature stress restrained specimen test, and barcode trial;
- Specification committee work on Sections 6, 8, 9, and 10;
- Investigated cracking on bent at Causeway Blvd. Interchange;
- Investigated temperature and volume change characteristics to better understand hairline cracking in piles at the Twin Spans;
- Provided comments to Luanna Cambas for AASHTO Balloted measures;
- Helped in developing the admixture QPL to accept the new generation type S admixtures;
- Forensics investigations for raveling on I-12 at Covington, LA;
- Forensic evaluation of tender mixtures on LA 38;
- Forensic evaluation for bleed spots, and structure for Runway 13, Baton Rouge, LA Airport; and
- Forensic evaluation Raveling problems associated with "Dry" Mixtures for LA 18, LA 46, LA 16.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

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

LTRC Annual Research Program
Fiscal Year 2011-2012

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

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

SIO:	**30000305**		Project Start Date:		7/1/2011
Research Project Number:	12-1TRS		Completion Date	(original)	6/30/2012
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Mark Morvant				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$425,000		**Total**		**$425,000**
	(revised)					
Est. Expended to Date				Salaries		$425,000
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

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

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

- Initiated 19 new contract research projects;
- Managed research projects for 38 external University and Consultant contracts; and
- Provided review for draft reports on completed research projects.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

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

FHWA

Part II SPR Funded Research Program

CONTINUING RESEARCH

Title:	**Field Demonstration of New Bridge Approach Slab Designs and Performance**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**30000116**		Project Start Date:		8/1/2008
Research Project Number:	05-1GT		Completion Date	(original)	8/1/2011
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Murad Abu-Farsakh				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$393,176		**Total**		**$67,000**
	(revised)					
Est. Expended to Date		$219,500		Salaries		$33,000
FY 2010 - 2011 Budget				Equipment	(expendable)	$34,000
FY Funds	(original)	$74,000		Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure		$80,000		Other		

PURPOSE AND SCOPE

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 collapsed 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 DOTD 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.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

- Conducted literature review on relevant research projects on field testing, geogrid soil reinforcement, instrumentation, and monitoring;
- Analyzed the collected data from approach slab at Bayou Courtableau Bridge during previous truck load test;
- Conducted another truck load test on both approach slabs at Bayou Courtableau Bridge. Monitored the performance of the approach slabs and collect data from all instrumentations during the test; and
- Designed and developed the instrumentation testing plan for Bayou Lacassine Bridge approach slab.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Analyze the collected data from approach slabs at Bayou Courtableau Bridge during the second truck load test;
- Installed the geogrid reinforcement layers and other instrumentations beneath the approach slab at Bayou Lacassine Bridge;
- Install sister bar strain gauges within the approach slab structure at Bayou Lacassine Bridge;
- Conducted truck load test on both approach slabs at Bayou Lacassine Bridge, and monitor collect data from all instrumentations during the test; and
- Look for new bridge approach slab embankment sites for instrumentation and monitoring.

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

SIO:	**30000114**		Project Start Date:		11/1/2007
Research Project Number:	08-3GT		Completion Date	(original)	11/1/2010
Research Agency:	LTRC		Completion Date	(revised)	12/31/2012
Principal Investigator:	Dr. Murad Abu-Farsakh				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$88,776		**Total**		**$68,000**
	(revised)	$320,951				
Est. Expended to Date		$232,951		Salaries		$68,000
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)	$93,415		Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure		$93,415		Other		

PURPOSE AND SCOPE

The objective of this proposal is to provide additional funding for research project No. 07-1ST to cover the cost required to instrument the I-10 Twin Span Bridge for short-term and long-term monitoring. The objective of the primary 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 tilt meters, 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.

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

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

- Used the FB-MultiPier program to analyze the lateral load test at M19 Eastbound pier of Twin Span Bridge;
- Compared between the measured and predicted values from FB-MultiPoer Analysis;
- Analyzed the lateral load test data using high order polynomial curve fitting of measured pile rotation with depth;
- Back-calculated the p-y curves of battered pile groups at M19 pier high order polynomial curve fitting; and
- Coordinated with the subcontractor to incorporate additional instrumentation for the long-term monitoring system.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Coordinate with the subcontractor to install the additional instrumentations (cost = $66,956): 12 strain gages on concrete girders, 12 strain gages on steel girders, and 3 OSMOS extensometers to three steel girders;
- Coordinate with the subcontractor to re-calibrate the OSMOS WIM;
- Coordinate with the subcontractor to complete and setup the long-term monitoring system (depends on availability of electric supply power);
- Analyze the results of lateral load test at M19 pier using the superposition method, calibrating FB-MultiPier input data, and back-calculate the p-y curves; and
- Prepare a final report.

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

SIO:	**30000111**		Project Start Date:		7/1/2010
Research Project Number:	10-1GERL		Completion Date	(original)	6/30/2011
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Murad Abu-Farsakh				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$523,000		**Total**		**$230,000**
	(revised)					
Est. Expended to Date		$272,000		Salaries		$176,000
FY 2010 - 2011 Budget				Equipment	(expendable)	$30,000
FY Funds	(original)	$170,000		Equipment	(non-expendable)	
	(revised)			Travel		$18,000
Est. FY Expenditure		$272,000		Other		$6,000

PURPOSE AND SCOPE

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

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

- Provided geotechnical testing support and technical assistance for LADOTD;
- Published several technical papers/reports on LTRC research results;
- Develop potential ideas and problem statements for future LTRC research project.
- Developed research proposals on "Field Instrumentation and Testing to Study Set of Piles", "Accelerated Load Testing of Geosynthetic Base Reinforced Pavement Test Sections", and "Calibration of Resistance Factors for Drilled Shafts for the New FHWA Design Method"; and
- Maintained and upgraded software's related to CPT application.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

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

Title:	**Design Values of Resilient Modulus of Stabilized and Non-Stabilized Base**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**30000099**		Project Start Date:		9/1/2010
Research Project Number:	10-3GT		Completion Date	(original)	2/29/2012
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Khalil Hanifa				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$120,985		**Total**		**$79,800**
	(revised)					
Est. Expended to Date		$41,185		Salaries		$79,800
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)	$60,492		Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure		$41,185		Other		

PURPOSE AND SCOPE

The purpose of this research study is to determine the design values of stabilized and non-stabilized base specified by LADOTD through lab tests with respect to resilient modulus and other parameters used by pavement design guides.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

- Conducted literature review;
- Developed testing factorials for lab testing program of stabilized and non-stabilized base materials used in Louisiana; and
- Began conducting lab tests accordingly.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Finish conducting lab tests accordingly;
- Analyze test data;
- Make recommendations of design values that accommodate field variation during construction; and
- Write final report.

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

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

BUDGET STATUS

Total Budget			Estimated 2011-2012 Budget		
Total Cost	(original)	$489,708	**Total**		**$40,000**
	(revised)				
Est. Expended to Date		$44,000	Salaries		$30,000
FY 2010 - 2011 Budget			Equipment	(expendable)	$10,000
FY Funds	(original)	$66,000	Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure		$44,000	Other		

PURPOSE AND SCOPE

Piles driven into saturated cohesive soils usually experience a time-dependent increase in pile capacity, known as pile setup, which contributes to the long-term capacity of the piles. Field observations showed that pile set-up is significant and continues to develop for long time after installation. An increase in pile capacity of up to 12 times has been reported. The pile set-up phenomenon depends on many factors including the increase in soil strength around the pile during the consolidation process resulting from dissipation of excess pore pressure with time, the effect of thixotropy in disturbed clayey soils during installation, and the aging effect. An accurate estimation and incorporation of pile set-up during design will result in reducing the cost of highway projects.

The main objective of this research study is to evaluate the time-dependent increase in pile capacity (or pile setup phenomenon) for piles driven into Louisiana soils through conducting repeated static and dynamic field testing with time on full-scale instrumented piles for the purpose of incorporation the pile setup into LADOTD design practice. This will include investigating the mechanism of pile setup, study the effect of soil type/properties, pile size, and their interaction on pile setup phenomenon, and develop a model and its reliability to estimate the increase in pile capacity with time.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

- Started literature review on relevant research studies related to pile setup phenomenon in clayey soils;
- Developed an instrumentation testing plan for a selected pile at Bayou Teche Bridge site to evaluate the pile setup phenomenon with time. However, due to construction time constrain, the pile was casted before being able to instrument it. Still the pile will be tested at specific time intervals and included in pile setup database; and
- Identified another potential site at Bayou Zourie Bridge for performing the field instrumentation pile set-up tests. An instrumentation plan was prepared.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Continue literature search on experimental and theoretical studies related to pile setup phenomenon in clayey soils;
- Collect data and start analyzing pile setup at Bayou Teche Bridge site;
- Follow up on instrumentation and testing plan at Bayou Zouri Bridge site;
- Develop an instrumentation testing plan for piles and the surrounding soils to capture the pile set-up phenomenon with time;
- Identify new potential sites/bridges for performing field instrumentation pile set-up tests;
- Collect and start analyzing the setup of the tested pile at Bayou Boeuf Bridge Extension, US 90; and
- Start finite element numerical modeling to understand the pile setup phenomenon.

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

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

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$297,579		**Total**		**$204,000**
	(revised)					
Est. Expended to Date		$48,000		Salaries		$167,000
FY 2010 - 2011 Budget				Equipment	(expendable)	$37,000
FY Funds	(original)	$95,071		Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure		$48,000		Other		

PURPOSE AND SCOPE

The main objective of this research study is to evaluate the benefits of geosynthetics stabilization and reinforcement of subgrade/base aggregate layer in flexible pavements built 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 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 possible the MEPDG that can provide a more suitable pavement structure design responsive to site conditions and projected loading.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

- Conducted literature review on the use of geosynthetic for subgrade stabilization and reinforcement of base aggregate layer in flexible pavements;
- Designed for test lane sections at ALF site;
- PPC Piles were driven in the designated site for support of reinforced concrete foundation;
- Conducted cyclic plate load tests on in-box geosynthetic reinforced test sections; and
- Ordered some instrumentations needed for the ALF test sections.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Continue conducting literature review on relevant published works;
- Construct the two strip footing supported on piles;
- Instrument and construct the test lane sections;
- Conduct accelerated load tests on the lane sections;
- Conduct cyclic plate load tests on the lane sections;
- Start analyzing of the experimental test results; and
- Prepare a draft report.

Title:	**Calibration of Resistance Factors for Drilled Shafts for the New FHWA Design Method**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**30000280**		Project Start Date:		1/12/2011
Research Project Number:	11-4GT		Completion Date	(original)	1/11/2012
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Murad Abu-Farsakh				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$72,679		**Total**		**$88,500**
	(revised)					
Est. Expended to Date		$26,650		Salaries		$38,500
FY 2010 - 2011 Budget				Equipment	(expendable)	$10,000
FY Funds	(original)	$30,000		Equipment	(non-expendable)	$40,000
	(revised)			Travel		
Est. FY Expenditure		$26,650		Other		

PURPOSE AND SCOPE

The purpose of this research is to calibrate the resistance factors for drilled shaft design using the new FHWA design methodology based on the Louisiana experience and subsurface soil conditions. For comparison purpose, the resistance factors for both the old FHWA (1999) and the new FHWA (2010) design methods used by the LADOTD will be developed at the target reliability, BT = 3. Procedures for the implementation of the LRFD design will be recommended as well.

To achieve this objective, all new drilled shaft load tests performed in Louisiana will be collected and added to the previously collected load test data base and will be compiled following the same data management framework developed in the previous research study. The measured resistance of each drilled shaft will be determined according to the FHWA failure criterion, i.e. the shaft load at the settlement of 5% shaft diameter or plunge load whichever occurs first, using the FHWA (1999) and FHWA (2010) design methods.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

- Conducted additional literature search to update the existing literature on LRFD design of drilled shafts;
- Collected design documents, field exploration, lab test reports, and load test reports for eight (8) new drilled shaft load tests; and
- Started analyzing the new collected and existing drilled shaft tests to determine the measured and predicted resistances (side, base, and total) of drilled shafts using the designated methods.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Continue looking for new drilled shaft load tested;
- Continue analyzing the new collected and existing drilled shaft tests to determine the measured and predicted resistances using the designated drilled shaft methods;
- Characterize the new combined data to obtain key statistical parameters such as the mean, standard deviation, and coefficient of variation (COV) as well as the type of distribution that best fits the data;
- Perform reliability analysis to determine the resistance factors for different design methods that are consistent with the target reliability index;
- Recommend resistance factors for the new FHWA (2010) design method; and
- Prepare a research report.

Title:	**Construction and Accelerated Pavement Testing of TTI Pavement Test Sections**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**30000168**		Project Start Date:		10/1/2009
Research Project Number:	09-7P		Completion Date	(original)	10/1/2011
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Zhong Wu				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$98,850		**Total**		**$9,700**
	(revised)					
Est. Expended to Date		$89,140		Salaries		$9,700
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)	$50,206		Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure		$40,706		Other		

PURPOSE AND SCOPE

The purpose of this study was to provide special pavement testing services in relation to Texas DOT Project 0-6132, “Development and Field Evaluation of the Next Generation of HMA Mix Design Procedures". The testing of this project includes 8 test sections and total number of ALF loading up to 1,200,000 passes.

Specifically, the Principal Investigators would perform duties in project coordination and project management, developing ALF construction plan and specifications, scheduling field tests as required by Texas Transportation Institute (TTI), providing technical assistance as needed and evaluating results for possible use by LADOTD.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

- Completed loading on section 5, 6, 7 and 8; and
- Performed FWD and distress survey as required.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Post-mortem trench investigation on all TTI test sections.

Title:	**LED Traffic Signal Lifetime Management System**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**30000164**		Project Start Date:		11/1/2010
Research Project Number:	10-3P		Completion Date	(original)	7/1/2013
Research Agency:	LTRC		Completion Date	(revised)	7/31/2013
Principal Investigator:	Dr. Leticia Santos da Rocha Courville				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$132,144		**Total**		**$42,630**
	(revised)					
Est. Expended to Date		$13,690		Salaries		$34,070
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)	$50,505		Equipment	(non-expendable)	
	(revised)			Travel		$2,260
Est. FY Expenditure		$13,690		Other		$6,300

PURPOSE AND SCOPE

The purpose of this research is to implement in Louisiana an LED traffic signal lifetime management system based on Institute of Transportation Engineers (ITE) luminous intensity threshold rather than the manufacturers' warranty period.

The objective of this research is to characterize LED traffic signals' performance operating continuously over 10,000 hours in Baton Rouge's environment by designing lifetime curves for red, yellow, and green circular traffic signals.

Sixty-three samples of the most current traffic signal manufacturer in stock at the LADOTD's Traffic Services Section Warehouse will operate up to 10,000 hours. Initially, lab will make measurement of luminous intensity for three red, yellow, and green circular traffic signal samples totaling nine samples. Lab will repeat measurement of luminous intensity every 2,000 up to 10,000 hours for nine distinct samples that operated continuously until they were turned off to send them to lab. In addition, the Principal Investigator and the Traffic Services staff will make measurement of luminous intensity for the entire sample of traffic signals every 500 hours using a handheld light meter. Moreover, Principal Investigator will make measurement of electrical variables such as AC voltage, DC voltage, AC current, and DC current every 500 hours as well. To build lifetime curves for red, yellow, and green traffic signals, Principal Investigator will analyze the relationship between measurements of luminous intensity and measurements of temperature, current, and voltage. The final report for this research will discuss strategies for using measurement of variables concerning luminous intensity degradation as indicator for LED traffic signal replacement by the LADOTD's Districts.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

Task 1 – Literature search
- Prepared projection of cost and time saved based on implementation of results gained from this research;
- Prepared technical requirements to contract lab to measure luminous intensity in traffic signal samples according to research's work schedule;
- Prepared research Project Capsule;
- Prepared technical requirements for purchase of equipment used in field measurement of luminous intensity; and
- Prepared national LED traffic signal replacement survey.

Task 2 – Acquisition of equipment
- Built a prototype to measure electrical variables in order to prepare specification for electronic components and data acquisition system that will be used to run the accelerated stress testing;
- Measured AC/DC current and AC/DC voltage one red, yellow, and green LED circular traffic signal samples using the aforementioned prototype;
- Ordered 21 red, yellow, and green traffic signals totaling 63 units that will work as samples in this research; and
- Preparing electrical installation (wiring methods and materials, and protection including lightning) according to National Electrical Code 2011 for 63 traffic signal samples, time clock, solid state relays, sensors, data acquisition system, power generator, laptop, and portable building (power outlets, lights, and air-conditioning) that are required to run the accelerated stress testing.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

Task 2 - Acquisition of equipment
- To prepare technical requirements for purchase of data acquisition system's hardware and software, and power generator to run the accelerated stress testing; and
- To Prepare specification for purchase of laptop that will be allocated to manage the accelerated stress testing.

Task 3 – Installation of 63 LED traffic signal samples
- To install poles, power generator, traffic signal samples, data acquisition system, laptop, and wires at the site of the accelerated stress testing.

Task 4 – Luminous intensity measurement and electrical variables measurement
- To send three red, yellow, and green LED traffic signals to lab to make measurement of luminous intensity using goniophotometer system starting at time zero, and subsequently, every 2,000 hours up to 10,000 hours;
- To use handheld device to make field measurement of luminous intensity around solar noon starting at time zero, and subsequently, every 500 hours up to 10,000 hours;
- To use data acquisition system to measure AC/DC voltage, AC/DC current, and PCB temperature consistent with the same schedule for field measurement of electrical variables; and
- To collect temperature data from the Weather Channel website according to schedule for measurement of electrical variables.

Task 5 – Analysis of information
- To make a draft of the lifetime curves through the analysis of all data collected until June, 2011.

Title:	**The Rideability of a Deflected Bridge Approach Slab (LTRC Project 02-2GT Continuation: Phase II)**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**30000160**		Project Start Date:		4/1/2011
Research Project Number:	11-3P		Completion Date	(original)	3/31/2013
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Mark Martinez				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$150,000		**Total**		**$64,340**
	(revised)					
Est. Expended to Date				Salaries		$58,340
FY 2010 - 2011 Budget				Equipment	(expendable)	$5,000
FY Funds	(original)	$10,000		Equipment	(non-expendable)	$1,000
	(revised)			Travel		
Est. FY Expenditure		$10,000		Other		

PURPOSE AND SCOPE

This project is a continuation of project 02-2GT which was initiated in response to a Louisiana Quality Initiative (LQI) entitled “Preservation of Bridge Approach Rideability.” The primary objective of 02-2GT was to develop a means of evaluating bridge approaches in terms of rideability. The principal objectives of 02-2GT were achieved in that a Localized Roughness Index (LRI) was developed. But, the findings were based on a very limited database (only 14 bridges were tested). 02-2GT also required that a so-called Translational Vehicular Transfer Function (TVTF) circuit be developed. The TVTF was developed. But, to date, it has not been yet been prototyped or tested. The principal focus of this Phase II research will be to carry out this prototyping/testing and to undertake a more comprehensive field analysis (utilizing more bridges).

