

LTRC Annual Research Program

Fiscal Year July 1, 2010 - June 30, 2011

**FHWA Part II SPR Research Program
FAP Number SPR-0010(34)
&
FHWA IBRD Funded Research Program
&
FHWA LTAP Funded Program
&
FHWA STP Funded Program
&
State Funded Research Program**



Conducted by:

Louisiana Department of Transportation and Development
Louisiana Transportation Research Center

In cooperation with
United States Department of Transportation
Federal Highway Administration

June 2010



U.S. Department
of Transportation
**Federal Highway
Administration**

Louisiana Division Office

June 30, 2010

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

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

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

Subject: LTRC Annual Research Program, FY 2010-2011
SPR-0010(34) Part II

Attention: Dr. Harold 'Skip' Paul

Dear Ms. LeBas:

We have reviewed the subject work program, and find it to be satisfactory. Please furnish this office with three copies of the final, bound printed work program.

A separate request from your Federal-aid section is required to process the fiscal documents necessary to obligate funding.

Sincerely yours,

Mary M. Stringfellow
Program Delivery Team Leader





Research, Technology Transfer, Education & Training



May 12, 2010

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

Attention: Ms. Mary Stringfellow

Re: FY 2010-2011 LTRC WORK PROGRAM

Dear Mr. Bolinger:

Enclosed please find the FY 2010/2011 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
Ms. Genevieve Smith, FHWA

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

Project Status

A	Active
P	Proposed
RFP	Request for Proposal

Table of Contents

Budget Recap Sheets	A1.....A5
Project Summary Sheets	B1.... B14
FHWA Part II SPR Funded Research Program	
Administrative Line Items & Research Support Studies.....	C-1....C-13
Continuing Research.....	C-14....C-35
Proposed Research.....	C-36....C-61
Pooled Fund Lead State Research.....	C-62....C-66
External Collaboration Research.....	C-67....C-76
FHWA IBRD Funded Research Program	
Continuing Research.....	D-1....D-10
Proposed Research.....	D-11....D-15
FHWA LTAP Funded Program	E-1....E-3
FHWA STP Funded Technology Transfer & Education Program	F-1....F-16
State Funded Research Program	
Continuing Research.....	G-1....G-15
Proposed Research.....	G-16....G-36
Self Generated Funded Research	
Continuing Research.....	H-1....H-6
Proposed Research.....	H-7....H-8
Other DOTD Funded Projects	I-1....I-6

FHWA SPR Work Program

Part II

FAP Number SPR-0010(34)



FHWA Funding

SPR Research Budget Recap	Total
Administrative Budget	\$765,000
Research Support Studies Budget	\$1,580,000
Active Studies Budget	\$1,655,455
Proposed Studies Budget	\$1,831,117
Pooled Fund Lead State Studies Budget	\$155,000
Total Contingencies Budget	\$100,000
Total SPR Budget	\$6,086,572

SPR External Collaboration Budget Recap	Total
Pool Funded Studies	\$130,000
TRB Correlations	\$125,270
NCHRP	\$715,038
Total SPR External Collaboration Budget	\$970,308

IBRD Budget Recap	Total
Active Studies Budget	\$360,550
Proposed Studies Budget	\$360,000
Total IBRD Budget	\$720,550

FHWA Funding

LTAP Budget Recap	Total
LTAP	\$608,525
LTAP Program Total	\$608,525

STP: Technology Transfer Program Budget Recap	Total
Technology Transfer Program and Operations	\$1,177,807
Workforce Development Program	\$3,833,237
Student Support Programs	\$520,500
Total STP Budget	\$5,531,544

State Funding

State Budget Recap	Total
Active Studies Budget	\$1,382,616
Proposed Studies Budget	\$1,356,130
RFP's	\$500,000
Total State Budget	\$3,238,746

Self-Generated Funding

Self-Generated Budget Recap	Total
Active Studies Budget	\$325,975
Proposed Studies Budget	\$180,000
Total Self-Generated Budget	\$505,975

Other DOTD Sections Funding

Other DOTD Sections Budget Recap	Total
Active Studies Budget	\$320,789
Proposed Studies Budget	\$15,000
Total Other DOTD Sections Budget	\$335,789

LTRC ANNUAL RESEARCH PROGRAM

SPR: TT-Fed/TT-Reg

FISCAL YEAR 2010-2011

Funding	A/P	Project Type	State Project Number	Research No.	FY Budget	Total Cost	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	Page No.
---------	-----	--------------	----------------------	--------------	-----------	------------	------------------------	---------------	------------	----------	----------------	----------

Project Type: Administrative

SPR: TT-Fed/TT-Reg	A	ADM	736-99-1703	11-1PM	\$765,000	\$765,000	Harold 'Skip' Paul	Program Management	7/1/2010	6/30/2011		C-2
					\$765,000	\$765,000	ADMINISTRATIVE BUDGET TOTALS					

Project Type: Research Support

SPR: TT-Fed/TT-Reg	A	RS	736-99-1707	11-1EQM	\$300,000	\$300,000	Mark Morvant	Equipment Management	7/1/2010	6/30/2011		C-3
SPR: TT-Fed/TT-Reg	A	RS	736-99-1704	11-1LFT	\$150,000	\$150,000	Mark Morvant	Research Laboratory and Field Test Support	7/1/2010	6/30/2011		C-5
SPR: TT-Fed/TT-Reg	A	RS	736-99-1705	11-1NPE	\$60,000	\$60,000	Mark Morvant	New Products Evaluation	7/1/2010	6/30/2011		C-6
SPR: TT-Fed/TT-Reg	A	RS	736-99-1706	11-1TA	\$385,000	\$385,000	Mark Morvant	Technical Assistance	7/1/2010	6/30/2011		C-8
SPR: TT-Fed/TT-Reg	A	RS	736-99-1709	11-1TRS	\$400,000	\$400,000	Mark Morvant	Technical Research Surveillance	7/1/2010	6/30/2011		C-10
SPR: TT-Fed/TT-Reg	A	RS	736-99-1708	11-1TTRI	\$285,000	\$285,000	Mark Morvant	Technology Transfer and Research Implementation	7/1/2010	6/30/2011		C-11
					\$1,580,000	\$1,580,000	RESEARCH SUPPORT BUDGET TOTALS					

Project Type: Contingency

SPR: TT-Fed/TT-Reg	A	CON	736-99-1710	11-1CON	\$100,000	\$100,000	Mark Morvant	Contingencies		6/30/2011		C-13
					\$100,000	\$100,000	CONTINGENCY BUDGET TOTALS					

LTRC ANNUAL RESEARCH PROGRAM

SPR: TT-Fed/TT-Reg

FISCAL YEAR 2010-2011

Funding	A/P	Project Type	State Project Number	Research No.	FY Budget	Total Cost	Agency	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	Page No.
---------	-----	--------------	----------------------	--------------	-----------	------------	--------	------------------------	---------------	------------	----------	----------------	----------

Project Type: Geotechnical

SPR: TT-Fed/TT-Reg	A	GT	736-99-1556	05-1GT	\$72,000	\$393,176	LTRC	Murad Abu-Farsakh	Field Demonstration of New Bridge Approach Slab Designs and Performance	8/1/2008	8/1/2011		C-15
SPR: TT-Fed/TT-Reg	A	GT	736-99-1507	08-3GT	\$95,000	\$232,951	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	7/31/2012	C-17
SPR: TT-Fed/TT-Reg	A	GT	736-99-1101	10-1GERL	\$168,000	\$170,000	LTRC	Murad Abu-Farsakh	LTRC Support for Geotechnical Research at the Geotechnical Engineering Research Laboratory (GERL)		6/30/2011		C-19
					\$335,000	\$796,127	GEOTECHNICAL BUDGET TOTALS						

Project Type: Pavements

SPR: TT-Fed/TT-Reg	A	P	736-99-1649	07-6P	\$130,400	\$220,192	LTRC	Zhong Wu	Evaluation of Current DOTD Flexible Pavement Structures Using PMS Data and New M-E Pavement Design Guide	7/1/2009	6/30/2011		C-20
SPR: TT-Fed/TT-Reg	A	P	736-99-1641	09-7P	\$50,500	\$98,850	LTRC	Zhong Wu	Construction and Accelerated Pavement Testing of TTI Pavement Test Sections	10/1/2009	10/1/2011		C-22
					\$180,900	\$319,042	PAVEMENTS BUDGET TOTALS						

Project Type: Bituminous

SPR: TT-Fed/TT-Reg	A	B	736-99-1512	04-6B	\$92,426	\$398,672	LTRC	Louay Mohammad	Characterization of Louisiana Asphalt Mixtures Using Simple Performance Tests and MEPDG	1/1/2008	12/31/2010		C-23
SPR: TT-Fed/TT-Reg	A	B	736-99-1624	07-1B	\$155,000	\$325,420	LTRC	Bill King	Evaluation of Warm Mix Asphalt Technology in Flexible Pavements	3/15/2009	3/15/2011		C-25
SPR: TT-Fed/TT-Reg	A	B	736-99-1652	09-2B	\$87,695	\$144,695	LTRC	Zhong Wu	Development of New Surface Friction Guidelines for LADOTD	7/1/2009	6/30/2010	6/30/2011	C-26
SPR: TT-Fed/TT-Reg	A	B	736-99-1029	10-1EMC	\$176,014	\$2,741,941	LTRC	Louay Mohammad	Pavement Materials Research Using Special Equipment at the Engineering Materials Characterization Research Facility	7/1/2009	6/30/2012		C-27
					\$511,135	\$3,610,728	BITUMINOUS BUDGET TOTALS						

Project Type: Structures

SPR: TT-Fed/TT-Reg	A	ST	736-99-1619	09-2ST	\$65,000	\$82,410	LTRC	Walid Alaywan	Performance and Analysis of Concrete Bridge Railing Using Conventional and Composite Reinforcement Materials	4/1/2009	9/30/2009	3/31/2011	C-28
					\$65,000	\$82,410	STRUCTURES BUDGET TOTALS						

Project Type: Special Studies

SPR: TT-Fed/TT-Reg	A	SS	736-99-1715	06-2SS	\$147,353	\$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-29
SPR: TT-Fed/TT-Reg	A	SS	736-99-1714	10-1PLA	\$110,896	\$4,182,901		Chester Wilmot	LTRC Proposal for the Support of Research and Development in Transportation Planning	7/1/1995	6/30/1996	6/30/2012	C-30
					\$258,249	\$4,693,740	SPECIAL STUDIES BUDGET TOTALS						

LTRC ANNUAL RESEARCH PROGRAM

SPR: TT-Fed/TT-Reg

FISCAL YEAR 2010-2011

Funding	A/P	Project Type	State Project Number	Research No.	FY Budget	Total Cost	Agency	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	Page No.
---------	-----	--------------	----------------------	--------------	-----------	------------	--------	------------------------	---------------	------------	----------	----------------	----------

Project Type: Concrete

SPR: TT-Fed/TT-Reg	A	C	736-99-1586	09-2C	\$38,456	\$121,044	LTRC	Tyson Rupnow	Evaluation of Cement and Fly Ash Treated RAP and Marginal Aggregates for Base Construction	3/1/2009	3/1/2011		C-31
SPR: TT-Fed/TT-Reg	A	C	736-99-1587	09-4C	\$123,486	\$233,544	LTRC	Tyson Rupnow	Evaluation of Ternary Cementitious Combinations	3/1/2009	2/28/2011	6/30/2011	C-32
SPR: TT-Fed/TT-Reg	A	C	736-99-1642	09-5C	\$76,351	\$116,351	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	6/30/2011	C-33
SPR: TT-Fed/TT-Reg	A	C	736-99-1661	10-1C	\$66,878	\$102,878		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		C-35
					\$305,171	\$573,817	CONCRETE BUDGET TOTALS						
					\$1,655,455	\$10,075,864	SPR: TT-FED/TT-REG ACTIVE BUDGET TOTALS						

LTRC ANNUAL RESEARCH PROGRAM

SPR: TT-Fed/TT-Reg

FISCAL YEAR 2010-2011

Funding	A/P	Project Type	State Project Number	Research No.	FY Budget	Total Cost	Agency	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	Page No.
---------	-----	--------------	----------------------	--------------	-----------	------------	--------	------------------------	---------------	------------	----------	----------------	----------

Project Type: Geotechnical

SPR: TT-Fed/TT-Reg	P	GT			\$64,340	\$150,000	LTRC	Mark Martinez	The Rideability of a Deflected Bridge Approach Slab (LTRC Project 02-2GT Continuation: Phase II)	1/1/2011	12/31/2012		C-37
SPR: TT-Fed/TT-Reg	P	GT			\$69,000	\$250,000	LTRC	Murad Abu-Farsakh	Accelerated Load Testing of Geosynthetic Base Reinforced Unpaved and Pavement Test Sections	9/1/2010	8/30/2012		C-38
SPR: TT-Fed/TT-Reg	P	GT			\$91,930	\$91,930	LTRC	Pallavi Bhandari	LTRC Research Software Development and Support	7/1/2010			C-39
SPR: TT-Fed/TT-Reg	P	GT		10-3GT	\$113,000	\$113,000	LTRC	Khalil Hanifa	Design Values of Resilient Modulus of Stabilized and Non-stabilized Base and Subbase	7/1/2010	6/30/2011		C-40
SPR: TT-Fed/TT-Reg	P	GT		10-5GT	\$112,500				Field Instrumentation and Testing to Study Set-Up Phenomenon of Piles Driven into Louisiana Clayey Soils				C-41
SPR: TT-Fed/TT-Reg	P	GT			\$27,000	\$150,000	LTRC	Murad Abu-Farsakh	Evaluation of Site and Testing Variability on Soil Properties	7/1/2010	12/31/2011		C-43
SPR: TT-Fed/TT-Reg	P	GT		10-4GT	\$123,000	\$250,000	LTRC	Murad Abu-Farsakh	In-Situ Evaluation of Design Parameters and Procedures for Stabilized Subbases from Cyclic Plate Load Tests	7/1/2010	12/31/2012		C-44
SPR: TT-Fed/TT-Reg	P	GT		06-3GT	\$150,000	\$200,000	LTRC	Gavin Gautreau	Intelligent Compaction Technology	10/1/2010	9/30/2012		C-46
					\$750,770	\$1,204,930	GEOTECHNICAL BUDGET TOTALS						

Project Type: Pavements

SPR: TT-Fed/TT-Reg	P	P			\$59,064	\$300,000	LTRC	Kevin Gaspard	Prevention of Extensive Desiccation Cracking on Rural Highways	8/2/2010	6/30/2016		C-47
SPR: TT-Fed/TT-Reg	P	P			\$90,550	\$500,000	LTRC	Kevin Gaspard	Assessment of Environmental, Seasonal and Regional Variations in Pavement Base and Subgrade Properties	9/24/2010	6/30/2015		C-48
SPR: TT-Fed/TT-Reg	P	P		09-5P	\$105,000	\$210,000		Mark Martinez	Development of Improved QA/QC Protocols for Portable WIM Data Collection	7/1/2009			C-49
SPR: TT-Fed/TT-Reg	P	P		10-3P	\$99,250	\$352,280	LTRC	Leticia Santos da Rocha Courville	LED Traffic Signal Lifetime Management System	6/1/2010	6/1/2012		C-50
					\$353,864	\$1,362,280	PAVEMENTS BUDGET TOTALS						

Project Type: Bituminous

SPR: TT-Fed/TT-Reg	P	B			\$83,485	\$105,106	LTRC		Evaluation of the Validity of Multiple Stress Creep Recovery Test to be included in LADOTD Asphalt Binder Specification	7/1/2010	9/30/2011		C-52
SPR: TT-Fed/TT-Reg	P	B			\$104,479	\$275,688	LTRC	Louay Mohammad	Investigation of In-situ tests in QC/QA Applications for Hot-Mix Asphalt	7/1/2010	6/30/2012		C-53
SPR: TT-Fed/TT-Reg	P	B			\$63,196	\$430,000	LTRC	Louay Mohammad	Performance Evaluation Of Sustainable Materials in HMA Mixtures Under Accelerated Pavement Testing	7/1/2010	6/30/2013		C-54

LTRC ANNUAL RESEARCH PROGRAM

SPR: TT-Fed/TT-Reg

FISCAL YEAR 2010-2011

Funding	A/P	Project Type	State Project Number	Research No.	FY Budget	Total Cost	Agency	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	Page No.
SPR: TT-Fed/TT-Reg	P	B			\$68,580	\$204,032	LTRC	Louay Mohammad	Evaluation Of HMA Mixtures Containing Recycled Asphalt Shingles	7/1/2010	6/30/2012		C-55
SPR: TT-Fed/TT-Reg	P	B			\$68,580	\$275,000	LTRC	Louay Mohammad	Investigation of the Use of High RAP Content in Hot Mix Asphalt Mixtures	7/1/2010	6/30/2012		C-56
					\$388,320	\$1,289,826	BITUMINOUS BUDGET TOTALS						

Project Type: Special Studies

SPR: TT-Fed/TT-Reg	P	SS			\$25,000	\$200,000	LTRC	Marie Walsh	Louisiana Transportation Safety Center				C-57
SPR: TT-Fed/TT-Reg	P	SS		10-7SS	\$93,163	\$93,163	LTRC	Chester Wilmot	Support Study for Establishing an Intelligent Transportation System (ITS) Lab at LTRC	7/1/2010	6/30/2012		C-58
					\$118,163	\$293,163	SPECIAL STUDIES BUDGET TOTALS						

Project Type: Concrete

SPR: TT-Fed/TT-Reg	P	C			\$150,000	\$300,000	LTRC	Tyson Rupnow	Investigation of Roller Compacted Concrete for Low Volume Roads	8/1/2010	6/30/2013		C-59
SPR: TT-Fed/TT-Reg	P	C			\$35,000	\$250,000	LTRC	Tyson Rupnow	Development of Performance Based, or End Result Specifications	12/1/2010	6/30/2012		C-60
SPR: TT-Fed/TT-Reg	P	C			\$35,000	\$100,000	LTRC	Patrick Icenogle	Investigation of Air Entrainment Quantities Needed for Pavements and Bridges in Louisiana	10/1/2010	12/31/2011		C-61
					\$220,000	\$650,000	CONCRETE BUDGET TOTALS						
					\$1,831,117	\$4,800,199	SPR: TT-FED/TT-REG PROPOSED BUDGET TOTALS						

LTRC ANNUAL RESEARCH PROGRAM

FHWA

FISCAL YEAR 2010-2011

Funding	A/P	Project Type	State Project Number	Research No.	FY Budget	Total Cost	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	Page No.
---------	-----	--------------	----------------------	--------------	-----------	------------	------------------------	---------------	------------	----------	----------------	----------

Project Type: Pooled Fund Lead State Research

SPR: Pooled Fund: TT-Fed	A	PF	736-99-1655	09-1PF	\$25,000	\$150,000	Mark Morvant	Southeast Transportation Consortium	9/1/2009	8/30/2012		C-63
					\$25,000	\$150,000	SPR: POOLED FUND: TT-FED ACTIVE BUDGET TOTALS					

SPR: Pooled Fund: TT-Fed	P	PF			\$130,000	\$500,000		Traffic and Data Preparation for AASHTO MEPDG Analysis and Design	10/1/2010	9/30/2013		C-65
					\$130,000	\$500,000	SPR: POOLED FUND: TT-FED PROPOSED BUDGET TOTALS					
					\$155,000	\$650,000	POOLED FUND BUDGET TOTALS					

LTRC ANNUAL RESEARCH PROGRAM

FHWA

FISCAL YEAR 2010-2011

Funding	A/P	Project Type	State Project Number	Research No.	FY Budget	Total Cost	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	Page No.
---------	-----	--------------	----------------------	--------------	-----------	------------	------------------------	---------------	------------	----------	----------------	----------

Project Type: Pooled Fund: External Lead State Research

SPR: Pooled Fund: TT-Fed	A	PFE		TPF-5(105)	\$20,000	\$100,000	Wisconsin DOT	Transportation Library Connectivity	10/1/2005	12/31/2010		C-68
SPR: Pooled Fund: TT-Fed	A	PFE		TPF-5(114)	\$25,000	\$165,000	Washington DOT	Roadside Safety Research Program	7/1/2008	12/31/2011		C-70
SPR: Pooled Fund: TT-Fed	A	PFE		TPF-5(159)	\$5,000	\$25,000	Iowa DOT	Technology Transfer Concrete Consortium	2/5/2008	2/4/2012		C-72
SPR: Pooled Fund: TT-Fed	A	PFE		TPF-5(228)	\$20,000	\$60,000	Alabama DOT	Superpave Regional Center				C-74
					\$70,000	\$350,000	POOLED FUND: EXTERNAL LEAD STATE BUDGET TOTALS					
					\$70,000	\$350,000	SPR: POOLED FUND: TT-FED ACTIVE BUDGET TOTALS					

Project Type: Pooled Fund: External Lead State

SPR: Pooled Fund: TT-Fed	P	PFE			\$60,000	\$60,000		Pooled Fund Collaboration Projects				C-76
					\$60,000	\$60,000	POOLED FUND: EXTERNAL LEAD STATE BUDGET TOTALS					
					\$60,000	\$60,000	SPR: POOLED FUND: TT-FED PROPOSED BUDGET TOTALS					

LTRC ANNUAL RESEARCH PROGRAM

FISCAL YEAR 2010-2011

Funding	A/P	Project Type	State Project Number	Research No.	FY Budget	Total Cost	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	Page No.
---------	-----	--------------	----------------------	--------------	-----------	------------	------------------------	---------------	------------	----------	----------------	----------

Project Type: Structures

IBRD: TT-Fed	A	ST	736-99-1370	05-5ST	\$20,000	\$220,537	Steve C.S. Cai	Bridge Deck Replacement using FRP Materials	11/15/2005	5/14/2008	11/14/2010	D-2
IBRD: TT-Fed	A	ST	736-99-1437	07-1ST	\$115,550	\$565,550	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-4
IBRD: TT-Fed	A	ST	736-99-1438	07-3ST	\$65,000	\$200,000	Steve C.S. Cai	Repairing/Strengthening of Bridges with Post-Tensioned FRP Strands and Performance Evaluation	10/1/2007	4/1/2010	3/31/2011	D-6
IBRD: TT-Fed	A	ST	736-99-1439	07-4ST	\$90,000	\$400,000	George Z. Voyiadjis	Integral Abutment Bridge for Louisiana's Soft and Stiff Soils	10/1/2007	8/31/2011		D-7
IBRD: TT-Fed	A	ST	736-99-1573	08-2ST	\$70,000	\$199,999	Steve C.S. Cai	Monitoring Bridge Scour Using Fiber Optic Sensors	1/1/2009	7/1/2011		D-9
					\$360,550	\$1,586,086	STRUCTURES BUDGET TOTALS					
					\$360,550	\$1,586,086	IBRD: TT-FED ACTIVE BUDGET TOTALS					

Project Type: Structures

IBRD: TT-Fed	P	ST		10-1ST	\$110,000	\$250,000	Aziz Saber	Monitoring System for Bridges Subject to Heavy Loads	7/1/2010	6/30/2012		D-12
IBRD: TT-Fed	P	ST		10-2ST	\$125,000	\$250,000	Aziz Saber	Use of Geosynthetic Reinforced Soil for Bridge Abutments	7/1/2010	6/30/2012		D-14
IBRD: TT-Fed	P	ST		10-3ST	\$125,000	\$270,000	Aziz Saber	Elimination of Deck Joints using a Corrosion Resistant FRP Grid	7/1/2010	6/30/2012		D-15
					\$360,000	\$770,000	STRUCTURES BUDGET TOTALS					
					\$360,000	\$770,000	IBRD: TT-FED PROPOSED BUDGET TOTALS					

LTRC ANNUAL RESEARCH PROGRAM

FISCAL YEAR 2010-2011

Funding	A/P	Project Type	State Project Number	Research No.	FY Budget	Total Cost	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	Page No.
---------	-----	--------------	----------------------	--------------	-----------	------------	------------------------	---------------	------------	----------	----------------	----------

Project Type: LTAP

LTAP: TT-Fed/TT-Reg	A	LTAP	736-99-1497	10-LTAP	\$608,525	\$608,525	Marie Walsh	Local Technical Assistance Program (LTAP)		12/31/2010		E-2
					\$608,525	\$608,525	LTAP BUDGET TOTALS					
					\$608,525	\$608,525	LTAP: TT-FED/TT-REG ACTIVE BUDGET TOTALS					

Project Type: Technology Transfer and Training

STP: TT-Fed	A	TT	736-99-1484	08-1TSQ	\$340,917	\$340,917	Sam Cooper	Technology Transfer Program and Operations		6/30/2011		F-2
STP: TT-Fed	A	TT	701-65-1402	10-1SS	\$169,607	\$274,475		Evaluation of Knowledge Transfer in an Immersive Virtual Learning Environment for the Transportation Community	1/1/2010	12/31/2010		F-4
STP: TT-Fed	A	TT	736-99-1701	11-1TSQ	\$567,283	\$567,283	Sam Cooper	Technology Transfer Program and Operations	7/1/2010	6/30/2011		F-6
STP: TT-Fed	A	TT	736-99-1702	11-1WD	\$1,233,237	\$1,233,237	Sam Cooper	Workforce Development	7/1/2010	6/30/2011		F-8
STP: TT-Fed	A	TT	701-65-1481	11-2AD	\$37,500	\$37,500		Support for Senior Project Courses for Retainer Contract for 11-WDC 736-99-1698	7/1/2010	6/30/2011		F-9
STP: TT-Fed	A	TT	701-65-1482	11-3AD	\$147,000	\$147,000	Harold 'Skip' Paul	LTRC Student Program	7/1/2010	6/30/2011		F-10
STP: TT-Fed	A	TT	736-99-1657	11-4AD	\$36,000	\$110,000	Mark Morvant	Technology Transfer & Research Implementation Support for Louisiana Universities	1/1/2010	12/31/2013		F-11
STP: TT-Fed	A	TT	736-99-1700	11-COOP	\$300,000	\$400,000	Sam Cooper	LaDOTD Co-Op Program	7/1/2010	6/30/2011		F-13
STP: TT-Fed	A	TT	736-99-1699	11-TTRF	\$100,000	\$100,000	Sam Cooper	Technology Transfer Registration Fees	7/1/2010	6/30/2011		F-14
STP: TT-Fed	A	TT	736-99-1698	11-WDC	\$2,600,000	\$2,600,000	Sam Cooper	Workforce Development Contracts	7/1/2010	6/30/2011		F-15
					\$5,531,544	\$5,810,412	TECHNOLOGY TRANSFER AND TRAINING BUDGET TOTALS					
					\$5,531,544	\$5,810,412	STP: TT-FED ACTIVE BUDGET TOTALS					