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

Bridge ride quality data was collected for the entire I-10 Interstate and further analyzed to develop the best strategy of implementation.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

There are discussions that may impact the future of this study: currently examining feasibility of using the alternative 25-ft moving base length method of estimating localized roughness. If the project is green-lighted, then the following tasks will be undertaken during the 2011-2012 fiscal year:

Task 1: Examine literature to help with refinement of TVTF circuit and develop a calibration procedure to ensure vehicular cross-compatibility;

Task 2: Build and retrofit a series of TVTF devices (attach to test vehicles) and carry out preliminary testing;

Task 3: Develop TVTF calibration procedure and test effectiveness; and

Task 4: Begin LRI indexing of bridges across the State (comprehensive testing).

Title:	**Evaluation of Warm Mix Asphalt Technology in Flexible Pavements**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**30000117**		Project Start Date:		3/15/2009
Research Project Number:	07-1B		Completion Date	(original)	3/15/2011
Research Agency:	LTRC		Completion Date	(revised)	3/31/2012
Principal Investigator:	Mr. Bill King				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$325,420		**Total**		**$120,442**
	(revised)	$413,556				
Est. Expended to Date		$293,114		Salaries		$119,442
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)	$108,121		Equipment	(non-expendable)	
	(revised)			Travel		$1,000
Est. FY Expenditure		$75,815		Other		

PURPOSE AND SCOPE

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.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

- Development of new nonstandard specification to use on new projects using WMA technologies;
- Selected new project on US 61, developed plans and specs for bidding;
- Develop permissive specification for inclusion in the re-write of section 502; and
- Conducted added task of fundamental materials characterization of beam fatigue on the three projects.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Complete fundamental materials characterization of beam fatigue on the three projects and evaluate data;
- Sampling and preparation of specimens for last WMA project to be let in June, 2011;
- Testing and conducting Materials Characterization for the last project; and
- Development and submittal of Draft Final Report for review and publication.

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

SIO:	**30000112**		Project Start Date:		7/1/2009
Research Project Number:	10-1EMC		Completion Date	(original)	6/30/2012
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Louay Mohammad				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$345,000		**Total**		**$175,218**
	(revised)					
Est. Expended to Date		$176,000		Salaries		$159,218
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)	$176,000		Equipment	(non-expendable)	$10,000
	(revised)			Travel		$6,000
Est. FY Expenditure		$176,000		Other		

PURPOSE AND SCOPE

The Engineering Materials Characterization and Research Facility, EMCRF, provides a multi-disciplinary expertise and state-of-the-art research capabilities to assess the fundamental engineering properties of materials used in the transportation industry in Louisiana. EMCRF plays an important role in the evaluation of the engineering properties of materials used in the 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 LADOTD engineers; provides experimental design and analysis; provide training for LADOTD employees for the purpose of adopting newly developed technology and implementation methodology into the daily operations of LADOTD, and, assists in-house LTRC investigators to develop thorough research programs.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

- Participated in the LADOTD Asphaltic Concrete Specification Committee; and Louisiana LADOTD Superpave Implementation Committee; and
- Participated in several technical assistance projects.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Continue participation in the LADOTD Asphaltic Concrete Specification Committee;
- Continue participation in technical assistance projects; and
- Conduct workshops and seminars.

Title:	**Development of Performance Based Specifications for Louisiana Asphalt Mixtures**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**30000221**		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				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$299,433		**Total**		**$98,698**
	(revised)					
Est. Expended to Date		$10,000		Salaries		$97,198
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)	$10,000		Equipment	(non-expendable)	
	(revised)			Travel		$1,500
Est. FY Expenditure		$10,000		Other		

PURPOSE AND SCOPE

The ultimate 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 Louisiana pavements;
- Developing a tailored PBS for Louisiana LADOTD; and
- Developing a framework of the PBS implementation in Louisiana.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

- Conduct Literature Review as related to the research projects above what is documented in the research proposal; and
- Establish an advisory project selection group to aid in the selection of field projects.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Continue the identification of field projects;
- Conduct laboratory and field testing on the selected projects; and
- Perform preliminary analysis on the collected data.

Title:	**Validity of Multiple Stress Creep Recovery Test for DOTD Asphalt Binder Specification**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**30000167**		Project Start Date:		9/1/2010
Research Project Number:	11-1B		Completion Date	(original)	6/30/2012
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Md. Sharear Kabir				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$144,838		**Total**		**$102,838**
	(revised)					
Est. Expended to Date		$42,000		Salaries		$102,838
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)	$42,000		Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure		$42,000		Other		

PURPOSE AND SCOPE

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 specification for PG graded binder. The main objective of this study is to collect asphalt binders from various sources listed in the Qualified Product List of LADOTD and characterize their elastic responses with regard to the present AASHTO binder specification. In addition, recommendations to the current LADOTD asphalt binder specification will be developed.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

- Literature review;
- Collected binder samples from some asphalt suppliers; and
- Laboratory experiments were delayed due to malfunctioning of DSR device.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Collect more binder samples from various asphalt suppliers;
- Fixation of DSR and finish laboratory experiments;
- Conduct data analysis; and
- Develop and submit Final Report for review and publication.

Title:	**Testing and Analysis of LWT and SCB Properties of Asphalitc Concrete Mixtures**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**30000220**		Project Start Date:		4/1/2011
Research Project Number:	11-3B		Completion Date	(original)	3/31/2013
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Bill King				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$263,975		**Total**		**$113,225**
	(revised)					
Est. Expended to Date		$32,850		Salaries		$113,225
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)	$32,850		Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure		$32,850		Other		

PURPOSE AND SCOPE

The Louisiana Transportation Research Center 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.

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.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

•Conduct a complete Literature Review;
•Develop simplified SCB test Apparatus (Modify Marshall Load Frame);
•Begin identifying field projects and conducting field sampling; and
•Perform Laboratory Testing.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

•Continue identifying field projects and conducting field sampling;
•Perform Laboratory Testing;
•Begin Data Analysis; and
•Begin developing End Result Specifications.

Title:	Development of a Time-Dependent Hurricane Evacuation Model for the New Orleans Area - Phase 2	Project Status:	Ongoing
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**30000126**		Project Start Date:		7/1/2008
Research Project Number:	06-2SS		Completion Date	(original)	6/30/2010
Research Agency:	LTRC		Completion Date	(revised)	6/30/2012
Principal Investigator:	Dr. Chester Wilmot				

BUDGET STATUS

Total Budget			Estimated 2011-2012 Budget		
Total Cost	(original)	$211,266	**Total**		**$187,533**
	(revised)	$510,839			
Est. Expended to Date		$309,956	Salaries		$185,533
FY 2010 - 2011 Budget			Equipment	(expendable)	
FY Funds	(original)	$147,353	Equipment	(non-expendable)	
	(revised)		Travel		$2,000
Est. FY Expenditure		$133,000	Other		

PURPOSE AND SCOPE

The purpose of this project is to extend the evacuation modeling capabilities developed in earlier projects funded by LTRC. This will be achieved by enhancing the current evacuation demand model, developing a new dynamic traffic assignment procedure for use in hurricane evacuation modeling, and evaluating the alternative method of data collection developed in the first phase of the project.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

- Ph.D. dissertation "Dynamic Trip Distribution Models for Hurricane Evacuation" by G. Cheng, May, 2010;
- Pending Ph.D. dissertation "Development of a Time-Dependent, Audio-Visual, Stated Choice Method of Data Collection of Hurricane Evacuation Behavior" by R. Gudishala, expected September, 2011; and
- Literature review of trip assignment procedures appropriate to evacuation modeling.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Research into new method of trip assignment for evacuation modeling; and
- Investigation of alternative method of estimating hurricane evacuation demand.

Title:	LTRC Proposal for the Support of Research and Development in Transportation Planning	Project Status:	Ongoing
Funding Source:	SPR: TT-Fed/TT-Reg	Budget Category:	FHWA

SIO:	30000125		Project Start Date:		7/1/1995
Research Project Number:	10-1PLA		Completion Date	(original)	6/30/1996
Research Agency:	LTRC		Completion Date	(revised)	6/30/2012
Principal Investigator:	Dr. Chester Wilmot				

BUDGET STATUS

Total Budget			Estimated 2011-2012 Budget		
Total Cost	(original)	$358,462	**Total**		**$130,434**
	(revised)				
Est. Expended to Date		$180,462	Salaries		$120,734
FY 2010 - 2011 Budget			Equipment	(expendable)	
FY Funds	(original)	$207,462	Equipment	(non-expendable)	$3,000
	(revised)		Travel		$5,000
Est. FY Expenditure		$180,745	Other		$1,700

PURPOSE AND SCOPE

This project provides long-term professional assistance to the LADOTD on transportation planning and other matters, supports management responsibility of the Special Studies section of LTRC, and permits teaching of courses in the Department of Civil and Environmental Engineering at 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 that LTRC issues proposal on.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

- Management of continuing projects in Special Studies section, and initiation of 5 new projects;
- Taught CE 7600, "Data Collection Methods" in the Department of Civil and Environmental Engineering at LSU in Spring, 2011;
- Assisted with RPIC 2011, and evaluation of TIRE projects awarded in 2011; and
- Thesis "Estimated Impact of Left Lane Truck Restriction on Louisiana Highway Pavements using MEPDG" by Mini Radakrishnan, May, 2010.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Manage projects in Special Studies section of LTRC;
- Teach CE 7640 "Transportation Policy and Planning" at LSU in Fall, 2011, and CE 7641 "Urban Transportation Planning Models" in Spring, 2012; and
- Provide technical assistance to LADOTD on request.

Title:	**Support Study for Establishing an Intelligent Transportation System (ITS) Lab at LTRC**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**30000137**		Project Start Date:		8/20/2010
Research Project Number:	10-7SS		Completion Date	(original)	8/19/2011
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Chester Wilmot				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$93,163		**Total**		**$53,163**
	(revised)					
Est. Expended to Date				Salaries		$10,000
FY 2010 - 2011 Budget				Equipment	(expendable)	$10,000
FY Funds	(original)	$75,000		Equipment	(non-expendable)	$33,163
	(revised)			Travel		
Est. FY Expenditure		$40,000		Other		

PURPOSE AND SCOPE

The purpose of this project is to equip the ITS Lab at LTRC with the necessary hardware and software to allow it receive data streamed from ITS devices in Louisiana. The objective of the lab is to process the ITS data received, develop procedures to exploit the information for the benefit of society, and provide an archive for the data.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

- Current hardware and communication infrastructure was examined and necessary additions or modifications identified;
- ITS Lab room remodeled and all necessary wiring completed; and
- Equipment ordered.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Install hardware;
- Set up workstations and data servers with all necessary software; and
- Run tests and evaluate installed equipment.

Title:	**Evaluation of Non-Destructive Technologies for Construction Quality Control of HMA and PCC Pavements in Louisiana**	**Project Status:**	**Ongoing**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:	**30000153**		Project Start Date:		7/1/2009
Research Project Number:	09-5C		Completion Date	(original)	9/30/2010
Research Agency:	LTRC		Completion Date	(revised)	12/31/2011
Principal Investigator:	Mr. Patrick Icenogle				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$116,351		**Total**		**$50,000**
	(revised)	$166,351				
Est. Expended to Date		$116,000		Salaries		$50,000
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)	$76,351		Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure		$76,000		Other		

PURPOSE AND SCOPE

The purpose of this study is to evaluate the Light Weight Deflectometer (LWD) and Portable Seismic Pavement Analyzer (PSPA) for use as non-destructive in-situ quality control tools. This research will use data collected from the devices on three hot-mix asphalt and three concrete jobs to determine the ruggedness and consistency of each device independently. Also, an operating procedure for each device will be developed and the in-situ measurements will be compared to lab samples from the same roadway locations.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

- Continued collection of asphalt pavements with both devices and concrete with only the PSPA;
- Equipment failures with both devices; and
- Consulting with expert about questionable early data showed much of the early data was erroneous.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

Needing six month time extension to collect sufficient data sets as stated in proposal. This extension will allow data collection during the upcoming construction season and allow time for data analysis, writing of report and editing.

Title:	Evaluation of the Surface Resistivity Measurements as an Alternative to the Rapid Chloride Permeability Test for Quality Assurance and Acceptance	Project Status:	Ongoing
Funding Source:	SPR: TT-Fed/TT-Reg	Budget Category:	FHWA

SIO:	**30000152**		Project Start Date:		2/1/2010
Research Project Number:	10-1C		Completion Date	(original)	5/1/2011
Research Agency:	LTRC		Completion Date	(revised)	5/1/2012
Principal Investigator:	Dr. Tyson Rupnow				

BUDGET STATUS

Total Budget			Estimated 2011-2012 Budget		
Total Cost	(original)	$102,878	**Total**		**$40,755**
	(revised)	$162,878			
Est. Expended to Date		$96,500	Salaries		$40,755
FY 2010 - 2011 Budget			Equipment	(expendable)	
FY Funds	(original)	$56,831	Equipment	(non-expendable)	
	(revised)	$45,504	Travel		
Est. FY Expenditure		$40,100	Other		

PURPOSE AND SCOPE

This project will oversee implementation of the surface resistivity meter for permeability measurements for concrete produced for LADOTD projects. An implementation report will be prepared detailing the cost benefit analysis.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

- Finish the research plan and final report;
- Develop and finalize a TR Procedure for use of the surface resistivity meter; and
- Purchase resistivity meters for all districts.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Train district laboratory personnel;
- Perform a detailed cost benefit analysis; and
- Prepare an implementation report.

FHWA

Part II SPR Funded Research Program

PROPOSED RESEARCH

LTRC Annual Research Program
Fiscal Year 2011-2012

Title:	Intelligent Compaction Technology	Project Status:	Proposed
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		5/1/2011
Research Project Number:	06-3GT		Completion Date	(original)	
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Gavin Gautreau				

BUDGET STATUS

Total Budget				Estimated 2011-2012 Budget		
Total Cost	(original)	$264,878		**Total**		**$169,225**
	(revised)					
Est. Expended to Date				Salaries		$149,225
FY 2010 - 2011 Budget				Equipment	(expendable)	$20,000
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

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; the intelligent roller then automatically and "instantaneously" modifies its settings (force amplitude, frequency) to meet the target modulus.

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.

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.

The project will develop draft specification and proposal to demo technology on a highway test site possibly located south of New Iberia on US 90 between Darnall and LA 85 in the spring of 2012.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

The proposed project has not begun.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

The proposed project has not begun.

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

SIO:			Project Start Date:		10/1/2011
Research Project Number:	11-1GT		Completion Date	(original)	3/31/2013
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Murad Abu-Farsakh				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$300,000		**Total**		**$35,000**
	(revised)					
Est. Expended to Date				Salaries		$30,000
FY 2010 - 2011 Budget				Equipment	(expendable)	$5,000
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

The purpose of this research study is to evaluate the design parameters and procedures for cementitious treated subgrade soil using cyclic plate load tests. This includes evaluating the composite resilient modulus (Mr) of various cementitious (cement, lime, fly ash) treated 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 subgrade 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 resilient modulus, single-stage and multi-stages repeated plate load tests in a steel test box with inside dimensions of 6.5 ft. (length) × 6.5 ft (width) × 5.5 ft. (height). In addition, Dynamic Cone Penetrometer (DCP), Light Falling Weight Deflectometer (LFWD), Geogauge, Portable Seismic Pavement Analyzer (PSPA) tests, and repeated triaxial load tests will be conducted.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Perform literature review on the soil-type dependent cementitious stabilization/treatment techniques and the in-situ evaluation of resilient modulus of cementitious treated subgrades;
- Identify the different types of soil in Louisiana and appropriate stabilization schemes for those soils;
- Start modifying the repeated plate load testing facility and purchasing instrumentation needed for this research; and
- Start conducting repeated plate load tests on selected sections.

Title:	**Prevention of Extensive Desiccation Cracking on Rural Highways**	**Project Status:**	**Proposed**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		8/2/2010
Research Project Number:	12-1P		Completion Date	(original)	
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Kevin Gaspard				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$300,000		**Total**		**$50,000**
	(revised)					
Est. Expended to Date				Salaries		$50,000
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

Pavement surface and foundation distresses due to shrinking and swelling soils are an issue on certain Louisiana highways which is the focus of this study. Desiccation is a common phenomenon due to diurnal changes in soil moisture content and be caused by three primary sources (Evaporation, Transpiration, Water table fluctuations), hereafter referred to as Evapotranspiration . Expansive clay soils (PI>20) are particularly vulnerable to changes in moisture content; shrinking during the drying cycles (desiccation) and swelling during wetting cycles (recharge).

While research has been conducted in these areas, though sometimes sparingly, assessment guidelines for soil characterization, environmental factors, and the stress state of the pavement system coupled with appropriate cost effective mitigation methods for evapotranspiration distresses on highways will be provided through a comprehensive report and technical assistance to the Districts.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Investigate sites in Districts 08, 58, and 05;
- Develop a research plan for selected sites; and
- Construct desiccation monitoring sites.

Title:	**Assessment of Environmental, Seasonal and Regional Variations in Pavement Base and Subgrade Properties**	**Project Status:**	**Proposed**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		9/24/2011
Research Project Number:	12-2P		Completion Date	(original)	6/30/2016
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Kevin Gaspard				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$500,000		**Total**		**$50,000**
	(revised)					
Est. Expended to Date				Salaries		$50,000
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

The purpose of this project is develop a subgrade resilient modulus seasonal variation model as well as develop laboratory shrink/swell prediction models that can be used in the environmental module of the AASHTO MEPDG which will be implemented by LADOTD in the future. Over 12 sites will be selected based upon geological and climatic conditions, instrumented, and assessed by the FWD. In-situ moisture testing and FWD assessments will be conducted seasonally for 3 years. Samples will be taken from each site and prediction models will be correlated between laboratory testing and field testing.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Select and instrument assessment sites;
- Begin monitoring; and
- Begin laboratory program.

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

SIO:			Project Start Date:		7/1/2011
Research Project Number:	12-3P		Completion Date	(original)	12/31/2013
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Zhong Wu				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$200,000		**Total**		**$45,000**
	(revised)					
Est. Expended to Date				Salaries		$45,000
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

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

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

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Literature review;
- Selection of new cement-stabilized base construction projects;
- Construction and micro cracking for some of selected projects; and
- Field testing, data collection and analysis.

LTRC Annual Research Program
Fiscal Year 2011-2012

Title:	Evaluation of DARWin-ME for Louisiana Pavement Design	Project Status:	Proposed
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		7/1/2011
Research Project Number:	12-4P		Completion Date	(original)	12/30/2012
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Zhong Wu				

BUDGET STATUS

Total Budget				Estimated 2011-2012 Budget		
Total Cost	(original)	$100,000		**Total**		**$68,000**
	(revised)					
Est. Expended to Date				Salaries		$60,000
FY 2010 - 2011 Budget				Equipment	(expendable)	$6,000
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		$2,000
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

The current LADOTD Pavement Design is based on the 1993 AASHTO Pavement Design Guide software, DARWin® version 3.1, whose basis has been empirical equations developed from the AASHO road test conducted in Ottawa, Illinois almost 50 years ago. DARWin-ME™ is the next generation of AASHTOWare® pavement design software which builds upon the National Cooperative Highway Research Program (NCHRP) Project 1-37A's final research product the Mechanistic-Empirical Guide for Design of New and Rehabilitated Pavement Structures (MEPDG). The DARWin-ME, developed based on mechanistic-empirical principles, provides a uniform and comprehensive set of procedures for the design and analysis of new and rehabilitated flexible, rigid and composite pavements. As part of planning for the release of DARWin-ME in April, 2011, AASHTO announced its intention to sunset the older version of pavement analysis software, DARWin 3.1, by December 31, 2011.