LTRC ANNUAL RESEARCH PROGRAM

State: TT-Reg

FISCAL YEAR 2010-2011

Funding	A/P	Project Type	State Project Number	Research No.	FY Budget	Total Cost	Agency	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	Page No.
---------	-----	--------------	----------------------	--------------	-----------	------------	--------	------------------------	---------------	------------	----------	----------------	----------

Project Type: Geotechnical

State: TT-Reg	A	GT	736-99-1589	09-1GT	\$62,054	\$193,054	WPI	Minjiang Tao	Update LADOTD Policy on Pile Driving Vibration Management	6/1/2009	12/31/2010	5/31/2011	G-2
					\$62,054	\$193,054	GEOTECHNICAL BUDGET TOTALS						

Project Type: Pavements

State: TT-Reg	A	P	736-99-1518	08-1P	\$41,940	\$165,444	LSU	Mostafa Elseifi	Cost Effective Prevention of Reflective Cracking of Composite Pavement	6/15/2008	6/14/2010	2/14/2011	G-4
State: TT-Reg	A	P	736-99-1648	09-2P	\$77,950	\$112,952	LTRC	Mostafa Elseifi	Implementation of the Rolling Wheel Deflectometer (RWD) in PMS and Pavement Preservation	7/1/2009	9/30/2010	6/30/2011	G-5
State: TT-Reg	A	P	736-99-0515	10-1ALF	\$693,800	\$2,977,050	LTRC	Zhong Wu	Management and Operation of the Pavement Research Facility	7/1/2009	6/30/2012		G-6
					\$813,690	\$3,255,446	PAVEMENTS BUDGET TOTALS						

Project Type: Structures

State: TT-Reg	A	ST	736-99-1513	08-1ST	\$21,211	\$249,578	LSU	Ayman Okeil	Evaluation of Continuity Details for Precast Prestressed Girders	12/10/2007	11/30/2009	8/31/2010	G-7
State: TT-Reg	A	ST	736-99-1620	08-3ST	\$100,004	\$200,004	LSU	Gouping Zhang	Evaluation of Design Methods to Determine Scour Depths for Bridge Structures	4/1/2009	4/1/2011		G-8
State: TT-Reg	A	ST	736-99-1623	09-5ST	\$42,750	\$72,750	LTRC	Guoqiang Li	Support Study for A Shape Memory Polymer Based Self-healing Sealant for Expansion Joint	5/1/2009	11/1/2010		G-9
					\$163,965	\$522,332	STRUCTURES BUDGET TOTALS						

Project Type: Special Studies

State: TT-Reg	A	SS	736-99-1479	07-4SS	\$5,864	\$185,988	Southern University	Sharon Parsons	LADOTD Customer Service Process and Outcome Evaluation	5/1/2007	4/30/2010	12/31/2010	G-10
State: TT-Reg	A	SS	739-99-1635	08-3SS	\$91,859	\$178,087	ULL	Xiaoduan Sun	Developing Louisiana Crash Reduction Factors	11/1/2009	10/31/2011		G-11
					\$97,723	\$364,075	SPECIAL STUDIES BUDGET TOTALS						

Project Type: Concrete

State: TT-Reg	A	C	736-99-1650	09-6C	\$15,271	\$99,271	LSU	Hak-Shul Shin	Support Study on the Characterization of Ternary Mixes with Various SCMs	7/1/2009	6/30/2010	12/31/2010	G-12
					\$15,271	\$99,271	CONCRETE BUDGET TOTALS						

Project Type: Other

State: TT-Reg	A	Other	736-99-1442	09-1AD	\$229,913	\$1,088,594	LTRC	Vijaya Gopu	Research Expansion Program	11/1/2006	11/1/2009	6/30/2012	G-13
					\$229,913	\$1,088,594	OTHER BUDGET TOTALS						
					\$1,382,616	\$5,522,772	STATE: TT-REG ACTIVE BUDGET TOTALS						

LTRC ANNUAL RESEARCH PROGRAM

State: TT-Reg

FISCAL YEAR 2010-2011

Funding	A/P	Project Type	State Project Number	Research No.	FY Budget	Total Cost	Agency	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	Page No.
---------	-----	--------------	----------------------	--------------	-----------	------------	--------	------------------------	---------------	------------	----------	----------------	----------

Project Type: Geotechnical

State: TT-Reg	P	GT			\$60,000	\$200,000			Bridge Data Management Tool and Support	7/1/2010	6/30/2012		G-17
State: TT-Reg	P	GT		10-2GT	\$105,000	\$200,000			Geotechnical Information Database – Phase 2	7/1/2010	6/30/2012		G-18
State: TT-Reg	P	GT	736-99-1695	10-2TIRE	\$29,912	\$29,912	McNeese University	Stanley Klemetson	Evaluation of Erosion Control Methods for Coastal Highways	7/1/2010			G-19
					\$194,912	\$429,912	GEOTECHNICAL BUDGET TOTALS						

Project Type: Pavements

State: TT-Reg	P	P			\$70,000	\$200,000			Safety Benefit of Shredded Tires in Hazardous Roadside Ditches	9/1/2010	8/30/2012		G-20
State: TT-Reg	P	P			\$80,000	\$150,000	LTRC	Sherif Ishak	Addressing Traffic Data Requirements for Development of Axle Load Spectra and Implementation of MEPDG in Louisiana (Phase II)	7/1/2010	3/31/2012		G-21
State: TT-Reg	P	P			\$50,000	\$250,000			Project Level Transportation Asset Management Methods Utilizing PMS Datasets and Engineering Economics	1/7/2011	6/30/2013		G-22
State: TT-Reg	P	P			\$175,000	\$350,000	ULL	Mohammad Jamal Khattak	Life Cycle Cost Analysis and Performance Evaluation of Existing Pavement Treatments	6/30/2010	6/30/2012		G-23
					\$375,000	\$950,000	PAVEMENTS BUDGET TOTALS						

Project Type: Bituminous

State: TT-Reg	P	B			\$209,379	\$255,438	LSU	William H. Daly	Implementation of GPC Characterization of Asphalt Binders at Louisiana Materials Laboratory				G-24
State: TT-Reg	P	B			\$50,170	\$60,170	LTRC		Evaluation of the Validity of Multiple Stress Creep Recovery for Emulsions.	8/1/2010	12/31/2011		G-25
State: TT-Reg	P	B	736-99-1694	10-1TIRE	\$29,986	\$29,986	ULL	Ahmed Khattab	Application of NanoTechnology to Develop Smart Hot Mix Asphalt (HMA) Mixtures	7/1/2010			G-26
					\$289,535	\$345,594	BITUMINOUS BUDGET TOTALS						

Project Type: Structures

State: TT-Reg	P	ST		10-4ST	\$75,000	\$300,000			Development of Wave and Surge Atlas for the Design and Protection of Coastal Bridges in South	8/1/2010	7/31/2012		G-27
State: TT-Reg	P	ST		10-5ST	\$50,000	\$250,000			Developing Prestressed Girder Transportation Guidelines	8/1/2010	7/31/2012		G-28
State: TT-Reg	P	ST		10-6ST	\$40,000	\$50,000	Henry G Russell Inc.	Henry Russell	Design of High Performance Concrete Bridges in Louisiana	8/2/2010	11/1/2011		G-29
					\$165,000	\$600,000	STRUCTURES BUDGET TOTALS						

LTRC ANNUAL RESEARCH PROGRAM

State: TT-Reg

FISCAL YEAR 2010-2011

Funding	A/P	Project Type	State Project Number	Research No.	FY Budget	Total Cost	Agency	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	Page No.
---------	-----	--------------	----------------------	--------------	-----------	------------	--------	------------------------	---------------	------------	----------	----------------	----------

Project Type: Special Studies

State: TT-Reg	P	SS			\$50,000	\$100,000			Automatic Enforcement and Highway Safety	7/1/2010	6/30/2012		G-30
State: TT-Reg	P	SS			\$65,000	\$130,000			Truck Facility Access Design Standards	7/1/2010	6/30/2012		G-31
State: TT-Reg	P	SS			\$50,000	\$100,000			Developing Inexpensive Crash Countermeasures for Louisiana Local Roads	7/1/2010	6/30/2012		G-32
State: TT-Reg	P	SS	736-99-1697	10-4TIRE	\$30,000	\$30,000	ULL	Vijay Raghavan	Mining Potentially Interesting Positive and Negative Association Patterns from Traffic Safety Data	7/1/2010			G-33
State: TT-Reg	P	SS		10-6SS	\$71,809	\$87,474	LSU	Sherif Ishak	Establishing an Intelligent Transportation Systems (ITS) Lab at LTRC (Phase II)	7/1/2010			G-34
					\$266,809	\$447,474	SPECIAL STUDIES BUDGET TOTALS						

Project Type: Concrete

State: TT-Reg	P	C			\$34,983	\$34,983	LSU	Hak-Shul Shin	Validation of Correction Factors for Concrete Coefficient of Thermal Expansion	7/1/2010	12/31/2010		G-35
State: TT-Reg	P	C	736-99-1696	10-3TIRE	\$29,891	\$29,891	LSU	Hak-Shul Shin	Performance Evaluation of Recycled PET Fiber Reinforced Concrete	7/1/2010			G-36
					\$64,874	\$64,874	CONCRETE BUDGET TOTALS						
					\$1,356,130	\$2,837,854	STATE: TT-REG PROPOSED BUDGET TOTALS						

LTRC ANNUAL RESEARCH PROGRAM

Self-Generated

FISCAL YEAR 2010-2011

Funding	A/P	Project Type	State Project Number	Research No.	FY Budget	Total Cost	Agency	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	Page No.
---------	-----	--------------	----------------------	--------------	-----------	------------	--------	------------------------	---------------	------------	----------	----------------	----------

Project Type: Bituminous

NCHRP	A	B	736-99-1360	06-4B	\$28,000	\$428,000	LTRC	Louay Mohammad	Optimization of Tack Coat for HMA Placement	7/1/2005	6/30/2009	12/31/2010	H-2
NCHRP	A	B	736-99-1625	10-1B	\$148,337	\$500,000	LTRC	Louay Mohammad	Field versus Laboratory Volumetrics and Mechanical Properties	8/1/2009	2/29/2012		H-3
Shell Oil Company	A	B	736-99-1653	10-5B	\$85,000	\$125,000	LTRC	Louay Mohammad	Laboratory Evaluation of the Performance of Sulfur-Enhanced Asphalt Treated Base Mixtures	7/1/2009	6/30/2010		H-4
					\$261,337	\$1,053,000	BITUMINOUS BUDGET TOTALS						

Project Type: Structures

NCHRP	A	ST	736-99-1622	09-4ST	\$45,000	\$135,000	LSU	Guoqiang Li	A Shape Memory Polymer based Self-healing Sealant for Expansion Joint	5/1/2009	11/1/2010		H-5
					\$45,000	\$135,000	STRUCTURES BUDGET TOTALS						

Project Type: Special Studies

NSF	A	SS	736-99-1575	09-2SS	\$19,638	\$50,050	LTRC	Chester Wilmot	Enhancing Calibrated Peer Review for Improved Engineering Communication Education	9/1/2008	9/1/2011		H-6
					\$19,638	\$50,050	SPECIAL STUDIES BUDGET TOTALS						
					\$325,975	\$1,238,050	SELF-GENERATED ACTIVE BUDGET TOTALS						

Project Type: Geotechnical

Geosynthetic Manufacturers	P	GT			\$180,000	\$200,000	LTRC	Murad Abu-Farsakh	Support for Accelerated Load Testing of Geosynthetic Base Reinforced Unpaved and Pavement Test Sections	9/1/2009	8/30/2011		H-8
					\$180,000	\$200,000	GEOTECHNICAL BUDGET TOTALS						
					\$180,000	\$200,000	SELF-GENERATED PROPOSED BUDGET TOTALS						

LTRC ANNUAL RESEARCH PROGRAM

Other DOTD Sections

FISCAL YEAR 2010-2011

Funding	A/P	Project Type	State Project Number	Research No.	FY Budget	Total Cost	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	Page No.
---------	-----	--------------	----------------------	--------------	-----------	------------	------------------------	---------------	------------	----------	----------------	----------

Project Type: Special Studies

LOOP	A	SS	766-99-1510	08-2SS	\$43,965	\$140,858	Dan Strecker	LOOP Environmental Monitoring: 2008-2010 Beach Elevation, Beach Vegetation, and Land Loss and Habitat Change Surveys	1/1/2008	12/31/2010		I-2
					\$43,965	\$140,858	SPECIAL STUDIES BUDGET TOTALS					

Project Type: Geotechnical

Public Works	A	GT	751-99-0073	10-1GT	\$48,982	\$163,982	Wesley Palmer	Measuring Levee Elevation Heights in North Louisiana	12/1/2009	11/30/2010		I-3
					\$48,982	\$163,982	GEOTECHNICAL BUDGET TOTALS					

Project Type: Pavements

Safety	A	P	736-99-0878	07-7P	\$27,842	\$107,060	Xiaoduan Sun	Safety Improvement from Edge Lines of Rural Two-Lane Highway	9/1/2007	8/31/2010	8/31/2011	I-4
					\$27,842	\$107,060	PAVEMENTS BUDGET TOTALS					

Project Type: Other

Safety	A	Other	737-99-0787	Safety	\$200,000	\$200,000	Marie Walsh	Implementation and Project Management of the New Louisiana Local Road Safety Program		12/31/2010		I-5
					\$200,000	\$200,000	OTHER BUDGET TOTALS					
					\$320,789	\$611,900	OTHER DOTD SECTIONS ACTIVE BUDGET TOTALS					

Project Type: Special Studies

LOOP	P	SS			\$15,000	\$150,000		LOOP Environmental Monitoring: 2011-2013 Beach Elevation, Beach Vegetation, Land Loss and Habitat Changes Surveys	1/1/2011	12/31/2013		I-6
					\$15,000	\$150,000	SPECIAL STUDIES BUDGET TOTALS					
					\$15,000	\$150,000	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 2010-2011

Title:	Program Management			Project Status:	Ongoing
Funding Source:	SPR: TT-Fed/TT-Reg		Budget Category:	FHWA	
State Project Number:	736-99-1703		Project Start Date:	7/1/2010	
Research Project Number:	11-1PM		Completion Date	(original)	6/30/2011
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Harold 'Skip' Paul				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$765,000	Total		\$765,000
	(revised)				
Est. Expended to Date			Salaries	\$765,000	
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		
PURPOSE AND SCOPE					
<p>To cover administrative costs of the staff members involved in the planning and supervision of the SPR program. This item will cover all general expenditures incurred in the management of the SPR Program, including the expense of the Policy Committee and Project Review Committees.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
<ul style="list-style-type: none"> • Managed the LTRC research program including administrative duties, financial responsibilities, and personnel supervision; • Conducted LTRC 2009 Research Project Identification Committee (RPIC) activities; • Participated in Transportation Research Board Activities; and • Participated on region and national RAC task groups. 					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<ul style="list-style-type: none"> • Implement LTRC 2009 RPIC results; • Conduct LTRC 2011 RPIC process; • Continue to manage the SPR Research Program; • Staff participation in External Peer Exchanges; • Continued support for Transportation Research Board Activities; and • Continued support for region and national RAC task group activities. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Equipment Management			Project Status:	Ongoing
Funding Source:	SPR: TT-Fed/TT-Reg		Budget Category:	FHWA	
State Project Number:	736-99-1707		Project Start Date:	7/1/2010	
Research Project Number:	11-1EQM		Completion Date	(original)	6/30/2011
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Mark Morvant				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$300,000	Total		\$300,000
	(revised)				
Est. Expended to Date			Salaries	\$240,000	
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	\$60,000
	(revised)		Travel		
Est. FY Expenditure			Other		
PURPOSE AND SCOPE					
<p>To cover costs incurred to provide support for the purchase, fabrication, evaluation, and maintenance of rolling equipment, special equipment, and instrumentation for research projects. To provide for participation in standardized testing programs for laboratory certification (Co-Op, AMRL, CRRL). Special emphasis will be on automation of instrumentation systems used for data collection.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
<ul style="list-style-type: none"> • Maintained LTRC research laboratory and field equipment; • Calibration of Profiler, FWD, Dynaflect, and Friction Tester; • Troubleshooting, testing and implementation of prototype laser profiler (LRI prototyping); • Ran Sites in support of inquiries into rutting accuracy (scanning laser vs 5-point laser vs A-frame); • 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; and • Refurbish LWT. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES

- Maintain AMRL laboratory accreditations;
- 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 Development of calibration and troubleshooting procedures for the LRI prototype; and
- Perform routine and unscheduled maintenance of LTRC research laboratory and field equipment.

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Research Laboratory and Field Test Support				Project Status:	Ongoing
Funding Source:	SPR: TT-Fed/TT-Reg		Budget Category:		FHWA	
State Project Number:	736-99-1704		Project Start Date:		7/1/2010	
Research Project Number:	11-1LFT		Completion Date	(original)	6/30/2011	
Research Agency:	LTRC		Completion Date	(revised)		
Principal Investigator:	Mr. Mark Morvant					
BUDGET STATUS						
Total Budget			Estimated 2010-2011 Budget			
Total Cost	(original)	\$150,000	Total		\$150,000	
	(revised)					
Est. Expended to Date			Salaries		\$150,000	
FY 2009 - 2010 Budget			Equipment	(expendable)		
FY Funds	(original)		Equipment	(non-expendable)		
	(revised)		Travel			
Est. FY Expenditure			Other			
PURPOSE AND SCOPE						
<p>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.</p>						
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS						
<ul style="list-style-type: none"> • Aided Districts in the collection and analysis of data derived from FWD, High-Speed Profiler, Dynatest and Skid; • Assessment of LA 1 By-Pass; • Development of Best Practices guidelines for Polyurethane Usage; • Shrinkage crack mitigation for soil cement base courses; • Forensics, BTR runway 31, US 61, LA 18, LA 48 and LA 27; • Collaboration with Transtek Company in evaluating continuous roughness algorithm used in high-speed pavement profiling; • Comparative evaluation of the RWD versus FWD in Districts 05 and 58; and • Comparative evaluation of the prototype Grip-Tester versus conventional Skid-Tester. 						
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES						
<ul style="list-style-type: none"> • 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 require a substantial amount of time and Laboratory effort; and • FHWA Continuous friction testing correlation to Lock Wheel Tester report and paper for either TRB or ASCE. 						

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	New Products Evaluation			Project Status:	Ongoing
Funding Source:	SPR: TT-Fed/TT-Reg		Budget Category:	FHWA	
State Project Number:	736-99-1705		Project Start Date:	7/1/2010	
Research Project Number:	11-1NPE		Completion Date (original)	6/30/2011	
Research Agency:	LTRC		Completion Date (revised)		
Principal Investigator:	Mr. Mark Morvant				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$60,000	Total		\$60,000
	(revised)				
Est. Expended to Date			Salaries	\$60,000	
FY 2009 - 2010 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 2009 - 2010 ACCOMPLISHMENTS					
The examples for LADOTD New Products Evaluation include:					
<ul style="list-style-type: none"> • Material Transfer Vehicle review; • Trackless Tack Coat Specifications; • Stargrid pavement reinforcing fabric construction and performance review; • Implementation of new Tack Coat Specifications for roadway reinforcing mesh; • Evaluation of Polycon Overlay System; • Evaluation of TyreGrip Overlay System; • Evaluation of joint bond; • Evaluation of skidabrador and fog seal system for preservation; • TerraCem, Lafarge, Phase 1, 2 & 3; • Lime Kiln Dust, Omni Materials, Phase 1 & 2; • Nen Dry Powder, Georgia Pacific, Phase 1 & 2; • Super Slurry, TXI, Phase 1 & 2 construction and performance review; and • TerraFusion, EcoRoads, Phase 1 & 2. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES

Continue managing the necessary evaluations of new products submitted to LTRC by the LADOTD new product evaluation committees such as:

- Evaluate environmentally friendly prime coats;
- Evaluation of joint bond; and
- Evaluation of skidabrador and fog seal system for preservation.

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Technical Assistance			Project Status:	Ongoing
Funding Source:	SPR: TT-Fed/TT-Reg		Budget Category:	FHWA	
State Project Number:	736-99-1706		Project Start Date:	7/1/2010	
Research Project Number:	11-1TA		Completion Date	(original)	6/30/2011
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Mark Morvant				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$385,000	Total		\$385,000
	(revised)				
Est. Expended to Date			Salaries	\$380,000	
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel	\$5,000	
Est. FY Expenditure			Other		
PURPOSE AND SCOPE					
<p>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.</p>					

LTRC Annual Research Program
Fiscal Year 2010-2011

FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS

Responded to technical assistance requests from DOTD. Examples include:

- Permeability Testing of Concrete for bridge structures: LA 1, Twin Span and Rigolets Bridges;
- Concrete mix design verification testing for Audubon Bridge;
- Forensic assistance for asphalt pavement on Hwy 659;
- Providing assistance for miscellaneous questions of mix design;
- Pre-design structural information, FWD, Dynaflect, etc. for district design units;
- Pre design DCP analysis;
- Help LADOTD instrument a pile at LA1 for lateral load test;
- Evaluation of aggregate materials for use as base layer in pavements;
- Rapid Chloride Permeability testing for HPC (Lab);
- Responded to various questions concerning concrete paving;
- Failure investigation on LA 3144 for District;
- I-49 analysis in response to a request from legislator to compare PCC and asphalt performance;
- Skid testing on LA20 in Lafourche Parish for District;
- Baton Rouge airport evaluation;
- I-210 polyurethane foam specification revisions;
- Submergence of Roads with Corp of Engineers;
- La 9 Pavement failures; and
- US 165 pavement evaluation.

FISCAL YEAR 2010-2011 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 2010-2011

Title:	Technical Research Surveillance			Project Status:	Ongoing
Funding Source:	SPR: TT-Fed/TT-Reg		Budget Category:	FHWA	
State Project Number:	736-99-1709		Project Start Date:	7/1/2010	
Research Project Number:	11-1TRS		Completion Date	(original)	6/30/2011
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Mark Morvant				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$400,000	Total		\$400,000
	(revised)				
Est. Expended to Date			Salaries	\$400,000	
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		
PURPOSE AND SCOPE					
<p>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.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
<ul style="list-style-type: none"> • Managed the research projects for over 7 external University contracts; • Prepared RFP's for initiation of new projects; and • Provided review for draft reports on completed research projects. 					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<ul style="list-style-type: none"> • Provide management of LTRC research project contracts; • Prepare new research proposals for initiation of new projects in accordance with proposed in-house projects as approved in this annual work program document; • Participation on LTRC Project Review Committees; and • Participation on LTRC Report Review Committees. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Technology Transfer and Research Implementation			Project Status:	Ongoing
Funding Source:	SPR: TT-Fed/TT-Reg		Budget Category:	FHWA	
State Project Number:	736-99-1708		Project Start Date:	7/1/2010	
Research Project Number:	11-1TTTRI		Completion Date	(original)	6/30/2011
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Mark Morvant				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$285,000	Total		\$285,000
	(revised)				
Est. Expended to Date			Salaries	\$270,000	
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel	\$15,000	
Est. FY Expenditure			Other		
PURPOSE AND SCOPE					
<p>To cover costs incurred in providing research implementation activities, technology transfer seminars and participation in external research/training activities (NCHRP/FHWA panels, TRB meetings, technical conferences, and research review committees).</p>					

LTRC Annual Research Program
Fiscal Year 2010-2011

FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS

- TRB, Transportation Research Board Annual Meeting, Washington, DC; attendance and committee participation, three committee chairs, and thirteen committee members, several presentations given. Participate on NCHRP research advisory panels (two);
- Host CRCP workshop;
- Developed Implementation items (Costs benefits analysis for DCP, TR procedure, EDSM, Training Video, and Computer program) for DCP;
- Developed Research Implementation and Assessment Reports;
- Began Implementation plan for new overlay design procedure;
- Attended and presented at American Concrete Institute Spring Convention;
- Intelligent Compactor Showcase *LTRC Project Review Committee Meetings;
- Southeast new MEPDG User Group Meeting;
- Development and hosted of Technology Transfer Seminars: Concrete Seminar and 2011 TRB paper presentation'
- Presented at Louisiana Transportation Conference;
- Development of Specifications for Polyurethane Usage;
- Delivered Warm Mix Showcase;
- Prepared video to promote CRM modified asphalt and I-10 Twin Span health monitoring system;
- Presentations at several regional and National venues, TRB, SEAUPG, AMAP, LAPA, NCUPG, World of Asphalt, AAPT; and
- Attended two National Concrete Consortium (NCC) Meetings.

FISCAL YEAR 2010-2011 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 2010-2011

Title:	Contingencies				Project Status:	Ongoing
Funding Source:	SPR: TT-Fed/TT-Reg		Budget Category:		FHWA	
State Project Number:	736-99-1710		Project Start Date:		7/1/2010	
Research Project Number:	11-1CON		Completion Date	(original)	6/30/2011	
Research Agency:	LTRC		Completion Date	(revised)		
Principal Investigator:	Mr. Mark Morvant					
BUDGET STATUS						
Total Budget			Estimated 2010-2011 Budget			
Total Cost	(original)	\$100,000	Total		\$100,000	
	(revised)					
Est. Expended to Date			Salaries		\$100,000	
FY 2009 - 2010 Budget			Equipment		(expendable)	
FY Funds	(original)		Equipment		(non-expendable)	
	(revised)		Travel			
Est. FY Expenditure			Other			
PURPOSE AND SCOPE						
<p>The purpose is to provide contingency funding for unforeseen budget increases on on-going research projects and for initiation of new research studies not programmed as individual line items in the current work program.</p>						
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS						
<p>Provided funding adjustments to work program as needed.</p>						
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES						
<p>Provide funding adjustments to work program as needed.</p>						

FHWA

**Part II SPR Funded
Research Program**

CONTINUING RESEARCH

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Field Demonstration of New Bridge Approach Slab Designs and Performance			Project Status:	Ongoing
Funding Source:	SPR: TT-Fed/TT-Reg		Budget Category:	FHWA	
State Project Number:	736-99-1556		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 2010-2011 Budget		
Total Cost	(original)	\$393,176	Total		\$72,000
	(revised)				
Est. Expended to Date		\$139,500	Salaries		\$42,000
FY 2009 - 2010 Budget			Equipment	(expendable)	\$30,000
FY Funds	(original)	\$77,500	Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure		\$77,500	Other		
PURPOSE AND SCOPE					
<p>This project implements the findings from two LTRC Projects: "The Rideability of a Deflected Bridge Approach Slab" (02-2GT) and "Determination of Interaction between Bridge Concrete Approach Slab and Embankment Settlement" (03-4GT). It will also study such major causes of extra settlement from the collapsive 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.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
<ul style="list-style-type: none"> • Conducted literature review on relevant research projects on field testing, geogrid soil reinforcement, instrumentation, and monitoring; • Designed and developed the instrumentation testing plan for Bayou Courtableau Bridge approach slab; • Installed the geogrid reinforcement layers and other instrumentations beneath the approach slab at Bayou Courtableau Bridge; • Install sister bar strain gauges within the approach slab structure; and • Monitored the performance of approach slab at Bayou Courtableau Bridge and collect data for all instrumentations during truck load test. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES

- Analyze the collected data from approach slab at Bayou Courtableau Bridge during truck load test;
- Look for new bridge approach slab embankment sites for instrumentation and monitoring; and
- Develop instrumentation and testing plan for the new identified approach slab embankment.

LTRC Annual Research Program
Fiscal Year 2010-2011

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	
State Project Number:	736-99-1507		Project Start Date:	11/1/2007	
Research Project Number:	08-3GT		Completion Date	(original)	11/1/2010
Research Agency:	LTRC		Completion Date	(revised)	7/31/2012
Principal Investigator:	Dr. Murad Abu-Farsakh				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$88,776	Total		\$95,000
	(revised)	\$232,951			
Est. Expended to Date		\$153,600	Salaries		\$95,000
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)	\$81,000	Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure		\$81,000	Other		
PURPOSE AND SCOPE					
<p>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.</p> <p>Static lateral load test will be performed by LADOTD immediately after completing the installation of the monitoring system in the Eastbound pier M19. The short-term monitoring will be used to validate the applicability of the FB-MultiPier analysis for predicting the performance of battered pile group system under lateral loading; and to develop (or back-calculated) the p-y multipliers for battered pile groups in similar soil conditions.</p> <p>The long-term monitoring will be used to evaluate the behavior of pile group structure under dynamic loads caused by selected events (winds, waves, and vessel collision).</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
<ul style="list-style-type: none"> • Conducted literature review on pile instrumentation, substructure monitoring systems, and lateral load tests of single and group of piles; • Completed the superstructure instrumentation (columns, cap bent, deck); • Installed and calibrated the OSMOS WIM system; • Started analyzing the lateral load test data; and • Started back-calculating the p-y multipliers for FB-MultiPier analysis of battered pile groups in similar soil conditions. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES

- Use the FB-multi pier program to analyze the lateral load test at M19 Eastbound pier of Twin Span bridge;
- Compare between the measured and predicted values from FB-MultiPier Analysis;
- Continue analyzing the measured lateral load test data;
- Continue working on back-calculating the p-y multipliers for FB-MultiPier analysis of battered pile groups in similar soil conditions;
- Coordinate with the subcontractor to setup the long-term monitoring system; and
- Prepare a draft report.

LTRC Annual Research Program
Fiscal Year 2010-2011

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	
State Project Number:	736-99-1101		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 2010-2011 Budget		
Total Cost	(original)	\$170,000	Total		\$168,000
	(revised)				
Est. Expended to Date			Salaries	\$78,000	
FY 2009 - 2010 Budget			Equipment	(expendable)	\$50,000
FY Funds	(original)	\$160,900	Equipment	(non-expendable)	\$20,000
	(revised)		Travel	\$15,000	
Est. FY Expenditure	\$160,900		Other	\$5,000	
PURPOSE AND SCOPE					
<p>This project is a continuation of the work of the GERL. The objectives of the research are to:</p> <ul style="list-style-type: none"> • 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 2009 - 2010 ACCOMPLISHMENTS					
<ul style="list-style-type: none"> • Provided geotechnical testing support and technical assistance for DOTD; • Published several technical papers/reports on LTRC research results; • Develop potential ideas and problem statements for future LTRC research project; • Developed a research proposal on Field Instrumentation and Testing of Pile Setup; and • Maintained and upgraded software's related to CPT application. 					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<ul style="list-style-type: none"> • Provide geotechnical and geosynthetic testing support and technical assistance for DOTD; • 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. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Evaluation of Current DOTD Flexible Pavement Structures Using PMS Data and New M-E Pavement Design Guide			Project Status:	Ongoing
Funding Source:	SPR: TT-Fed/TT-Reg		Budget Category:		FHWA
State Project Number:	736-99-1649		Project Start Date:		7/1/2009
Research Project Number:	07-6P		Completion Date	(original)	6/30/2011
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Zhong Wu				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$220,192	Total		\$130,400
	(revised)				
Est. Expended to Date		\$89,750	Salaries		\$129,400
FY 2009 - 2010 Budget			Equipment (expendable)		
FY Funds	(original)	\$122,624	Equipment (non-expendable)		
	(revised)		Travel		\$1,000
Est. FY Expenditure		\$89,750	Other		
PURPOSE AND SCOPE					
<p>This research will statistically evaluate the performance of the current DOTD pavement design procedure using the accumulated Pavement Management System (PMS) data, traffic data, and other material properties available within the Department. Different pavement performance groups will be developed through the evaluation and be analyzed using the new Mechanistic-Empirical Pavement Design Guide (M-EPDG) for possible causes. The possible benefits from this approach will be:</p> <ul style="list-style-type: none"> • Provide immediate help to the current DOTD pavement design practice; • Summarize DOTD's experience; • Connect pavement design with PMS; • Build a bridge between the existing DOTD pavement design procedure with the new M-EPDG; • Allow the Department to obtain practical experience with the new M-EPDG; and • Identify the directions of research for the implementation of new M-EPDG and future development of PMS. 					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
<ul style="list-style-type: none"> • Literature Search and Fact-gathering on M-E PDG and PMS; • Total 53 pavement structures have been pre-selected for this study. The project selection was based on the classification of three traffic levels, three climate regions, and different sub grade strengths; • Detailed design/construction material information as well as PMS performance data were planned to collect from available DOTD database. At the current stage, information data for half of those selected projects has been collected and stored in a table format; and • Preliminary analysis was performed, in which the M-E PDG program was used to compute the performance for several selected projects and the results was compared to the PMS data. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES

- Develop Input Files for New M-E PDG;
- Collect Additional Input Data and Field Testing Data;
- Validate New M-E PDG with Recommendations;
- Perform Cost-Benefit Analyses; and
- Prepare Final Report.

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Construction and Accelerated Pavement Testing of TTI Pavement Test Sections			Project Status:	Ongoing
Funding Source:	SPR: TT-Fed/TT-Reg		Budget Category:	FHWA	
State Project Number:	736-99-1641		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 2010-2011 Budget		
Total Cost	(original)	\$98,850	Total		\$50,500
	(revised)				
Est. Expended to Date		\$48,373	Salaries		\$50,000
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)	\$48,373	Equipment	(non-expendable)	
	(revised)		Travel		\$500
Est. FY Expenditure		\$48,373	Other		
PURPOSE AND SCOPE					
<p>The purpose of this study is to provide special pavement testing services in relation to TxDOT Project 0-6132, "Development and Field Evaluation of the Next Generation of HMA Mix Design Procedures". The testing of this project include 8 test sections and total number of ALF loading up to 2,000,000 passes.</p> <p>Specifically, the PIs will perform duties in project coordination and project management, developing ALF construction plan & specifications, conducting field and laboratory tests as required by Texas Transportation Institute (TTI), providing technical assistance as needed and evaluating results for possible use by Louisiana DOTD.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
<ul style="list-style-type: none"> Completed the construction of three 215-ft long by 13-ft wide test lanes with 8 test sections as shown in the construction specification; Completed Loading on sections 1, 2, 3, 4; Partially Completed Loading on sections 7 & 8; and Collected and provided all performance data as required by TTI. 					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<ul style="list-style-type: none"> Continue testing on sections 7 & 8; and Loading on section 5 & 6 (during Fall 2010). 					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Characterization of Louisiana Asphalt Mixtures Using Simple Performance Tests and MEPDG			Project Status:	Ongoing
Funding Source:	SPR: TT-Fed/TT-Reg		Budget Category:		FHWA
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$398,672	Total		\$92,426
	(revised)				
Est. Expended to Date		\$306,246	Salaries		\$90,573
FY 2009 - 2010 Budget					
FY Funds	(original)	\$84,246	Equipment	(expendable)	
	(revised)		Equipment	(non-expendable)	
Est. FY Expenditure		\$84,246	Travel		\$1,853
			Other		
PURPOSE AND SCOPE					
<p>The primary objective of this research is to characterize common Louisiana hot mix asphalt mixtures as defined by the SPTs protocols for QA and to create a catalog for dynamic modulus values inputs in the MEPDG software. The secondary objective is to evaluate the sensitivity of rut prediction models from MEPDG software using the dynamic modulus E* test results. In addition, the Witczak and Hirsch models will be evaluated, for the prediction of dynamic modulus E* values for the asphalt mixtures. Field performance parameters will also be measures and compared to the ones predicted from the MEPDG software.</p>					

LTRC Annual Research Program
Fiscal Year 2010-2011

FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS

- Five field projects were selected. Those projects were selected in consultation with LADOTD researchers and design and construction personnel;
- A complete record of the job mix formula (JMF) development was secured. In addition, sufficient loose mixtures were collected from the plant production facility and transported to the laboratory for testing;
- Samples were fabricated for materials characterization of Task 5 "Conducting Laboratory Tests." Samples were compacted to their designed gyration and density. The Simple performance test samples were fabricated by coring a 100mm diameter by 150mm tall cylindrical specimens from the center of Superpave gyratory compactor compacted samples of 150 mm in diameter and 170 mm in height. The target air voids of those samples were 7.0 ± 0.5 . The Hamburg wheel tracking test slabs, 320 mm long, 260 mm wide, and 80 mm thick, were produced using a kneading compactor. The target air voids for all test samples were also 7.0 ± 0.5 . Triplicate samples were prepared for each test, except the Hamburg wheel tracking test where two slabs were tested;
- The dynamic modulus in axial mode, flow time, flow number, and Hamburg wheel tracking test were performed on the mixtures from the three field projects of Task 3;
- Initial field performances of the projects selected were measured using the DYNATEST 5051 Road Surface Profiler. The evaluation included rutting, cracking, and IRI; and
- Preliminary statistical and analytical data of the results of the laboratory and in-situ tests were performed and presented to the PRC.

FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES

- Continue selection of field project as per test factorial;
- Continue fabrication of samples as per test factorial;
- Continue laboratory materials characterization of field performance evaluation; and
- Conduct Preliminary data analysis; and
- Prepare Draft Final Report.

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Evaluation of Warm Mix Asphalt Technology in Flexible Pavements	Project Status:	Ongoing
Funding Source:	SPR: TT-Fed/TT-Reg	Budget Category:	FHWA
State Project Number:	736-99-1624	Project Start Date:	3/15/2009
Research Project Number:	07-1B	Completion Date (original)	3/15/2011
Research Agency:	LTRC	Completion Date (revised)	
Principal Investigator:	Mr. Bill King		
BUDGET STATUS			
Total Budget		Estimated 2010-2011 Budget	
Total Cost (original)	\$325,420	Total	\$155,000
(revised)			
Est. Expended to Date	\$221,000	Salaries	\$154,000
FY 2009 - 2010 Budget		Equipment (expendable)	
FY Funds (original)	\$191,000	Equipment (non-expendable)	
(revised)		Travel	\$1,000
Est. FY Expenditure	\$191,000	Other	
PURPOSE AND SCOPE			
<p>The objective of this research is to evaluate existing technologies that allow the reduction of mixing and compaction temperatures of asphalt mixtures and ultimately develop an innovative approach to achieve that without compromising the performance and durability of the resulting mixtures. Reduced production and paving temperatures would have beneficial environmental and economic effects. A comparison of conventional mix designs to existing Warm-Mix technologies will be conducted on Field mixtures. Chemical properties and engineering (rheological) properties of the modified asphalt binder in this study will be evaluated using standard analytical method and Superpave binder tests. Asphalt mixtures that contain different levels of additives will be characterized by a suite of fundamental engineering tests. Those tests will be aimed at characterizing the stability and durability of the asphalt mixtures.</p>			
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS			
<ul style="list-style-type: none"> • Development of special provisions to use on specific projects using WMA technologies; • Conducted complete test factorial on three total projects; • Three additional projects completed under district controls; • A draft permissive special provisions was developed and sent for comments and direction; • Conducted fundamental materials characterization on the three projects and evaluate; • Construction of field projects; and • Permissive WMA specifications approved and ready for inclusion into future construction projects. 			
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES			
<ul style="list-style-type: none"> • Continue data analysis and evaluation; • Schedule and construct at least three additional field projects, preferably in the southern region of the state; and • Conduct fundamental materials characterization tests based on the developed test factorials for the three constructed projects. 			

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Development of New Surface Friction Guidelines for LADOTD			Project Status:	Ongoing
Funding Source:	SPR: TT-Fed/TT-Reg		Budget Category:		FHWA
State Project Number:	736-99-1652	Project Start Date:		7/1/2009	
Research Project Number:	09-2B	Completion Date	(original)	6/30/2010	
Research Agency:	LTRC	Completion Date	(revised)	6/30/2011	
Principal Investigator:	Dr. Zhong Wu				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$99,695	Total		\$87,695
	(revised)	\$144,695			
Est. Expended to Date		\$57,000	Salaries		\$86,695
FY 2009 - 2010 Budget					
FY Funds	(original)	\$95,000	Equipment	(expendable)	
	(revised)	\$57,000	Equipment	(non-expendable)	
Est. FY Expenditure		\$57,000	Travel		\$1,000
			Other		
PURPOSE AND SCOPE					
<p>Existing design guidelines for selecting aggregates for asphalt mixtures used in the surface course are based on the polish value, or BPN, obtained using the British Pendulum Test. There are many parameters that affect the safety of the highway surfaces and Micro-texture, related the BPN being only one of these parameters. NCHRP 1-43 draft report by Jim Hall of ARA on this topic examines many parameters that influence surface friction. Given the fact that only two high friction aggregate sources are available in Louisiana, a system that utilizes more information when qualifying aggregates may increase the sources of aggregate supply for our asphalt surface mixtures.</p> <p>The objective of this research will be to develop Pavement Surface Friction Management Guidelines for use in Louisiana DOTD and to also validate NCHRP 1-43 findings using Louisiana data.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
<ul style="list-style-type: none"> • Performed further literature review on friction resistance of surface HMA mixtures; • Analyzed field measured friction resistance data and developed preliminary relationship between skid number(SN)and mixture/aggregate properties using data from 100 plus projects and collected between 1984 and 2008; and • Started to prepare laboratory mixtures used for the friction testing at NCAT. 					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<ul style="list-style-type: none"> • Conduct laboratory friction test at NCAT; • Perform data analysis; • Initiate Specification Changes as needed; and • Prepare draft final report. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

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	
State Project Number:	736-99-1029		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 2010-2011 Budget		
Total Cost	(original)	\$2,741,941	Total		\$176,014
	(revised)	\$2,741,941			
Est. Expended to Date		\$129,863	Salaries		\$160,014
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)	\$129,863	Equipment	(non-expendable)	\$10,000
	(revised)		Travel		\$6,000
Est. FY Expenditure		\$129,863	Other		
PURPOSE AND SCOPE					
<p>The Engineering Materials Characterization and Research Facility, EMCRF, provides a multi-disciplinary expertise and state-of-the-art research capabilities to assess the fundamental engineering properties of materials used in the transportation industry in Louisiana. EMCRF plays an important role in the evaluation of the engineering properties of materials used in the LTRC's regional pavement testing facility, ALF. In addition, EMCRF provides specialized analytical expertise for on-going as well as newly initiated in-house research projects; develops new software to be used by DOTD engineers; provides experimental design and analysis; provide training for DOTD employees for the purpose of adopting newly developed technology and implementation methodology into the daily operations of DOTD, and, assists in-house LTRC investigators to develop thorough research programs.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
<ul style="list-style-type: none"> • Participated in the Louisiana DOTD Asphaltic Concrete Specification Committee and Louisiana DOTD Superpave Implementation Committee; and • Participated in several technical assistance Projects. 					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<ul style="list-style-type: none"> • Continue participation in the Louisiana DOTD Asphaltic Concrete Specification Committee; • Continue participation in technical assistance projects; and • Conduct workshops and seminars. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Performance and Analysis of Concrete Bridge Railing Using Conventional and Composite Reinforcement Materials			Project Status:	Ongoing
Funding Source:	SPR: TT-Fed/TT-Reg		Budget Category:	FHWA	
State Project Number:	736-99-1619		Project Start Date:	4/1/2009	
Research Project Number:	09-2ST		Completion Date	(original)	9/30/2009
Research Agency:	LTRC		Completion Date	(revised)	3/31/2011
Principal Investigator:	Mr. Walid Alaywan				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$82,410	Total		\$65,000
	(revised)				
Est. Expended to Date		\$17,400	Salaries		\$30,000
FY 2009 - 2010 Budget			Equipment	(expendable)	\$31,000
FY Funds	(original)	\$10,500	Equipment	(non-expendable)	\$3,000
	(revised)		Travel		\$1,000
Est. FY Expenditure		\$10,000	Other		
PURPOSE AND SCOPE					
<p>Bridge Barriers are designed to resist accidental impact of a standard test vehicle. NCHRP 350 "Recommended Procedures for the Safety Performance Evaluation of Highway Features," specifies various levels of test vehicles for different applications. The LA Department of Transportation and Development (LA DOTD) uses the F-Shape concrete railing over many of its highway bridges. There were several approved changes to the current NCHRP Report 350. Based on that, it is necessary to reevaluate the performance of the new detail.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
<ul style="list-style-type: none"> • Instrumentation plan was developed; • A 20 ft-long concrete bridge railing and slab were cast and shipped to LA Tech University for testing; • Slab and railing were mounted to a strong floor system. Bridge railing was instrumented; • Section was tested in a middle region to failure; and • Analytical computations were performed and compared to collected data. 					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<ul style="list-style-type: none"> • Due to barrier collapse at the middle and the end region, a new section will be cast, instrumented, and tested at the end region; • Data will be collected and compared to analytical computation; • Strength of the section will be assessed and a draft final report will be submitted; and • IF the PRC requests a 36 in F-shape barrier be tested at the middle and end regions instead of a 32 inch currently used section, two barriers will have to be cast, instrumented, tested, and results will be compared with analytical computations. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

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	
State Project Number:	736-99-1715		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 2010-2011 Budget		
Total Cost	(original)	\$211,266	Total		\$147,353
	(revised)	\$510,839			
Est. Expended to Date		\$211,266	Salaries		\$145,877
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)	\$127,553	Equipment	(non-expendable)	
	(revised)		Travel		\$1,230
Est. FY Expenditure		\$127,553	Other		\$246
PURPOSE AND SCOPE					
To develop a new hurricane evacuation demand models based on improved theoretical principles as well as to develop a new dynamic trip assignment method suited to hurricane evacuation modeling.					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
<ul style="list-style-type: none"> • Developed a time-dependent, audio-visual stated choice method of data collection; • Collected revealed preference and stated choice data from 300 respondents in the New Orleans area; and • Developed a time-dependent hurricane evacuation destination choice model. 					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<ul style="list-style-type: none"> • Investigate TRANSIMS and other alternative approaches to hurricane evacuation demand estimation in the New Orleans metropolitan area; and • Develop an alternative hurricane evacuation trip assignment process. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

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	
State Project Number:	736-99-1714		Project Start Date:	7/1/1995	
Research Project Number:	10-1PLA		Completion Date	(original)	6/30/1996
Research Agency:			Completion Date	(revised)	6/30/2012
Principal Investigator:	Dr. Chester Wilmot				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$123,199	Total		\$110,896
	(revised)	\$4,182,901			
Est. Expended to Date		\$256,306	Salaries		\$107,196
FY 2009 - 2010 Budget			Equipment	(expendable)	\$1,500
FY Funds	(original)	\$329,978	Equipment	(non-expendable)	
	(revised)		Travel		\$2,000
Est. FY Expenditure		\$329,000	Other		\$200
PURPOSE AND SCOPE					
<p>This project is a long-term professional services contract. It provides an interdisciplinary, full-time researcher in the planning area. The primary responsibility is to develop proposals and conduct research in areas of interest to DOTD. The teaching of courses at LSU is permitted on a case by case basis depending on 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 DOTD, and external research solicitations that LTRC issues proposals on.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
<ul style="list-style-type: none"> Completed a technical assistance request from DOTD investigating the use of Truck Lane Restriction Strategies on multilane highways in Louisiana. Findings documented in Technical Assistance Report 09-1TA. Further research on the pavement damage that TLRS may cause led to M.S. thesis "Estimated impact of a hypothetical left lane truck restriction on Louisiana highway pavements using M-EPDG" by M. Radhakrishnan; Completed draft final report on "Factors Affecting Traffic Safety in Louisiana"; Conducted research on Department of Homeland Security project on Natural Disasters, Coastal Infrastructure, and Emergency Management; and Managed Special Studies section at LTRC. 					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<ul style="list-style-type: none"> Conduct research into hurricane evacuation demand modeling; Continue with Department of Homeland Security Project on modeling of evacuation response to disasters; Conduct technical assistance investigations for DOTD on request; and Manage Special Studies section at LTRC. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Evaluation of Cement and Fly Ash Treated RAP and Marginal Aggregates for Base Construction			Project Status:	Ongoing
Funding Source:	SPR: TT-Fed/TT-Reg		Budget Category:	FHWA	
State Project Number:	736-99-1586		Project Start Date:	3/1/2009	
Research Project Number:	09-2C		Completion Date	(original)	3/1/2011
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Tyson Rupnow				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$121,044	Total		\$38,456
	(revised)				
Est. Expended to Date		\$82,500	Salaries		\$38,456
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)	\$84,760	Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure		\$55,000	Other		
PURPOSE AND SCOPE					
<p>The purpose of this study is to determine mixtures of cement treated rap (CTRAP) and possible marginal aggregates that will prove acceptable for both Portland cement concrete and hot mix asphalt pavement systems. Fly ash treated RAP (FTRAP) and other aggregates will also be investigated to determine if they are suitable alternatives to cement treated materials. The respective mixtures will be characterized and the performance of a mixture to be determined upon further testing will be evaluated in the accelerated load testing facility (ALF).</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
<ul style="list-style-type: none"> • Cementitious materials were characterized according to their respective ASTM standards; • The limestone based and gravel based RAP mixtures have been produced and tested; • The reference material has been obtained. Contacts have been developed to obtain the remainder of the material for the study; and • A working outline of the final report was developed. 					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<ul style="list-style-type: none"> • Continue with the testing matrix producing and testing the reference mixtures, limestone screenings mixtures, and blended calcium sulfate mixtures; • Provide interim results for possible ALF construction; and • Conduct a statistical analysis of the results and continue preparing the final report. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Evaluation of Ternary Cementitious Combinations			Project Status:	Ongoing
Funding Source:	SPR: TT-Fed/TT-Reg		Budget Category:		FHWA
State Project Number:	736-99-1587	Project Start Date:		3/1/2009	
Research Project Number:	09-4C	Completion Date	(original)	2/28/2011	
Research Agency:	LTRC	Completion Date	(revised)	6/30/2011	
Principal Investigator:	Dr. Tyson Rupnow				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$202,343	Total		\$123,486
	(revised)	\$233,544			
Est. Expended to Date		\$110,058	Salaries		\$121,486
FY 2009 - 2010 Budget			Equipment	(expendable)	\$2,000
FY Funds	(original)	\$101,171	Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure		\$75,000	Other		
PURPOSE AND SCOPE					
<p>The purpose of this study is to determine the properties of various ternary cementitious combinations for the state of Louisiana. Mixtures will be evaluated in the fresh and hardened state. Current specifications allow the use of both fly ash and slag, and the results from this research will provide guidance on possible ternary combinations.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
<p>The cementitious materials were procured and chemically characterized. The raw coarse aggregate and sand was also obtained and characterized. Thirty percent of the test matrix was produced and tested. The results are currently being statically analyzed and compared. A working outline of the final report was produced. An interim PRC meeting was held in February to update the PRC members on the progress of the project.</p>					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<ul style="list-style-type: none"> • Finish the remainder of the test matrix; • Analyze the results; and • Finish and publish the final report. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

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	
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$116,351	Total		\$76,351
	(revised)				
Est. Expended to Date		\$40,000	Salaries		\$46,351
FY 2009 - 2010 Budget					
FY Funds	(original)	\$85,447	Equipment	(expendable)	
	(revised)		Equipment	(non-expendable)	\$30,000
Est. FY Expenditure		\$40,000	Travel		
			Other		
PURPOSE AND SCOPE					
<p>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.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
<p>Literature Review: Completed Data Collection on 4 out of 6 test sections: <ul style="list-style-type: none"> • Asphalt projects: LA116, LA3191, LA3121; and • Concrete projects: Ambassador Caffery. • Completed Data Analysis on 3 out of 6 test sections: <ul style="list-style-type: none"> • Projects: LA3191, LA3121, Ambassador Caffery. • Ongoing Data Collections: <ul style="list-style-type: none"> • LA171 = Ended early due to equipment malfunctions, planning return trip; • US61 = Advised paving will continue in June; and • ALF = Extra. • Equipment malfunctions cause many delays. After months of working with manufacturer and replacement parts, PSPA is functional.</p>					

LTRC Annual Research Program
Fiscal Year 2010-2011

FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES

Purchase new PSPA and recheck a few of the previously collected test sections; and

Purchase replacement pieces for LWD (pads, screws, and rod);

Complete data collection:

- Finish collection of ongoing projects: LA171, US61, ALF;
- Plan to use US61 as field to lab comparison;
- Locate one additional concrete section; and
- Assist and include other LTRC projects that require PSPA and LWD data collection.

Write final report.

LTRC Annual Research Program
Fiscal Year 2010-2011

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
State Project Number:	736-99-1661		Project Start Date:		2/1/2010
Research Project Number:	10-1C		Completion Date	(original)	5/1/2011
Research Agency:			Completion Date	(revised)	
Principal Investigator:	Dr. Tyson Rupnow				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$102,878	Total		\$66,878
	(revised)				
Est. Expended to Date		\$36,000	Salaries		\$64,878
FY 2009 - 2010 Budget			Equipment	(expendable)	\$2,000
FY Funds	(original)	\$36,000	Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure		\$36,000	Other		
PURPOSE AND SCOPE					
<p>The purpose of this study is to evaluate a surface resistivity device in conjunction with the rapid chloride permeability test. The results of this study will aid in a decision to implement surface resistivity measurements in lieu of rapid chloride permeability results leading to a cost savings to the Department in terms of time and money.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
<p>This study has been started. The Wenner Probe has been obtained and is currently in use. The study has been testing and received samples from ready-mix suppliers and samples produced from the 09-4C study on ternary cementitious combinations.</p>					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<p>Completion of the test matrix:</p> <ul style="list-style-type: none"> • Preparation and publication of a final report; and • Preparation of an implementation statement and plan. 					