In order to implement the DARWin-ME in Louisiana and provide a smooth transition from using DARWin® version 3.1 to DARWin-ME for pavement design engineers, there is a need to thoroughly evaluate the DARWin-ME based on the Louisiana pavement conditions.

The scope of this study will include: (1) selection of existing pavement projects (including flexible, rigid and composite pavements, and overlaid pavements), which were previously designed based on the DARWin® version 3.1; (2) pavement design analysis using the DARWin-ME; (3) analysis of the DARWin-ME design results as compared to those from the DARWin® version 3.1.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES
• Literature review; • Acquisition of a single-user license for DARWin-ME; • Selection of pavements from the TOPS and other LADOTD data sources; • Pavement design and analysis using the DARWin-ME; and • Analysis of DARWin-ME pavement design results.

Title:	**Relationship between Friction Resistance Measured with Ribbed and Smooth Tire and Dynamic Friction Tester**	**Project Status:**	**Proposed**

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

SIO:			Project Start Date:		7/1/2011
Research Project Number:	12-5P		Completion Date	(original)	12/30/2012
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Zhong Wu				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$150,000		**Total**		**$125,000**
	(revised)					
Est. Expended to Date				Salaries		$63,000
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	$60,000
	(revised)			Travel		$2,000
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

The LTRC Project 09-2B "Development of Surface friction Guidelines for LADOTD" is near to its completion. The results of the study will provide a laboratory friction design procedure that relates surface mixture's friction resistance measured by the Dynamic Friction Tester (DFT) to polished stone value, surface texture measured by the Circular Track Meter (CTM) and mixture type. It is known that the DFT measured friction resistance on lab mixtures can be different from those measured in the field. To facilitate the implementation of the developed friction design procedure, there is a need to build a relationship between lab and field measured friction resistance for typical surface mixtures in Louisiana.

The overall objective of this research study is to develop a correlation between the skid numbers (SN) measured by the lock-wheel skid trailer (LWST) and the friction number measured by the DFT. To achieve the objective, a field testing program will be set up in cooperation with LADOTD to evaluate smooth- and ribbed-tire LWST surface friction, DFT measured surface friction and pavement surface macro texture by CTM.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

Task 1: Literature review;
Task 2: Acquire DFT and CTM devices;
Task 3: Project Selection;
- The selected projects shall include all typical DOTD surface mixture types (i.e. Superpave, SMA and OGFC), existing and new pavement surfaces, and locations throughout the state.

Task 4: Field Friction Test; and
- Field tests include LWST, DFT and CTM and laser texture test.

Task 5: Develop SN Prediction Model .
- Statistical analysis will be performed on the collected friction test data. it is anticipated that the SN prediction model will be developed in terms of the properties measured by DFT and pavement surface texture (e.g. mean profile depth).

LTRC Annual Research Program
Fiscal Year 2011-2012

Title:	**User Oriented Pavement Management Interfaces and Applications**	**Project Status:**	**Proposed**

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

SIO:			Project Start Date:		4/1/2012
Research Project Number:	12-6P		Completion Date	(original)	6/30/2014
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Patrick Icenogle				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$100,000		**Total**		**$10,000**
	(revised)					
Est. Expended to Date				Salaries		$10,000
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

This project is a follow up to LTRC Project 11-1P. The results of Project 11-1P will determine levels of variability of pavement management (PM) distress values and what type of project level applications are feasible based on available PM data and user requests. This project will follow up with development of project level PM applications for users.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Meet with various users from districts and sections interested in using PM data to determine applications to accommodate user needs;
- Meet with database system managers for availability of other data systems which can be combined with PM data for applications;
- Begin development of project level PM applications for users; and
- Provide assistance to Principal Investigators of LTRC Project 11-1P.

Title:	Roller Compacted Concrete Over Soil Cement Under Accelerated Loading	Project Status:	Proposed

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

SIO:			Project Start Date:		7/1/2011
Research Project Number:	12-7P		Completion Date	(original)	6/30/2012
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Zhong Wu				

BUDGET STATUS

Total Budget				Estimated 2011-2012 Budget		
Total Cost	(original)	$210,000		**Total**		**$210,000**
	(revised)					
Est. Expended to Date				Salaries		$210,000
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

Roller Compacted Concrete, (RCC) is a stiff, low-water mix of concrete placed with modified asphalt paving equipment and compacted with vibratory rollers. Properly designed RCC mixes can achieve outstanding compressive strength values despite low cement content. The initial construction cost of RCC is comparable to asphalt base. RCC offers some of the advantages of both asphalt and concrete pavement. Besides its high strength and the comparable cost to the asphalt, RCC pavements may be used by light traffic almost immediately after paving to minimizing traffic disruption during construction. With the increase costs of asphalt concrete mixtures, an RCC-surfaced pavement may be used as a cost-effective alternative to the current practice of asphalt concrete surfacing for a low-volume road design in Louisiana.

The purpose of this study is to document the RCC mix design and construction practice, and to evaluate RCC pavements over soil cement base under accelerated loading using the ATLAS30. This project will monitor loading for a 4" and 6" RCC section over a soil cement base. The end results for this project will enable alternate designs for lower volume roadways under high traffic loading conditions.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Lab tests on RCC mix design;
- Construct two RCC test sections over soil cement bases at PRF;
- Accelerated testing on two RCC test sections; and
- Monitor the performance of sections through cracking mapping, deflection measurements and/or Instrumentation.

Title:	**Thin White Topping Under Accelerated Loading**	**Project Status:**	**Proposed**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		7/1/2011
Research Project Number:	12-8P		Completion Date	(original)	6/30/2013
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Zhong Wu				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$200,000		**Total**		**$10,950**
	(revised)					
Est. Expended to Date				Salaries		$10,950
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

White Topping is the covering of an existing asphalt pavement with a layer of Portland Cement Concrete (PCC). Thin white topping uses a bonded layer of concrete that is four to six inches thick while an ultrathin layer is two to four inches thick. The bond is made by texturing the asphalt. Ultrathin White Topping is suitable for low-volume roads, parking lots and small airports.

The purpose of this study is to document the construction practice of White Topping Pavement in Louisiana, and evaluate the performance of Thin White Topping overlays under accelerated loading using the newly acquired device-ATLAS30. Two test sections will be constructed. The sections will comprise of 2-4 inches of PCC overlay of asphalt.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Lab mix design of the White Topping Mixtures; and
- Construction of two test sections at ALF.

Title:	**Roller Compacted Concrete Overlays Under Accelerated Loading**	**Project Status:**	**Proposed**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		7/1/2011
Research Project Number:	12-9P		Completion Date	(original)	6/30/2013
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Zhong Wu				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$200,000		**Total**		**$10,950**
	(revised)					
Est. Expended to Date				Salaries		$10,950
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

Roller compacted concrete(RCC)is a stiff, low-water mix of concrete placed with modified asphalt paving equipment and compacted with vibratory rollers. Properly designed RCC mixes can achieve outstanding compressive strength values despite low cement content. The initial construction cost of RCC is comparable to asphalt base. RCC offers some of the advantages of both asphalt and concrete pavement. Besides its high strength and the comparable cost to the asphalt, RCC pavements may be used by light traffic almost immediately after paving to minimizing traffic disruption during construction. With the increase costs of asphalt concrete mixtures, RCC provides itself as a potential cost-effective alternative to be used in an asphalt concrete overlay design.

The purpose of this project is to document the construction practice for RCC overlay on top of an existing asphalt surface, and to evaluate of performance of the RCC overlays under the accelerated loading using the ATLAS30. Two RCC overlay test sections will be constructed and tested at PRF.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Lab design of RCC overlay mixes; and
- Construct two RCC overlay test sections.

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

SIO:			Project Start Date:		7/1/2011
Research Project Number:	12-1B		Completion Date	(original)	6/30/2013
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Louay Mohammad				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$204,032		**Total**		**$95,866**
	(revised)					
Est. Expended to Date				Salaries		$93,866
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		$2,000
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

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. .

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Characterize the rheological and mechanical properties of asphalt binders and aggregates extracted from three contrasting sources of RAS;
- Prepare RAS modified asphalt binder blends using a wet process and measure the rheological properties of prepared asphalt blends; and
- Determine the mechanical properties of asphalt/aggregate mixtures with and without RAS.

Title:	Investigation of the Use of High RAP Content in Hot Mix Asphalt Mixtures	Project Status:	Proposed
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		7/1/2011
Research Project Number:	12-2B		Completion Date	(original)	6/30/2013
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Louay Mohammad				

BUDGET STATUS

Total Budget				Estimated 2011-2012 Budget		
Total Cost	(original)	$275,000		**Total**		**$100,070**
	(revised)					
Est. Expended to Date				Salaries		$98,070
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		$2,000
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

Many state agencies are considering increasing the allowable percentages of RAP in Hot-Mix Asphalt (HMA) to take full advantages of this promising technology. For instance, up to 50% RAP has been used in some asphalt mixtures, which produced an acceptable level of performance. However, to ensure successful use of RAP, 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. In addition, the use of RAP allows decreasing the amount of produced waste and helps to resolve the disposal problems of highway construction materials. The main objective of the proposed research is to evaluate the laboratory performance of HMA produced with various levels of high RAP contents. The optimum level of RAP contents to achieve the required high, intermediate, and low temperature properties will be examined. It is anticipated that the proposed research activities will provide the LADOTD with specifications, and recommendations for the use of HMA mixtures containing high RAP contents. With the increasing costs of asphalt, coupled with the scarcity of quality aggregates and the pressuring need to preserve the environment, the use of RAP has a strong potential to provide the State with significant savings.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

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

LTRC Annual Research Program
Fiscal Year 2011-2012

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

SIO:			Project Start Date:		7/1/2011
Research Project Number:	12-1SA		Completion Date	(original)	6/30/2014
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Marie Walsh				

BUDGET STATUS

Total Budget				Estimated 2011-2012 Budget		
Total Cost	(original)	$200,000		**Total**		**$25,000**
	(revised)					
Est. Expended to Date				Salaries		$20,000
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	$5,000
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

The 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 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 TRB will be made available to transportation professionals on a national basis. LADOTD, LTRC and the TTEC in Baton Rouge, Louisiana will serve as the nucleus for these activities.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Development of proposal to establish the Louisiana Transportation Safety Center;
- Develop business plan for the center; and
- Transfer all LTRC safety related programs and projects to the center.

Title:	**Roller Compacted Concrete Field Demonstration in Haynesville Shale Area**	**Project Status:**	**Proposed**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		7/1/2011
Research Project Number:	12-1C		Completion Date	(original)	6/30/2013
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Tyson Rupnow				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$150,000		**Total**		**$60,000**
	(revised)					
Est. Expended to Date				Salaries		$60,000
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

This project will evaluate different overlay and reconstruction applications of roller compacted concrete as a low cost alternative to maintenance and overlay operations currently being used offset the massive damage caused to low volume roadways by the Haynesville Shale drilling in District 04. Test sections (at least three) will be constructed and monitored for two to three years to note surface and structural damage. The results will them be compared to existing sections constructed around the same time.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Select roadway candidates that will not impede current truck traffic;
- Design test sections;
- Develop mix design;
- Construct test sections;
- Collect initial surface distress (IRI, images) and structural (FWD, cores) measurements for RCC and control sections; and
- Begin short term monitoring.

Title:	**High Volume Replacement of Portland Cement in Roller Compacted Concrete**	**Project Status:**	**Proposed**
Funding Source:	**SPR: TT-Fed/TT-Reg**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		7/1/2011
Research Project Number:	12-2C		Completion Date	(original)	6/30/2013
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Tyson Rupnow				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$215,000		**Total**		**$93,000**
	(revised)					
Est. Expended to Date				Salaries		$93,000
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

This project will evaluate various ternary combinations as a replacement for Portland Cement in Roller Compacted Concrete (RCC) mixtures. A factorial of ternary combinations will be used to compare OPC RCC to ternary RCC. Items to be measured include: permeability, strength gain (flexural and compressive), length change, and modulus of elasticity. Alternative mix designing methods will be investigated.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Develop test matrix;
- Acquire necessary materials; and
- Begin laboratory testing of proposed test matrix.

FHWA

Part II SPR Funded Research Program

POOLED FUND
LOUISIANA
LEAD STATE RESEARCH

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

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

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$150,000		**Total**		**$113,000**
	(revised)					
Est. Expended to Date		$16,424		Salaries		$5,000
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)	$25,000		Equipment	(non-expendable)	
	(revised)			Travel		$8,000
Est. FY Expenditure		$9,869		Other		$100,000

PURPOSE AND SCOPE

Southeast Transportation Consortium's 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 Southeast Transportation Consortium program are to develop synergy and provide for a more efficient use of resources.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

- Presented update on activities at the 2011 TRB Annual Meeting in Washington, D.C.;
- Developed and went live on Southeast Transportation Consortium website;
- Continued work on synthesis of member state research programs;
- Completed quality check of state data;
- Refined project categories to parallel TRIS and NHRP search categories;
- Reclassified project data with new categories to allow multiple search options;
- Began development of database for more user friendly search routine;
- Solicited data from non-member state research projects from Florida and South Carolina for synthesis project;
- Developed Opportunities-for-Collaboration research topics;
- Developed and distributed information for initiation of new pooled fund project for Increased use of RAP in asphalt pavements;
- Scheduled meeting/presentation to solicit state interest in RAP pooled fund project;
- Southeast Transportation Consortium Synthesis Projects; and
- Continued solicitation for members to serve on TAC committees.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Complete enhancement of regional research project database search routine;
- Develop process to update and add state project into database;
- Establish technical committees for synthesis projects;
- Advertise, select, and conduct top ranked synthesis projects;
- Add data collection of non-member state research projects from Florida and South Carolina for synthesis project;
- Hold October meeting; and
- Present activities at National RAC and TRB meetings.

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

SIO:			Project Start Date:		7/1/2011
Research Project Number:	12-1PF		Completion Date	(original)	
Research Agency:			Completion Date	(revised)	
Principal Investigator:					

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$500,000		**Total**		**$130,000**
	(revised)					
Est. Expended to Date				Salaries		$130,000
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

The Mechanistic Empirical Pavement Design Guide (MEPDG) is a significant advancement in pavement design, but requires significantly more input 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. The proposed pooled fund study will help participating states highway agencies use MEPDG with a full-production software called PrepME with its scope of service to be expanded to:

- Recognize the differences in loading patterns or traffic groups and estimate the full axle load spectrum data occurring under different conditions based on large amount of WIM data, such as the data of LTPP;
- 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 field data collection crew;
- Add more functions based on the consensus of participating states;
- Customize PrepME for participating states;
- Prepare and conduct training for the personnel of participating states; and
- Provide participating states technical support throughout the three-year period.

There are a number of other features in PrepME that may be useful to any highway agency, including (1) geo-referencing of design sites, weather stations, WIM, and water table observations; (2) populating materials inputs for MEPDG; and (3) preparing other MEPDG inputs. It is envisioned that through this pooled-fund study, a possible nationwide platform for data preparation of MEPDG can be established with guidelines and supports provided to individual states for implementation.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Recognize the differences in loading patterns or traffic groups and estimate the full axle load spectrum data occurring under different conditions based on large amount of WIM data, such as the data of LTPP; and
- 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 field data collection crew.

FHWA

Part II SPR Funded Research Program

POOLED FUND EXTERNAL LEAD STATE RESEARCH

LTRC Annual Research Program
Fiscal Year 2011-2012

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

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

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$165,000		**Total**		
	(revised)					
Est. Expended to Date		$165,000		Salaries		
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)	$20,000		Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure		$20,000		Other		

PURPOSE AND SCOPE

Background: In 2005, a consortium of states joined together to pool resources to identify common research needs addressing the design, analysis, testing and evaluation of crashworthy structures including bridge rails, guardrails, transitions, median barriers , break away support structures, etc. Together, they developed about $1 million in research funding over a three year period to fund 14 projects that are in various stages of completion. Texas Transportation Institute (TTI) is under contract to conduct the research for these projects. This research has provided cost effective and timely information to participating states. This solicitation invites other states to join the Roadside Safety Committee and to participate in developing research projects for the FFY09 and FFY10 program.

Objectives: This solicitation achieves the original objective to continue the cooperative approach to developing research proposals on roadside safety through FFY2010, thus realizing cost efficiency in projects and consensus on various priorities and approaches.

Scope of Work: The research projects that are currently under contract with TTI will be paid for with existing funding commitments. This solicitation is for new roadside safety research projects that will be identified and approved by the Roadside Safety Committee. The specific scopes of work are identified in problem statements or proposals that are developed by individual member states. The Committee then ranks and selects the projects that are funded and the work is carried out by Texas Transportation Institute. Member states may also develop and fund research projects that are not selected by the Roadside Safety pooled fund states to take advantage of the reduced overhead costs offered under the agreement.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

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

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

The Roadside Safety Research Committee plans to meet in Seattle in November 2010 to discuss research progress on several projects and to select new problem statements/proposals for research and testing at Texas Transportation Institute for FFY11. The Committee invites other state DOT's to participate in the development of the 2011 program and to collaborate on future research.

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

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

BUDGET STATUS

Total Budget			**Estimated 2011-2012 Budget**		
Total Cost	(original)	$25,000	**Total**		**$5,000**
	(revised)				
Est. Expended to Date		$15,000	Salaries		
FY 2010 - 2011 Budget			Equipment	(expendable)	
FY Funds	(original)	$5,000	Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure		$5,000	Other		$5,000

PURPOSE AND SCOPE

Background: Increasingly, state departments of transportation (DOTs) are challenged to design and build longer life concrete pavements that result in a higher level of user satisfaction for the public. One of the strategies for achieving longer life pavements is to use innovative materials and construction optimization technologies and practices. In order to foster new technologies and practices, experts from state DOTs, Federal Highway Administration (FHWA), academia and industry must collaborate to identify and examine new concrete pavement research initiatives. The purpose of this pooled fund project is to identify, support, facilitate and fund concrete research and technology transfer initiatives.

Objectives: The proposed project is for the establishment of a pooled fund for state representatives to continue the collaborative effort begun in TPF-5(066) Materials and Construction Optimization. The TTCC will be open to any state desiring to be a part of new developments in concrete paving leading to the implementation of new technologies which will lead to longer life pavements through the use of the innovative testing, construction optimization technologies and practices, and technology transfer.

Scope of Work: It is envisioned this partnership will be part of the Track Team for the CP Road Map Mix Design and Analysis Track. The Track Team will include state representatives along with FHWA representatives, industry representatives (from ACPA, ACPA chapters, and material suppliers), consultants, and academic representatives. This pooled fund will be the opportunity for all states interested in the Mix Design and Analysis Track to become part of that endeavor.

TTCC will begin by meeting in conjunction with MCC, twice a year, as the MCO has done in the past. It may be advantageous for MCC in the future to consider melding itself into, and becoming part of the TTCC.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS
• Interaction with Technical Monitor and/or Project Advisory Committee; • Frequent conference calls with planning committee; and • Summary of research activities pertaining to the project may be found on TTCC website.
FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES
• Plan and conduct TTCC Fall meeting.

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

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

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$60,000		**Total**		**$20,000**
	(revised)					
Est. Expended to Date		$40,000		Salaries		
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)	$20,000		Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure		$20,000		Other		$20,000

PURPOSE AND SCOPE

Objectives of the Center are:

- Conduct training in regard to Superpave binders, mix design, and performance testing, and provide training on special topics as requested by participating agencies;
- Perform research, both cooperatively and agency-specific, sponsored by members of the pooled-fund;
- Perform precision and bias testing for asphalt-related performance test equipment;
- Conduct noise studies in an effort to develop quieter pavements;
- Perform forensic evaluations on materials or projects that have experienced premature distress.
- Prepare and give presentations and reports of research activities at local, state, and national meetings when invited;
- Prepare research articles of regional and national interest;
- 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
- Work in close association with the Southeastern Asphalt User/Producer Group to promote technology transfer from research to implementation.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

A Superpave Center Management Committee meeting was held in December in conjunction with the Southeastern Asphalt User/Producer Group (SEAUPG) annual meeting. State sponsors were presented a current financial report that showed each state's balance in the pooled fund and the activities funds were spent on. Research and training activities conducted in 2010 were reported on at the meeting. Attendees were also presented a brief description of several potential research projects to consider for 2011. Comments on the various proposed research activities were made and the items discussed will be followed up on.

Work continued on an accelerated pavement friction study in which the three-wheeled polishing device (TWPD) developed by NCAT is used to polish pavement surfaces. The surface of 36 slabs is then tested with a dynamic friction tester and circular texture meter in increments of 20,000 cycles. Previous research indicated the TWPD results compared very well with the polishing effect of traffic at the NCAT Test Track. A special training course on Stone Matrix Asphalt (SMA) mix design was developed and conducted at a state agency facility. The course included lectures, class problems, and hands-on laboratory testing.

SIGNIFICANT RESULTS
A total of 15 persons participated in a custom-prepared SMA mix design course. Seven potential research projects were discussed at the annual Management Committee meeting.

POTENTIAL IMPLEMENTATION
The SMA mix design course was conducted to establish a basis for participants to become certified to perform SMA mix designs acceptable to the state agency.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

RESEARCH PLANNED NEXT QUARTER
A final report on the accelerated friction study will be submitted. The objective is to be able to evaluate friction properties of an asphalt mix during the mix design stage in order to avoid problems with low friction after construction.

Follow up will be made on several research ideas discussed at the annual SSC Management Committee meeting.

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

SIO:			Project Start Date:		01/01/2011
Research Project Number:	TPF-5(237)		Completion Date	(original)	12/31/2015
Research Agency:			Completion Date	(revised)	
Principal Investigator:					

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$15,000		**Total**		**$15,000**
	(revised)					
Est. Expended to Date				Salaries		
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		$15,000

PURPOSE AND SCOPE

The Transportation Library Connectivity Pooled Fund Study is a grassroots effort by librarians and information professionals in 22 state departments of transportation, two university transportation centers and a metropolitan transportation authority.

Since 2005 members have been pooling their talents, energy and resources to develop better ways to serve practitioners in transportation agencies. A full-time consultant provides technical assistance to member libraries and carries out a ten-point annual work plan aimed at improving information access throughout the transportation community.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

This project is an extension of previous pooled fund project TPF-5(105).

Accomplishments may be found on project website.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

Proposed activities may be found on project website.

Title:	**Pooled Fund Collaboration Projects**	**Project Status:**	**Proposed**
Funding Source:	**SPR: Pooled Fund: TT-Fed**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		
Research Project Number:			Completion Date	(original)	
Research Agency:			Completion Date	(revised)	
Principal Investigator:					

BUDGET STATUS

Total Budget			**Estimated 2011-2012 Budget**		
Total Cost	(original)	$90,000	**Total**		**$90,000**
	(revised)				
Est. Expended to Date			Salaries		
FY 2010 - 2011 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		$90,000

PURPOSE AND SCOPE

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.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

Select and fund research pooled fund projects that would provide benefits to the Louisiana transportation network.

FHWA

IBRD Funded Research Program

CONTINUING RESEARCH

Title:	**Structure Health Monitoring of the I-10 Twin Span Bridge Over Lake Pontchartrain**	**Project Status:**	**Ongoing**
Funding Source:	**IBRD: TT-Fed**	**Budget Category:**	**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)	7/31/2012
Principal Investigator:	Dr. Murad Abu-Farsakh				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$449,925		**Total**		**$153,073**
	(revised)	$565,550				
Est. Expended to Date		$479,433		Salaries		
FY 2010 - 2011 Budget				Equipment	(expendable)	$153,073
FY Funds	(original)	$115,550		Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure		$29,433		Other		

PURPOSE AND SCOPE

The objective of this research project is to establish a structure health monitoring system of the I-10 Twin Span bridge through instrumentation of the M19 Eastbound pier for use in the short-term and long-term monitoring purposes. This includes instrument selected piles with inclinometers and strain gauges, instrument pile-cap with accelerometers and tilt meters, 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.

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

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

- Used the FB-MultiPier program to analyze the lateral load test at M19 Eastbound pier of Twin Span Bridge;
- Compared between the measured and predicted values from FB-MultiPoer Analysis;
- Analyzed the lateral load test data using high order polynomial curve fitting of measured pile rotation with depth;
- Back-calculated the p-y curves of battered pile groups at M19 pier high order polynomial curve fitting; and
- Coordinated with the subcontractor to incorporate additional instrumentation for the long-term monitoring system.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Coordinate with the subcontractor to install the additional instrumentations (cost = $66,956): 12 strain gages on concrete girders, 12 strain gages on steel girders, and 3 OSMOS extensometers to three steel girders;
- Coordinate with the subcontractor to re-calibrate the OSMOS WIM;
- Coordinate with the subcontractor to complete and setup the long-term monitoring system (depends on availability of electric supply power);
- Analyze the results of lateral load test at M19 pier using the superposition method, calibrating FB-MultiPier input data, and back-calculate the p-y curves; and
- Prepare a final report.

Title:	**Repairing/Strengthening of Bridges with Post-Tensioned FRP Strands and Performance Evaluation**	**Project Status:**	**Ongoing**
Funding Source:	**IBRD: TT-Fed**	**Budget Category:**	**FHWA**

SIO:	**30000130**		Project Start Date:		10/1/2007
Research Project Number:	07-3ST		Completion Date	(original)	4/1/2010
Research Agency:	LSU		Completion Date	(revised)	08/31/2011
Principal Investigator:	Dr. Steve C.S. Cai				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$140,019		**Total**		**$30,000**
	(revised)					
Est. Expended to Date		$110,019		Salaries		$30,000
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)	$65,000		Equipment	(non-expendable)	
	(revised)	$28,000		Travel		
Est. FY Expenditure		$20,000		Other		

PURPOSE AND SCOPE

The project is to take advantages of some new development in bridge engineering to implement a demonstrative bridge with FRP post-tensioning strands in the state of Louisiana. The ultimate purpose is to develop a more durable, less maintenance intensive bridge system. The scope of work includes designing and/or checking the bridge repairing/strengthening scheme with FRP strands, finite element prediction, performance evaluation and development of long-term monitoring strategies.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

Task 4: The design of repairing/strengthening of the selected bridge is completed; and
Task 5: Numerical modeling of bridge with FRP post-tensioning was started.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

Since the cost of the FRP rods exceeded expectations, and LADOTD will not select another bridge for implementation, field installation will not be conducted. To close the project, the final report will be prepared summarizing all information available to-date. A draft final report documenting the Tasks 1 to 6 and Task 9 will be submitted in the end of May, 2011, and a final report will be finished by the end of August, 2011.

Title:	**Integral Abutment Bridge for Louisiana's Soft and Stiff Soils**	**Project Status:**	**Ongoing**

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

SIO:	**30000131**		Project Start Date:		10/1/2007
Research Project Number:	07-4ST		Completion Date	(original)	8/31/2011
Research Agency:	LSU		Completion Date	(revised)	
Principal Investigator:	Dr. George Z. Voyiadjis				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$400,000		**Total**		**$130,000**
	(revised)	$418,102				
Est. Expended to Date		$270,000		Salaries		$80,000
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)	$90,000		Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure		$90,000		Other		$50,000

PURPOSE AND SCOPE

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.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

Instrumentation and Testing Plan for the Bodcau Bridge:
- LA DOTD provided the update design plans for the Bodcau Bridge to the investigators;
- An instrumentation plan for the Bodcau Bridge was submitted by the investigators for both the superstructure and the substructure and approved by the Project Review Committee;
- The research team participated in the pre-construction meeting for the project;
- Purchased of all instrumentation for the bridge; and
- Sister bar strain gages are installed in the girders at the precast plant.

The following tasks were accomplished for the Caminada Bridge:
- Completed the Finite element modeling of the bridge abutment (six piers) for the substructure by Dr. Voyiadjis and Dr. Faghihi for the evaluation of the instrumentation plan. The load deflection curves were obtained for six different load cases. Finite Element was conducted for part of the superstructure by Dr. Cai and Dr. Kong;
- The LSU research team and LADOTD staff monitored the pile driving; and
- BDI and LSU research team installed all sensors in the backfill, the bent, and the bridge deck.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

Instrumentation and Testing Plan for the Caminada Bridge:
- Install the control/data acquisition system and wire the sensors to the control panel;
- Purchase a computer and establish a communication protocol with the bridge field control panel;
- Data gathering from the monitoring system; and
- Analysis using the finite element modeling of the bridge abutment (several piers)for evaluation of the instrumentation plan.

Instrumentation and Testing Plan for the Bodcau Bayou Bridge:
- Instrument the piles at the steel yard;
- Drive the piles (depending on the construction schedule); and
- Modeling of the bridge will be initiated using the finite element method for several piers of the .

LTRC Annual Research Program
Fiscal Year 2011-2012

Title:	**Monitoring Bridge Scour Using Fiber Optic Sensors**	**Project Status:**	**Ongoing**

Funding Source:	**IBRD: TT-Fed**	**Budget Category:**	**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)	
Principal Investigator:	Dr. Steve C.S. Cai				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$199,999		**Total**		**$60,000**
	(revised)					
Est. Expended to Date		$55,000		Salaries		$40,000
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)	$70,000		Equipment	(non-expendable)	
	(revised)	$28,000		Travel		$1,000
Est. FY Expenditure		$30,000		Other		$19,000

PURPOSE AND SCOPE

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.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

Task 3: Development of Scour Monitoring Methodology
- Monitoring methodology to monitor the scour has been developed; and
- A bridge has been identified.

Task 4: Test of Monitoring Methodology in Laboratory
- The concept of monitoring the scour has been further investigated in lab by testing the flow and sensor interaction.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

Task 5: Installation and Field Testing
- The developed system will be installed in field and data will be collected.

Title:	**Monitoring System for Bridges Subject to Heavy Loads**	**Project Status:**	**Ongoing**
Funding Source:	**IBRD: TT-Fed**	**Budget Category:**	**FHWA**

SIO:	**30000204**		Project Start Date:		3/15/2010
Research Project Number:	10-1ST		Completion Date	(original)	3/31/2012
Research Agency:	LTU		Completion Date	(revised)	6/30/2012
Principal Investigator:	Dr. Aziz Saber				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$250,000		**Total**		**$100,000**
	(revised)					
Est. Expended to Date		$150,000		Salaries		$65,000
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)	$75,000		Equipment	(non-expendable)	$5,000
	(revised)			Travel		$5,000
Est. FY Expenditure		$75,000		Other		$25,000

PURPOSE AND SCOPE

Purpose:
During the 2009 regular session the Louisiana Senate passed a concurrent resolution (Senate Concurrent Resolution 35), sponsored by Senator McPherson, which urged the Louisiana Department of Transportation and Development (LADOTD) to conduct a pilot study on alternative truck-trailer configurations to support the bio-fuels industry. Resolution 35 specifically requested that the study include vehicles hauling sugarcane biomass for alternative fuel and electricity generation. The alternative truck-trailer configuration will use extra axles under the load to reduce the impact on Louisiana roads. The alternative truck-trailer when compared to the traditional trailer designs will decrease the number of trucks and increase the total number of tons of sugar cane that travel on Louisiana roads.

Scope:
- Study the effects of heavy truck loads (100,000-lb. and 148,000-lb.) on distribution of forces and moments on slab-girder bridges;
- Develop a long-term monitoring system which can assess the impact of heavy truck loads on safety, serviceability, and durability of non-interstate bridges; and
- Determine the cost of the fatigue damage per heavy truck load (100,000-lb. and 148,000-lb.) per year.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

Bridge is remotely monitored and data continuously collected and pictures of the heavy load trucks are captured. Two alternative truck-trailer configurations were developed with input and approval from the American Sugar Cane Board representatives. The theoretical studies of the alternative truck-trailers are in progress.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

For this FY:
- New collected data will be analyzed;
- The cost of fatigue damage per heavy truck load (100,000-lb. and 148,000-lb.) per year will be determined;
- A correlation between the truck axle load and strain readings collected at the bent will be formalized.
- Submit draft final report for LTRC Project Review Committee;
- Presentation of finding and recommendations;
- Address technical comments;
- Submit revised final report for editing; and
- Address editorial comments.

FHWA

IBRD Funded Research Program

PROPOSED RESEARCH

LTRC Annual Research Program
Fiscal Year 2011-2012

Title:	Use of Geosynthetic Reinforced Soil for Bridge Abutments	Project Status:	Proposed

Funding Source:	IBRD: TT-Fed	Budget Category:	FHWA

SIO:			Project Start Date:		7/1/2011
Research Project Number:	10-2ST		Completion Date	(original)	
Research Agency:	LTU		Completion Date	(revised)	
Principal Investigator:	Dr. Aziz Saber				

BUDGET STATUS

Total Budget			Estimated 2011-2012 Budget		
Total Cost	(original)	$250,000	**Total**		**$125,000**
	(revised)				
Est. Expended to Date			Salaries		$30,000
FY 2010 - 2011 Budget			Equipment	(expendable)	$5,000
FY Funds	(original)		Equipment	(non-expendable)	$50,000
	(revised)		Travel		$5,000
Est. FY Expenditure			Other		$35,000

PURPOSE AND SCOPE

Louisiana has built many pile-supported GRS abutments with select backfill. This study will lend itself to pile-free GRS abutment with marginal soils for backfill.

Purpose:
• Apply the Geosynthetic Reinforced Soil (GRS) technology to a bridge abutment; and
• Assess the performance of the GRS abutment during construction and under service loads.

Scope:
• Install a monitoring system for GRS bridge abutment; and
• Develop a numerical model for the bridge abutment based on performance data.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

The project has not started yet.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

The project has not started yet.

Title:	**Elimination of Deck Joints using a Corrosion Resistant FRP Grid**	**Project Status:**	**Proposed**
Funding Source:	**IBRD: TT-Fed**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		7/1/2010
Research Project Number:	10-3ST		Completion Date	(original)	
Research Agency:	LTU		Completion Date	(revised)	
Principal Investigator:	Dr. Aziz Saber				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$270,000		**Total**		**$125,000**
	(revised)					
Est. Expended to Date				Salaries		$30,000
FY 2010 - 2011 Budget				Equipment	(expendable)	$30,000
FY Funds	(original)			Equipment	(non-expendable)	$60,000
	(revised)			Travel		$3,000
Est. FY Expenditure				Other		$2,000

PURPOSE AND SCOPE

Purpose:
This is an implementation project for findings and recommendation from LTRC 06-2ST project. The theoretical work was performed through state funding. Due to it is promising outcome, the FHWA-IBRD Program decided to find the implementation portion.

Scope:
The study will be performed through the installation and monitoring the performance of an FRP link slab that will be replacing a damaged bridge joint.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

The project has not started yet.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Selection of a bridge with damaged joint;
- Design the link slab that will replace the joint;
- Acquiring of the FRP link slab; and
- Material characterization of the FRP link slab.

FHWA

LTAP Funded Program

LTRC Annual Research Program
Fiscal Year 2011-2012

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

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

SIO:	**30000087**		Project Start Date:		1/1/2011
Research Project Number:	11-LTAP		Completion Date	(original)	12/31/2013
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Marie Walsh				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$641,162		**Total**		**$641,162**
	(revised)					
Est. Expended to Date				Salaries		$364,197
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		$27,000
Est. FY Expenditure				Other		$249,965

PURPOSE AND SCOPE

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

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

- Provided no cost or low cost webinar opportunities to facilitate statewide customer participation in technical training and professional development;
- Completed development and broadcast of the traffic engineering webinar series in partnership with LADOTD's Traffic engineering Office which were presented free of charge through the LA Municipal Association's system. Topics included roundabouts and traffic calming;
- Conducted speed management train the trainer program and one regional workshop;
- Coordinated 8 regional meetings for LADOTD Traffic Engineering Section as part of outreach on the new LADOTD Traffic Impact Policy;
- Managed implementation of Louisiana Local Road Safety Program including implementation of over 100 Federal Aid Projects for low cost safety improvement;
- Kicked off the new Local Transportation Asset Management Program with input from DOTD offices with related responsibilities;
- Responded to initial request from LADOTD for assistance in obtaining local road inventory information;
- Participated with LADOTD in development of Local Public Agency Manuel for Working with LADOTD and Federal Programs; and
- Completed Local Traffic Sign Manual.

Presented 150 classes or workshops:
- 20 Worker Safety classes;
- 61 Highway Safety classes;
- 49 Infrastructure Management classes;
- 20 Workforce Development classes;
- 14800 hours of training provided; and
- 2648 program participants.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Implement first phase of local Transportation Asset Management Program;
- Coordinate local agency participation in LADOTD preparation of LA Public Roads Inventory;
- Manage current Local Road Safety Program and projects; and
- Communicate impending new retro reflectivity requirements to local agencies.