FHWA

**Part II SPR Funded
Research Program**

PROPOSED RESEARCH

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	The Rideability of a Deflected Bridge Approach Slab (LTRC Project 02-2GT Continuation: Phase II)			Project Status:	Proposed
Funding Source:	SPR: TT-Fed/TT-Reg		Budget Category:	FHWA	
State Project Number:			Project Start Date:	1/1/2011	
Research Project Number:			Completion Date	(original)	12/31/2012
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Mark Martinez				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$150,000	Total		\$64,340
	(revised)				
Est. Expended to Date			Salaries		\$58,340
FY 2009 - 2010 Budget			Equipment	(expendable)	\$5,000
FY Funds	(original)		Equipment	(non-expendable)	\$1,000
	(revised)		Travel		
Est. FY Expenditure			Other		
PURPOSE AND SCOPE					
<p>This project is a continuation of LTRC 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). Project 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).</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<p>Task 1: Examine literature to help with refinement of TVTF circuit and develop a calibration procedure to ensure vehicular cross-compatibility;</p> <p>Task 2: Build and retrofit a series of TVTF devices (attach to test vehicles) and carry out preliminary testing;</p> <p>Task 3: Develop TVTF calibration procedure and test effectiveness; and</p> <p>Task 4: Begin LRI indexing of bridges across state (comprehensive testing).</p>					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Accelerated Load Testing of Geosynthetic Base Reinforced Unpaved and Pavement Test Sections			Project Status:	Proposed
Funding Source:	SPR: TT-Fed/TT-Reg		Budget Category:	FHWA	
State Project Number:			Project Start Date:	9/1/2010	
Research Project Number:			Completion Date	(original)	8/30/2012
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Murad Abu-Farsakh				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$250,000	Total	\$69,000	
	(revised)				
Est. Expended to Date			Salaries	\$64,500	
FY 2009 - 2010 Budget			Equipment	(expendable)	\$2,500
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel	\$2,000	
Est. FY Expenditure			Other		
PURPOSE AND SCOPE					
<p>The use of geosynthetic materials, such as geogrids, to reinforce the base aggregate layers within the pavement section has been used for many years to improve the performance of paved and unpaved roadways. Many experimental and numerical studies were conducted to evaluate the benefits of applying geosynthetic reinforcement to the base course layer, and several design methods were proposed that are limited to the conditions associated with the experimental test sections of their study.</p> <p>The objective of this research study is to evaluate the benefits of geosynthetic reinforcement of base aggregate layer in flexible pavements built on a soft subgrade. This will be achieved through conducting extensive accelerated load testing on geosynthetic reinforced unpaved and pavement test sections to be constructed at ALF site. Different types and configurations of geogrids and geotextiles will be used for base reinforcements.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<ul style="list-style-type: none"> • Perform literature review on geosynthetic reinforced base aggregates; • Design and supervise construction of the support platform needed to extend the ALF site for additional test sections; • Prepare a detailed plan of the proposed geosynthetic reinforced unpaved and paved test sections; and • Supervise construction of experimental lanes and begin testing. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	LTRC Research Software Development and Support			Project Status:	Proposed
Funding Source:	SPR: TT-Fed/TT-Reg		Budget Category:	FHWA	
State Project Number:			Project Start Date:	7/1/2010	
Research Project Number:			Completion Date	(original)	
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Ms. Pallavi Bhandari				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$91,930	Total	\$91,930	
	(revised)				
Est. Expended to Date			Salaries	\$91,930	
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		
PURPOSE AND SCOPE					
<ul style="list-style-type: none"> • Perform database management. Programming may include SQL Server, ESRI SDE and others as require; • Create and manage multiple web sites and windows application. Programming may include Java, Java Script, Visual Basic, .NET, XML, and others as required; and • Perform other outreach tasks as directed. 					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<ul style="list-style-type: none"> • Perform database management. Programming may include SQL Server, ESRI SDE and others as required; • Create and manage multiple web sites and windows application. Programming may include Java, Java Script, Visual Basic, .NET, XML, and others as required; and • Perform other outreach tasks as directed. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Design Values of Resilient Modulus of Stabilized and Non-stabilized Base and Sub-base			Project Status:	Proposed
Funding Source:	SPR: TT-Fed/TT-Reg		Budget Category:		FHWA
State Project Number:			Project Start Date:		7/1/2010
Research Project Number:	10-3GT		Completion Date	(original)	6/30/2011
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Khalil Hanifa				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$113,000	Total		\$113,000
	(revised)				
Est. Expended to Date			Salaries		\$113,000
FY 2009 - 2010 Budget					
FY Funds	(original)		Equipment	(expendable)	
	(revised)		Equipment	(non-expendable)	
Est. FY Expenditure			Travel		
			Other		
PURPOSE AND SCOPE					
<p>The purpose of this research study is to determine the design values of regular base and sub base specified by LADOTD through lab tests with respect to resilient modulus and other parameters used by pavement design guides.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<ul style="list-style-type: none"> • Perform literature review; • Develop testing factorials of Lab testing program for typical base and sub base materials used in Louisiana; • Conduct lab tests accordingly; • Analyze the data using statistical approach; • Make recommendation of design values that accommodate field variation during construction; and • Write final report. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Field Instrumentation and Testing to Study Set-up Phenomenon of Piles Driven into Louisiana Clayey Soils			Project Status:	Proposed
Funding Source:	SPR: TT-Fed/TT-Reg		Budget Category:		FHWA
State Project Number:			Project Start Date:		7/1/2010
Research Project Number:	10-5GT		Completion Date	(original)	6/30/2013
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Murad Abu-Farsakh				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$400,000	Total		\$112,500
	(revised)				
Est. Expended to Date			Salaries		\$62,500
FY 2009 - 2010 Budget			Equipment	(expendable)	\$50,000
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		
PURPOSE AND SCOPE					
<p>Piles driven into saturated cohesive soils (clays and silts) usually experience a time-dependant increase in pile capacity, known as pile set-up, which can contribute 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 pile lengths, reducing pile sections, reducing number of piles, or reducing the size of driving equipment; Hence, reducing the cost of highway projects.</p> <p>A research project was performed to develop a simple empirical model to estimate pile set-up based on soil properties obtained from traditional subsurface exploration program. However, due limited number of reported restrrike dynamic tests after 14 days of installation, it was difficult to develop a rational set-up model.</p> <p>The main objective of this project is to design and perform field testing program on four fully-instrumented piles and surrounding soils to study the set-up phenomena of piles driven into Louisiana clayey soils. The testing program will include conducting pile load tests, dynamic load tests, and in-situ PCPT and SPT-torque tests at different times after pile installation. The purpose of testing program is to develop a rational procedure to estimate the increase in pile capacity with time after pile driving. This includes investigating the possibility of evaluating pile set-up from traditional soil boring data, and using data from in-situ testing such as piezocone penetration/dissipation tests and SPT-torque tests. Correlation will be made to develop a model for the static pile capacity–time relationship using data obtained from dynamic monitoring with time</p>					

LTRC Annual Research Program
Fiscal Year 2010-2011

FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS

--

FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES

- Perform literature review on the experimental and theoretical researches related to pile setup phenomenon in clayey soils;
- Develop an instrumentation testing plan for piles and the surrounding soils to capture the pile set-up phenomenon with time;
- Identify potential sites/bridges for performing the field instrumentation pile set-up tests;
- Identify new sites/bridges that have pile load tests. Conduct static load tests, dynamic load tests, and PCPT tests at different times after pile driving; and
- Start finite element numerical modeling to understand the pile set-up phenomenon.

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Evaluation of Site and Testing Variability on Soil Properties			Project Status:	Proposed
Funding Source:	SPR: TT-Fed/TT-Reg		Budget Category:	FHWA	
State Project Number:			Project Start Date:	7/1/2010	
Research Project Number:			Completion Date	(original)	12/31/2011
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Murad Abu-Farsakh				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$150,000	Total		\$27,000
	(revised)				
Est. Expended to Date			Salaries	\$27,000	
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		
PURPOSE AND SCOPE					
<p>The purpose of this research study is to evaluate the effect of site and laboratory/in-situ testing variability on estimating the different soil properties. This includes studying the variation of soil classification, traditional laboratory tests, undrained shear strength, and results of some in-situ testing within a specified site. The variation in laboratory test results between different labs due to sample handling, preparation, quality control, and testing procedure will be investigated through extending a coop similar program to include state and consultant labs.</p> <p>Reliability statistical analysis will be conducted on collected database. It is expected that the outcome of this research project will help us identify site and laboratory variation for inclusion in LRFD reliability analysis and design for different geotechnical engineering applications.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<ul style="list-style-type: none"> • Perform literature review on relevant research topics; • Identify ten sites for studying the effect of site variability on estimating the different soil properties; • Identify several state and consultant laboratory to participate in evaluating the variability of laboratory testing; and • Start collecting field samples for laboratory testing. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	In-Situ Evaluation of Design Parameters and Procedures for Stabilized Sub-bases from Cyclic Plate Load Tests			Project Status:	Proposed
Funding Source:	SPR: TT-Fed/TT-Reg		Budget Category:	FHWA	
State Project Number:			Project Start Date:	7/1/2010	
Research Project Number:	10-4GT		Completion Date	(original)	12/31/2012
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Murad Abu-Farsakh				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$250,000	Total		\$123,000
	(revised)				
Est. Expended to Date			Salaries		\$103,000
FY 2009 - 2010 Budget			Equipment	(expendable)	\$20,000
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		
PURPOSE AND SCOPE					
<p>The purpose of this research study is to evaluate the design parameters of cementitious stabilized subbase. This includes structural layer coefficient (ai) and resilient modulus (Mr) of various cementitious stabilized sub base materials.</p> <p>A sub base course constructed of cementitious stabilized soil has many characteristics that contribute to the performance of the pavement. As such, an adequate evaluation of design parameters of cementitious stabilized sub base is necessary in pavement structural analysis and design. The structural layer coefficient (ai) is a key input in the 1993 AASHTO Guide for Design of Pavement Structures, which express relative "strength" of component layers and are used to determine required thicknesses of layers; while the resilient modulus is a key input property in the new Mechanistic-Empirical Pavement Design Guide (MEPDG) for pavement geomaterials. Therefore, the determination of resilient modulus/structural layer coefficient of cementitious stabilized sub base which can provide a more suitable pavement structure design responsive to site conditions and projected loading is crucial in pavement design process.</p> <p>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) x 6.5 ft (width) x 5.5 ft (height). In addition, Dynamic Cone Penetrometer (DCP), Light Falling Weight Deflectometer (LFD), Geogauge, Portable Seismic Pavement Analyzer (PSPA) tests, and repeated triaxial load tests will be conducted.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					

LTRC Annual Research Program
Fiscal Year 2010-2011

FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES

- Perform literature review on the soil-type dependent cementitious stabilization techniques (including the determination of dosage and type of cementitious materials) and in-situ evaluation of resilient modulus/structural layer coefficient of cementitious sub base layer;
- 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.

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Intelligent Compaction Technology			Project Status:	Proposed
Funding Source:	SPR: TT-Fed/TT-Reg		Budget Category:	FHWA	
State Project Number:			Project Start Date:	10/1/2010	
Research Project Number:	06-3GT		Completion Date	(original)	9/30/2012
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Gavin Gautreau				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$200,000	Total		\$150,000
	(revised)				
Est. Expended to Date			Salaries	\$130,000	
FY 2009 - 2010 Budget			Equipment	(expendable)	\$20,000
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		
PURPOSE AND SCOPE					
<p>Intelligent compaction refers to the use of instrumented rollers that record soil stiffness (vibration load/soil displacement) and GPS position. These measurements are used to create a stiffness index. Once calibrated, subsequent passes are compared against target values. The roller receives feedback from the soil based on the resistance encountered; 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. The goal of the technology is to ensure proper compaction is achieved while reducing delays and "pumping" problems.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
<p>Discussions have begun with SHRP2 representatives to conduct a demo project in the spring of 2011. The intelligent rollers will shadow the normal data collection process throughout the test section. The results (collected on soil and asphalt) will be used to help develop a performance specification.</p>					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<p>Coordination of the test section with the intelligent compaction rollers will continue, with construction and testing scheduled for spring 2011.</p>					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Prevention of Extensive Desiccation Cracking on Rural Highways	Project Status:	Proposed
Funding Source:	SPR: TT-Fed/TT-Reg	Budget Category:	FHWA
State Project Number:		Project Start Date:	8/2/2010
Research Project Number:		Completion Date (original)	6/30/2016
Research Agency:	LTRC	Completion Date (revised)	
Principal Investigator:	Mr. Kevin Gaspard		
BUDGET STATUS			
Total Budget		Estimated 2010-2011 Budget	
Total Cost (original)	\$300,000	Total	\$59,064
(revised)			
Est. Expended to Date		Salaries	\$59,064
FY 2009 - 2010 Budget		Equipment (expendable)	
FY Funds (original)		Equipment (non-expendable)	
(revised)		Travel	
Est. FY Expenditure		Other	
PURPOSE AND SCOPE			
<p>Pavement surface and foundation distresses due to shrinking and swelling soils are an issue on certain Louisiana Highways which is the focus of this study. Desiccation is a common phenomena 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).</p> <p>While research has been conducted in these areas, though sometimes sparingly, assessment guidelines for soil characterization, environmental factors, and the stress state of the pavement system coupled with appropriate cost effective mitigation methods for Evapotranspiration Distresses on Highways will be provided through a comprehensive report and technical assistance to the Districts.</p>			
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS			
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES			
<ul style="list-style-type: none"> • Investigate sites in Districts 08, 58, and 05; • Develop a research plan for selected sites; and • Construct desiccation monitoring sites. 			

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Assessment of Environmental, Seasonal and Regional Variations in Pavement Base and Sub-grade Properties	Project Status:	Proposed
Funding Source:	SPR: TT-Fed/TT-Reg	Budget Category:	FHWA
State Project Number:		Project Start Date:	9/24/2010
Research Project Number:		Completion Date (original)	6/30/2015
Research Agency:	LTRC	Completion Date (revised)	
Principal Investigator:	Mr. Kevin Gaspard		
BUDGET STATUS			
Total Budget		Estimated 2010-2011 Budget	
Total Cost (original)	\$500,000	Total	\$90,550
(revised)			
Est. Expended to Date		Salaries	\$78,550
FY 2009 - 2010 Budget		Equipment (expendable)	
FY Funds (original)		Equipment (non-expendable)	\$12,000
(revised)		Travel	
Est. FY Expenditure		Other	
PURPOSE AND SCOPE			
<p>The purpose of this project is develop a Sub grade 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 DOTD 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.</p>			
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS			
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES			
<ul style="list-style-type: none"> • Select and instrument assessment sites; • Begin monitoring; and • Begin Laboratory program. 			

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Development of Improved QA/QC Protocols for Portable WIM Data Collection		Project Status:	Proposed
Funding Source:	SPR: TT-Fed/TT-Reg		Budget Category:	FHWA
State Project Number:			Project Start Date:	7/1/2009
Research Project Number:	09-5P		Completion Date (original)	
Research Agency:			Completion Date (revised)	
Principal Investigator:	Mr. Mark Martinez			
BUDGET STATUS				
Total Budget			Estimated 2010-2011 Budget	
Total Cost	(original)	\$210,000	Total	\$105,000
	(revised)			
Est. Expended to Date			Salaries	\$105,000
FY 2009 - 2010 Budget			Equipment (expendable)	
FY Funds	(original)		Equipment (non-expendable)	
	(revised)		Travel	
Est. FY Expenditure			Other	
PURPOSE AND SCOPE				
<p>To facilitate implementation of the Mechanistic-Empirical Pavement Design Guide (MEPDG), the Louisiana Department of Transportation (LADOTD) funded LTRC Project 07-2P to examine current traffic characterization techniques used in Louisiana. A component part of Project 07-2P required that data from Louisiana's portable WIM data collection program be evaluated. It was discovered during this evaluation that many of the sites examined could not pass QA/QC tests because the piezoelectric sensors associated with the problem WIM sites were either out of calibration or had failed. This project proposes to investigate the causes behind the failures as well as underlying causes. The project will also seek to determine what might be done to improve the quality of data derived from portable WIM equipment and will attempt to develop a procedural flowchart or checklist to aid field personnel in carrying out and maintaining calibration more effectively</p>				
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS				
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES				
<p>Task 1: Examine literature and consult with OEMs to develop an understanding of project requirements; Task 2: Consult with field personnel to help determine mechanism behind equipment failure; Task 3: Develop procedural approach to improving QA/QC; Task 4: Develop a training program and QA/QC policy that can be used by field personnel in WIM setup; and Task 5: Begin attempting to automate processes to aid field personnel in quickly assessing equipment performance.</p>				

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	LED Traffic Signal Lifetime Management System			Project Status:	Proposed
Funding Source:	SPR: TT-Fed/TT-Reg		Budget Category:	FHWA	
State Project Number:			Project Start Date:	6/1/2010	
Research Project Number:	10-3P		Completion Date	(original)	6/1/2012
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Leticia Santos da Rocha Courville				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$352,280	Total		\$99,250
	(revised)				
Est. Expended to Date			Salaries	\$54,270	
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	\$15,600
	(revised)		Travel	\$3,390	
Est. FY Expenditure			Other	\$25,990	
PURPOSE AND SCOPE					
<p>The purpose of this research is to provide Louisiana State with LED traffic signals that are replaced based on service time estimate rather than the warranty period stated by manufacturers.</p> <p>The objectives of this research are to develop LED traffic signal lifetime curves, and to design and test the prototype of a circuit that cuts off LED traffic signal light at the time that the threshold published by Institute of Transportation Engineers occurs in these lifetime curves.</p> <p>In this research, AllnGaP LED traffic signals operating in Baton Rouge will be identified. LED traffic signal samples which involve different service time will be collected from the streets of this city. Luminous intensity will be measured in laboratory and in the field. Voltage, current, and power factor will also be measured. Average high and low temperature in Baton Rouge will be identified. Cylindrical sun path diagram for Baton Rouge will also be identified. Such measurements and data will assist in investigating both the current effect in luminous intensity degradation, and the temperature effect in luminous intensity degradation. LED traffic signal lifetime curves will be developed. The prototype of the cutoff circuit will designed and tested. The technical audience who will use LED traffic signal lifetime curves and cutoff circuit is Louisiana DOTD's Districts. An evaluation of implementing such lifetime curves and cutoff circuit, and strategies for this research implementation will be presented in the final report.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					

LTRC Annual Research Program
Fiscal Year 2010-2011

FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES

The activities that will be done during the 2010-2011 fiscal year are:

- To search literature about accelerated life testing of LEDs, and electronics components;
- To do acquisition of data acquisition system, data sensors, laptop, handheld light tester;
- To collect samples of AlInGaP LED traffic signals operating in Baton Rouge;
- To measure luminous intensity using goniophotometer system;
- To measure luminous intensity using handheld light tester;
- To compare luminous intensity from laboratory measurement and field measurement;
- To measure voltage AC and DC, current AC and DC, and power factor;
- To integrate luminous intensity degradation, service life, voltage, current, power factor, temperature, and cylindrical sun path diagram information; and
- To develop LED traffic signal lifetime curves.

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Evaluation of the Validity of Multiple Stress Creep Recovery Test to be included in LADOTD Asphalt Binder Specification			Project Status:	Proposed
Funding Source:	SPR: TT-Fed/TT-Reg		Budget Category:	FHWA	
State Project Number:			Project Start Date:	7/1/2010	
Research Project Number:			Completion Date	(original)	9/30/2011
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Md. Sharear Kabir				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$105,106	Total		\$83,485
	(revised)				
Est. Expended to Date			Salaries		\$82,485
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		\$1,000
Est. FY Expenditure			Other		
PURPOSE AND SCOPE					
<p>Multiple Stress Creep Recovery (MSCR) test has been used extensively to identify the elastic response in a binder at different stress levels and can be used to determine the presence of polymer in a binder. This test has already been added to the AASHTO 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.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<ul style="list-style-type: none"> • Conduct literature review; • Collect binder samples from various asphalt suppliers; • Perform laboratory experiments; • Start data analysis; and • Start writing up the draft final report. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Investigation of In-situ tests in QC/QA Applications for Hot-Mix Asphalt	Project Status:	Proposed
Funding Source:	SPR: TT-Fed/TT-Reg	Budget Category:	FHWA
State Project Number:		Project Start Date:	7/1/2010
Research Project Number:		Completion Date (original)	6/30/2012
Research Agency:	LTRC	Completion Date (revised)	
Principal Investigator:	Dr. Louay Mohammad		
BUDGET STATUS			
Total Budget		Estimated 2010-2011 Budget	
Total Cost	(original)	\$275,688	Total
	(revised)		\$104,479
Est. Expended to Date			Salaries
			\$104,479
FY 2009 - 2010 Budget		Equipment	(expendable)
FY Funds	(original)	Equipment	(non-expendable)
	(revised)	Travel	
Est. FY Expenditure		Other	
PURPOSE AND SCOPE			
<p>Adequate QA practices are the key to obtain a satisfactory product and to ensure that an installed HMA pavement is what the designer specified. Years of experience support that deviation from either material or construction specifications often lead to premature pavement distress or even failure. While volumetric and laboratory properties are widely used in current specifications, in-situ tests such as light falling weight Deflectometer, Portable Pavement Seismic Analyzer (PSPA), ground penetrating radar can be used in QC/QA activities. These tests may be used to complement current volumetric specifications in order to achieve better construction practices of asphalt construction. The main objective of the proposed research is to evaluate these in-situ tests in the field in order to complement current QC/QA specifications. A number of field projects will be selected for evaluation and for establishing correlations to predict field performance from the results of these tests.</p>			
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS			
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES			
<ul style="list-style-type: none"> • Conduct a thorough literature review; • Develop a rational test factorial; • Select field project; and • Conduct field NDT and laboratory tests. 			

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Performance Evaluation Of Sustainable Materials in HMA Mixtures Under Accelerated Pavement Testing			Project Status:	Proposed
Funding Source:	SPR: TT-Fed/TT-Reg		Budget Category:	FHWA	
State Project Number:			Project Start Date:	7/1/2010	
Research Project Number:			Completion Date	(original)	6/30/2013
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Louay Mohammad				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$430,000	Total		\$63,196
	(revised)				
Est. Expended to Date			Salaries		\$61,196
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		\$2,000
Est. FY Expenditure			Other		
PURPOSE AND SCOPE					
<p>The objective of this study is to evaluate the overall performance of hot mix asphalt mixtures containing Thiopave additives as compared to similar mixtures with conventional HMA under Accelerated Pavement Testing (APT) at the Louisiana Pavement Research Facility. Test lanes will be designed, constructed, and trafficked using the accelerated loading device at the LADOTD Pavement Research Facility. The field performance will be monitored using Falling Weight Deflectometer (FWD) and DYNAFLECT tests as well as rutting and surface cracking measurements.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<p>This research will be conducted according to the following tasks:</p> <p>Task 1. Conduct Literature Review;</p> <p>Task 2. Design Test Lanes;</p> <p>Task 3. Develop Construction and Bid Specification;</p> <p>Task 4. Perform Lane Construction;</p> <p>Task 5. Apply APT Loading; and</p> <p>Task 6. Perform Field Performance Tests.</p>					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Evaluation Of HMA Mixtures Containing Recycled Asphalt Shingles			Project Status:	Proposed
Funding Source:	SPR: TT-Fed/TT-Reg		Budget Category:		FHWA
State Project Number:			Project Start Date:		7/1/2010
Research Project Number:			Completion Date	(original)	6/30/2012
Research Agency:		LTRC	Completion Date	(revised)	
Principal Investigator:	Dr. Louay Mohammad				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$204,032	Total		\$68,580
	(revised)				
Est. Expended to Date			Salaries		\$68,580
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		
PURPOSE AND SCOPE					
<p>The primary objective of this research project is to evaluate the potential use of roofing shingle in asphalt concrete mixtures. The roofing shingles may be blended with asphalt binder through a wet process, in which the ground recycled material is blended with a virgin binder at high temperature prior to mixing with the aggregates. To achieve this objective, this research will measure experimentally the rheological and mechanical properties of asphalt binders and aggregates extracted from three contrasting sources of Recycled Asphalt Shingles (RAS). The ground recycled material will then be blended with virgin asphalt binder at high temperature and at different RAS content levels. The chemical and physical interaction mechanisms taking place in the blending process will be characterized using rheological testing and GPC. Rheological and mechanical characterization of asphalt binders and aggregates extracted from three contrasting sources of RAS will be performed. In addition, the mechanical properties of asphalt/aggregate mixtures with and without RAS will be evaluated at high, intermediate and low temperatures.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<ul style="list-style-type: none"> • 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. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

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
State Project Number:		Project Start Date:	7/1/2010
Research Project Number:		Completion Date (original)	6/30/2012
Research Agency:	LTRC	Completion Date (revised)	
Principal Investigator:	Dr. Louay Mohammad		
BUDGET STATUS			
Total Budget		Estimated 2010-2011 Budget	
Total Cost (original)	\$275,000	Total	\$68,580
(revised)			
Est. Expended to Date		Salaries	\$68,580
FY 2009 - 2010 Budget		Equipment (expendable)	
FY Funds (original)		Equipment (non-expendable)	
(revised)		Travel	
Est. FY Expenditure		Other	
PURPOSE AND SCOPE			
<p>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 LDOTD with specifications, 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.</p>			
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS			
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES			
<ul style="list-style-type: none"> • Conduct a thorough literature review; • Develop a laboratory and field experiments; and • Conduct laboratory experiment. 			