FHWA

STP Funded

Technology Transfer
and
Education Program

LTRC Annual Research Program
Fiscal Year 2011-2012

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

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

SIO:	**30000320**		Project Start Date:		7/1/2010
Research Project Number:	08-1TSQ		Completion Date	(original)	6/30/2011
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Sam Cooper				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$340,917		**Total**		**$351,746**
	(revised)					
Est. Expended to Date				Salaries		$310,766
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	$15,000
	(revised)			Travel		$6,000
Est. FY Expenditure				Other		$19,980

PURPOSE AND SCOPE

The objectives of this study are to:

- Disseminate information on new technologies and methodologies to LADOTD and other transportation-oriented agencies;
- Improve communications on technical, transportation-related issues between the department and other agencies;
- Encourage implementation of new procedures and technologies; and
- Disseminate information on transportation subjects to appropriate managers and engineers in the department.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

- Developed & maintained web site for 2011 Louisiana Transportation Conference;
- Participated in several committees for the 2011 LTC;
- Coordinated sponsorship information for 2011 LTC;
- Coordinated online registration and ecommerce capabilities for the 2011 LTC;
- Published program for 2011 LTC;
- Redesigned & produced 1 issue of Tech Exchange newsletter for LTAP;
- Used social media (Facebook/Twitter) to promote LTRC news;
- Produced program & brochure for ATSIP meeting in New Orleans, Louisiana;
- Assisted in on-site registration for ATSIP meeting in New Orleans, Louisiana ;
- Set up online registration for NHI/training courses (14);
- Edited/distributed 9 Project Capsules, 22 Technical Summaries, 15 Final Reports and 1 Technical Assistance Report;
- Published Technology Today (2);
- Published 2009-2010 LTRC Annual Report;
- Edited and produced State of LADOTD video;
- Edited and produced QCIP - Continuous Quality Improvement video; and
- Photographed all LTRC events.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Continue developing online registration for all LTRC/LADOTD events;
- Coordinate registration and publications for any LTRC seminar series events;
- Created web site for Southeastern Transportation Consortium/developing project database;
- Maintain online registration and e-commerce for the American Transportation Safety Information Professionals annual meeting;
- Processing registration forms for LTAP events and LTRC events;
- Reviewing/Updating content site-wide on LTRC site;
- Updated Project Capsule design;
- Create content/publish Technology Today (2);
- Edited and distribute Project Capsules, Technical Summaries, Final Reports and Technical Assistance Reports;
- Writing script and planning video production of LADOTD Bridge Inspection;
- Writing script and planning video production of Implementation of Roundabouts; and
- Photograph all LTRC events.

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

SIO:	**30000313**		Project Start Date:		7/1/2011
Research Project Number:	12-1TSQ		Completion Date	(original)	6/30/2012
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Sam Cooper				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$518,094		**Total**		**$518,094**
	(revised)					
Est. Expended to Date				Salaries		$518,094
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

The objectives of this study are to:

- Disseminate information on new technologies and methodologies to LADOTD and other transportation-oriented agencies.
- Improve communications on technical, transportation-related issues between the department and other agencies;
- Encourage implementation of new procedures and technologies; and
- Disseminate information on transportation subjects to appropriate managers and engineers in the department.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

- Developed and maintained web site for 2011 Louisiana Transportation Conference;
- Participated in several committees for the 2011 LTC;
- Coordinated sponsorship information for 2011 LTC;
- Coordinated online registration and ecommerce capabilities for the 2011 LTC;
- Published program for 2011 LTC;
- Redesigned and produced 1 issue of Tech Exchange newsletter for LTAP;
- Used social media (Facebook/Twitter) to promote LTRC news;
- Produced program and brochure for ATSIP meeting in New Orleans, Louisiana;
- Assisted in on-site registration for ATSIP meeting in New Orleans, Louisiana;
- Set up online registration for NHI/training courses (14);
- Edited/distributed 9 Project Capsules,22 Technical Summaries, 15 Final Reports and 1 Technical Assistance Report;
- Published Technology Today (2);
- Published 2009-2010 LTRC Annual Report;
- Edited and produced State of LADOTD video;
- Edited and produced QCIP - Continuous Quality Improvement video; and
- Photographed all LTRC events.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Continue developing online registration for all LTRC/LADOTD events;
- Coordinate registration and publications for any LTRC seminar series events;
- Created web site for Southeastern Transportation Consortium/developing project database;
- Maintain online registration and e-commerce for the American Transportation Safety Information Professionals annual meeting;
- Processing registration forms for LTAP events and LTRC events;
- Reviewing/Updating content site-wide on LTRC site;
- Updated Project Capsule design;
- Create content/publish Technology Today (2);
- Edited and distribute Project Capsules, Technical Summaries, Final Reports and Technical Assistance Reports;
- Writing script and planning video production of LADOTD Bridge Inspection;
- Writing script and planning video production of Implementation of Roundabouts; and
- Photograph all LTRC events.

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

SIO:	**30000315**		Project Start Date:		7/1/2011
Research Project Number:	12-1TT		Completion Date	(original)	6/30/2012
Research Agency:			Completion Date	(revised)	
Principal Investigator:					

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$37,500		**Total**		**$37,500**
	(revised)					
Est. Expended to Date				Salaries		
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		$37,500

PURPOSE AND SCOPE

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

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

Four universities participated in this program this reporting period.
- McNeese State University;
- Louisiana Tech University;
- University of Louisiana at Lafayette; and
- Southern University.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

Continue to provide support for senior project engineering courses.

LTRC Annual Research Program
Fiscal Year 2011-2012

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

SIO:	**30000314**		Project Start Date:		7/1/2011
Research Project Number:	12-1WD		Completion Date	(original)	6/30/2012
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Sam Cooper				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$1,126,109		**Total**		**$1,126,109**
	(revised)					
Est. Expended to Date				Salaries		$1,116,109
FY 2010 - 2011 Budget				Equipment	(expendable)	$10,000
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

The purpose of this study is to provide for the strategic planning, program development and delivery management of the workforce development programs for LADOTD personnel. The scope of this study also includes the development, delivery and administration of the LTRC Transportation & Training Center's transportation outreach program.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

- Developed 16 training courses, 73 recertification tests given, 191 specialty tests given, 91 certifications awarded;
- Monitoring revised PPM 59 (Workforce Development) and noting future changes to PPM 59;
- Scheduled and registered students for the following courses;
- Leadership, management, supervisory, computer based training courses, NHI, CADD/GIS and other specialty courses;
- Coordinated the activities of 13 - ERDP participants, 33 - Co-Op students; and
- Approximately 4500 training opportunities provided to LADOTD and transportation industry.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Continue to meet with principal customers to prioritize needs to develop training courses, performance evaluations, and safe operating checklists;
- Manage PC and CAAD software, leadership, technical skills training, and professional development and evaluations, and safe operating checklists;
- Continue the program of safety training;
- Maintain and build library collection in support of workforce development and research activities;
- Continue coordinating activities of ERDP participants and Co-Op students; and
- Revise Workforce Development Policy and Procedures (PPM 59).

LTRC Annual Research Program
Fiscal Year 2011-2012

Title:	**LTRC Student Program**	**Project Status:**	**Ongoing**
Funding Source:	**STP: TT-Fed**	**Budget Category:**	**FHWA**

SIO:	**30000316**		Project Start Date:		7/1/2011
Research Project Number:	12-2TT		Completion Date	(original)	6/30/2012
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Harold 'Skip' Paul				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$147,000		**Total**		**$147,000**
	(revised)					
Est. Expended to Date				Salaries		$147,000
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

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

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

35 undergraduate students were employed by LTRC to provide support in fulfilling necessary job tasks on various LTRC projects.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

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

LTRC Annual Research Program
Fiscal Year 2011-2012

Title:	Technology Transfer & Research Implementation Support for Louisiana Universities	Project Status:	Ongoing
Funding Source:	**STP: TT-Fed**	**Budget Category:**	**FHWA**

SIO:	**30000317**		Project Start Date:		1/1/2010
Research Project Number:	12-3TT		Completion Date	(original)	12/31/2013
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Mark Morvant				

BUDGET STATUS

Total Budget				Estimated 2011-2012 Budget		
Total Cost	(original)	$110,000		**Total**		**$20,000**
	(revised)					
Est. Expended to Date		$15,805		Salaries		
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)	$36,000		Equipment	(non-expendable)	
	(revised)			Travel		$20,000
Est. FY Expenditure		$15,805		Other		

PURPOSE AND SCOPE

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

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

This project provided support for travel for presentation of the following papers developed from LTRC research projects:

- Estimating Setup of Piles Driven into Louisiana Clayey Soils;
- Analysis of Rainfall-Accident Relationships Using High-Resolution Radar-Rainfall Data;
- Update of Correlatons Between Cone Penetration and Boring Data;
- Development of Uniform Sections for PMS Inventory and Application;
- Characterization and Development of Truck Load Spectra and Growth Factor for Current and Future Pavement Design Practices in Louisiana;
- Evaluation of the Traffic Safety Benefits of a Lower Speed Limit and Restriction of Trucks to use of Right Lane Only on I-10 Over the Atchafalaya Basin;
- Safety and Operational Assessment of Unconventional Lane Merges in Freeway Work Zones;
- Reliability Analysis of Pile Setup for Piles Driven in Louisiana Soft Clays;
- Support Study on the Characterization of Ternary Mixes;
- Cost Effective Prevention of Reflective Cracking of Concrete; and
- Implementation of the Rolling Wheel Deflectometer.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES
Continue to provide support technology transfer travel for university faculty to deliver research results to state and national audiences.

Title:	**LADOTD CO-OP PROGRAM**	**Project Status:**	**Ongoing**
Funding Source:	**STP: TT-Fed**	**Budget Category:**	**FHWA**

SIO:	**30000318**		Project Start Date:		7/1/2011
Research Project Number:	12-COOP		Completion Date	(original)	6/30/2012
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Sam Cooper				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$400,000		**Total**		**$400,000**
	(revised)					
Est. Expended to Date				Salaries		$400,000
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

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

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

- 33 students participated in CO-OP at various LADOTD sections throughout Louisiana; and
- 3 CO-OP students were hired by LADOTD upon graduation.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

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

Title:	**Technology Transfer Registration Fees**	**Project Status:**	**Ongoing**
Funding Source:	**STP: TT-Fed**	**Budget Category:**	**FHWA**

SIO:	**30000319**		Project Start Date:		7/1/2011
Research Project Number:	12-TTRF		Completion Date	(original)	6/30/2012
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Sam Cooper				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$100,000		**Total**		**$100,000**
	(revised)					
Est. Expended to Date				Salaries		
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		$100,000

PURPOSE AND SCOPE

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

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

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

Title:	**Workforce Development Contracts**	**Project Status:**	**Ongoing**
Funding Source:	**STP: TT-Fed**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		7/1/2011
Research Project Number:	12-WDC		Completion Date	(original)	6/30/2012
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Sam Cooper				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$3,335,991		**Total**		**$3,335,991**
	(revised)					
Est. Expended to Date				Salaries		$619,047
FY 2010 - 2011 Budget				Equipment	(expendable)	$44,000
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		$17,500
Est. FY Expenditure				Other		$2,655,444

PURPOSE AND SCOPE

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

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

Conducted the following courses:

- UNO Computer Classes: 116 classes held – 1,170 student participants;
- CADD: 12 classes held – 76 student participants;
- LanTEC – ERP: 1 class held – 18 student participants;
- NHI Courses: 18 classes held – 524 student participants;
- LSU STP: 41 classes held – 615 student participants;
- Additional Contract Training: 2 classes held – 124student participants;
- Individual Registrations: 120 classes held – 317 student participants;
- Approximately 3000 student participants for leadership/management/supervisory and computer based training courses; and
- Conferences/Workshops/Webinars: 8 held – 1,720 student participants.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Conduct at least 25 National Highway Institute courses;
- Conduct at least 150 PC software training courses;
- Manage 30 Safety related training contracts;
- Manage Leadership, management, and supervisory training contracts;
- Arrange over 500 Individual training registrations;
- Conduct and manage at least 11 conferences and workshops for approximately 1,300 participants;
- Offer ArcGIS (unable to offer due to contracting issues) ;
- Offer Mechanic Classes (unable to offer due to contracting issues);
- Offer Nuclear Gauge Safety (unable to offer due to contracting issues);
- Offer Work Zone Safety (unable to offer due to contracting issues);
- Offer Trimble Process Training (unable to offer due to contracting issues); and
- Offer Highway Capacity Manual Training (unable to offer due to contracting issues).

State Funded Research Program

CONTINUING RESEARCH

Title:	**Geotechnical Information Database – Phase 2**	**Project Status:**	**Ongoing**

Funding Source:	**State: TT-Reg**	**Budget Category:**	**State**

SIO:	**30000201**	Project Start Date:		3/10/2011
Research Project Number:	10-2GT	Completion Date	(original)	9/9/2012
Research Agency:	Dataforensics, LLC	Completion Date	(revised)	
Principal Investigator:	Dr. Scott Deaton			

BUDGET STATUS

Total Budget			**Estimated 2011-2012 Budget**		
Total Cost	(original)	$200,000	**Total**		**$140,000**
	(revised)				
Est. Expended to Date			Salaries		$114,677
FY 2010 - 2011 Budget			Equipment	(expendable)	
FY Funds	(original)	$60,000	Equipment	(non-expendable)	
	(revised)		Travel		$7,985
Est. FY Expenditure		$60,000	Other		$17,338

PURPOSE AND SCOPE

PROBLEM
The Louisiana Department of Transportation (LADOTD) has been collecting geotechnical data for many years in a variety of different formats. Accessing this data and combining it with new data for the purpose of design, analysis, visualization, and reporting is difficult because the data has been generated by disparate systems and stored as hard copies, scanned images, various digital formats, or other non-digital formats such as microfilm. Essentially, there is no single system or repository nor an integrated, systematic approach for collecting, managing, archiving, and retrieving the vast amount of geotechnical data that is collected or generated by LADOTD each year.

OBJECTIVES
With advances in computing capabilities, software tools are available that streamline the entire data management process from data collection through reporting, archiving and map-based retrieval/reporting. Dataforensics will create a plan to integrate and customize a data management system to fulfill the needs of the LADOOD. This Enterprise GIS-based Geotechnical Data Management System is comprised of various off the shelf software packages including PLog Enterprise, RAPID CPT, gINT, ArcGIS and ArcGIS Server integrated with critical process and workflow components to be designed and developed as part of this project.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

The project kicked off on March 10, 2011. We have begun working on tasks 1 and 2. Specifically, we have had a kickoff meeting, questionnaires have been submitted to LADOTD personnel and returned to Dataforensics and a report summarizing the data management needs is in progress. We anticipate completing task 1 and task 2 within FY 2010-2011 and the majority of task 3.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES
We estimate the project should be completed within approximately 12 to 15 months. Accordingly, tasks 3 through 8 should be completed within FY 2011-2012 allowing LADOTD personnel to begin utilizing the system.

Title:	**Implementation of the Rolling Wheel Deflectometer (RWD) in PMS and Pavement Preservation**	**Project Status:**	**Ongoing**

Funding Source:	**State: TT-Reg**	**Budget Category:**	**State**

SIO:	**30000143**		Project Start Date:		7/1/2009
Research Project Number:	09-2P		Completion Date	(original)	9/30/2010
Research Agency:	LSU		Completion Date	(revised)	12/31/2011
Principal Investigator:	Dr. Mostafa Elseifi				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$112,952		**Total**		**$41,330**
	(revised)	$135,101				
Est. Expended to Date		$69,850		Salaries		$41,330
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)	$77,950		Equipment	(non-expendable)	
	(revised)	$60,000		Travel		
Est. FY Expenditure		$60,000		Other		

PURPOSE AND SCOPE

Project 09-2P is currently evaluating the data collected in the research sites with the objective of assessing the repeatability and characteristics of RWD measurements. A decision matrix will be developed to correlate RWD deflection measurements with pavement conditions and thicknesses and may be used by LADOTD personnel to quickly identify pavement sections that may be structurally-deficient or that are in need for maintenance or repair as part of the State pavement preservation program. In addition, this project will integrate collected District wide RWD data into the existing Pavement Management System (PMS) via Geographic Information System (GIS).

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

The research team has analyzed collected data in the research sites. Repeatability and general of RWD data with pavement conditions have been established. An interim report documenting these accomplishments has been submitted to the PRC. In addition, a presentation was made to the PRC to discuss our findings.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

The research team will utilize RWD measurements collected in the District wide network to develop a pavement condition matrix, which would help determine pavement structural conditions and identify feasible treatment options based on RWD measurements. This project will be completed in the 2011/2012 fiscal year.

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

SIO:	**30000141**		Project Start Date:		7/1/2009
Research Project Number:	10-1ALF		Completion Date	(original)	6/30/2012
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Zhong Wu				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$1,730,000		**Total**		**$420,000**
	(revised)					
Est. Expended to Date		$1,300,000		Salaries		$250,000
FY 2010 - 2011 Budget				Equipment	(expendable)	$78,000
FY Funds	(original)	$693,800		Equipment	(non-expendable)	$80,000
	(revised)	$1,385,000		Travel		$12,000
Est. FY Expenditure		$1,300,000		Other		

PURPOSE AND SCOPE

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 LTRC's Pavement Research Facility is to investigate and evaluate economic and practical alternatives to current design and construction practices. The objective of this study is to provide for the management and operation structure of the PRF site in performing full-scale accelerated pavement testing.

A manager, 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.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

- ALF Loading on TTI section 5 and 6;
- Prepared new test site for LTRC Project 11-3GT; and
- Acquired a new APT test device (AtLaS).

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- ALF machine maintenance;
- ALF loading on LTRC Project 11-3GT's test sections; and
- Construction and APT testing (using AtLaS30) of RCC test sections.

Title:	**Development of Cost-Effective Pavement Treatment Selection and Treatment Performance Models**	**Project Status:**	**Ongoing**
Funding Source:	**State: TT-Reg**	**Budget Category:**	**State**

SIO:	**30000166**		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				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$267,395		**Total**		**$120,215**
	(revised)					
Est. Expended to Date		$26,920		Salaries		$75,866
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)	$79,863		Equipment	(non-expendable)	
	(revised)			Travel		$360
Est. FY Expenditure		$75,663		Other		$43,989

PURPOSE AND SCOPE

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:

- Conduct a comprehensive review of the LADOTD state-of-the-practice regarding pavements projects and treatment selection procedures;
- 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;
- 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;
- 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;
- 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;
- Develop guidelines for the implementation of cost-effective pavement preservation strategies that would maximize the user and agency benefits and minimize their costs;
- 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;
- Integrate all the models into the LADOTD PMS, Pavement Preservation system, and Pavement design System; and
- Train the LADOTD staff to use all models developed in this study.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

- Review of the current practices of pavement treatments within the state;
- Conduct, analyzed and document the results of interviews and the district Survey related to pavement treatments;
- Review of existing treatment selection models in progress;
- Development of computer programs for data extraction, data sorting and analysis; and
- Identification and selection of pavement treatments and treatment projects with sufficient 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.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Analyze the performance all selected pavement projects prior and after treatment using the PMS distress data;
- Compare the costs and performance of pavement sections with and without treatments and their life extension based on the treatment;
- Evaluate the pavement treatment selection models along with associated trigger and reset values of indices for various treatment actions;
- Conduct regression analysis to develop pavement treatment models for each pavement type and distress type;
- Update pavement treatment selection models based on performance data and the experience gained over time;
- Based on the type and causes of pavement distresses in the state of Louisiana, analyze and recommend a process for identifying the optimal timing for the application of rehabilitation actions and/or preventive maintenance treatments; and
- Develop guidelines for the implementation of cost-effective pavement preservation strategies that would maximize the user and agency benefits and minimize their costs.

Title:	**LADOTD Pavement Management System (PMS) for Project Level Applications**	**Project Status:**	**Ongoing**
Funding Source:	**State: TT-Reg**	**Budget Category:**	**State**

SIO:	**30000159**	Project Start Date:		5/23/2011
Research Project Number:	11-1P	Completion Date	(original)	5/22/2013
Research Agency:	Nichols Consulting Engineers	Completion Date	(revised)	
Principal Investigator:	Ms. Margot Yapp			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$219,774
	(revised)	
Est. Expended to Date		
FY 2010 - 2011 Budget		
FY Funds	(original)	
	(revised)	
Est. FY Expenditure		

Estimated 2011-2012 Budget		
Total		**$130,000**
Salaries		$130,000
Equipment	(expendable)	
Equipment	(non-expendable)	
Travel		
Other		

PURPOSE AND SCOPE

The main objective of this project is to develop a guideline that provides information on how network level PMS data can be used at project level in the activities of pavement engineering. This objective will be accomplished by a comprehensive assessment of the network level data provided by the current PMS. Because of its enormous information and convenience for access, more and more users have started to use the PMS data for project level activities, especially for pavement preservation at the local district levels. They have compared the distress data such as cracks and rutting from the PMS with those from field observations, hoping they match so that more confidence and credentials can be established with the PMS data. At the network level, Department policies, guidelines, and procedures having vital and extensive impacts on LADOTD's operation, functions, and performance can be developed based on PMS data. This is a legitimate course considering the current environment within LADOTD due to the downsizing and limited funding level. However, network and project levels often yield different sets of data due to the differences in their intended purposes and the ways in which they are collected. Clearly, a guideline will be very helpful to accommodate such users' needs, which will specify the accuracy and limitation of the current PMS data in addition to others. On the other hand, the information contained in the guidelines will also help PMS managers improve their quality control and quality assurance in data collection and management.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

Start the research project.

Title:	**Development of a DOTD GPS Technology Management Plan**	**Project Status:**	**Ongoing**
Funding Source:	**State: TT-Reg**	**Budget Category:**	**State**

SIO:	**30000162**		Project Start Date:		3/1/2011
Research Project Number:	11-2P		Completion Date	(original)	8/31/2011
Research Agency:	Inner Corridor Technologies		Completion Date	(revised)	
Principal Investigator:	Ms. Jennifer Harrison				

BUDGET STATUS

Total Budget			**Estimated 2011-2012 Budget**		
Total Cost	(original)	$49,600	**Total**		**$19,525**
	(revised)				
Est. Expended to Date		$9,675	Salaries		$19,525
FY 2010 - 2011 Budget			Equipment	(expendable)	
FY Funds	(original)	$49,600	Equipment	(non-expendable)	
	(revised)	$30,075	Travel		
Est. FY Expenditure		$30,075	Other		

PURPOSE AND SCOPE

The purpose of this short study is to develop a GPS technology management plan on best practices. The plan will provide standards for GPS use, management, and training for the department. This objective will be accomplished by a comprehensive assessment of the current situation within the department with respect to GPS technology use and management.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

A thorough literature review of current GPS practices, including a search of previous and on-going nationwide research projects and case studies on the management of GPS technology has been completed. Based on input from this literature review, the team has developed a comprehensive and detailed plan to survey various agencies within and outside Louisiana to collect information for the best practices and GPS management plans.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

The research team will perform a detailed survey of LADOTD staff to quantify GPS use within the department. Based on the results of the survey of existing use and the research of GPS management in other agencies, the team will develop a detailed GPS technology management plan for the LADOTD.

Title:	**Implementation of GPC Characterization of Asphalt Binders at Louisiana Materials Laboratory**	**Project Status:**	**Ongoing**
Funding Source:	**State: TT-Reg**	**Budget Category:**	**State**

SIO:	**30000142**		Project Start Date:		6/1/2010
Research Project Number:	10-6B		Completion Date	(original)	12/1/2011
Research Agency:	LSU		Completion Date	(revised)	
Principal Investigator:	Mr. William H. Daly				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$255,438		**Total**		**$109,038**
	(revised)					
Est. Expended to Date		$146,400		Salaries		$70,140
FY 2010 - 2011 Budget				Equipment	(expendable)	$20,072
FY Funds	(original)	$209,379		Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure		$130,500		Other		$18,826

PURPOSE AND SCOPE

This research will implement a procedure for using gel permeation chromatography (GPC) as an analytical tool to define the percent amounts of polymer modifiers, which are soluble in eluting GPC solvents, in polymer modified asphalt cements. It will also address quantification of GPC solvent insoluble crumb rubber present in crumb rubber modified binders for which a repeated solvent/non-solvent precipitation procedure is being developed. Attention will also be paid to using GPC for assessment of the extent of oxidative aging of modified asphalt binders as well as forensic analysis of pavement failures.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

- Purchased GPC equipment;
- Install columns and test GPC;
- Transfer GPC to Materials Lab;
- Calibrate GPC instrument and deliver to laboratory; and
- Begin testing with GPC equipment.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Write detailed analytical procedures for using the GPC to characterize binder samples and procedures for preparing GPC samples from either PMAC's or asphalt pavement cores;
- Evaluate methods for producing larger scale binder samples from asphalt pavement cores;
- Review data collected at LADOTD Materials Laboratory and help compile GPC chromatogram library ;
- Correlate GPC data with rheological testing of common samples; and
- Prepare final report.

Title:	**Evaluation of Dynamic Shear Rheometer Tests for Emulsions.**	**Project Status:**	**Ongoing**
Funding Source:	**State: TT-Reg**	**Budget Category:**	**State**

SIO:	**30000163**		Project Start Date:		9/15/2010
Research Project Number:	11-2B		Completion Date	(original)	7/14/2012
Research Agency:	LTU		Completion Date	(revised)	
Principal Investigator:	Nazimuddin M Wasiuddin				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$100,000		**Total**		**$46,000**
	(revised)					
Est. Expended to Date		$54,000		Salaries		$41,000
FY 2010 - 2011 Budget				Equipment	(expendable)	$5,000
FY Funds	(original)	$50,000		Equipment	(non-expendable)	
	(revised)	$54,000		Travel		
Est. FY Expenditure		$54,000		Other		

PURPOSE AND SCOPE

The main objective of this research is to examine MSCR test at 25°C for emulsion residue. The specific objectives are as follows: (1) determine applicable stress limits; 100Pa, 300Pa, 500Pa, 1000Pa, 5000Pa up to 30000 Pa.; (2) test LADOTD available emulsions at shear stress determined in 1 and compare to force ductility and elastic recovery tested by materials lab and (3) set specification for emulsions with a quick residual DSR test for emulsions.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

- Compared recovery by distillation, to recovery by evaporation for CMS-1P; CSS-1HP; emulsion;
- Modified the evaporation method to include evaporation on DSR mold; and
- Tested DSR G*/sin delta on material recovered from both methods and found them to be comparable.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Conduct Literature Review;
- Collect emulsion samples from various emulsion suppliers;
- Test MSCR for polymer modified emulsions;
- Perform additional laboratory experiments; and
- Write final report.

Title:	**Evaluation of Design Methods to Determine Scour Depths for Bridge Structures**	**Project Status:**	**Ongoing**

Funding Source:	**State: TT-Reg**	**Budget Category:**	**State**

SIO:	**30000145**		Project Start Date:		4/1/2009
Research Project Number:	08-3ST		Completion Date	(original)	4/1/2011
Research Agency:	LSU		Completion Date	(revised)	9/30/2011
Principal Investigator:	Dr. Gouping Zhang				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$200,004		**Total**		**$28,562**
	(revised)					
Est. Expended to Date		$161,442		Salaries		$20,000
FY 2010 - 2011 Budget				Equipment	(expendable)	$3,562
FY Funds	(original)	$100,004		Equipment	(non-expendable)	
	(revised)	$100,004		Travel		$5,000
Est. FY Expenditure		$71,442		Other		

PURPOSE AND SCOPE

The overall goal of the project is to develop a more reliable tool for scour depth and scour rate prediction in the state of Louisiana (LA), with the consideration of the LA's special meteorological and climatic characteristics and soil/sediment properties. The newly developed technique will still be based on the fundamental frameworks set by FHWA-approved HEC-18, but include some new statistically derived components and/or parameters in the models.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

- Finished the scour survey data analysis and hydtrometeorological data analysis for six bridges situated on clays;
- Established the GIS-based models for the six bridges and completed the associated hydrologic analysis for the six bridges;
- Finished the hydraulic analysis of floods and water flow velocities using HEC-18 and WASPRO programs;
- Surveyed two additional methods used in Texas DOT and Florida DOT using two different types of laboratory equipment to quantify the erosion rate of cohesive soils; and
- Finished a case study to examine the sensitivity of the HEC-18 method and its applicability for cohesive soils (by assigning a small mead particle size D50).

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- To get familiar and run some experiments with the FLDOT's Rotating Erosion Test Apparatus (RETA) and Texas DOT's SRICOS-EFA apparatus;
- To further survey these two methods for their applicability and accuracy in estimating scour depth in soft clays;
- To complete the data analyses for the six selected bridges situated on cohesive soils; and
- To prepare and submit a final report.

Title:	**Support Study for A Shape Memory Polymer Based Self-Healing Sealant for Expansion Joint**	**Project Status:**	**Ongoing**

Funding Source:	**State: TT-Reg**	**Budget Category:**	**State**

SIO:	**30000172**		Project Start Date:		5/1/2009
Research Project Number:	09-5ST		Completion Date	(original)	11/1/2010
Research Agency:	LSU		Completion Date	(revised)	7/31/2011
Principal Investigator:	Dr. Guoqiang Li				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$72,750		**Total**		**$30,050**
	(revised)					
Est. Expended to Date		$11,917		Salaries		$30,050
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)	$42,700		Equipment	(non-expendable)	
	(revised)	$42,700		Travel		
Est. FY Expenditure		$42,700		Other		

PURPOSE AND SCOPE

The purpose of this study is to provide technical and managerial support for a self- generated one titled “A Shape Memory Polymer based Self-healing Sealant for Expansion Joint.” The support will be in the form coordinating the selection of two bridges to place the self-healing sealant, reviewing the design of the product and the placement and the monitoring of the product, ensuring quarterly progress reports are delivered on time to the IDEA Program manager.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

- Continue working with the Principal Investigator;
- Review additional progress reports ; and
- Coordinate with LADOTD to select a bridge for application of this technology.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Continue to work with the Principal Investigator to install a joint.

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

Funding Source:	**State: TT-Reg**	**Budget Category:**	**State**

SIO:	**30000118**		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				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$309,117		**Total**		**$100,000**
	(revised)					
Est. Expended to Date		$20,000		Salaries		$80,000
FY 2010 - 2011 Budget				Equipment	(expendable)	$10,000
FY Funds	(original)	$75,000		Equipment	(non-expendable)	
	(revised)	$55,000		Travel		$5,000
Est. FY Expenditure		$20,000		Other		$5,000

PURPOSE AND SCOPE

The objectives of the proposed research (Phase I) are to:

- Assess the vulnerability for coastal bridges in the 100-year hurricane flood zone in south Louisiana;
- Develop a series of site specific surge atlas for vulnerable bridges and prioritize for wave atlas Development; and
- 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.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

Started Task 1: Performing a Literature Survey.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Continue Task 1: Performing a Literature Survey; and
- Starting Task 2: Review LADOTD selected bridges and assess their vulnerability to a 100-year flood frequency.

Title:	**Developing Prestressed Girder Transportation Guidelines**	**Project Status:**	**Ongoing**

Funding Source:	**State: TT-Reg**	**Budget Category:**	**State**

SIO:	**30000138**	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)	
Principal Investigator:	Mr. Jonathan McGormley			

BUDGET STATUS

Total Budget			**Estimated 2011-2012 Budget**		
Total Cost	(original)	$199,961	**Total**		**$100,000**
	(revised)				
Est. Expended to Date		$20,000	Salaries		$80,000
FY 2010 - 2011 Budget			Equipment	(expendable)	$10,000
FY Funds	(original)	$50,000	Equipment	(non-expendable)	
	(revised)	$30,000	Travel		$5,000
Est. FY Expenditure		$20,000	Other		$5,000

PURPOSE AND SCOPE

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 effect of stresses that transported girders are subject to, and providing recommendation that would ensure the safety of such girders while being transported from the plant to the bridge site.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

Started Task 1: Review the state of practice of transportation of prestressed girders in Louisiana and other states.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Continuation of Task 1 started in previous Fiscal Year 10-11: Review the state of practice of transportation of prestressed girders in Louisiana and other states;
- Start of Task 2: Submit an instrumentation plan to the Project Review Committee (PRC). Instrumentation plan should be prepared for two prestressed girders that are transported to different construction sites. Instrumentation should be able to quantify stresses that a girder may experience during transportation and handling under different conditions, such as traffic speed, road geometry, sharp turns, and girder supports, and provide stress limit for transported girders; and
- Start of Task 3: Perform field work as approved as stated in Task 2.

Title:	**Developing Louisiana Crash Reduction Factors**	**Project Status:**	**Ongoing**

Funding Source:	**State: TT-Reg**	**Budget Category:**	**State**

SIO:	**30000149**		Project Start Date:		11/1/2009
Research Project Number:	08-3SS		Completion Date	(original)	10/31/2011
Research Agency:	ULL		Completion Date	(revised)	
Principal Investigator:	Dr. Xiaoduan Sun				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$178,087		**Total**		**$68,087**
	(revised)					
Est. Expended to Date		$110,000		Salaries		$45,000
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)	$91,859		Equipment	(non-expendable)	
	(revised)			Travel		$3,087
Est. FY Expenditure		$91,859		Other		$20,000

PURPOSE AND SCOPE

The primary goal of this research is to develop and document a list of CRFs to be used by LADOTD. Particularly, this research will:

- Document the state-of-the-practice in CFR development;
- Determine the CFRs to be developed for Louisiana;
- Develop some CFRs with available information under the budgetary constraint; and
- Develop a web based tool listing the published CFRs and their development information.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

Contacting the enforcement agencies and Collecting enforcement data.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

Developing CMF possible for enforcement actions.

Title:	**Automated Enforcement and Highway Safety**	**Project Status:**	**Ongoing**

Funding Source:	**State: TT-Reg**	**Budget Category:**	**State**

SIO:	**30000203**	Project Start Date:		6/1/2011
Research Project Number:	10-3SS	Completion Date	(original)	5/31/2013
Research Agency:	Cambridge Systematics	Completion Date	(revised)	
Principal Investigator:	Dr. Susan Herbel			

BUDGET STATUS

Total Budget			**Estimated 2011-2012 Budget**		
Total Cost	(original)	$130,000	**Total**		**$65,000**
	(revised)				
Est. Expended to Date			Salaries		$40,000
FY 2010 - 2011 Budget			Equipment	(expendable)	$600
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		$1,000
Est. FY Expenditure			Other		$23,400

PURPOSE AND SCOPE

The objectives of this research are to identify and quantify the aspects of automated red light running enforcement supported and opposed by the public and develop policies and strategies addressing public concerns; quantify and compare automatic enforcement with traditional enforcement; conduct an economic evaluation for implementing automatic enforcement compared to traditional enforcement with the applied policies and strategies designed to address public concerns; and develop recommended practices.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Identify aspects of the automatic detection of red light running that the public find offensive or problematical and quantify the level of opposition on each aspect;
- Identify the aspects of automatic detection of red light running the public supports, and quantify the level of support on each aspect;
- Quantify the safety impact of automatic enforcement versus traditional enforcement in countering red light running; and
- Develop alternative policies and strategies aimed at addressing public concerns of automatic enforcement of red light running.

Title:	**Truck Facility Access Design Guidelines**	**Project Status:**	**Ongoing**
Funding Source:	**State: TT-Reg**	**Budget Category:**	**State**

SIO:	**30000202**		Project Start Date:		4/25/2011
Research Project Number:	10-4SS		Completion Date	(original)	4/24/2013
Research Agency:	GEC, Inc.		Completion Date	(revised)	
Principal Investigator:	Ms. Lucy Kimbeng				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$99,396		**Total**		**$64,378**
	(revised)					
Est. Expended to Date				Salaries		$45,452
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)	$18,710		Equipment	(non-expendable)	$4,500
	(revised)			Travel		
Est. FY Expenditure		$18,710		Other		$14,426

PURPOSE AND SCOPE

The main purpose of this project is to develop design guidelines for access by means of interchange, to and from truck stop facilities adjoining interstate highways in Louisiana. The following tasks will be pursued to achieve the desired objective.

Task 1: Identify existing access design standards/ guidelines for truck facilities adjoining interstate highways and for facilities accessed by means of an interchange in other states;
Task 2: Inventory truck stops adjoining interstates in Louisiana and record current access and truck stop layouts;
Task 3: Record good and bad practice in truck facility access design;
Task 4: Evaluate current practice and recommend preferred guidelines; and
Task 5: Document recommended guidelines.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

The work related to this project has not commenced yet. Hence nothing is listed in this section.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

The following activities are proposed for the fiscal year 2011-2012.

Task 1: Identify existing access design standards/ guidelines for truck facilities adjoining interstate highways and for facilities accessed by means of an interchange in other states; and
Task 2: Inventory truck stops adjoining interstates in Louisiana and record current access and truck stop layouts.

Title:	**Developing Inexpensive Crash Countermeasures for Louisiana Local Roads**	**Project Status:**	**Ongoing**
Funding Source:	**State: TT-Reg**	**Budget Category:**	**State**

SIO:	**30000240**		Project Start Date:		1/17/2011
Research Project Number:	10-5SS		Completion Date	(original)	1/16/2013
Research Agency:	LSU		Completion Date	(revised)	
Principal Investigator:	Dr. Helmut Schneider				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$100,000		**Total**		**$55,179**
	(revised)					
Est. Expended to Date		$5,146		Salaries		$22,955
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)	$22,916		Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure		$15,000		Other		$32,224

PURPOSE AND SCOPE

This project uses a systems approach to develop inexpensive crash countermeasures for Louisiana local roads that are ranked as high risk with respect to crash numbers and/or severity of crashes. Although 40% of all crashes in Louisiana are on local roads local road safety improvement programs have not received the attention needed to reduce crash frequencies. However, Local road crash countermeasures are an important part of the overall efforts to reduce crashes and their severity in Louisiana. The efforts to develop a local road safety program are hampered by the lack of an appropriate risk assessment and low cost countermeasures that enable local agencies to reduce crash frequencies with limited budgets. This proposal deals with both issues. First, statistical models, a so called safety performance functions (SPF), will be developed to assess the risk of local road segments with respect to crash frequencies. Secondly, low cost countermeasures will be researched and recommended for individual road segments based on current geometric features and crash frequency and type of crashes. Thirdly, a score will be developed for each road segment that incorporates the risk, benefits of improvements, and cost which allows ranking of road projects. Finally a local road safety improvement program will be developed to allow local agencies with guidelines and procedures for a systematic system-wide road improvement methodology.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

At the end of Fiscal Year 2010-2011 two substantive aspects of the project will have occurred. First, the literature review will be submitted and presented to the PRC. Second, the data assessment will be started; this includes plans for data collection (crashes, AADT, geometric features of road segments) from the Louisiana Crash Database, the Local Road File of the Surface Transportation Log, the Highway Performance Management System and local agencies.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES
The proposed activities during fiscal year 2011-2012 are: develop a safety performance function, estimate safety risk levels of local road sections in Louisiana, identify crash countermeasures, and estimate the cost of these candidate countermeasures.