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Louisiana Transportation Safety Center			Project Status:	Proposed
Funding Source:	SPR: TT-Fed/TT-Reg		Budget Category:	FHWA	
State Project Number:			Project Start Date:		
Research Project Number:			Completion Date	(original)	
Research Agency:		LTRC	Completion Date	(revised)	
Principal Investigator:	Dr. Marie Walsh				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$200,000	Total		\$25,000
	(revised)				
Est. Expended to Date			Salaries		\$20,000
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	\$5,000
	(revised)		Travel		
Est. FY Expenditure			Other		
PURPOSE AND SCOPE					
<p>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. DOTD, LTRC and the TTEC in Baton Rouge, LA will serve as the nucleus for these activities.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<ul style="list-style-type: none"> • 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. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Support Study for Establishing an Intelligent Transportation System (ITS) Lab at LTRC			Project Status:	Proposed
Funding Source:	SPR: TT-Fed/TT-Reg		Budget Category:	FHWA	
State Project Number:			Project Start Date:	7/1/2010	
Research Project Number:	10-7SS		Completion Date	(original)	6/30/2012
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Chester Wilmot				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$93,163	Total		\$93,163
	(revised)				
Est. Expended to Date			Salaries		\$25,403
FY 2009 - 2010 Budget			Equipment	(expendable)	\$50,400
FY Funds	(original)		Equipment	(non-expendable)	\$17,360
	(revised)		Travel		
Est. FY Expenditure			Other		
PURPOSE AND SCOPE					
<p>This project provides the internal funding and staff support for LTRC project 10-6SS. The establishment of the ITS lab will address the needs of DOTD, other agencies, and the public, as well as serve as a foundation to conduct "bleeding 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.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
<p>Phase 1 of investigation is complete which included preparation of a final report documenting the preliminary investigation into the feasibility and desirability of establishing an ITS Lab at LTRC.</p>					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<ul style="list-style-type: none"> • Develop specifications for equipment purchase and install ITS lab equipment; • Develop plans and specifications for modifying existing LTRC building to accommodate the ITS lab; • Award contract to modify building; • Award contract to purchase and install ITS equipment; • Develop operational guidelines; and • Begin operations of ITS lab. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Investigation of Roller Compacted Concrete for Low Volume Roads			Project Status:	Proposed
Funding Source:	SPR: TT-Fed/TT-Reg		Budget Category:	FHWA	
State Project Number:			Project Start Date:	8/1/2010	
Research Project Number:			Completion Date	(original)	6/30/2013
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Tyson Rupnow				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$300,000	Total		\$150,000
	(revised)				
Est. Expended to Date			Salaries	\$65,000	
FY 2009 - 2010 Budget			Equipment	(expendable)	\$3,000
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other	\$82,000	
PURPOSE AND SCOPE					
<p>Develop a methodology for roller compacted concrete (RCC). This study would also investigate various mixture designs and determine suitable mixtures for use in LADOTD roadway applications. ALF testing would also be conducted to determine optimal thickness for paving applications.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
<p> </p>					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<p>Prepare the proposal, procure funding, and procure materials for the laboratory testing portion of the study and construct the lanes at ALF. Note that the "other" monies will be used in construction of the ALF lanes.</p>					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Development of Performance Based, or End Result Specifications			Project Status:	Proposed
Funding Source:	SPR: TT-Fed/TT-Reg		Budget Category:	FHWA	
State Project Number:			Project Start Date:	12/1/2010	
Research Project Number:			Completion Date	(original)	6/30/2012
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Tyson Rupnow				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$250,000	Total		\$35,000
	(revised)				
Est. Expended to Date			Salaries	\$35,000	
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		
PURPOSE AND SCOPE					
<p>The purpose of this study is to develop performance based or end result specifications for the design build projects currently being let by LADOTD. This study will help determine the various end result parameters that are desired by LADOTD for construction of PCC pavements.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<p>Develop the proposal and send portions of the project out for RFP.</p>					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Investigation of Air Entrainment Quantities Needed for Pavements and Bridges in Louisiana			Project Status:	Proposed
Funding Source:	SPR: TT-Fed/TT-Reg		Budget Category:	FHWA	
State Project Number:			Project Start Date:	10/1/2010	
Research Project Number:			Completion Date	(original)	12/31/2011
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Patrick Icenogle				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$100,000	Total	\$35,000	
	(revised)				
Est. Expended to Date			Salaries	\$35,000	
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		
PURPOSE AND SCOPE					
<p>This project will be used to validate the air entrainment quantities needed for bridges and pavement projects constructed in Louisiana. Several different mix designs will be produced with and without entrained air and tested to determine durability.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
<p></p>					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<p>Develop the test matrix, procure materials, and start laboratory testing.</p>					

FHWA

**Part II SPR Funded
Research Program**

POOLED FUND LEAD STATE RESEARCH

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Southeast Transportation Consortium			Project Status:	Ongoing
Funding Source:	SPR: Pooled Fund: TT-Fed		Budget Category:	FHWA	
State Project Number:	736-99-1655		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 2010-2011 Budget		
Total Cost	(original)	\$150,000	Total		\$25,000
	(revised)				
Est. Expended to Date		\$6,554	Salaries		\$15,000
FY 2009 - 2010 Budget			Equipment (expendable)		
FY Funds	(original)	\$10,000	Equipment (non-expendable)		
	(revised)		Travel		\$8,000
Est. FY Expenditure		\$6,554	Other		\$2,000
PURPOSE AND SCOPE					
<p>STC'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 STC program are to develop synergy and provide for a more efficient use of resources.</p>					

LTRC Annual Research Program
Fiscal Year 2010-2011

FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS

The inaugural meeting of the Southeastern Transportation Consortium (STC) meeting was held in Baton Rouge, LA on October 21, 22, 2009. The meeting was hosted by Louisiana (lead state) at the Louisiana Transportation Research Center. Ten member states represented include AL, AR, GA, KY, LA, MS, NC, TN, VA, and WV.:

- Developed a STC charter defining conduct of business and organizational procedures;
- Developing a research topic list of opportunities for collaboration including member rating of research need.

Began work on synthesis of member state research programs:

- Collected research project data for the past 5 years for Louisiana and Virginia programs;
- Presented example database and categories to the RAC II members at TRB Annual Meeting;
- Collected research project data from Alabama, Georgia, Arkansas, West Virginia, and Mississippi; and
- Began development of website for project searches.

Developed Opportunities-for-Collaboration research topics:

- Collected research topic summaries from members;
- Completed survey of members for topic ratings; and
- Presented ratings at TRB RAC II meeting.

FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES

- Complete synthesis of member state research projects;
- Develop strategic plan for conducting research studies beneficial to the region;
- Continue development of a web site for the STC;
- Present status of synthesis project at Annual RAC meeting;
- Conduct STC Annual Meeting; and
- Select and fund research consortium research project.

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Traffic and Data Preparation for AASHTO MEPDG Analysis and Design			Project Status:	Proposed
Funding Source:	SPR: Pooled Fund: TT-Fed		Budget Category:	FHWA	
State Project Number:			Project Start Date:	10/1/2010	
Research Project Number:			Completion Date	(original)	9/30/2013
Research Agency:			Completion Date	(revised)	
Principal Investigator:					
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$500,000	Total		\$130,000
	(revised)				
Est. Expended to Date			Salaries	\$130,000	
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		
PURPOSE AND SCOPE					
<p>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:</p> <ul style="list-style-type: none"> • 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. <p>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.</p>					

LTRC Annual Research Program
Fiscal Year 2010-2011

FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS

--

FISCAL YEAR 2010-2011 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 2010-2011

Title:	Transportation Library Connectivity			Project Status:	Ongoing
Funding Source:	SPR: Pooled Fund: TT-Fed		Budget Category:	FHWA	
State Project Number:			Project Start Date:	10/1/2005	
Research Project Number:	TPF-5(105)		Completion Date	(original)	12/31/2010
Research Agency:			Completion Date	(revised)	
Principal Investigator:					
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$100,000	Total		\$20,000
	(revised)				
Est. Expended to Date		\$80,000	Salaries		\$20,000
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)	\$20,000	Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure		\$20,000	Other		
PURPOSE AND SCOPE					
<p>The Transportation Library Connectivity Pooled Fund Study is a grassroots effort by librarians and information professionals in 22 state departments of transportation, two university transportation centers and a metropolitan transportation authority.</p> <p>Since 2005 members have been pooling their talents, energy and resources to develop better ways to serve practitioners in transportation agencies. A full-time consultant provides technical assistance to member libraries and carries out a ten-point annual work plan aimed at improving information access throughout the transportation community</p>					

LTRC Annual Research Program
Fiscal Year 2010-2011

FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS

Technical guidance and support to members:

- Conducted a site visit to New Mexico DOT;
- Consulted with Arizona DOT on moving their library and planning the new space;
- Began working on the Year Five Annual Report;
- Consulted with Louisiana DOTD/LTRC on statistical tracking software and integrated library systems software;
- Continued consulting with Mississippi DOT on data implementation of ILS, OCLC upload, training and MARC cataloging formats;
- Provided ongoing technical cataloging assistance to convert bibliographic records into MARC format. Specifically, facilitated MARC cataloging activities including adding new items to WorldCat and TLCat, helping eliminate backlogs, and enhancing overall quality of cataloging. Teleconferences; and
- A Webinar was held on March 16, 2010 to discuss pooled fund business and discuss the current status and strategic planning for the regional TKNs and National TKN. Amanda J. Wilson (NTL), Kendra Levine (chair, WTKN), Amy Emrick (chair, MTKN) and Jane Minotti (chair, ETKN) participated in the Webinar.

Project Web site:

- An RSS feed was added to the Web site;
- The calendar was kept updated with all relevant dates and events including 2010 meeting schedules, updated throughout the quarter;
- Updates and news items are posted on a bi-weekly basis;
- Preliminary planning of the 2010 National TKN meeting took place with NTL and the chairs of WTKN, MTKN and ETKN. The meeting will be held on June 17, 2010 in New Orleans, LA.; and
- Continued to facilitate guidelines, training, reporting and accounts for the TKN Resource Sharing pilot program through its end date of March 31, 2010.

Implementation of focused research and technology projects:

- The National Resource Sharing pilot project continued to collect statistics and submit progress reports this quarter. It concluded on March 31, 2010. Maggie worked with NTL and participating libraries to report statistics on www.transportationresearch.gov through March 2010 and coordinated with NTL in notifying participants of the end of the project and the final report due date (mid-May 2010).

FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES

- Technical guidance and support to members;
- Teleconferences;
- Promotion of the value and importance of transportation library and information services to top-level transportation administrators
- Workshops for librarians on the value of the Transportation Librarian's Toolkit;
- Annual meeting;
- Project Web site;
- Support of members in their efforts to form and grow regional Transportation Knowledge Networks;
- Collaboration with the National Transportation Library, the new AASHTO RAC TKN Task Force and others;
- Facilitate payment of OCLC and TLCat subscriptions for eligible pooled fund members; and
- Implementation of focused research and technology projects.

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Roadside Safety Research Program				Project Status:	Ongoing
Funding Source:	SPR: Pooled Fund: TT-Fed		Budget Category:		FHWA	
State Project Number:			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 2010-2011 Budget			
Total Cost	(original)	\$165,000	Total		\$25,000	
	(revised)					
Est. Expended to Date		\$140,000	Salaries		\$25,000	
FY 2009 - 2010 Budget						
FY Funds	(original)	\$25,000	Equipment	(expendable)		
	(revised)		Equipment	(non-expendable)		
Est. FY Expenditure		\$25,000	Travel			
			Other			
PURPOSE AND SCOPE						
<p>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.</p> <p>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.</p> <p>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.</p>						

LTRC Annual Research Program
Fiscal Year 2010-2011

FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS

The Roadside Safety Research Committee met at Texas Transportation Institute, College Station Texas in November to review the results of ongoing safety research and to develop the research plan for FFY10. In addition, the committee observed a crash test of a cable barrier system. The Committee approved five additional research projects for the coming year. A new solicitation was approved to be issued in early 2010 to invite more states to participate in the program. 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 2010-2011 PROPOSED ACTIVITIES

The Roadside Safety Committee will meet next fall in Washington State.

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Technology Transfer Concrete Consortium			Project Status:	Ongoing
Funding Source:	SPR: Pooled Fund: TT-Fed		Budget Category:		FHWA
State Project Number:			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 2010-2011 Budget		
Total Cost	(original)	\$25,000	Total		\$5,000
	(revised)				
Est. Expended to Date		\$10,000	Salaries		
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)	\$5,000	Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure		\$5,000	Other		\$5,000
PURPOSE AND SCOPE					
<p>Background: Increasingly, state departments of transportation (DOTs) are challenged to design and build longer life concrete pavements that result in a higher level of user satisfaction for the public. One of the strategies for achieving longer life pavements is to use innovative materials and construction optimization technologies and practices. In order to foster new technologies and practices, experts from state DOTs, Federal Highway Administration (FHWA), academia and industry must collaborate to identify and examine new concrete pavement research initiatives. The purpose of this pooled fund project is to identify, support, facilitate and fund concrete research and technology transfer initiatives.</p> <p>Objectives: The proposed project is for the establishment of a pooled fund for state representatives to continue the collaborative effort begun in TPF-5(066) Materials and Construction Optimization. The TTCC will be open to any state desiring to be a part of new developments in concrete paving leading to the implementation of new technologies which will lead to longer life pavements through the use of the innovative testing, construction optimization technologies and practices, and technology transfer.</p> <p>Scope of Work: It is envisioned this partnership will be part of the Track Team for the CP Road Map Mix Design and Analysis Track. The Track Team will include state representatives along with FHWA representatives, industry representatives (from ACPA, ACPA chapters, and material suppliers), consultants, and academic representatives. This pooled fund will be the opportunity for all states interested in the Mix Design and Analysis Track to become part of that endeavor.</p> <p>TTCC will begin by meeting in conjunction with MCC, twice a year, as the MCO has done in the past. It may be advantageous for MCC in the future to consider melding itself into, and becoming part of the TTCC.</p>					

LTRC Annual Research Program
Fiscal Year 2010-2011

FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS

- Interaction with Technical Monitor and/or Project Advisory Committee;
- Frequent conference calls with planning committee; and
- Brief summary of this quarter's research and activities pertaining to the project: The Fall TTCC meeting was held in St. Louis, October 6-8.

FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES

Plan and conduct TTCC Fall 10 meeting.

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Superpave Regional Center			Project Status:	Ongoing
Funding Source:	SPR: Pooled Fund: TT-Fed		Budget Category:	FHWA	
State Project Number:			Project Start Date:		
Research Project Number:	TPF-5(228)		Completion Date	(original)	
Research Agency:			Completion Date	(revised)	
Principal Investigator:					
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$60,000	Total		\$20,000
	(revised)				
Est. Expended to Date		\$25,000	Salaries		
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)	\$25,000	Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure		\$25,000	Other		\$20,000
PURPOSE AND SCOPE					
<p>Objectives of the Center are:</p> <ul style="list-style-type: none"> • 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. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS

- Conduct Superpave mix designs and Superpave binder training courses (typically offered at NCAT facilities annually). In addition, specialized training may be conducted on-site at a sponsoring agencies facility;
- Conduct cooperative research that may cost more than a state is willing to commit to individually. This allows for basic research to be conducted that can answer questions and address needs quickly;
- Conduct state-specific research that can be done quickly to address problems that have come up prior to, during, or after construction and for which an answer or solution is needed quickly;
- Perform materials testing that an agency may not be equipped to conduct, or for which independent verification of test results is needed; and
- Conduct equipment calibration and develop precision and bias statements when new laboratory equipment is introduced.

FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES

Continue meeting the objectives of the center.

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Pooled Fund Collaboration Projects			Project Status:	Proposed
Funding Source:	SPR: Pooled Fund: TT-Fed		Budget Category:	FHWA	
State Project Number:			Project Start Date:		
Research Project Number:			Completion Date	(original)	
Research Agency:			Completion Date	(revised)	
Principal Investigator:					
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$60,000	Total		\$60,000
	(revised)				
Est. Expended to Date			Salaries	\$60,000	
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		
PURPOSE AND SCOPE					
<p>The Transportation Pooled Fund (TPF) Program allows federal, state, and local agencies and other organizations to combine resources to support transportation research studies. The objective of this work program item is to provide SPR funding for LADOTD to participate in upcoming pooled fund projects in which LTRC is not the lead state.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
<p> </p>					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<p>Select and fund research pooled fund projects that would provide benefits to the Louisiana transportation network.</p>					

FHWA

**IBRD Funded
Research Program**

CONTINUING RESEARCH

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Bridge Deck Replacement using FRP Materials				Project Status:	Ongoing
Funding Source:	IBRD: TT-Fed		Budget Category:		FHWA	
State Project Number:	736-99-1370		Project Start Date:		11/15/2005	
Research Project Number:	05-5ST		Completion Date	(original)	5/14/2008	
Research Agency:	LSU		Completion Date	(revised)	11/14/2010	
Principal Investigator:	Dr. Steve C.S. Cai					
BUDGET STATUS						
Total Budget			Estimated 2010-2011 Budget			
Total Cost	(original)	\$220,537	Total		\$20,000	
	(revised)					
Est. Expended to Date		\$196,000	Salaries		\$18,000	
FY 2009 - 2010 Budget						
FY Funds	(original)	\$40,059	Equipment	(expendable)		
	(revised)		Equipment	(non-expendable)	\$1,000	
Est. FY Expenditure		\$21,837	Travel		\$500	
			Other		\$500	
PURPOSE AND SCOPE						
<p>The purpose of the study is to investigate the application of Fiber Reinforced Polymer (FRP) products to replace a low-rated, deteriorated bridge deck. The study encompasses the design and purchasing of an FRP deck, computer analysis and finite element modeling of the candidate bridge, as well as instrumentation and data acquisition. Successful results will add "FRP deck" as another option for bridge deck replacement.</p>						
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS						
<p>Task 3: Analytical Modeling and FRP System Design (partially completed)</p> <ul style="list-style-type: none"> • Additional finite element analysis was conducted by using the as-built bridge information after the bridge was installed. Comparison of bridge field test and finite element prediction were conducted. <p>Task 4: Design of Monitoring Systems</p> <ul style="list-style-type: none"> • Monitoring system was installed and completed. <p>Task 5: Installation and Field Testing (partially completed)</p> <ul style="list-style-type: none"> • Bridge deck was installed and the bridge was live load tested; • Both static including truck stopping and slow moving and dynamic testing were conducted; and Strain information, acceleration, and acoustic information was collected. <p>Task 6: Guideline for Long-Term Monitoring of the Installed FRP Deck</p> <ul style="list-style-type: none"> • The monitoring guideline is under development, including documentation of instrumentation plan, description of instrument, and operation procedures. <p>Task 7: Final Report</p> <ul style="list-style-type: none"> • Final report was partially finished. 						

LTRC Annual Research Program
Fiscal Year 2010-2011

FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES

Task 3: Analytical Modeling and FRP System Design

- The analysis results will be documented and discussed.

Task 5: Installation and Field Testing

- Installation and live load test were completed; and
- However, more data under service live loads will be collected on bridge site.

Task 6: Guideline for Long-Term Monitoring of the Installed FRP Deck

- The monitoring guideline will be finished.

Task 7: Final Report

- The final report will be submitted.

LTRC Annual Research Program
Fiscal Year 2010-2011

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	
State Project Number:	736-99-1437		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 2010-2011 Budget		
Total Cost	(original)	\$449,925	Total		\$115,550
	(revised)	\$565,550			
Est. Expended to Date	\$450,000		Salaries		
FY 2009 - 2010 Budget			Equipment (expendable)		
FY Funds	(original)	\$317,077	Equipment (non-expendable)		\$115,550
	(revised)		Travel		
Est. FY Expenditure	\$201,527		Other		
PURPOSE AND SCOPE					
<p>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.</p> <p>Static lateral load test will be performed by LADOTD immediately after completing the installation of the monitoring system in the Eastbound pier M19. The short-term monitoring will be used to validate the applicability of the FB-MultiPier analysis for predicting the performance of battered pile group system under lateral loading; and to develop (or back-calculated) the p-y multipliers for battered pile groups in similar soil conditions.</p> <p>The long-term monitoring will be used to evaluate the behavior of pile group structure under dynamic loads caused by selected events (winds, waves, and vessel collision).</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
<ul style="list-style-type: none"> • Conducted literature review on pile instrumentation, substructure monitoring systems, and lateral load tests of single and group of piles; • Completed the superstructure instrumentation (columns, cap bent, deck); • Installed and calibrated the OSMOS WIM system; • Started analyzing the lateral load test data; and • Started back-calculating the p-y multipliers for FB-Multiplier analysis of battered pile groups in similar soil conditions. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES

- Use the FB-multi pier program to analyze the lateral load test at M19 Eastbound pier of Twin Span bridge;
- Compare between the measured and predicted values from FB-MultiPier Analysis;
- Continue analyzing the measured lateral load test data;
- Continue working on back-calculating the p-y multipliers for FB-MultiPier analysis of battered pile groups in similar soil conditions;
- Coordinate with the subcontractor to setup the long-term monitoring system; and
- Prepare a draft report

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Repairing/Strengthening of Bridges with Post-Tensioned FRP Strands and Performance Evaluation			Project Status:	Ongoing
Funding Source:	IBRD: TT-Fed		Budget Category:	FHWA	
State Project Number:	736-99-1438		Project Start Date:	10/1/2007	
Research Project Number:	07-3ST		Completion Date	(original)	4/1/2010
Research Agency:	LSU		Completion Date	(revised)	3/31/2011
Principal Investigator:	Dr. Steve C.S. Cai				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$200,000	Total		\$65,000
	(revised)				
Est. Expended to Date		\$43,000	Salaries		\$45,000
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)	\$75,000	Equipment	(non-expendable)	\$15,000
	(revised)	\$28,000	Travel		\$1,500
Est. FY Expenditure		\$28,000	Other		\$3,500
PURPOSE AND SCOPE					
<p>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.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
<p>Task 4: Design of bridge repairing/strengthening with FRP post-tensioning strands (Partially Completed)</p> <p>Task 5: Numerical modeling of bridge with FRP post-tensioning strands (Partially Completed)</p> <p>Task 6: Design of Monitoring Systems (Partially Completed)</p>					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<p>Task 4: The design of repairing/strengthening of the selected bridge will be completed;</p> <p>Task 5: Numerical modeling of bridge with FRP post-tensioning;</p> <p>Task 6: Design of Monitoring Systems;</p> <p>Task 7: Installation and Field Testing;</p> <p>Task 8: Guideline for Long-Term Monitoring of Deck with FRP pre-stressing strands; and</p> <p>Task 9: Final Report.</p>					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Integral Abutment Bridge for Louisiana's Soft and Stiff Soils			Project Status:	Ongoing
Funding Source:	IBRD: TT-Fed		Budget Category:		FHWA
State Project Number:	736-99-1439		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 2010-2011 Budget		
Total Cost	(original)	\$400,000	Total		\$90,000
	(revised)				
Est. Expended to Date		\$240,000	Salaries		\$30,000
FY 2009 - 2010 Budget					
FY Funds	(original)	\$90,000	Equipment	(expendable)	
	(revised)	\$100,000	Equipment	(non-expendable)	\$60,000
Est. FY Expenditure		\$100,000	Travel		
			Other		
PURPOSE AND SCOPE					
<p>The proposed project is to use embedded instrumentation to monitor a full Integral Abutment Bridge for Louisiana's soft 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.</p> <p>This study has been approved and is federally funded through the Innovative Bridge Research and Deployment Program (IBRD) program.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
<p>Literature Review was conducted.</p> <p>Instrumentation and Testing Plan for the Caminada Bridge:</p> <ul style="list-style-type: none"> • LA DOTD provided the design plans for the Caminada Bridge to the Principal Investigator; • An instrumentation plan for the Caminada Bridge was submitted to and approved by the Project Review Committee; • A contract was signed with the instrumentation company to design the Data Acquisition System for the Caminada bridge; • All instrumentation for the Caminada bridge was delivered to LSU; and • Preconstruction Conference was held and presentations were made for the Caminada Bridge by all parties concerned. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES

Instrumentation and Testing Plan for the Caminada Bridge:

- Installation of the instrumentation plan;
- Continue finite element modeling of the bridge abutment for evaluation of the instrumentation plan; and
- Data gathering from the monitoring system.

Instrumentation and Testing Plan for the Bodcau Bayou Bridge:

- LA DOTD provided the design plans for the Bridge to the Principal Investigators;
- An instrumentation plan for the Bridge will be submitted for approval by the Project Review Committee;
- Purchase of all instrumentation for the bridge; and
- Modeling of this bridge will be initiated.

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Monitoring Bridge Scour Using Fiber Optic Sensors				Project Status:	Ongoing
Funding Source:	IBRD: TT-Fed		Budget Category:		FHWA	
BUDGET STATUS						
Total Budget			Estimated 2010-2011 Budget			
Total Cost	(original)	\$199,999	Total		\$70,000	
	(revised)					
Est. Expended to Date		\$43,000	Salaries		\$45,000	
FY 2009 - 2010 Budget			Equipment		(expendable)	
FY Funds	(original)	\$72,000	Equipment		(non-expendable) \$15,000	
	(revised)	\$40,000	Travel		\$1,500	
Est. FY Expenditure		\$19,000	Other		\$8,500	
PURPOSE AND SCOPE						
<p>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 will include laboratory test and field applications.</p>						
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS						
<p>Task 1: A state-of-the-art review Task 2: Submit a summary report</p> <ul style="list-style-type: none"> • An interim report was submitted to the project committee. <p>Task 3: Development of Scour Monitoring Methodology (Partially Completed)</p> <ul style="list-style-type: none"> • Monitoring methodology to monitor the scour is under development by using optic sensors; • One methodology is based the strain reading and another one is based on the dynamic response due to flow impact; and • These methodologies need to be conceptually verified. <p>Task 4: Test of Monitoring Methodology in Laboratory (Partially Completed)</p> <ul style="list-style-type: none"> • The concept of monitoring the scour is under investigation in lab by testing the flow and sensor interaction. Protection of the system needs to be further developed. 						

LTRC Annual Research Program
Fiscal Year 2010-2011

FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES

Task 3: Development of Scour Monitoring Methodology

- Monitoring methodology to monitor the scour will be further developed;
- A bridge should be identified since the monitoring design is site-specific;
- How to install and how to protect the system will depend on the site conditions; and
- Help from LADOTD is needed to identify the bridge for monitoring.

Task 4: Test of Monitoring Methodology in Laboratory

- The concept of monitoring the scour will be further investigated in lab by testing the flow and sensor interaction.

Task 5: Installation and Field Testing

- The developed system will be installed in field.

FHWA

**IBRD Funded
Research Program**

PROPOSED RESEARCH

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Monitoring System for Bridges Subject to Heavy Loads			Project Status:	Proposed
Funding Source:	IBRD: TT-Fed		Budget Category:	FHWA	
State Project Number:			Project Start Date:	7/1/2010	
Research Project Number:	10-1ST		Completion Date	(original)	6/30/2012
Research Agency:	LTU		Completion Date	(revised)	
Principal Investigator:	Dr. Aziz Saber				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$250,000	Total		\$110,000
	(revised)				
Est. Expended to Date			Salaries		\$30,000
FY 2009 - 2010 Budget			Equipment	(expendable)	\$5,000
FY Funds	(original)		Equipment	(non-expendable)	\$70,000
	(revised)		Travel		\$5,000
Est. FY Expenditure			Other		
PURPOSE AND SCOPE					
<p>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 (DOTD) 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.</p> <p>Scope:</p> <ul style="list-style-type: none"> • Study the effects of heavy truck loads (100,000-lb, 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. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS

Accomplishments for the FY were achieved in a companion study under LTRC 09-1ST. For this study, a new bridge was selected in New Iberia. This bridge is on US 90 and is subject to heavily loaded sugar cane trucks.