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

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

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$87,474		**Total**		**$28,031**
	(revised)					
Est. Expended to Date		$34,443		Salaries		$28,031
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)	$71,809		Equipment	(non-expendable)	
	(revised)	$59,443		Travel		
Est. FY Expenditure		$59,443		Other		

PURPOSE AND SCOPE

The lab will address the needs of LADOTD, other agencies, and the public, as well as serve as a foundation to conduct "leading edge" research and training of graduate students. The lab will primarily serve as a catalyst to collect and store data from various ITS sources such as traffic monitoring systems (e.g. video detectors and cameras), as well as other sources of data such as crash data, planning data, weigh-in-motion data, etc. The ITS lab will also process this data and make it available to the interested agencies for use in applications of their needs. The ultimate goal is to create a centralized location for data that can effectively support applications of immediate and long-term needs. This project works in conjunction with LTRC support study 10-7SS.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

The conference room at LTRC has been remodeled and partitioned to create the designated lab space. All wiring and renovation work has been completed by facility services. Request for bids was issued for the video wall by LSU and several bids were received. Cinemax was selected for acquisition of video wall and other related hardware. Purchase requisition is being prepared now.

A software program is currently being developed for transmitting and archiving traffic data from the freeways, as well as provides a web interface for database queries.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Acquisition and installation of workstations and other computer hardware components, video wall, software, furniture;
- Setup and testing of the lab equipment;
- Launch the software for data archival and web interface;
- Develop lab operating policies; and
- Submit final report.

Title:	**Measuring Effectiveness of Ramp Metering Strategies on I-12**	**Project Status:**	**Ongoing**

Funding Source:	**State: TT-Reg**	**Budget Category:**	**State**

SIO:	**30000177**		Project Start Date:		4/1/2011
Research Project Number:	11-2SS		Completion Date	(original)	3/31/2013
Research Agency:	LSU		Completion Date	(revised)	
Principal Investigator:	Dr. Sherif Ishak				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$99,999		**Total**		**$50,000**
	(revised)					
Est. Expended to Date				Salaries		$50,000
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)	$26,205		Equipment	(non-expendable)	
	(revised)	$15,000		Travel		
Est. FY Expenditure		$15,000		Other		

PURPOSE AND SCOPE

The main goal of this research is to conduct an overall assessment of the effectiveness of the newly implemented ramp metering strategy on I-12 in the Baton Rouge, Louisiana area. The research objectives of this study are to:

- Conduct a brief literature review of the most recent research findings on ramp metering applications in other states. This is to identify the successful state-of-the-practice techniques for assessment of ramp metering benefits and their relevance to this research study, (Task 1);
- Identify the ramp junctions (study area) where ramp metering has already been or will be implemented during the course of study, (Task 2);
- Collect traffic data at each of the identified locations over a period of at least three months including periods when ramp metering is turned on and off, (Task 2);
- Conduct thorough analysis to evaluate the effectiveness of ramp metering on I-12 using the collected traffic data; and
- Develop a statistical analysis model to illustrate the impacts to travel along the I-12 corridor and test different ramp metering strategies that would optimize the metering parameters and maximize performance.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

The project started on April 1, 2011. Partial literature review has been completed to date.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Complete the literature review on ramp metering strategies and successful implementations in other states;
- Coordinate with LADOTD to begin the process of collecting traffic data from all ramp metering locations on I-12;
- Analyze the data to determine its quality; and
- Conduct traffic analysis as described in the research proposal.

Title:	**Research Expansion Program**	**Project Status:**	**Ongoing**
Funding Source:	**State: TT-Reg**	**Budget Category:**	**State**

SIO:	**30000169**		Project Start Date:		11/1/2006
Research Project Number:	11-1AD		Completion Date	(original)	11/1/2009
Research Agency:	LTRC		Completion Date	(revised)	6/30/2012
Principal Investigator:	Dr. Vijaya Gopu				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$363,309		**Total**		**$240,884**
	(revised)	$1,088,594				
Est. Expended to Date		$1,088,594		Salaries		$230,384
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)	$229,913		Equipment	(non-expendable)	
	(revised)			Travel		$10,500
Est. FY Expenditure		$229,913		Other		

PURPOSE AND SCOPE

To cover administrative costs handled under contract to support the LTRC research development and technology transfer expansion funding programs.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

- The following proposals were developed and/or coordinated during this fiscal year and submitted to various external funding agencies. Faculty at different Louisiana Universities and industrial collaborators were involved in these proposals.
  - -Environmental Efficiency and Durability of Asphalt Mixtures.., NCHRP-IDEA Program, $182K;
  - -Application of NASA Satellite Rainfall Measurement, NASA, $400K;
  - -Field Monitoring and Measurements Education, NSF, $150K; and
  - -Several proposals are under preparation for submission to funding agencies.
- Coordinated the TIER Program. Fifteen proposals were received and four awards were recommended for 11-12 fiscal year;
- Established a CAREER-BRIDGE Learning Community at LSU in cooperation with Dr. Roger Seals to assist junior faculty in developing competitive proposals for submission to NSF. The Learning Community will be expanded in the near future to include faculty at most Louisiana universities;
- Continued efforts to coordinate the assembly of research project data for the various DOT's in the SE Transportation Consortium;
- Chaired the Industrial Advisory Board Meetings of the NSF University-Industry Center for Integration of Composites into Infrastructure held in Fort Lauderdale, FL, in February, 2011 and Raleigh, NC, in June, 2011;
- Served as a member of the Committee of Visitors for the NSF EFRI (Emerging Frontiers in Research and Innovation) Program in January, 2011. This is the highest level of service that can be offered to NSF;
- Served as a member of the Site Visit Teams for the NSF NEES Headquarters and the following Equipment Sites, Purdue University, NEES Headquarters September, 2010, University of Texas – Austin, NEES Geotech Equipment Site September, 2010, University of California - Los Angeles, NEES Portable Earthquake Equipment Site September, 2010, University of California - San Diego, NEES Large Shake Table Equipment Site March, 2011, Oregon State University – Corvallis, NEES Tsunami Wave Table Equipment Site April, 2011, University of California – Davis, NEES Centrifuge Equipment Site May, 2011;
- Served on the following NSF Review Panels, REU Site Review Panel, Washington, D.C. November, 2010 and NEES Research Proposals Reviewer (Mail reviews only) May, 2011;
- Served on the 2011 Tulane Engineering Forum Organizing Comm., and as the Co-Chair for the Infrastructure session;
- Presented a research paper at the Louisiana Engineering Conference, September, 2009;
- Attend the National Association of Home Builders Research Center Experts Meeting on Uplift in Buildings held in Washington, D.C. in July, 2010;
- Delivered a lecture on ASD & LRFD in Wood Construction to the New Orleans ASCE Structures Section in August, 2010;
- Held a Proposal Writing Workshop in collaboration with Prof. Seals at LSU in October, 2010;
- Delivered a Grand Challenges Lectureââ,¬Â to the freshmen class at Tulane University in November, 2010;
- Attended the 7th Int. Bridge Engineering Conference in San Antonio, December, 2010 and the TRB Meeting in Washington, D.C., January, 2011;
- Coordinated and the chaired the Senior Design Projects session at the Louisiana Transportation Conference held in Baton Rouge in January, 2011;
- Chaired the ASCE Committee on Wood Research meeting at the ASCE Structures Congress held in Las Vegas, May 2011; and
- Participated in the Educator Session at the AISC/NASC Conference held in Pittsburgh, PA, May, 2011.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Increase number of collaborative proposals submitted by university faculty and industrial collaborators through LTRC to external funding agencies. Active involvement of collaborators from other institutions is being sought because of the limited number of faculty engaged in transportation related research in the state;
- Continue effort to identify NHI courses than can be offered by Louisiana faculty;
- Pursue efforts to offer statewide ME program after the reorganization of the universities and management boards is completed in 2011;
- Offer a timber design course on a state-wide basis utilizing LTRC's distance learning capability;
- Continue coordination of TIER program;
- Expand the CAREER-BRIDGE Learning Community to involve faculty in various Louisiana universities; and
- Organize an EFRI workshop in cooperation with the EFRI program at NSF.

State Funded
Research Program

PROPOSED RESEARCH

Title:	**Addressing Traffic Data Requirements for Development of Axle Load Spectra and Implementation of MEPDG in Louisiana (Phase II)**	**Project Status:**	**Proposed**

Funding Source:	**State: TT-Reg**	**Budget Category:**	**State**

SIO:			Project Start Date:		12/1/2011
Research Project Number:	12-10P		Completion Date	(original)	
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Sherif Ishak				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$150,000		**Total**		**$50,000**
	(revised)					
Est. Expended to Date				Salaries		$50,000
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

The scope of the study is limited to the current practices and traffic monitoring system within the state of Louisiana. All findings and guidelines will be geared towards the needs of the LADOTD with the purpose of improving traffic data quality for current and future pavement design practices. Appropriate statistical models and procedures will be applied to identify the main traffic characteristics that influence the pavement design process.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

Task 1: Update literature review and gather facts on data sources;
Task 2: Establish a standard procedure to collect reliable WIM data;
Task 3: Develop a procedure to collect data from LTPP and weight enforcement sites; and
Task 4: Begin pilot study.

Title:	**Chemical Characterization of Asphalts Related to their Performance**	**Project Status:**	**Proposed**
Funding Source:	**State: TT-Reg**	**Budget Category:**	**State**

SIO:			Project Start Date:		4/1/2012
Research Project Number:	12-3B		Completion Date	(original)	4/1/2014
Research Agency:			Completion Date	(revised)	
Principal Investigator:					

BUDGET STATUS

Total Budget			**Estimated 2011-2012 Budget**		
Total Cost	(original)	$200,000	**Total**		**$50,000**
	(revised)				
Est. Expended to Date			Salaries		$50,000
FY 2010 - 2011 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		

PURPOSE AND SCOPE

The age hardening properties of asphalt materials and the quantification of the asphalt binder contained in recycled asphalt pavement, RAP, used in construction could be identified with molecular characterization using gel permeation chromatography. Bringing this information to compare to other mix and binder physical properties from the point of view of their chemical composition and/or their reactivity towards their immediate environment (such as air oxygen) in relation to their performance in paving the roads or other construction is the focus of this work. At present, there are no methods to verify percentages of RAP use, nor accurately predict the RAP binder blends from a design perspective without costly extractions. This work, if successful will verify specification limits for RAP and new asphalt mixture blends and provide a method to identify RAP quantities in mixtures confirming design submittals. Other materials under consideration for GPC application are:

- Asphalt binders;
- Crumb rubber containing asphalt cements; and
- Warm mix asphalts.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

To be determined upon award of contract.

Title:	**A Novel Fire Resistant FRP for Externally Bonded Concrete Repair**	**Project Status:**	**Proposed**
Funding Source:	**State: TT-Reg**	**Budget Category:**	**State**

SIO:	**30000310**		Project Start Date:		7/1/2011
Research Project Number:	11-2TIRE		Completion Date	(original)	
Research Agency:	LSU		Completion Date	(revised)	
Principal Investigator:	Dr. Gefu Ji				

BUDGET STATUS

Total Budget			**Estimated 2011-2012 Budget**		
Total Cost	(original)	$30,000	**Total**		**$30,000**
	(revised)				
Est. Expended to Date			Salaries		$25,569
FY 2010 - 2011 Budget			Equipment	(expendable)	$4,431
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		

PURPOSE AND SCOPE

The scientific and technical objectives of this research work are identified as follows: (1) design and evaluate the novel nanoclay reinforced intumescent coated fire-resistant FRP system, as shown in Fig.1; (2) implement this novel fire resistant FRP to enhance the fire resistant, thermal insulation, mechanical, and physical properties of FRP; and (3) to also increase the residual strength of FRP repaired concrete after fire exposure.

The scope of the work will be accomplished through the following:

Task 1: The selection of raw materials and the fabrication of specimen;
Task 2: The evaluation of novel fire resistant fiber reinforced polymer (FRP) system; and
Task 3: The Evaluation of novel fire resistant FRP-repaired reinforced concrete (RC) beams.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

Start of Task 1.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Continuation of Tasks 1,2, and 3; and
- Submittal of a final report.

Title:	**An Ultra-Low Cost Wireless Sensor Network for Real-Time Monitoring of Strands in Cable Stay Bridges**	**Project Status:**	**Proposed**

Funding Source:	**State: TT-Reg**	**Budget Category:**	**State**

SIO:	**30000311**		Project Start Date:		7/1/2011
Research Project Number:	11-3TIRE		Completion Date	(original)	
Research Agency:	LTU		Completion Date	(revised)	
Principal Investigator:	Dr. Arun Jaganathan				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$30,000		**Total**		**$30,000**
	(revised)					
Est. Expended to Date				Salaries		$24,400
FY 2010 - 2011 Budget				Equipment	(expendable)	$3,500
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		$2,000
Est. FY Expenditure				Other		$100

PURPOSE AND SCOPE

The purpose of the study is to fabricate, test and explore the applicability of an ultra-low cost sensor node which can be distributed along the cable stays for real-time monitoring and wireless communication with the base station when any abnormal activity is detected.

The scope of the proposed work is to carry out exploratory research to investigate the various aspects of AE technique in specific to the wireless application on cable stays. This will be accomplished through:

Task 1. Carrying out laboratory tests using a loaded cable to obtain acoustic emission (AE) signatures caused during a wire break and oscillation;
Task 2. Design and fabrication of MSP430 based sensor node and base station;
Task 3. Development of neural network based signal detection and classification algorithm;
Task 4. Field testing to obtain the AE signatures caused by traffic and background noise; and
Task 5. Field testing of the final prototype and report generation.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

Start of Task 1.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Continuation of Tasks 1 through 5; and
- Submittal of a final report.

Title:	**Design, Fabrication and Testing of a Low Cost, Highly Durable, "Green" Median Barrier**	**Project Status:**	**Proposed**
Funding Source:	**State: TT-Reg**	**Budget Category:**	**State**

SIO:	**30000312**	Project Start Date:		7/1/2011
Research Project Number:	11-4TIRE	Completion Date	(original)	
Research Agency:	LTU	Completion Date	(revised)	
Principal Investigator:	Dr. Erez Allouche			

BUDGET STATUS

Total Budget			**Estimated 2011-2012 Budget**		
Total Cost	(original)	$30,000	**Total**		**$30,000**
	(revised)				
Est. Expended to Date			Salaries		$23,780
FY 2010 - 2011 Budget			Equipment	(expendable)	$4,620
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		$600
Est. FY Expenditure			Other		$1,000

PURPOSE AND SCOPE

The purpose of this study is to use inorganic polymer concrete (geopolymer), an emerging class of cementitious materials as a 100% substitute Portland cement as the binder in the matrix in the manufacturing and casting of a precast concrete barrier.

The scope of this project will be as follow:

Task 1: Literature review;
Phase 2: Establishment of mix design for geopolymer concrete based on locally available materials; and
Phase 3: Experimental evaluation of structural response.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

Start of Task 1 Literature.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Continuation of Task 1;
- Task 2: Establishment of mix design for geopolymer concrete based on locally available materials;
- Task 3: Manufacturing of a concrete barrier and experimental evaluation of structural response of the Barrier; and
- Task 4: Preparation of Final Report.

Title:	**Traffic Counting Using Existing Video Detection Cameras**	**Project Status:**	**Proposed**
Funding Source:	**State: TT-Reg**	**Budget Category:**	**State**

SIO:			Project Start Date:		7/1/2011
Research Project Number:	12-1SS		Completion Date	(original)	6/30/2013
Research Agency:			Completion Date	(revised)	
Principal Investigator:					

BUDGET STATUS

Total Budget			**Estimated 2011-2012 Budget**		
Total Cost	(original)	$150,000	**Total**		**$50,000**
	(revised)				
Est. Expended to Date			Salaries		$30,000
FY 2010 - 2011 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		$20,000

PURPOSE AND SCOPE

The purpose of the project is to establish software programs that are capable of processing the data collected by existing video detection cameras and producing estimates of daily, monthly, and seasonal adjustment factors that will allow daily estimates of AADT. The scope of the project is limited to video detection cameras in Baton Rouge.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Review existing software programs available from the manufacturer of the video detection equipment;
- Evaluate the software programs to determine whether they are capable of establishing the adjustment factors required in the study;
- If necessary, develop additional software to estimate adjustment factors; and
- Demonstrate use of the software programs in sample applications.

Title:	**Creation of a Strategic Plan for Highway Safety Research**	**Project Status:**	**Proposed**

Funding Source:	**State: TT-Reg**	**Budget Category:**	**State**

SIO:			Project Start Date:		7/1/2011
Research Project Number:	12-2SA		Completion Date	(original)	6/30/2012
Research Agency:			Completion Date	(revised)	
Principal Investigator:					

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$50,000		**Total**		**$50,000**
	(revised)					
Est. Expended to Date				Salaries		$50,000
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

Currently, there is a national effort underway for a strategic focus to highway safety research. Strategic research planning provides the framework for a state and its partners to collaborate and ensure research resources are directed to the most crucial highway safety research needs. Creating a strategic plan for Louisiana's highway safety research would guide what research is proposed and selected based on need. By adopting a research plan with consideration to strategic highway safety deployment, LADOTD and stakeholders would ensure selected projects support the needs of Louisiana's Strategic Highway Safety Plan.

Develop a strategic plan for highway safety research in Louisiana. This plan would also include a management framework to ensure a cooperative and coordinated effort between diverse research projects that support the deployment of effective highway safety countermeasures. The research program would include a comprehensive approach to safety including the multi-disciplinary approach

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

To be determined upon award of contract.

Title:	**History of the Implementation of AASHTO and Louisiana DOTD Road Design Standards**	**Project Status:**	**Proposed**
Funding Source:	**State: TT-Reg**	**Budget Category:**	**State**

SIO:			Project Start Date:		7/1/2011
Research Project Number:	12-2SS		Completion Date	(original)	6/30/2013
Research Agency:			Completion Date	(revised)	
Principal Investigator:					

BUDGET STATUS

Total Budget			**Estimated 2011-2012 Budget**		
Total Cost	(original)	$250,000	**Total**		**$80,000**
	(revised)				
Est. Expended to Date			Salaries		$60,000
FY 2010 - 2011 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		$20,000

PURPOSE AND SCOPE

The main purpose of this project is to develop comparative historical time lines for the implementation of national and state road design standards for use in tort liability cases and for knowledge management purposes. The scope of the project is limited to implementation of national and state road design standards for Baton Rouge, Louisiana.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Conduct Literature search of the history of national and state road design standards;
- Conduct Research on State and Federal Laws regarding implementation of road design standards;
- Conduct File search of the state road design standards and FHWA Stewardship Agreements;
- Conduct Personal and/or Telephone Interviews of current and retired national and state design officials; and
- Prepare a report summarizing the results of various activities and present/describe developed-time lines for National and State Design Standards.

Title:	**Calibration of the Louisiana Highway Safety Manual (Phase 1)**	**Project Status:**	**Proposed**
Funding Source:	**State: TT-Reg**	**Budget Category:**	**State**

SIO:			Project Start Date:		7/1/2011
Research Project Number:	12-3SA		Completion Date	(original)	
Research Agency:			Completion Date	(revised)	
Principal Investigator:					

BUDGET STATUS

Total Budget			**Estimated 2011-2012 Budget**		
Total Cost	(original)	$200,000	**Total**		**$100,000**
	(revised)				
Est. Expended to Date			Salaries		$100,000
FY 2010 - 2011 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		

PURPOSE AND SCOPE

The objective of this proposed project is to use the state data to calibrate the safety prediction models for three types of highways: rural 2-lane, rural multiple lane and urban and suburban arterials. For each type of highway, the calibration will be done for both segment and intersections. The basic steps for the calibration procedure are:

- Identify facility types for which the applicable safety prediction model is to be calibrated;
- Select sites for calibration of the model for each facility type;
- Obtain data for each facility type applicable to a specific calibration period;
- Apply the applicable model to predict total accident frequency for each site during the calibration period as a whole; and
- Compute calibration factors for use in safety prediction models.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

To be determined upon award of contract.

Title:	**Development of a Model to Guide the Number of Staff Resources Needed for Quality Assurance on Construction Projects**	**Project Status:**	**Proposed**
Funding Source:	**State: TT-Reg**	**Budget Category:**	**State**

SIO:			Project Start Date:		7/1/2011
Research Project Number:	12-3SS		Completion Date	(original)	6/30/2013
Research Agency:			Completion Date	(revised)	
Principal Investigator:					

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$20,000		**Total**		**$50,000**
	(revised)					
Est. Expended to Date				Salaries		$30,000
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		$20,000

PURPOSE AND SCOPE

The purpose of this project is to develop an analytical method to guide the number of construction staff needed on construction projects factoring in the scope, size and type of construction projects in consideration of the LADOTD standard specifications, quality assurance manuals, and sampling and testing manuals.

The scope of the project is limited to construction projects related to LADOTD.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Conduct a Literature Review to explore the existing analytical methods that are used by other DOT's;
- If any methods are found in activity 1 then evaluate them for their applicability by adopting them and applying them in the construction projects that are related LADOTD;
- Develop a new analytical method if there is no existing analytical method;
- Demonstrate the effectiveness of newly developed analytical method/ adopted analytical method by applying it on a current ongoing construction project related to LADOTD; and
- Write a report summarizing all the activities, document the procedure used in analytical model development, outline the steps needed to apply the newly developed model and state the limitations of the model if any.

Title:	**A Tool for Documenting, Tracking, Recording, and Analyzing Intersection Site Improvements**	**Project Status:**	**Proposed**
Funding Source:	**State: TT-Reg**	**Budget Category:**	**State**

SIO:		Project Start Date:		7/1/2011
Research Project Number:	12-4SA	Completion Date	(original)	
Research Agency:		Completion Date	(revised)	
Principal Investigator:				

BUDGET STATUS

Total Budget			**Estimated 2011-2012 Budget**		
Total Cost	(original)	$200,000	**Total**		**$50,000**
	(revised)				
Est. Expended to Date			Salaries		$50,000
FY 2010 - 2011 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		

PURPOSE AND SCOPE

One of the SHSP emphasis areas is Infrastructure and Operations which is comprised of “intersection crashes” and “roadway departure crashes”. To address intersection safety 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.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

To be determined upon award of contract.

Title:	**Development of Minimum State Requirements for Local Growth management Policies-Phase 1**	**Project Status:**	**Proposed**

Funding Source:	**State: TT-Reg**	**Budget Category:**	**State**

SIO:			Project Start Date:		7/1/2000
Research Project Number:	12-4SS		Completion Date	(original)	6/30/2013
Research Agency:			Completion Date	(revised)	
Principal Investigator:					

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$250,000		**Total**		**$70,000**
	(revised)					
Est. Expended to Date				Salaries		$50,000
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		$20,000

PURPOSE AND SCOPE

The main purpose of this research is to develop minimum requirements for local growth management policies for use in Louisiana. The research will be conducted in three phases. The first phase of this research will be limited to defining minimum requirements with respect to transportation. The scope of this project is limited to state of Louisiana.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Conduct literature review to gain an understanding of existing state-of-the-practice concerning growth management;
- Conduct a survey of other states and a cross-section of municipalities to investigate the state-of-the-practices in growth management that are currently in use;
- Establish a task force comprising of representatives from metropolitan planning organizations, municipal and parish public works engineers and municipal and parish planning officials and LADOTD engineers and planners;
- Conduct a series of consensus building meetings with the task force established in preceding activity. The main aim of this meetings will be to develop/defining minimum growth managements policies with respect to transportation; and
- Summarize the results of various activities and document the developed minimum requirements for local growth management policies.

Title:	**Photocatalytic Previous Concrete for Ambient Air Purification and Water Quality Improvement**	**Project Status:**	**Proposed**
Funding Source:	**State: TT-Reg**	**Budget Category:**	**State**

SIO:	**30000309**		Project Start Date:		7/1/2011
Research Project Number:	11-1TIRE		Completion Date	(original)	6/30/2012
Research Agency:	LSU		Completion Date	(revised)	
Principal Investigator:	Dr. Marwa Hassan				

BUDGET STATUS

Total Budget			**Estimated 2011-2012 Budget**		
Total Cost	(original)	$30,000	**Total**		**$30,000**
	(revised)				
Est. Expended to Date			Salaries		$25,000
FY 2010 - 2011 Budget			Equipment	(expendable)	$5,000
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		

PURPOSE AND SCOPE

The objective of this project is to determine the effectiveness of pervious concrete mixtures to perform as a photocatalytic agent to trap and degrade air pollutants. Pervious concrete samples will be produced with varying porosities and thicknesses. Air purification experiments will be used to determine the most efficient pervious concrete design and for comparison against impervious photocatalytic contrete.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Prepare pervious concrete samples;
- Determine the environmental benefits of pervious concrete;
- Determine the levels of nitrate after photocatalytic activities;
- Measure the mechanical performance of pervious concrete; and
- Prepare a final report that documents the research effort in this study.

LTRC Annual Research Program

Fiscal Year 2011-2012

2011 RPIC PROBLEM STATEMENTS

FINAL RANKING	PROBLEM STATEMENT TITLE
1	Minimizing Shrinkage Cracking in Cement-Stabilized Bases Through the Use of Microcracking
2	Full Application of HSM in Louisiana
3	Traffic Counting Using Existng Video Detection Cameras.
4	A Tool for Documenting, Tracking, Recording, and Analyzing Intersection Site Improvements
5	Creation of a Strategic Plan for Highway Safety Research
6	Comparison of Conventional Concrete and Self Consolidation Concrete in Drilled Shaft Construction
7	Development of a Model to Guide the Number of Staff Resources Needed for Quality Assurance on Construction Projects
8	Development of Minimum State Requirements for Local Growth Management Policies – Phase I
9	History of the Implementation of AASHTO and Louisiana DOTD Road Design Standards
10	Construction and evaluation of several test sections for mitigating shale gas exploration and mining efforts
11	Joint Repair Using Polymer Concrete Products
12	Development of Standards for GPS Elevation Accuracy
13	Chemical Characterization of Asphalts as Related to Their Performance
14	Development of Design Method for Post Grouted Drilled Shafts
15	Travel time estimation in urban areas using Bluetooth receivers
16	Develop a GIS based map showing all protected land by the levees with a 100 year flood frequency event or greater within the State of Louisiana.
17	ground-in rumble strips: a detriment to flexible pavement structure?
18	New Concrete Mix with Self-Curing Capabilities
19	Reversing cross slopes on multi lane roads causes water to pond.
20	NCHRP 1-40D Soil Unit Map Data for Louisiana
21	Determination of Pile Splices Transition Length Requirement
22	Development of Geotechnical Manual for LADOTD
23	Louisiana Highway Construction Cost Index Monitoring System
24	Development of a Short-Term Traffic Prediction Model for Travel Times on I-10/I-12
25	Determination of chemical characteristics of fly ash to predict behavior
26	Development of a Graphical Web-Based H&H Programs for LDOTD
27	Development of an Automated Data Collection, Tracking and Notification System/Service for LADOTD District Level Operations

Self Generated Funded Research Program

CONTINUING RESEARCH

Title:	**LOOP Environmental Monitoring: 2011-2013 Beach Elevation, Beach Vegetation, Land Loss and Habitat Changes Surveys**	**Project Status:**	**Ongoing**
Funding Source:	**LOOP**	**Budget Category:**	**Self-Generated**

SIO:	**30000200**		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				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$136,247		**Total**		**$50,000**
	(revised)					
Est. Expended to Date				Salaries		$50,000
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

PURPOSE AND SCOPE

The purpose of this project is to provide ongoing surveillance of the environmental impact of the LOOP pipeline in terms of beach erosion, impact on vegetation, and any influence on the habitat in the vicinity of the pipeline.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

To be determined upon award of contract.

Title:	**Field versus Laboratory Volumetrics and Mechanical Properties**	**Project Status:**	**Ongoing**
Funding Source:	**NCHRP**	**Budget Category:**	**Self-Generated**

SIO:	**30000133**		Project Start Date:		8/1/2009
Research Project Number:	10-1B		Completion Date	(original)	2/29/2012
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Louay Mohammad				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$500,000		**Total**		**$153,247**
	(revised)					
Est. Expended to Date		$300,000		Salaries		$103,247
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)	$150,000		Equipment	(non-expendable)	
	(revised)			Travel		$3,000
Est. FY Expenditure		$150,000		Other		$47,000

PURPOSE AND SCOPE

The objectives of this study are (.) 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 DOT's 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.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

Completed the Following Tasks for Phase 1A
- Task 1A: Comprehensive Literature Review;
- Task 2A: Conduct A Meta-Analysis Of Collected Data; and
- Task 3A: Design An updated Experimental Work Plan And Submit An Interim Report.

Performed the following Tasks:
- Conduct Laboratory Experiments approved in Task 3

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

Perform 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 discusses the cause and magnitude of variability in measured volumetric and mechanical properties with the three specimen types of interest and 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.

It is anticipated that a time extension of 6 months will be requested due to the additional work of Phase I that was requested by the Project Panel.

Title:	**Modulus Based Construction Specification of Earthwork and Unbound Aggregate**	**Project Status:**	**Ongoing**
Funding Source:	**NCHRP**	**Budget Category:**	**Self-Generated**

SIO:	**30000260**		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				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$154,037		**Total**		**$70,250**
	(revised)					
Est. Expended to Date		$10,000		Salaries		$60,250
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)	$10,000		Equipment	(non-expendable)	
	(revised)			Travel		$2,000
Est. FY Expenditure		$10,000		Other		$8,000

PURPOSE AND SCOPE

LTRC is a subcontract to University Texas El Paso for this NCHRP 10-84 Project. The objective of this research is to develop a modulus-based construction specification for compaction of earthwork and unbound aggregate. LTRC will assist in gathering the necessary data to develop specification limits on stiffness or modulus and moisture content of compacted earthwork and unbound aggregate related to design modulus values.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

Completed the Following Tasks:

- Task 1: Comprehensive Literature Review;
- Task 2: Review and summarize current state DOT practice on the measurement of the field stiffness;
- Task 3: Identify appropriate moisture and suction prediction models for evaluation in Phase II;
- Task 4: Identify appropriate test methods and devices for in situ measurement of stiffness evaluation in Phase II;
- Task 5: Prepare an updated, detailed work plan; and
- Task 6: Submit an interim report.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

Perform The Following Tasks:

- Task 7: Conduct the work plan approved in Task 6; and
- Task 8: Using the results of Task 7, prepare a draft modulus-based construction specification for compaction of earthwork and unbound aggregate.

Title:	**A Shape Memory Polymer based Self-healing Sealant for Expansion Joint**	**Project Status:**	**Ongoing**
Funding Source:	**NCHRP**	**Budget Category:**	**Self-Generated**

SIO:	**30000171**		Project Start Date:		5/1/2009
Research Project Number:	09-4ST		Completion Date	(original)	11/1/2010
Research Agency:	LSU		Completion Date	(revised)	7/31/2011
Principal Investigator:	Dr. Guoqiang Li				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$135,000		**Total**		**$15,000**
	(revised)					
Est. Expended to Date		$90,000		Salaries		$10,000
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)	$120,000		Equipment	(non-expendable)	$3,000
	(revised)	$120,000		Travel		
Est. FY Expenditure		$120,000		Other		$2,000

PURPOSE AND SCOPE

The objective of this study is to develop a Novel Shape Memory Polymer (SMP) based syntactic foam joint sealant which will be able to self-heal cohesive damage by its shape memory characteristic and avoid adhesive failure by consistently and autonomously applying a compressive stress to the edge of the concrete. The proposed novel sealant belongs to the category of compression seal joint.

This study has been approved and is TRB funded through the Ideas Deserving Exploratory Analysis (IDEA) Program.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

- 2-D programming of the foam sealant;
- Stress-strain behavior of the sealant under 2-D stress condition; and
- Lab-scale testing.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Field-level installation.

Self Generated Funded Research Program

PROPOSED RESEARCH

Title:	**Performance of WMA Technologies: Stage II – Long-term Field Performance**	**Project Status:**	**Proposed**

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

SIO:		Project Start Date:		4/7/2011
Research Project Number:	12-4B	Completion Date	(original)	10/6/2013
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Dr. Louay Mohammad			

BUDGET STATUS

Total Budget			**Estimated 2011-2012 Budget**		
Total Cost	(original)	$103,796	**Total**		**$50,000**
	(revised)				
Est. Expended to Date			Salaries		$48,000
FY 2010 - 2011 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		$2,000
Est. FY Expenditure			Other		

PURPOSE AND SCOPE

LTRC is a subcontractor to Washington State University on this NCHRP 9-49 project. The objectives of this research are to:

- Identify the material and engineering properties of WMA pavements that are significant determinants of their long-term field performance; and
- Recommend best practices for the use of WMA technologies.

The main task for LTRC in this effort is in supporting the loaded wheel testing requirements of this study.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

Performed the following task
Task 1: Select WMA Candidate Projects.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

Perform the following tasks:
Task 1: Select WMA Candidate Projects;
Task 2: Develop Experimental Design; and
Task 3: Conduct Field Characterization of WMA Projects.

Federal Funded Projects

Title:	**Enhancing Calibrated Peer Review for Improved Engineering Communication Education**	**Project Status:**	**Ongoing**
Funding Source:	**NSF**	**Budget Category:**	**Federal**

SIO:	**30000148**		Project Start Date:		9/1/2008
Research Project Number:	09-2SS		Completion Date	(original)	9/1/2011
Research Agency:	LTRC		Completion Date	(revised)	8/31/2012
Principal Investigator:	Dr. Chester Wilmot				

BUDGET STATUS

Total Budget				**Estimated 2011-2012 Budget**		
Total Cost	(original)	$50,050		**Total**		**$10,397**
	(revised)					
Est. Expended to Date		$33,069		Salaries		$5,198
FY 2010 - 2011 Budget				Equipment	(expendable)	
FY Funds	(original)	$19,752		Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure		$19,653		Other		$5,198

PURPOSE AND SCOPE

The purpose of this project is to extend the existing Calibrated Peer Review (CPR) process which enhances written communication skills, to enhancing visual and oral communication skills as well. The scope of the project is limited to visual and oral communication skills used in presenting a Capstone Design in Civil Engineering. Students learn these skills by reviewing presentations of their peers and then comparing their evaluation with that of an expert. The process is repeated on other presentations until the student is able to evaluate a presentation similarly to the expert, and is therefore considered "calibrated".

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

- In Spring, 2010, students in the first semester of the Civil Engineering Capstone Design course went Through up to 3 cycles of the peer review process on presentations made by students in the course. Deviations of their evaluations from those of an expert presenter were noted on each cycle, quantified, and fed back to the student;
- Students displayed improvement on each cycle mentioned above. ON a five-point evaluation scale, the Standard deviation of the student's scores to those of the expert evaluator decreased from 1.12 on the first iteration, to 0.88 on the second, and 0.84 on the third;
- The University of North Carolina, Chapel Hill, conducted an assessment of the new procedure allowing Development of visual and oral skills, and found that the majority of the students were of the opinion that they learned from the process; and
- The Principal Investigator attended the "Communication Across the Curriculum" Faculty Summer Institute, June 2-4, 2010.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Obtain the services of multiple expert presentation experts to evaluate several presentations that range in standard in a comprehensive and well-balanced manner;
- Video recording of presentations must improve to provide good sound, and pan speaker, screen, and audience;
- The enhanced CPR process must be computerized to store presentations, assign them to individuals, receive evaluations back from students, compare them with the expert evaluation, calculate statistics, return evaluation with a new assignment if acceptable standard of evaluation has not been met, and accumulate overall statistics and overall assessment; and
- Other members of this Collaborative Research Project (members UNC, Rose-Hulman, UCLA, LSU, LTRC) are planning to request a no cost extension to the project.

Other
DOTD Funded Projects

Title:	**Safety Improvement from Edge Lines of Rural Two-Lane Highway**	**Project Status:**	**Ongoing**
Funding Source:	**Safety**	**Budget Category:**	**Other DOTD Sections**

SIO:	**200004880**		Project Start Date:		9/1/2007
Research Project Number:	07-7P		Completion Date	(original)	8/31/2010
Research Agency:	ULL		Completion Date	(revised)	8/31/2011
Principal Investigator:	Dr. Xiaoduan Sun				

BUDGET STATUS

Total Budget			**Estimated 2011-2012 Budget**		
Total Cost	(original)	$107,060	**Total**		**$7,060**
	(revised)				
Est. Expended to Date		$100,000	Salaries		$3,560
FY 2010 - 2011 Budget			Equipment	(expendable)	
FY Funds	(original)	$107,060	Equipment	(non-expendable)	
	(revised)		Travel		$2,000
Est. FY Expenditure		$100,000	Other		$1,500

PURPOSE AND SCOPE

The goal of this project is to improve the safety of narrow rural two-lane highways in Louisiana. Specifically, the research team will:

- Identify the segments that will benefit from implementing the pavement edge line the most;
- Implement pavement edge lines at selected locations; and
- Conduct the Before-and-After study at these locations to estimate the crash reduction factors.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

Perform the before-and-after crash data analysis.

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

Finish the final report by August, 2011.

LTRC Annual Research Program
Fiscal Year 2011-2012

Title:	Quantifying the Key Factors that Create Road Flooding	Project Status:	Proposed

Funding Source:	Operations	Budget Category:	Other DOTD Sections

SIO:		Project Start Date:		
Research Project Number:	11-6GT	Completion Date	(original)	
Research Agency:	ULL	Completion Date	(revised)	
Principal Investigator:	Dr. Roy Dokka			

BUDGET STATUS

Total Budget			Estimated 2011-2012 Budget		
Total Cost	(original)	$50,000	**Total**		**$50,000**
	(revised)				
Est. Expended to Date			Salaries		$49,675
FY 2010 - 2011 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	$175
	(revised)		Travel		$150
Est. FY Expenditure			Other		

PURPOSE AND SCOPE

The objective of this proposal is to develop a near real-time, data driven decision support model and operational instrument that will synthesize the flood hazard for emergency evacuation road segments in south Louisiana.

FISCAL YEAR 2010 - 2011 ACCOMPLISHMENTS

FISCAL YEAR 2011-2012 PROPOSED ACTIVITIES

- Collect and measure data on commonly flooded road segments;
- Develop a deterministic, scenario-based flood inundation model;
- Perform vehicle vulnerability and risk analysis
- Design map interface and reporting tool;
- Document metadata and reporting tool; and
- Report review and delivery.