Several decks and spans were instrumented to monitor the strains caused by the passages of heavy trucks. The monitoring is now done remotely and work on a website for this monitoring system is almost complete. A webcam was installed for the purpose of capturing the truck at the instant it triggers the collection of a high strain it causes.

FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES

For this Fiscal Year:

- Collected data are being analyzed;
- A live load testing for a heavier vehicle (up 148,000 lbs) will be performed;
- Bridge will be remotely monitored and data continuously collected and
- New collected data will be analyzed, as well.

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Use of Geosynthetic Reinforced Soil for Bridge Abutments	Project Status:	Proposed
Funding Source:	IBRD: TT-Fed	Budget Category:	FHWA
State Project Number:		Project Start Date:	7/1/2010
Research Project Number:	10-2ST	Completion Date (original)	6/30/2012
Research Agency:	LTU	Completion Date (revised)	
Principal Investigator:	Dr. Aziz Saber		
BUDGET STATUS			
Total Budget		Estimated 2010-2011 Budget	
Total Cost (original)	\$250,000	Total	\$125,000
(revised)			
Est. Expended to Date		Salaries	\$30,000
FY 2009 - 2010 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			
<p>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.</p> <p>Purpose:</p> <ul style="list-style-type: none"> • 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. <p>Scope:</p> <ul style="list-style-type: none"> • Install a monitoring system for GRS bridge abutment; and • Develop a numerical model for the bridge abutment based on performance data. 			
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS			
The project has not started yet.			
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES			
<p>There will be a lot of coordinated efforts between the PI and the LADOTD regarding the design of the GRS abutment. These will be in the form of:</p> <ul style="list-style-type: none"> • Selection of a suitable bridge site; • Design of the GRS abutment; • Selection of one or multiple reinforcing geosynthetic reinforcing systems; and • Design the instrumentation system of the abutment. 			

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Elimination of Deck Joints using a Corrosion Resistant FRP Grid	Project Status:	Proposed
Funding Source:	IBRD: TT-Fed	Budget Category:	FHWA
State Project Number:		Project Start Date:	7/1/2010
Research Project Number:	10-3ST	Completion Date (original)	6/30/2012
Research Agency:	LTU	Completion Date (revised)	
Principal Investigator:	Dr. Aziz Saber		
BUDGET STATUS			
Total Budget		Estimated 2010-2011 Budget	
Total Cost (original)	\$270,000	Total	\$125,000
(revised)			
Est. Expended to Date		Salaries	\$30,000
FY 2009 - 2010 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			
<p>Purpose:</p> <ul style="list-style-type: none"> This is an implementation project for findings and recommendation from LTRC 06-2ST project. The theoretical work was performed through state funding. Due to its promising outcome, the FHWA-IBRD Program decided to fund the implementation portion. <p>Scope:</p> <ul style="list-style-type: none"> 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 2009 - 2010 ACCOMPLISHMENTS			
The project has not started yet.			
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES			
<ul style="list-style-type: none"> 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 2010-2011

Title:	Local Technical Assistance Program (LTAP)			Project Status:	Ongoing
Funding Source:	LTAP: TT-Fed/TT-Reg		Budget Category:	FHWA	
State Project Number:	736-99-1497		Project Start Date:	1/1/2010	
Research Project Number:	10-LTAP		Completion Date	(original)	12/31/2010
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Marie Walsh				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$608,525	Total		\$608,525
	(revised)				
Est. Expended to Date			Salaries	\$346,615	
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel	\$21,000	
Est. FY Expenditure			Other	\$240,910	
PURPOSE AND SCOPE					
<p>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.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
<ul style="list-style-type: none"> • Implemented traffic engineering webinars with DOTD Traffic Operations Section and LMA; • Coordinated statewide outreach efforts and meetings with local on behalf of DOTD's Traffic Engineering, Highway Safety and Row of Way Sections; • Co-sponsored first statewide "sustainability" workshop focused on public works and transportation in partnership with LA APWA; • Piloted new technical classes for local customers; • Coordinated and implemented webinar series, Traffic Engineering 101, with DOTD's Traffic Engineering Office in conjunction with LMA; and • Utilized electronic delivery to make more national and state level training and resources available to local customers. <p>Presented 124 classes or workshops:</p> <ul style="list-style-type: none"> • 30 Worker Safety classes; • 50 Highway Safety classes; • 32 Infrastructure Management classes; • 12 Workforce Development classes; • 10925 hours of training provided; and • 2145 program participants. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES

- Participate in federal aid program outreach efforts to locals;
- Pilot selected technical training using electronic and blended delivery methods; and
- Complete revision of Roads Scholar and Road Master programs.

FHWA

STP Funded

**Technology Transfer
and
Education Program**

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Technology Transfer Program and Operations			Project Status:	Ongoing
Funding Source:	STP: TT-Fed		Budget Category:	FHWA	
State Project Number:	736-99-1484		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 2010-2011 Budget		
Total Cost	(original)	\$340,917	Total		\$340,917
	(revised)				
Est. Expended to Date			Salaries		\$299,937
FY 2009 - 2010 Budget			Equipment		(expendable)
FY Funds	(original)		Equipment		(non-expendable) style="text-align: right;">\$15,000
	(revised)		Travel		\$6,000
Est. FY Expenditure			Other		\$19,980
PURPOSE AND SCOPE					
<p>The objectives of this study are to:</p> <ul style="list-style-type: none"> • Disseminate information on new technologies and methodologies to DOTD 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 2009 - 2010 ACCOMPLISHMENTS					
<ul style="list-style-type: none"> • Published 8 reports, 2 technical assistance report, 8 technical summaries, 8 project capsules, 4 Tech Today newsletters, 1 Implementation update, and 1 annual report; • Online registration established for 27 classes hosted at TTEC (NHI, FHWA, DOTD); • Videos produced: Crumb Rubber, The Greening of Louisiana Highways, Documentation of Balsa bridge panels at Pierre Part, Preventing harassment In the Workplace, LADOTD Legal Seminar, Tack Coat Test series; • Maintain website and online registration for July 2009 ASSHTO Subcommittee on Bridges and Structures Annual Meeting; and • Maintain website and online registration for April 2010 SWGEC Conference. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES

- Continue the production of all publications;
- Continue development of LTRC websites and databases;
- Continue LTRC video development of research and training projects;
- E-Commerce online registration to be established for ATSIP conference in July;
- Collecting information for annual report; and
- Planning for the 2011 Louisiana Transportation Conference.

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Evaluation of Knowledge Transfer in an Immersive Virtual Learning Environment for the Transportation Community			Project Status:	Ongoing
Funding Source:	STP: TT-Fed		Budget Category:	FHWA	
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$274,475	Total		\$169,607
	(revised)				
Est. Expended to Date		\$104,868	Salaries		\$95,567
FY 2009 - 2010 Budget			Equipment (expendable)		
FY Funds	(original)	\$153,580	Equipment (non-expendable)		\$9,750
	(revised)		Travel		\$8,000
Est. FY Expenditure		\$104,868	Other		\$56,290
PURPOSE AND SCOPE					
<p>This research project was designed to test the use of web 3D technology in a Virtual Learning Environment (VLE) simulating real-world highway work zones. The VLE supplemented traditional course content and delivery methods to enhance the transfer of work zone safety procedure knowledge. This learning environment consisted of real life case studies within a 3D virtual world, similar to a CAD-like environment. The research is unique due to the evaluation of the effectiveness of knowledge transfer across a variety of demographic categories.</p> <p>This project is a one - year research study (January 1, 2010 to December 31, 2010) of learning transfer as it relates to blended delivery methodology in the field of andragogy, with the specific focus on the VLE technology as the method of blended delivery. This project is investigating learning engagement through the VLE as it relates to work zone safety simulations, with a specific focus on flagging procedures.</p>					

LTRC Annual Research Program
Fiscal Year 2010-2011

FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS

- Designed, delivered, and deployed an Immersive Virtual Learning Environment for the "Basic Flagging Procedures" course;
- Built project database in Excel for data entry of research findings that will be imported into SPSS for data analysis;
- Designed, delivered, and deployed demographic instrument for administration in the experimental groups;
- Assisted in design of "Basic Flagging Procedures" pretest and post test;
- Attended over 45 project meetings that occurred in Lafayette at LITE and Baton Rouge at TTEC;
- Delivered 8 "Basic Flagging Procedures" for maintenance courses in the TTEC Computer Lab;
- Delivered 7 "Basic Flagging Procedures" for maintenance courses in the TTEC Rooms 175 and 179;
- Conducted over 30 qualitative interviews with individuals that attended the experimental class in the computer lab;
- Approximately 300 participants enrolled and attended the "Basic Flagging Procedures" course for maintenance;
- Assisted in the development of the imbedded tracking database that measures: telemetry (spatial and temporal analysis), accuracy, decision making, and understanding of the presented concepts;
- Submitted proposal to the Annual Conference on Distance Learning and Education for E-Poster presentation. Proposal was accepted for presentation at the August 2 - 6, 2010 in Madison, WI.; and
- Submitted proposal to the 2010 I/ITSEC conference in Orlando, FL. The proposal was accepted and the paper will be published in the conference proceedings. Paper may be accepted for presentation but will not be announced until August of 2010.

FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES

- Analyze data findings through SPSS and other modeling analyses;
- Write, review, and publish final report on research findings;
- Attend various conferences as both presenters and attendees; and
- Submit journal articles for publication to appropriate scientific and educational journals.

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Technology Transfer Program and Operations				Project Status:	Ongoing
Funding Source:	STP: TT-Fed		Budget Category:		FHWA	
State Project Number:	736-99-1701		Project Start Date:		7/1/2010	
Research Project Number:	11-1TSQ		Completion Date	(original)	6/30/2011	
Research Agency:	LTRC		Completion Date	(revised)		
Principal Investigator:	Mr. Sam Cooper					
BUDGET STATUS						
Total Budget			Estimated 2010-2011 Budget			
Total Cost	(original)	\$567,283	Total		\$567,283	
	(revised)					
Est. Expended to Date			Salaries		\$567,283	
FY 2009 - 2010 Budget			Equipment	(expendable)		
FY Funds	(original)		Equipment	(non-expendable)		
	(revised)		Travel			
Est. FY Expenditure			Other			
PURPOSE AND SCOPE						
<p>The objectives of this study are to:</p> <ul style="list-style-type: none"> • Disseminate information on new technologies and methodologies to DOTD 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 2009 - 2010 ACCOMPLISHMENTS						
<ul style="list-style-type: none"> • Published 8 reports, 2 technical assistance report, 8 technical summaries, 8 project capsules, 4 Tech Today newsletters, 1 Implementation update, and 1 annual report; • Online registration established for 27 classes hosted at TTEC (NHI, FHWA, DOTD); • Videos produced: Crumb Rubber, The Greening of Louisiana Highways, Documentation of Balsa bridge panels at Pierre Part, Preventing harassment In the Workplace, LADOTD Legal Seminar, Tack Coat Test series; • Maintain website and online registration for July 2009 ASSHTO Subcommittee on Bridges and Structures Annual Meeting; and • Maintain website and online registration for April 2010 SWGEC Conference. 						

LTRC Annual Research Program
Fiscal Year 2010-2011

FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES

- Continue the production of all publications;
- Continue development of LTRC websites and databases;
- Continue LTRC video development of research and training projects;
- E-Commerce online registration to be established for ATSIP conference in July;
- Collecting information for annual report; and
- Planning for the 2011 Louisiana Transportation Conference.

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Workforce Development				Project Status:	Ongoing
Funding Source:	STP: TT-Fed		Budget Category:		FHWA	
State Project Number:	736-99-1702		Project Start Date:		7/1/2010	
Research Project Number:	11-1WD		Completion Date	(original)	6/30/2011	
Research Agency:	LTRC		Completion Date	(revised)		
Principal Investigator:	Mr. Sam Cooper					
BUDGET STATUS						
Total Budget			Estimated 2010-2011 Budget			
Total Cost	(original)	\$1,233,237	Total		\$1,233,237	
	(revised)					
Est. Expended to Date			Salaries		\$1,223,237	
FY 2009 - 2010 Budget			Equipment	(expendable)	\$10,000	
FY Funds	(original)		Equipment	(non-expendable)		
	(revised)		Travel			
Est. FY Expenditure			Other			
PURPOSE AND SCOPE						
<p>The purpose of this study is to provide for the strategic planning, program development and delivery management of the workforce development programs for DOTD personnel. The scope of this study also includes the development, delivery and administration of the LTRC Transportation & Training Center's transportation outreach program.</p>						
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS						
<ul style="list-style-type: none"> • Developed 11 training courses, 80 recertification tests given, 130 specialty tests given, 90 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 7 - ERDP participants and 31 - Co-op students; and • Approximately 4500 training opportunities provided to DOTD and transportation industry. 						
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES						
<ul style="list-style-type: none"> • 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 continuing education; • 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 2010-2011

Title:	Support for Senior Project Courses for Retainer Contract for 11-WDC - 736-99-1698	Project Status:	Ongoing
Funding Source:	STP: TT-Fed	Budget Category:	FHWA
State Project Number:	701-65-1481	Project Start Date:	7/1/2010
Research Project Number:	11-2AD	Completion Date (original)	6/30/2011
Research Agency:		Completion Date (revised)	
Principal Investigator:			
BUDGET STATUS			
Total Budget		Estimated 2010-2011 Budget	
Total Cost (original)	\$37,500	Total	\$37,500
(revised)			
Est. Expended to Date		Salaries	
FY 2009 - 2010 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 2009 - 2010 ACCOMPLISHMENTS			
<p>Three universities participated in this program this reporting period:</p> <ul style="list-style-type: none"> • McNeese State University • Louisiana State University • University of Louisiana at Lafayette 			
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES			
Continue to provide support for senior project engineering courses.			

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	LTRC Student Program			Project Status:	Ongoing
Funding Source:	STP: TT-Fed		Budget Category:		FHWA
State Project Number:	701-65-1482		Project Start Date:		7/1/2010
Research Project Number:	11-3AD		Completion Date	(original)	6/30/2011
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Harold 'Skip' Paul				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$147,000	Total		\$147,000
	(revised)				
Est. Expended to Date			Salaries		\$147,000
FY 2009 - 2010 Budget					
FY Funds	(original)		Equipment	(expendable)	
	(revised)		Equipment	(non-expendable)	
Est. FY Expenditure			Travel		
			Other		
PURPOSE AND SCOPE					
To pay for salaries for undergraduate students employed to provide support to various LTRC projects.					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
35 undergraduate students were employed by LTRC to provide support in fulfilling necessary job tasks on various LTRC projects.					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
Continue to pay for salaries for undergraduate students employed to provide support to various LTRC projects.					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Technology Transfer & Research Implementation Support for Louisiana Universities			Project Status:	Ongoing
Funding Source:	STP: TT-Fed		Budget Category:	FHWA	
State Project Number:	736-99-1657		Project Start Date:	1/1/2010	
Research Project Number:	11-4AD		Completion Date	(original)	12/31/2013
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Mark Morvant				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$110,000	Total		\$36,000
	(revised)				
Est. Expended to Date		\$10,188	Salaries		
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)	\$36,000	Equipment	(non-expendable)	
	(revised)		Travel		\$36,000
Est. FY Expenditure		\$10,188	Other		
PURPOSE AND SCOPE					
<p>The purpose of the project is to provide travel funds to university research principal investigators for dissemination of research results at various technology transfer events. 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 DOTD Implementation meetings and training. Travel funds are dispersed on a case by case basis as it applies to providing a benefit to Louisiana.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
<p>This project provided support for travel for presentation of the following papers developed from LTRC research projects:</p> <ul style="list-style-type: none"> • Transportation Research Board; • Development of Uniform Section for PMS Inventory and Applications; • Estimating Setup of Piles Driven into Louisiana Clayey Soils; • Analysis of Rainfall-Accident Relationships Using High-Resolution Radar-Rainfall Data; • Update of Correlations between Cone Penetration and Boring Log Data; and • 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; and • Safety and Operational Assessment of Unconventional Lane Merges in Freeway Work Zones. <p>GeolInstitute 2010</p> <ul style="list-style-type: none"> • Estimating Setup of Piles Driven into Louisiana Clayey Soils. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES

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

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	LaDOTD Co-Op Program			Project Status:	Ongoing
Funding Source:	STP: TT-Fed		Budget Category:	FHWA	
State Project Number:	736-99-1700		Project Start Date:	7/1/2010	
Research Project Number:	11-COOP		Completion Date	(original)	6/30/2011
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Sam Cooper				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$400,000	Total		\$300,000
	(revised)				
Est. Expended to Date			Salaries	\$300,000	
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		
PURPOSE AND SCOPE					
<p>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.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
<ul style="list-style-type: none"> • 31 students participated in CO-OP at various LADOTD sections throughout Louisiana; and • 2 CO-OP students were hired by LADOTD upon graduation. 					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<ul style="list-style-type: none"> • Place CO-OP approximately 30 students in various DOTD Sections across the state; • Continue end of semester presentations.; and • Retain students in CO-OP. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Technology Transfer Registration Fees			Project Status:	Ongoing
Funding Source:	STP: TT-Fed		Budget Category:	FHWA	
State Project Number:	736-99-1699		Project Start Date:	7/1/2010	
Research Project Number:	11-TTRF		Completion Date	(original)	6/30/2011
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Sam Cooper				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$100,000	Total		\$100,000
	(revised)				
Est. Expended to Date			Salaries		
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		\$100,000
PURPOSE AND SCOPE					
<p>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.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
<p></p>					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<p>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.</p>					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Workforce Development Contracts			Project Status:	Ongoing
Funding Source:	STP: TT-Fed		Budget Category:	FHWA	
State Project Number:	736-99-1698		Project Start Date:	7/1/2010	
Research Project Number:	11-WDC		Completion Date	(original)	6/30/2011
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Mr. Sam Cooper				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$2,600,000	Total	\$2,600,000	
	(revised)				
Est. Expended to Date			Salaries	\$842,550	
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other	\$1,757,450	
PURPOSE AND SCOPE					
<p>The purpose of this study is to provide contractual services through federal, university and private sector suppliers for continuing education, professional development, technical skills, software, leadership, management, supervisory training. The scope of this project also includes providing individual registration fees for DOTD employees to attend workshops, courses and conferences to enhance their professional and technical development.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
<ul style="list-style-type: none"> • Conducted 17 National Highway Institute courses (486 students); • Conducted 147 PC software courses (1470 students); • Conducted 47 CADD/ArcGIS courses (486 students); • Conducted 2 LanTEC-ERP courses (24 students); • Conducted 26 safety related courses (704 students); • Conducted 30 specialty courses (490 students); • Individual training registrations (147 classes/495 DOTD Employees); • Approximately 3000 students for leadership/management/supervisory and computer based training courses; and • Managed 13 workshops, meetings, seminars, and conferences (1500 participants). 					

LTRC Annual Research Program
Fiscal Year 2010-2011

FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES

Provide/manage:

- National Highway Institute courses;
- PC software training courses;
- CADD/GIS and specialty software training;
- Professional Development training contracts;
- Technical skills training contracts;
- Safety related training contracts;
- Manage Leadership, management, & supervisory training contracts;
- Individual training registrations;
- Research tools training;
- Library resource orientation and training;
- Maintain and build library collection in support of workforce development and research activities;
- Training events management; and
- Plan/manage/conduct 4-day 2011 Louisiana Transportation Conference for approximately 1750 attendees.

State Funded Research Program

CONTINUING RESEARCH

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Update LADOTD Policy on Pile Driving Vibration Management			Project Status:	Ongoing
Funding Source:	State: TT-Reg		Budget Category:		State
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$193,054	Total		\$62,054
	(revised)				
Est. Expended to Date		\$131,000	Salaries		\$56,454
FY 2009 - 2010 Budget					
FY Funds	(original)	\$131,000	Equipment	(expendable)	\$1,600
	(revised)		Equipment	(non-expendable)	
Est. FY Expenditure		\$131,000	Travel		\$4,000
			Other		
PURPOSE AND SCOPE					
<p>The major objective of the proposed research is to update the current LA DOTD policy on Pile Driving Vibration Management and to provide readily implementable recommendations of monitoring and the control of ground and structure vibrations generated by pile driving to LA DOTD for pile-driving risk management.</p> <p>The scope of the proposed research study will include an extensive literature review, conducting a survey among state DOTs to identify the best practices on the issue of pile driving vibration monitoring and risk management, collecting field pile driving monitoring data from LA DOTD or other resources, checking the feasibility of using empirical prediction models under Louisiana soil conditions, and developing a systematic procedure to guide pile driving vibration monitoring and mitigation by taking hammer-pile-soil interactions into account.</p>					

LTRC Annual Research Program
Fiscal Year 2010-2011

FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS

Task 1: Literature Review

- Conducted a comprehensive literature survey on relevant published works to identify the state of the art and practice on pile driving vibration monitoring and risk management (100%).

Task 2: Conduct a survey on the state of practice and policies on pile driving risk management

- Conducted a Questionnaire Survey on state highway agencies and consultants to identify the state of the art and practice of pile driving vibration monitoring and risk management (100%).

Task 3: Collect available field monitoring data on pile driving

- Collected available field monitoring data on pile driving from five projects in Louisiana and available literature (80%). Because more data will be collected throughout the project, this task will continue.

Task 4: Prepare an Interim Report

- Submitted an Interim Report, which summarizes findings from the first three tasks, identifies the gaps between the current LA pile driving risk management and the best practice, and outlines a manual framework for managing pile driving induced risk in Louisiana (100%). A SPECIFICATION FRAMEWORK FOR LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT PILE DRIVING VIBRATION RISK MANAGEMENT has been sent to the PRC for review.

Task 5: Validate or Develop Correlations between Ground Vibration and Ensuing Structural Damage (100%)

- Two threshold ground vibration limits have been identified (one is independent of vibration frequency and the other is vibration frequency dependent), both of which suggest that the current threshold vibration limits adopted by LA DOTD be overly conservative.

Task 6: Develop Simple Models to Determine Vibration Monitoring Range (70%)

- A procedure to determine vibration monitoring area has been developed, which provides a vibration monitoring area specific to project conditions (e.g., selected pile driving hammer).

Task 7: Evaluate and identify mitigation strategies to control ground vibrations (90%)

- Existing mitigation strategies to mitigate ground vibrations have been identified, among which the appropriate ones will be recommended for Louisiana DOTD.

Task 8: Update LA DOTD pre-construction inspection survey (60%)

- Some of essential aspects of pre-construction inspection survey have been included in the SPECIFICATION FRAMEWORK DRAFT submitted for the project PRC.

FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES

Task 8: Update LA DOTD pre-construction inspection survey

- An updated specification on pre-construction inspection survey, with essential details such as survey area and vibration monitoring area ranges, will be finalized.

Task 9: Develop a GIS database to compile information pertinent to pile driving risk management

- A new module pertinent to ground vibrations during pile driving will be developed and added to the existing LA DOTD geotechnical database.

Task 10: Make recommendations to implement the research findings

- A Pile driving risk management specification will be developed to facilitate the implementation of major findings from this research study and to execute a rational pile driving risk evaluation.

Task 11: Prepare a final report to LA DOTD

- A final report will be prepared for LA DOTD, which will include major findings from the proposed research study and suggestions for implementation.

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Cost Effective Prevention of Reflective Cracking of Composite Pavement			Project Status:	Ongoing
Funding Source:	State: TT-Reg		Budget Category:	State	
State Project Number:	736-99-1518		Project Start Date:	6/15/2008	
Research Project Number:	08-1P		Completion Date	(original)	6/14/2010
Research Agency:	LSU		Completion Date	(revised)	2/14/2011
Principal Investigator:	Dr. Mostafa Elseifi				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$165,444	Total		\$41,940
	(revised)				
Est. Expended to Date		\$116,935	Salaries		\$33,140
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)	\$112,425	Equipment	(non-expendable)	\$5,800
	(revised)	\$55,000	Travel		\$3,000
Est. FY Expenditure		\$55,000	Other		
PURPOSE AND SCOPE					
<p>Evaluate and compare different reflection cracking control treatments by evaluating the performance, constructability, and cost-effectiveness of pavements built with these methods across the state. Develop a standard state-wide policy for control of this distress in composite pavements and for pavement preservation.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
<p>The response and the level of participation from the districts were initially low. Numerous attempts through the LTRC Assistant Director and the Project Technical Manager helped increase the rate of response. However, this caused delays in data collection and affected the schedule of the project tasks. This problem was discussed with the Project Review Committee in our recent meeting with the Technical Manager and the LTRC Assistant Director. We recently completed our analysis for glass-grid interlayer and we are expecting to complete our analysis for saw and seal during this fiscal year.</p>					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<p>The analysis is now moving at an adequate rate and results of our work are starting to shape up. A contract extension was recently requested in order to adjust the project schedule and to compensate for the delay in data collection. This project will be complete in the 2010-2011 fiscal year.</p>					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Implementation of the Rolling Wheel Deflectometer (RWD) in PMS and Pavement Preservation			Project Status:	Ongoing
Funding Source:	State: TT-Reg		Budget Category:	State	
State Project Number:	736-99-1648		Project Start Date:	7/1/2009	
Research Project Number:	09-2P		Completion Date	(original)	9/30/2010
Research Agency:	LTRC		Completion Date	(revised)	6/30/2011
Principal Investigator:	Dr. Mostafa Elseifi				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$112,952	Total		\$77,950
	(revised)				
Est. Expended to Date		\$35,000	Salaries		\$74,950
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)	\$90,000	Equipment	(non-expendable)	\$1,000
	(revised)	\$35,000	Travel		\$2,000
Est. FY Expenditure		\$35,000	Other		
PURPOSE AND SCOPE					
<p>Proposed research activities will generate an electronic map with current DOTD Pavement Management (PMS) distress data as well as RWD deflection data indices for the selected research sites in District 05. Additionally, the relationship between FWD deflection data and RWD measurements will be established as well as a methodology to predict the pavements structural number (SN) directly from RWD data.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
<p>The research team has developed a testing factorial for RWD and FWD tests and has traveled to District 05 to document the testing process. In addition, current DOTD PMS performance data for the research sites have been evaluated. The literature has been completed and the research team has recently started analyzing the FWD data on the research sites.</p> <p>In spite of these accomplishments, this project has been significantly delayed due to difficulties in the data collection process. RWD data have not been delivered to the research team. A time extension for 9 months has been filed to allow re-scheduling the research activities based on the delay in data collection.</p>					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<p>While significant delays have occurred due to difficulties in the data collection, the research team expects significant progress as soon as the data are delivered in the next few weeks. Unless unforeseen conditions are faced, this project will be completed in the 2010-2011 fiscal year.</p>					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Management and Operation of the Pavement Research Facility	Project Status:	Ongoing
Funding Source:	State: TT-Reg	Budget Category:	State
State Project Number:	736-99-0515	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 2010-2011 Budget	
Total Cost (original)	\$2,977,050	Total	\$693,800
(revised)			
Est. Expended to Date	\$405,300	Salaries	\$362,500
FY 2009 - 2010 Budget		Equipment (expendable)	\$96,300
FY Funds (original)	\$680,000	Equipment (non-expendable)	\$223,000
(revised)	\$405,300	Travel	\$12,000
Est. FY Expenditure	\$405,300	Other	
PURPOSE AND SCOPE			
<p>The Pavement Research Facility 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.</p> <p>A manager, two operators and a research associate will be funded in this study. The scope of the work includes management of the facility, maintenance and operation, preparations of plans for individual experiments, construction and instrumentation activities and planning.</p>			
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS			
<ul style="list-style-type: none"> • Prepared construction specifications and constructed eight test sections for TTI ALF experiment; • Completed ALF Loading on TTI sections 1-4; • Moved ALF device from A-side to B-side; and • Completed ALF Loading on TTI sections 7 and 8. 			
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES			
<ul style="list-style-type: none"> • ALF Loading on TTI sections 5 & 6; • Prepare, plan and construct test sections for a new ALF experiment on Geogrid reinforcement; and • Prepare, plan and construct test sections for a new ALF experiment on modified Asphalt mixture. 			

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Evaluation of Continuity Details for Precast Pre-stressed Girders			Project Status:	Ongoing
Funding Source:	State: TT-Reg		Budget Category:	State	
State Project Number:	736-99-1513		Project Start Date:	12/10/2007	
Research Project Number:	08-1ST		Completion Date	(original)	11/30/2009
Research Agency:	LSU		Completion Date	(revised)	8/31/2010
Principal Investigator:	Dr. Ayman Okeil				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$249,578	Total		\$21,211
	(revised)				
Est. Expended to Date		\$203,243	Salaries		\$16,711
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)	\$76,578	Equipment	(non-expendable)	
	(revised)	\$60,113	Travel		\$2,500
Est. FY Expenditure		\$60,113	Other		\$2,000
PURPOSE AND SCOPE					
<p>The main objective of this project is to install a monitoring system for the purpose of investigating the performance of the continuity diaphragm detail including the positive moment detail that is employed in Bridge No. 2 of the James Audubon Bridge Project under long-term effects. The ultimate goal of the project is to provide LA DOTD with a successful continuity detail for implementation in future projects based on a full understanding of the behavior of the continuity diaphragm connection detail.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
<ul style="list-style-type: none"> • Monitoring system installation was completed; • Testing, adjustment, and deployment of monitoring system was finalized; • Continuous data collection; • Several site visits were made to perform visual inspection; and • Developed algorithms for data preprocessing. 					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<ul style="list-style-type: none"> • Data analysis of joint performance; and • Final Report to be reviewed published and distributed. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Evaluation of Design Methods to Determine Scour Depths for Bridge Structures			Project Status:	Ongoing
Funding Source:	State: TT-Reg		Budget Category:		State
State Project Number:	736-99-1620		Project Start Date:		4/1/2009
Research Project Number:	08-3ST		Completion Date	(original)	4/1/2011
Research Agency:	LSU		Completion Date	(revised)	
Principal Investigator:	Dr. Gouping Zhang				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$200,004	Total		\$100,004
	(revised)				
Est. Expended to Date		\$100,000	Salaries		\$80,004
FY 2009 - 2010 Budget			Equipment	(expendable)	\$10,000
FY Funds	(original)	\$100,000	Equipment	(non-expendable)	\$5,000
	(revised)	\$90,000	Travel		\$5,000
Est. FY Expenditure		\$90,000	Other		
PURPOSE AND SCOPE					
<p>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.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
<ul style="list-style-type: none"> • Finished an extensive review of literature and available technologies; • Conducted the analysis and evaluation of historical field survey scour data; • Submitted a report of interim progress; • Re-developed historical hydrometeorological forcing and conducted hydrological analysis; and • Performed Validation and calibration of hydrometeorological data using USGS data. 					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<ul style="list-style-type: none"> • To continue to work on the scour survey data analysis and hydrometeorological analysis; • To complete the hydrologic analysis; • To conduct hydraulic analysis of floods and water flow velocities; • To deduct the results for water surface elevations; • To conduct a geotechnical analysis; • To develop a statistical-based method for scour depth and scour rate prediction; • To conduct validation of the new method; • To perform a cost-benefit analysis for the new method; and • To prepare and submit the final report. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

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	
BUDGET STATUS						
Total Budget			Estimated 2010-2011 Budget			
Total Cost	(original)	\$72,750	Total		\$42,750	
	(revised)					
Est. Expended to Date		\$30,000	Salaries		\$35,000	
FY 2009 - 2010 Budget			Equipment (expendable)		\$2,000	
FY Funds	(original)	\$35,000	Equipment (non-expendable)		\$3,000	
	(revised)	\$30,000	Travel		\$750	
Est. FY Expenditure		\$30,000	Other		\$2,000	
PURPOSE AND SCOPE						
<p>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.</p>						
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS						
<ul style="list-style-type: none"> • Holding Project Review Committee meetings and reviewing three progress reports before their submittal to the FHWA. 						
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES						
<ul style="list-style-type: none"> • Continue working with the Principal Investigator; • Review additional progress reports ; and • Coordinate with LADOTD to select a bridge for application of this technology. 						

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	LADOTD Customer Service Process and Outcome Evaluation			Project Status:	Ongoing
Funding Source:	State: TT-Reg		Budget Category:	State	
State Project Number:	736-99-1479		Project Start Date:	5/1/2007	
Research Project Number:	07-4SS		Completion Date	(original)	4/30/2010
Research Agency:	Southern University		Completion Date	(revised)	12/31/2010
Principal Investigator:	Dr. Sharon Parsons				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$185,988	Total		\$5,864
	(revised)				
Est. Expended to Date		\$151,828	Salaries		\$5,864
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)	\$61,996	Equipment	(non-expendable)	
	(revised)	\$69,337	Travel		
Est. FY Expenditure		\$63,473	Other		
PURPOSE AND SCOPE					
<p>The purpose of this project is to assess DOTD customer satisfaction over time, to provide reports on customer satisfaction that include action steps to improve the level of customer satisfaction, and to measure the success of the suggested action steps in subsequent assessments. The first objective of this research involves outcome monitoring while the remaining two objectives involve process monitoring. The project will provide an evaluation that will monitor program outcomes and program processes. Program outcome monitoring involves the continual measurement of the intended conditions the program intends to improve. Program process monitoring is the continual observation of program performance criteria in order to determine whether the program is operating as intended.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
<ul style="list-style-type: none"> • Telephone interviews and target group surveys were collected; • Data analysis has been delayed due to problems revealed during the data verification process; and • A 6-month no-cost time extension for completion of this project was requested and approved by DOTD. 					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<p>Upon completion of data verification, data analysis will be performed and draft final report will be submitted to DOTD for review and comment.</p>					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Developing Louisiana Crash Reduction Factors			Project Status:	Ongoing
Funding Source:	State: TT-Reg		Budget Category:	State	
State Project Number:	739-99-1635		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 2010-2011 Budget		
Total Cost	(original)	\$178,087	Total		\$91,859
	(revised)				
Est. Expended to Date		\$2,000	Salaries		\$47,187
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)	\$91,859	Equipment	(non-expendable)	
	(revised)	\$91,859	Travel		\$2,000
Est. FY Expenditure		\$2,000	Other		\$42,672
PURPOSE AND SCOPE					
<p>The primary goal of this research is to develop and document a list of CRFs to be used by LaDOTD. Particularly, this research will:</p> <ul style="list-style-type: none"> • 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 2009 - 2010 ACCOMPLISHMENTS					
<ul style="list-style-type: none"> • Finish literature review; • Categorize countermeasures; and • Identify countermeasures for further study. 					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<ul style="list-style-type: none"> • Start to develop selected crash reduction factors and web-based tool. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Support Study on the Characterization of Ternary Mixes with Various SCMs			Project Status:	Ongoing
Funding Source:	State: TT-Reg		Budget Category:		State
State Project Number:	736-99-1650		Project Start Date:		7/1/2009
Research Project Number:	09-6C		Completion Date	(original)	6/30/2010
Research Agency:	LSU		Completion Date	(revised)	12/31/2010
Principal Investigator:	Mr. Hak-Shul Shin				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$99,271	Total		\$15,271
	(revised)				
Est. Expended to Date		\$84,000	Salaries		\$15,271
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)	\$99,271	Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure		\$84,000	Other		
PURPOSE AND SCOPE					
<ul style="list-style-type: none"> • This project was developed to supplement the ongoing 09-4C study being complete by LTRC researchers. • The scope of the study is to investigate interfacial shear development and conduct CTE testing. 					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
<ul style="list-style-type: none"> • The interfacial shear testing samples were produced and tested; and • About 45% of the ternary mixtures have been produced and the CTE measured to date. 					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<ul style="list-style-type: none"> • Complete the CTE measurements and write a final report. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Research Expansion Program			Project Status:	Ongoing
Funding Source:	State: TT-Reg		Budget Category:	State	
State Project Number:	736-99-1442		Project Start Date:	11/1/2006	
Research Project Number:	09-1AD		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 2010-2011 Budget		
Total Cost	(original)	\$363,309	Total		\$229,913
	(revised)	\$1,088,594			
Est. Expended to Date		\$522,000	Salaries		\$219,413
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)	\$219,465	Equipment	(non-expendable)	
	(revised)		Travel		\$10,500
Est. FY Expenditure		\$219,465	Other		
PURPOSE AND SCOPE					
<p>To cover administrative costs handled under contract to support the LTRC research development and technology transfer expansion funding programs.</p>					

LTRC Annual Research Program
Fiscal Year 2010-2011

FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS

1. 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:
 - Advanced Health Monitoring Technologies for Bridges; proposal submitted to the Advanced Technology Program at NIST \$16M;
 - A Photocatalytic Titanium Dioxide Coating for Asphalt Pavement; proposal submitted to IDEA Program at TRB, \$150K;
 - Rainfall Estimation for MEPDG; proposal submitted to IDEA Program at TRB, \$150K;
 - Early Warning System for Motorists; proposal submitted to IDEA Program at TRB; \$150K; and
 - Field Monitoring and Measurement; proposal to be submitted to NSF Education and Human Resources Directorate, \$200K.
2. Coordinated LTRC's TIER Program:
 - Four awards were recommended for 10-11 fiscal year.
3. Coordinated LTRC Town Hall meetings at the campuses of five Louisiana universities. Meetings were held to educate faculty and administrators at the various universities about the research funding and collaboration opportunities at LTRC.
4. Coordinated the assembling of the research project data for the various DOTs participating in the SE Transportation Consortium.
5. Coordinated NSF Program Director's (Dr. Fragaszy) visit to LTRC/TTEC in November, '10.
6. Serving as the Vice-Chair of the Industrial Advisory Board for NSF University-Industry Center for Integration of Composites into Infrastructure (2009 to Present).
7. Served on the following NSF Review Panels:
 - MRI Panel; October 2009;
 - AARI-ENGINEERING 2 Panel; October 2009;
 - Engineering Research Centers – CCPCI Panel, October 2009;
 - Research Experience for Undergraduates – REU Sites Panel, December 2009; and
 - EEFRI – SEED Panel, January, 2010.
8. Served as NSF Site Review Panel member for the following site visit:
 - NEES Operations Headquarters, Purdue University Transition Review, April 2010.
9. Served as an Organizing Committee member for the Tulane Engineering Forum and as the Chair for the session on Infrastructure for the 2010 Tulane Engineering Forum.
10. Presented a research paper at the Louisiana Engineering Conference, September, 2009.
11. Coordinated Rutgers University involvement in Morganza bridge pile cap repair utilizing inorganic composites.
12. Published three peer reviewed papers in the proceedings of two international conferences held in Italy and China.
13. Developed list of faculty interested in offering NHI courses for LTRC.

LTRC Annual Research Program
Fiscal Year 2010-2011

FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES

1. Increase number of collaborative proposals submitted by university faculty and industrial collaborators through LTRC to external funding agencies;
2. Increase NHI course offerings by utilizing the faculty pool available to offer these courses;
3. Initiate efforts to offer statewide ME program in cooperation with the new administration at LSU;
4. Offer a timber design course on a state-wide basis utilizing LTRC's distance learning capability;
5. Continue coordination of TIER program; and
6. Coordinate to completion the research project data collection for the SE Transportation Consortium.

State Funded Research Program

PROPOSED RESEARCH

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Bridge Data Management Tool and Support			Project Status:	Proposed
Funding Source:	State: TT-Reg		Budget Category:	State	
State Project Number:			Project Start Date:	7/1/2010	
Research Project Number:			Completion Date	(original)	6/30/2012
Research Agency:			Completion Date	(revised)	
Principal Investigator:					
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$200,000	Total		\$60,000
	(revised)				
Est. Expended to Date			Salaries	\$60,000	
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		
PURPOSE AND SCOPE					
Provide tools and interface to link bridge data in various sections of LADOTD for better accessing and using by various users under the direction of the LADOTD bridge committee.					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
Work with LADOTD bridge committee and develop the scope of service and research work plan. Execute the plan under the supervision of the project review committee.					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Geotechnical Information Database – Phase 2			Project Status:	Proposed
Funding Source:	State: TT-Reg		Budget Category:		State
State Project Number:			Project Start Date:		7/1/2010
Research Project Number:	10-2GT		Completion Date	(original)	6/30/2012
Research Agency:			Completion Date	(revised)	
Principal Investigator:					
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$200,000	Total		\$105,000
	(revised)				
Est. Expended to Date			Salaries		\$105,000
FY 2009 - 2010 Budget					
FY Funds	(original)		Equipment	(expendable)	
	(revised)		Equipment	(non-expendable)	
Est. FY Expenditure			Travel		
			Other		
PURPOSE AND SCOPE					
<p>With advancements in technology, people (especially Engineers) expect and need quick responsive and interactive data. This project is a follow up study to LTRC Project 03-1GT. The project will encompass digitally storing geotechnical data within the department for easy retrieval, rather than being lost in the hardcopy archives. Current and future data should be recorded and stored digitally so that as the data grows it can be accessed via Content Manager, Site /Materials manager, this GIS website, etc.</p> <p>Enhancements to the website and application should be incorporated in phases so that the Geotechnical Information Database becomes an even more valuable resource. This project will expand into future studies by including data from other various sources to provide more information and details to designers.</p> <p>Gint, a geotechnical database has many additional features not fully utilized by the department. This project will expand the use of Gint and create a tool to digitally interpret the data and present the findings in a specified DOTD format.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<p>The project will begin and work will be directed toward the purpose and scope as detailed above.</p>					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Evaluation of Erosion Control Methods for Coastal Highways			Project Status:	Proposed
Funding Source:	State: TT-Reg		Budget Category:		State
State Project Number:	736-99-1695	Project Start Date:		7/1/2010	
Research Project Number:	10-2TIRE	Completion Date	(original)		
Research Agency:	McNeese University	Completion Date	(revised)		
Principal Investigator:	Dr. Stanley Klemetson				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$29,912	Total		\$29,912
	(revised)				
Est. Expended to Date			Salaries		\$20,640
FY 2009 - 2010 Budget			Equipment	(expendable)	\$350
FY Funds	(original)		Equipment	(non-expendable)	\$6,000
	(revised)		Travel		\$672
Est. FY Expenditure			Other		\$2,250
PURPOSE AND SCOPE					
<p>The project will evaluate the erosive forces caused by the pressure, velocity and acoustics of the waves on highway shoulders for several types of shoulder materials and configurations. Computer modeling will be utilized for the Computational Fluid Dynamics (CFD) and Acoustic analysis. The project will provide a better understanding of the shoulder design and material requirements for highways constructed in locations with severe conditions.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<p>Task 1: Surveying; Task 2: Data Collection and Model Validation; Task 3: Evaluation of Wave Action on the Test Sections; Task 4: Evaluation of Shoulder Materials and Configurations; and Task 5: Evaluation of Research Results and Recommendations.</p>					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Safety Benefit of Shredded Tires in Hazardous Roadside Ditches			Project Status:	Proposed
Funding Source:	State: TT-Reg		Budget Category:	State	
State Project Number:			Project Start Date:	9/1/2010	
Research Project Number:			Completion Date	(original)	8/30/2012
Research Agency:			Completion Date	(revised)	
Principal Investigator:					
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$200,000	Total		\$70,000
	(revised)				
Est. Expended to Date			Salaries	\$70,000	
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		
PURPOSE AND SCOPE					
Evaluate the safety benefit and waste recycling effort by using shredded tires in hazardous roadside ditches with a balanced consideration of hydraulic requirements.					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<ul style="list-style-type: none"> Develop a research plan. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

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
State Project Number:		Project Start Date:	7/1/2010
Research Project Number:		Completion Date (original)	3/31/2012
Research Agency:	LTRC	Completion Date (revised)	
Principal Investigator:	Dr. Sherif Ishak		
BUDGET STATUS			
Total Budget		Estimated 2010-2011 Budget	
Total Cost (original)	\$150,000	Total	\$80,000
(revised)			
Est. Expended to Date		Salaries	\$80,000
FY 2009 - 2010 Budget		Equipment (expendable)	
FY Funds (original)		Equipment (non-expendable)	
(revised)		Travel	
Est. FY Expenditure		Other	
PURPOSE AND SCOPE			
<p>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 LA DOTD 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.</p>			
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS			
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES			
<p>Task 1: Update literature review and gather facts on data sources; Task 2: Establish a standard procedure to collect reliable portable WIM data; Task 3: Develop a procedure to collect data from LTPP and weight enforcement sites; and Task 4: Begin pilot study.</p>			

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Project Level Transportation Asset Management Methods Utilizing PMS Datasets and Engineering Economics			Project Status:	Proposed
Funding Source:	State: TT-Reg		Budget Category:	State	
State Project Number:			Project Start Date:	1/7/2011	
Research Project Number:			Completion Date	(original)	6/30/2013
Research Agency:			Completion Date	(revised)	
Principal Investigator:					
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$250,000	Total		\$50,000
	(revised)				
Est. Expended to Date			Salaries	\$50,000	
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		
PURPOSE AND SCOPE					
<p>The purpose of this study is to develop a Project Level Transportation Assets Management (TAM) System utilizing PMS data and Engineering Economic Principles. A TAM system can't function with large inaccuracies provided by network level analysis. The study begins by utilizing a team composed of a Statistician and Engineer to assess the current "network level" accuracy of the DOTD PMS system. Once this is complete, project level accuracies will be defined and a sampling regime will be established to monitor future PMS datasets to ensure that the project level accuracies are provided.</p> <p>A team composed of a Statistician, Engineering Economist, and perhaps Economist will develop a Life Cycle Cost Analysis (LCCA) and planning regime based upon "project level" datasets for use by DOTD TAM management personnel.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<ul style="list-style-type: none"> • Select University to conduct study; • Develop sampling regime of existing PMS database; • Collect information on current DOTD TAM process; and • Begin statistical analysis of PMS database. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Life Cycle Cost Analysis and Performance Evaluation of Existing Pavement Treatments			Project Status:	Proposed
Funding Source:	State: TT-Reg		Budget Category:	State	
State Project Number:			Project Start Date:	6/30/2010	
Research Project Number:			Completion Date	(original)	6/30/2012
Research Agency:		ULL	Completion Date	(revised)	
Principal Investigator:	Dr. Mohammad Jamal Khattak				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$350,000	Total		\$175,000
	(revised)				
Est. Expended to Date			Salaries	\$175,000	
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		
PURPOSE AND SCOPE					
<p>The purpose of this project is to develop Life Cycle Cost Analysis (LCCA) and Performance models for Pavement Treatments typically used on DOTD roadways. This will be accomplished through a Three Phase Program. Phase 1 identifies the treatments, projects per treatments from the PMS database, and costs for project/treatment combinations. Phase 2 develops the models for performance, LCCA, triggers for each treatment, and provides a cost benefits analysis of the new system. Phase 3 integrates the models into the PMS, Pavement Preservation, and Pavement Design Systems. Software will be provided and the appropriate DOTD staff will be trained.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
<p></p>					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<ul style="list-style-type: none"> • Complete Phase 1 which identifies the treatments, projects per treatments from the PMS database, and costs for project/treatment combinations; and • Begin Phase 2 which develops the models for performance, LCCA, triggers for each treatment, and provides a cost benefits analysis of the new system. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Implementation of GPC Characterization of Asphalt Binders at Louisiana Materials Laboratory			Project Status:	Proposed
Funding Source:	State: TT-Reg		Budget Category:		State
State Project Number:			Project Start Date:		
Research Project Number:			Completion Date	(original)	
Research Agency:		LSU	Completion Date	(revised)	
Principal Investigator:	Mr. William H. Daly				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$255,438	Total		\$209,379
	(revised)				
Est. Expended to Date			Salaries		\$96,679
FY 2009 - 2010 Budget			Equipment	(expendable)	\$85,000
FY Funds	(original)		Equipment	(non-expendable)	\$27,700
	(revised)		Travel		
Est. FY Expenditure			Other		
PURPOSE AND SCOPE					
<p>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.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<ul style="list-style-type: none"> • Purchase, installation and calibration of a GPC instrument at the DOTD Materials Laboratory; • Writing detailed procedures (and eventually a manual) for conducting binder analysis; and • Develop more efficient extraction processes capable of recovering binder from roadway cores. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Evaluation of the Validity of Multiple Stress Creep Recovery for Emulsions	Project Status:	Proposed
Funding Source:	State: TT-Reg	Budget Category:	State
State Project Number:		Project Start Date:	8/1/2010
Research Project Number:		Completion Date (original)	12/31/2011
Research Agency:	LTRC	Completion Date (revised)	
Principal Investigator:			
BUDGET STATUS			
Total Budget		Estimated 2010-2011 Budget	
Total Cost (original)	\$60,170	Total	\$50,170
(revised)			
Est. Expended to Date		Salaries	\$44,670
FY 2009 - 2010 Budget		Equipment (expendable)	\$4,000
FY Funds (original)		Equipment (non-expendable)	
(revised)		Travel	\$1,500
Est. FY Expenditure		Other	
PURPOSE AND SCOPE			
<p>Multiple Stress Creep Recovery (MSCR) test has been used extensively to identify the elastic response in a binder at different stress levels. This test has already been added to the AASHTO specification for PG graded binder. The PG specifications drive towards improve methods that are more mechanistic and that simulate real conditions. To this end, the main objective of this study is to study the applicability of MSCR for emulsions. The emulsions from various sources listed in the Qualified Product List of LADOTD will be collected and their elastic responses will be evaluated. In addition, a set of specifications for emulsions will be proposed.</p>			
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS			
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES			
<ul style="list-style-type: none"> • Conduct literature review; • Collect emulsion samples from various asphalt suppliers; • Perform laboratory experiments; • Start data analysis; and • Writing up the draft final report. 			

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Application of Nanotechnology to Develop Smart Hot Mix Asphalt (HMA) Mixtures			Project Status:	Proposed
Funding Source:	State: TT-Reg		Budget Category:		State
State Project Number:	736-99-1694		Project Start Date:		7/1/2010
Research Project Number:	10-1TIRE		Completion Date	(original)	
Research Agency:	ULL		Completion Date	(revised)	
Principal Investigator:	Dr. Ahmed Khattab				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$29,986	Total		\$29,986
	(revised)				
Est. Expended to Date			Salaries		\$23,686
FY 2009 - 2010 Budget			Equipment		(expendable) \$1,200
FY Funds	(original)		Equipment		(non-expendable) \$3,900
	(revised)		Travel		\$1,200
Est. FY Expenditure			Other		
PURPOSE AND SCOPE					
<p>The main objective is to develop smart HMA mixture by using CNF. The smart HMA would have the ability to respond to loading, which will facilitate in determining the mechanical properties and performance of the mixtures. The sub-objectives of the study are to:</p> <ul style="list-style-type: none"> • Develop mixing procedure to evenly disperse the CNF in the asphalt binder to produce a homogenous HMA mixture with smart properties. • Explore and evaluate any relationship between the stress-strain response due to loading and electrical conductivity or resistivity of smart HMA mixture. 					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<p>Task 1: Literature Search; Task 2: Laboratory Investigation; Task 3: Optimization of Smart HMA Mixtures and Development of Model; and Task 4: Preparation of Progress Report.</p>					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Development of Wave and Surge Atlas for the Design and Protection of Coastal Bridges in South			Project Status:	Proposed
Funding Source:	State: TT-Reg		Budget Category:	State	
State Project Number:			Project Start Date:	8/1/2010	
Research Project Number:	10-4ST		Completion Date	(original)	7/31/2012
Research Agency:			Completion Date	(revised)	
Principal Investigator:					
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$300,000	Total		\$75,000
	(revised)				
Est. Expended to Date			Salaries	\$75,000	
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		
PURPOSE AND SCOPE					
<p>The objectives of the proposed research (Phase I) are to:</p> <ul style="list-style-type: none"> • 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. • 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 2009 - 2010 ACCOMPLISHMENTS					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<ul style="list-style-type: none"> • Review LADOTD selected bridges and assess their vulnerability to a 100-year flood frequency. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Developing Pre-stressed Girder Transportation Guidelines	Project Status:	Proposed
Funding Source:	State: TT-Reg	Budget Category:	State
State Project Number:		Project Start Date:	8/1/2010
Research Project Number:	10-5ST	Completion Date (original)	7/31/2012
Research Agency:		Completion Date (revised)	
Principal Investigator:			
BUDGET STATUS			
Total Budget		Estimated 2010-2011 Budget	
Total Cost (original)	\$250,000	Total	\$50,000
(revised)			
Est. Expended to Date		Salaries	\$30,000
FY 2009 - 2010 Budget		Equipment (expendable)	\$10,000
FY Funds (original)		Equipment (non-expendable)	
(revised)		Travel	\$5,000
Est. FY Expenditure		Other	\$5,000
PURPOSE AND SCOPE			
<p>The purpose of the study is to develop (or review and update) the transportation guidelines for pre-stressed girders.</p> <p>This will be done by assessing and analyzing the effect of stresses that transported girders are subject to, and providing recommendation that would endure the safety of such girders while being transported from the plant to the bridge site.</p>			
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS			
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES			
<ul style="list-style-type: none"> • Review the state of practice of transportation of pre-stressed girders in Louisiana and other states. 			

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Design of High Performance Concrete Bridges in Louisiana	Project Status:	Proposed
Funding Source:	State: TT-Reg	Budget Category:	State
State Project Number:		Project Start Date:	8/2/2010
Research Project Number:	10-6ST	Completion Date (original)	11/1/2011
Research Agency:	Henry G Russell Inc.	Completion Date (revised)	
Principal Investigator:	Dr. Henry Russell		
BUDGET STATUS			
Total Budget		Estimated 2010-2011 Budget	
Total Cost (original)	\$50,000	Total	\$40,000
(revised)			
Est. Expended to Date		Salaries	\$35,000
FY 2009 - 2010 Budget		Equipment (expendable)	
FY Funds (original)		Equipment (non-expendable)	
(revised)		Travel	
Est. FY Expenditure		Other	\$5,000
PURPOSE AND SCOPE			
<p>The objectives of the proposed research are to prepare a summary report of all the information obtained in the previous research projects and to compare the information with current AASHTO and LADOTD design criteria. The end result will be confirmation that existing design criteria are acceptable or a proposed change is needed. The report will provide a reference document for use by the LADOTD bridge design staff.</p>			
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS			
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES			
<ul style="list-style-type: none"> • Collect information obtained from previous research projects and compare them to current AASHTO and LADOTD Design criteria. • Prepare a report confirming the existing design criteria or proposing changes. 			

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Automatic Enforcement and Highway Safety			Project Status:	Proposed
Funding Source:	State: TT-Reg		Budget Category:	State	
State Project Number:			Project Start Date:	7/1/2010	
Research Project Number:			Completion Date	(original)	6/30/2012
Research Agency:			Completion Date	(revised)	
Principal Investigator:					
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$100,000	Total		\$50,000
	(revised)				
Est. Expended to Date			Salaries	\$47,000	
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel	\$3,000	
Est. FY Expenditure			Other		
PURPOSE AND SCOPE					
<p>The goal of this project is to demonstrate the benefits of automatic enforcement in terms of crash reductions on Louisiana highways and streets.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<ul style="list-style-type: none"> • Identify sites for analysis; and • Collect data at selected sites. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Truck Facility Access Design Standards			Project Status:	Proposed
Funding Source:	State: TT-Reg		Budget Category:	State	
State Project Number:			Project Start Date:	7/1/2010	
Research Project Number:			Completion Date	(original)	6/30/2012
Research Agency:			Completion Date	(revised)	
Principal Investigator:					
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$130,000	Total		\$65,000
	(revised)				
Est. Expended to Date			Salaries	\$60,000	
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel	\$5,000	
Est. FY Expenditure			Other		
PURPOSE AND SCOPE					
<p>The purpose of this research is to develop truck facility site access design standards for use in Louisiana.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<ul style="list-style-type: none"> • Conduct literature review of truck access design standards; • Visit and conduct interviews with select agencies and individuals who are knowledgeable in the area; and • Prepare interim report to PRC. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Developing Inexpensive Crash Countermeasures for Louisiana Local Roads				Project Status:	Proposed
Funding Source:	State: TT-Reg		Budget Category:		State	
State Project Number:			Project Start Date:		7/1/2010	
Research Project Number:			Completion Date	(original)	6/30/2012	
Research Agency:			Completion Date	(revised)		
Principal Investigator:						
BUDGET STATUS						
Total Budget			Estimated 2010-2011 Budget			
Total Cost	(original)	\$100,000	Total		\$50,000	
	(revised)					
Est. Expended to Date			Salaries		\$45,000	
FY 2009 - 2010 Budget			Equipment		(expendable)	
FY Funds	(original)		Equipment		(non-expendable)	
	(revised)		Travel		\$5,000	
Est. FY Expenditure			Other			
PURPOSE AND SCOPE						
<p>The purpose of this research is to identify inexpensive crash countermeasures that are suited for use on Louisiana's local roads. The research will require identifying the unique features of Louisiana's local roads and developing inexpensive crash countermeasures that address those conditions.</p>						
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS						
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES						
<ul style="list-style-type: none"> • Identify features of Louisiana's local roads by conducting an inventory on a random sample of road sections; • Identify which road features contribute significantly to crashes on local roads in Louisiana; • Conduct literature search of inexpensive crash countermeasures that can be applied to local roads; and • Prepare an interim report for the PRC. 						

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Mining Potentially Interesting Positive and Negative Association Patterns from Traffic Safety Data			Project Status:	Proposed
Funding Source:	State: TT-Reg		Budget Category:	State	
State Project Number:	736-99-1697		Project Start Date:	7/1/2010	
Research Project Number:	10-4TIRE		Completion Date	(original)	
Research Agency:	ULL		Completion Date	(revised)	
Principal Investigator:	Dr. Vijay Raghavan				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$30,000	Total		\$30,000
	(revised)				
Est. Expended to Date			Salaries	\$28,400	
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel	\$1,350	
Est. FY Expenditure			Other	\$250	
PURPOSE AND SCOPE					
<p>The technical objectives are:</p> <ul style="list-style-type: none"> • Create a roadmap and an overall multi-dimensional data model for crash data analysis; • Perform extraction, transformation and loading (ETL) operations to develop a data resource that is cleaned, semantically enriched and ready for use by different kinds of user-end tools; • Apply association analysis algorithms to discover and store interesting positive and negative patterns; and • Provide a simple user interface for navigating and exploring the discovered patterns. 					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<p>Task 1: Create a data/knowledge warehouse roadmap; Task 2: Select data sources and Enrich data dimensions; Task 3: Perform ETL operations; Task 4: Construct association maps at different levels of generalizations of data; Task 5: Develop user interfaces for navigation and interaction; and Task 6: Summarize significant findings in a report.</p>					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Establishing an Intelligent Transportation Systems (ITS) Lab at LTRC (Phase II)			Project Status:	Proposed
Funding Source:	State: TT-Reg		Budget Category:	State	
State Project Number:			Project Start Date:	7/1/2010	
Research Project Number:	10-6SS		Completion Date	(original)	
Research Agency:	LSU		Completion Date	(revised)	
Principal Investigator:	Dr. Sherif Ishak				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$87,474	Total		\$71,809
	(revised)				
Est. Expended to Date			Salaries		\$62,259
FY 2009 - 2010 Budget			Equipment	(expendable)	\$8,680
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		\$620
Est. FY Expenditure			Other		\$250
PURPOSE AND SCOPE					
<p>The lab will address the needs of DOTD, 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.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
<p>Phase 1 of investigation is complete which included preparation of a final report documenting the preliminary investigation into the feasibility and desirability of establishing an ITS Lab at LTRC.</p>					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<ul style="list-style-type: none"> • Develop specifications for equipment purchase and install ITS lab equipment; • Develop plans and specifications for modifying existing LTRC building to accommodate the ITS lab; • Award contract to modify building; • Award contract to purchase and install ITS equipment; • Develop operational guidelines; and • Begin operations of ITS lab. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Validation of Correction Factors for Concrete Coefficient of Thermal Expansion			Project Status:	Proposed
Funding Source:	State: TT-Reg		Budget Category:	State	
State Project Number:			Project Start Date:	7/1/2010	
Research Project Number:			Completion Date	(original)	12/31/2010
Research Agency:		LSU	Completion Date	(revised)	
Principal Investigator:	Mr. Hak-Shul Shin				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$34,983	Total		\$34,983
	(revised)				
Est. Expended to Date			Salaries	\$26,786	
FY 2009 - 2010 Budget			Equipment	(expendable)	\$1,000
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other	\$7,197	
PURPOSE AND SCOPE					
<p>This study will measure the correct CTE of the specimen used for the LTRC project 07-02C in accordance to AASHTO T 336-09, and find correction factors to convert the CTE values measured by AASHTO TP 60-00 without further measurements. The scope of the study is restricted to the measurements of CTE of the specimens used for the LTRC project 07-02C to obtain correct CTE complying with AASHTO T 336-09.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<ul style="list-style-type: none"> • Conduct and complete the study; • Prepare and update the final report published as a result of the 07-2C project. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Performance Evaluation of Recycled PET Fiber Reinforced Concrete	Project Status:	Proposed
Funding Source:	State: TT-Reg	Budget Category:	State
State Project Number:	736-99-1696	Project Start Date:	7/1/2010
Research Project Number:	10-3TIRE	Completion Date (original)	
Research Agency:	LSU	Completion Date (revised)	
Principal Investigator:	Mr. Hak-Shul Shin		
BUDGET STATUS			
Total Budget		Estimated 2010-2011 Budget	
Total Cost (original)	\$29,891	Total	\$29,891
(revised)			
Est. Expended to Date		Salaries	\$22,891
FY 2009 - 2010 Budget		Equipment (expendable)	\$5,000
FY Funds (original)		Equipment (non-expendable)	
(revised)		Travel	\$1,500
Est. FY Expenditure		Other	\$500
PURPOSE AND SCOPE			
<p>The purpose of this research is to utilize RPET fiber in a concrete mixture to enhance the mechanical properties and consume PET plastics. The objectives of the proposed research are to measure basic material properties of RPET fiber reinforced concrete and to compare it with the control mixture. The experiment will find the effects of RPET fiber on the mechanical properties of concrete in fresh and hardened concrete as well as show the feasibility of utilizing RPET fiber in the transportation related projects.</p>			
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS			
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES			
<p>Task 1: Determination of Mixture Design; Task 2: Measurement of Mechanical Properties of RPET Fiber Concrete; Task 3: Study on the Effects of RPET Fiber on Concrete Properties; and Task 4: Prepare Final Report and Presentation.</p>			

LTRC Annual Research Program

Fiscal Year 2009-2011

2009 RPIC PROBLEM STATEMENTS	
Final Ranking	PROBLEM STATEMENT TITLE
1	Automatic Enforcement and Highway Safety
2	Performance Evaluation of Flexible Pavement Treatments for Cost Effective Pavement Preservation
3	Developing Inexpensive Crash Countermeasures for Louisiana Local Roadways
4	Why Air Entrain Bridge Decks in Southern Louisiana?
5	Reflectivity of Paint or Thermoplastic on Chip Seals and Open Pavement Surfaces
6	Development of Wave and Surge Atlases for the Design and Protection of Coastal Bridges in South Louisiana
7	Developing Prestressed Members Transportation Guidelines
8	Develop Model Truck Facility Site Access Design Standards (Louisiana Statewide Transportation Plan-Recommendation T-7)
9	Performance Related Specifications for Concrete Pavement Construction
10	Utilizing ITS Data to Develop an Integrated Corridor Management Framework for Congestion Mitigation
11	Investigation of the Use of High RAP Contents in Asphalt Mixtures
12	Prevention of Extensive Dessication Cracking on Rural Highways
13	Travel Time Study for Baton Rouge Road Network
14	Development of a Short-Term Traffic Prediction Model for Travel Times on I-10/I-12
15	Left Turn Traffic Signal Operation
16	Validation of Multiple Stress Creep Recovery (MSCR) Test
17	Evaluation and Implementation of Maturity for PCC
18	Investigation of In-situ in QC/QA Applications for Hot-Mix Asphalt
19	Development of a Fiber Optic-Based Monitoring System to Assess Pile Damages Due to Transportation, Lifting and Pile Driving
20	Advanced Grid Stiffened FRP Tube Encased Concrete Piles
21	Cost Effective Alternative for Noise Abatement
22	Application of Titanium Dioxide Photocatalysis to Create Self-Cleaning, Air-Purifying Concrete Pavements
23	Field Performance of Rubblized Pavements
24	Disaster Debris Forecasting, Estimating, Modeling, and Tracking for Linear Assets using GIS
25	Determine the Statewide Need for Replacing Pipes, Guardrail, Striping and Joints
26	Work Zone Speed Control
27	Joining Advanced Grid Stiffened FRP Tube Encased Concrete Columns
28	Developing Horizontal Curve Crash Countermeasures through Crash Data Analysis
29	Evaluate the Need to Calibrate the Pavement Performance Models using PMS Database

Self Generated Funded Research Program

CONTINUING RESEARCH

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Optimization of Tack Coat for HMA Placement			Project Status:	Ongoing
Funding Source:	NCHRP		Budget Category:	Self-Generated	
State Project Number:	736-99-1360		Project Start Date:	7/1/2005	
Research Project Number:	06-4B		Completion Date	(original)	6/30/2009
Research Agency:	LTRC		Completion Date	(revised)	12/31/2010
Principal Investigator:	Dr. Louay Mohammad				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$350,000	Total		\$28,000
	(revised)	\$428,000			
Est. Expended to Date		\$400,000	Salaries		\$18,000
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)	\$80,000	Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure		\$80,000	Other		\$10,000
PURPOSE AND SCOPE					
<p>The objective of this project is to determine the optimum application methods, equipment type and calibration procedures, application rates, and asphalt binder materials for the various uses of tack coats and to recommend revisions to relevant AASHTO methods and practices related to tack coats. Optimum tack coat type and application rate will be determined by the type and condition of the existing pavement surface as well as other factors including material type and permeability of the HMA pavement overlay to be placed, the traffic loading, and the climate.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
<ul style="list-style-type: none"> Continued progress on Task 4: Conduct Experiment approved in Task 3; Based on preliminary findings, two technical papers were presented at the 2010 TRB Annual Meeting and accepted for publication in the Journal of Transportation Research Record; Developed Test method in AASHTO format for Tack Coat Quality and interface bond strength test has been completed; and Continued progress on the preparation in instructional materials for a training course. 					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<ul style="list-style-type: none"> Continue the conduct of Tasks 5 and 7; and Prepare Draft Final Report. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Field versus Laboratory Volumetrics and Mechanical Properties	Project Status:	Ongoing
Funding Source:	NCHRP	Budget Category:	Self-Generated
State Project Number:	736-99-1625	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 2010-2011 Budget	
Total Cost (original)	\$500,000	Total	\$148,337
(revised)			
Est. Expended to Date	\$150,000	Salaries	\$105,337
FY 2009 - 2010 Budget		Equipment (expendable)	
FY Funds (original)	\$150,000	Equipment (non-expendable)	
(revised)		Travel	\$3,000
Est. FY Expenditure	\$150,000	Other	\$40,000
PURPOSE AND SCOPE			
<p>The objectives of this study are:</p> <ul style="list-style-type: none"> • 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 • Develop a recommended practice for state DOTs to incorporate these results in specifications and criteria for (a) quality assurance; (b) mix design and verification or validation, and (c) structural design and forensic studies. 			
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS			
<p>Completed the Following Tasks:</p> <p>Task 1: Comprehensive Literature Review; Task 2: Conduct A Meta-Analysis Of Collected Data; and Task 3: Design An Experimental Work Plan And Submit An Interim Report.</p>			
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES			
<p>Perform The Following Tasks:</p> <p>Task 4: Conduct Laboratory Experiments approved in Task 3.</p>			

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Laboratory Evaluation of the Performance of Sulfur-Enhanced Asphalt Treated Base Mixtures			Project Status:	Ongoing
Funding Source:	Shell Oil Company		Budget Category:	Self-Generated	
State Project Number:	736-99-1653		Project Start Date:	7/1/2009	
Research Project Number:	10-5B		Completion Date (original)	6/30/2010	
Research Agency:	LTRC		Completion Date (revised)		
Principal Investigator:	Dr. Louay Mohammad				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$125,000	Total		\$85,000
	(revised)				
Est. Expended to Date		\$125,000	Salaries		\$83,907
FY 2009 - 2010 Budget			Equipment (expendable)		
FY Funds	(original)	\$125,000	Equipment (non-expendable)		
	(revised)		Travel		\$1,093
Est. FY Expenditure		\$125,000	Other		
PURPOSE AND SCOPE					
<p>The objective of this study is to evaluate the laboratory performance of conventional mixtures and asphalt treated base mixture containing sulphur extended additives. The ATB mixture will be designed using the methodology developed under LTRC Project 04-4B "Development Of A Design Methodology For Asphalt Treated Base Mixtures."</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
<ul style="list-style-type: none"> • Completed characterization of aggregate, binder, and sulphur extended additives • Performed mixture design; • Fabricated test specimens; • Performed fundamental materials characterization tests (ITS, LWT, E*, FN, SCB, DSCE, RSCH, Beam Fatigue); and • Performed preliminary data analysis. 					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<ul style="list-style-type: none"> • Continue mixture design as per test factorial; • Fabricate test specimens; • Perform fundamental materials characterization tests (ITS, LWT, E*, FN, SCB, DSCE, RSCH, Beam Fatigue); • Perform preliminary data analysis; and • Prepare final report. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	A Shape Memory Polymer based Self-healing Sealant for Expansion Joint			Project Status:	Ongoing
Funding Source:	NCHRP		Budget Category:	Self-Generated	
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$135,000	Total		\$45,000
	(revised)				
Est. Expended to Date		\$90,000	Salaries		\$20,000
FY 2009 - 2010 Budget			Equipment (expendable)		
FY Funds	(original)	\$100,000	Equipment	(non-expendable)	\$20,000
	(revised)	\$90,000	Travel		\$2,000
Est. FY Expenditure		\$90,000	Other		\$3,000
PURPOSE AND SCOPE					
<p>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.</p> <p>This study has been approved and is TRB funded through the Ideas Deserving Exploratory Analysis (IDEA) Program.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
<ul style="list-style-type: none"> • 1-D compressive programming and fully confined as well as partially confined shape recovery test; • Design of 2-D test specimens; • Preparation of lab-scale testing; • Preparation of 2-D test specimens; and • Preparation of concrete specimens for lab-scale testing. 					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<ul style="list-style-type: none"> • 2-D programming of the foam sealant; • Stress-strain behavior of the sealant under 2-D stress condition; and • Lab-scale testing. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Enhancing Calibrated Peer Review for Improved Engineering Communication Education			Project Status:	Ongoing
Funding Source:	NSF		Budget Category:	Self-Generated	
State Project Number:	736-99-1575		Project Start Date:	9/1/2008	
Research Project Number:	09-2SS		Completion Date	(original)	9/1/2011
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Chester Wilmot				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$50,050	Total		\$19,638
	(revised)				
Est. Expended to Date		\$13,267	Salaries		\$19,638
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)	\$19,900	Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure		\$19,900	Other		
PURPOSE AND SCOPE					
<p>This project sets out to extend current Calibrated Peer Review from a process that considers only written communication to one that includes visual and oral communication.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
<ul style="list-style-type: none"> • Pilot application to Senior Design students in CEE at LSU in September, 2009; and • Full scale application to Senior Design students in CEE at LSU in March, 2010. 					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<ul style="list-style-type: none"> • Modify procedure in light of findings of previous applications; • Computerize procedure to function on LSU's CPR website; and • Develop training modules. 					

Self Generated Funded Research Program

PROPOSED RESEARCH

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Support for Accelerated Load Testing of Geosynthetic Base Reinforced Unpaved and Pavement Test Sections			Project Status:	Proposed
Funding Source:	Geosynthetic Manufacturers		Budget Category:	Self-Generated	
State Project Number:			Project Start Date:	9/1/2009	
Research Project Number:			Completion Date	(original)	8/30/2011
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Dr. Murad Abu-Farsakh				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$200,000	Total		\$180,000
	(revised)				
Est. Expended to Date			Salaries		
FY 2009 - 2010 Budget			Equipment	(expendable)	\$170,000
FY Funds	(original)		Equipment	(non-expendable)	\$10,000
	(revised)		Travel		
Est. FY Expenditure			Other		
PURPOSE AND SCOPE					
<p>The use of geosynthetic materials, such as geogrids, to reinforce the base aggregate layers within the pavement section has been used for many years to improve the performance of paved and unpaved roadways. Many experimental and numerical studies were conducted to evaluate the benefits of applying geosynthetic reinforcement to the base course layer, and several design methods were proposed that are limited to the conditions associated with the experimental test sections of their study.</p> <p>The main objective of this research study is support construction of ALF test lanes to evaluate the benefits of geosynthetic reinforcement of base aggregate layer in flexible pavements build on soft subgrade. This will be achieved through conducting extensive accelerated load testing on geosynthetic reinforced unpaved and pavement test sections at the DOTD Pavement Research Facility. Different types and configurations of geogrids and geotextiles will be used for base reinforcements.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<ul style="list-style-type: none"> • Construct the support platform needed to extend the ALF site for additional test sections; • Prepare a detailed plan of the proposed geosynthetic reinforced unpaved and paved test sections; and • Construct and instrument ALF test sections. 					

Other DOTD Funded Projects

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	LOOP Environmental Monitoring: 2008-2010 Beach Elevation, Beach Vegetation, and Land Loss and Habitat Change Surveys	Project Status:	Ongoing
Funding Source:	LOOP	Budget Category:	Other DOTD Sections
State Project Number:	766-99-1510	Project Start Date:	1/1/2008
Research Project Number:	08-2SS	Completion Date (original)	12/31/2010
Research Agency:	LTRC	Completion Date (revised)	
Principal Investigator:	Mr. Dan Strecker		
BUDGET STATUS			
Total Budget		Estimated 2010-2011 Budget	
Total Cost (original)	\$140,858	Total	\$43,965
(revised)			
Est. Expended to Date	\$96,891	Salaries	\$36,965
FY 2009 - 2010 Budget		Equipment (expendable)	
FY Funds (original)	\$15,000	Equipment (non-expendable)	\$2,000
(revised)		Travel	
Est. FY Expenditure	\$79,419	Other	\$5,000
PURPOSE AND SCOPE			
<p>This project is part of a continuous monitoring of the Louisiana Offshore Oil Pipeline to determine its impact on the environment. The project involves an annual beach elevation survey in May each year, beach vegetation survey every second year in May, and a land loss and habitat change survey once every three years. The beach vegetation and land loss and habitat change survey will be conducted in 2009. The budget for 2009 - 2010 is the estimated cost for the beach vegetation and beach elevation survey, as well as the completion of the land-loss analysis.</p>			
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS			
<p>The second Beach Elevation and the Beach Vegetation field work were completed in May of 2009. Image classification for the Habitat and Land Loss Analysis were completed as well as the field verification.</p>			
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES			
<p>The third Beach Elevation field work will be performed in May of 2010. All of the field work and the data analyzed will be incorporated into a draft report for review. Comments from the draft will be incorporated into the final report to be submitted in 2010.</p>			

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Measuring Levee Elevation Heights in North Louisiana			Project Status:	Ongoing
Funding Source:	Public Works		Budget Category:	Other DOTD Sections	
State Project Number:	751-99-0073		Project Start Date:	12/1/2009	
Research Project Number:	10-1GT		Completion Date	(original)	11/30/2010
Research Agency:	LTU		Completion Date	(revised)	
Principal Investigator:	Mr. Wesley Palmer				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$163,982	Total		\$48,982
	(revised)				
Est. Expended to Date		\$115,000	Salaries		\$20,000
FY 2009 - 2010 Budget			Equipment (expendable)		
FY Funds	(original)	\$115,000	Equipment (non-expendable)		
	(revised)		Travel		\$2,000
Est. FY Expenditure		\$115,000	Other		\$26,982
PURPOSE AND SCOPE					
<p>The Louisiana Department of Transportation and Development (LaDOTD) is seeking precise measurements of the existing levee heights in North Louisiana. Through this research, Louisiana Tech University will capture these measurements using survey grade GPS technology. The resulting output will provide LaDOTD with accurate elevation information to aid in their flood control decisions. The objectives of this project is to measure the elevation and centerline coordinates of the top of federal and local levees and to ensure that the resulting GPS measurement data is within a precision interval of $\pm 3/10$ths of a foot vertically and $1/10$th of a foot horizontally. The levees will be measured on a 100 foot interval.</p> <p>This project will cover ~700 miles of levee in North Louisiana along the Red, the Ouachita and the Black rivers. The locations of the proposed levees to be surveyed are based on a shape file dataset provided by LaDOTD. Levees will be measured on both sides of the river where present.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
<ul style="list-style-type: none"> • From the project start date on December 1, 2009, initial efforts we spent on acquiring and testing the survey grade GPS equipment. • As of March 20, 2010, the project team has collected and processed 136 miles of levee along the Red River from the Louisiana-Arkansas border to the southern end of Caddo and Bossier Parishes. The resulting data has been submitted to LA DOTD. 					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<ul style="list-style-type: none"> • The project goal for Fiscal Year 2010-2011 is to complete data collection on the remaining levees proposed by the project. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Safety Improvement from Edge Lines of Rural Two-Lane Highway			Project Status:	Ongoing
Funding Source:	Safety		Budget Category:	Other DOTD Sections	
State Project Number:	736-99-0878		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 2010-2011 Budget		
Total Cost	(original)	\$107,060	Total		\$27,842
	(revised)				
Est. Expended to Date		\$75,383	Salaries		\$21,607
FY 2009 - 2010 Budget			Equipment	(expendable)	\$560
FY Funds	(original)	\$57,123	Equipment	(non-expendable)	
	(revised)		Travel		\$1,300
Est. FY Expenditure		\$40,000	Other		\$4,375
PURPOSE AND SCOPE					
<p>The goal of this project is to improve the safety of narrow rural two-lane highways in Louisiana. Specifically, the research team will:</p> <ul style="list-style-type: none"> • Identify the segments that will benefit from implementing the pavement edge line the most; • Implement pavement edge lines at selected locations; • Conduct the Before-and-After study at these locations to estimate the crash reduction factors 					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
<ul style="list-style-type: none"> • Collecting after crash data (2008 and 2007); • Contacting each district for potential issues; and • Perform cross-sectional analysis to see the impact of edge lines based on crash data analysis for potential CRF (Crash Reduction Factor). 					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<ul style="list-style-type: none"> • Finish the crash data analysis and final report. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	Implementation and Project Management of the New Louisiana Local Road Safety Program			Project Status:	Ongoing
Funding Source:	Safety		Budget Category:	Other DOTD Sections	
State Project Number:	737-99-0787		Project Start Date:	1/1/2010	
Research Project Number:	Safety		Completion Date (original)	12/31/2010	
Research Agency:	LTRC		Completion Date (revised)		
Principal Investigator:	Dr. Marie Walsh				
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost (original)		\$200,000	Total		\$200,000
(revised)					
Est. Expended to Date			Salaries	\$200,000	
FY 2009 - 2010 Budget			Equipment (expendable)		
FY Funds (original)			Equipment (non-expendable)		
(revised)			Travel		
Est. FY Expenditure			Other		
PURPOSE AND SCOPE					
To implement the Louisiana Strategic Highway Safety Plan initiatives at the local level through data analysis, education, and outreach and management of low cost safety improvement projects for the local transportation system.					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
<ul style="list-style-type: none"> Presented 50 Highway Safety Classes; Began implementation of local level roadway departure and intersection action plans in accordance with LA SHSP strategy; Coordinated with Louisiana Highway Safety Commission to engage local elected officials in the Click it or Ticket initiative; Conducted Impaired Driving workshops for local law enforcement officers on behalf of Louisiana Highway Safety Commission (LHSC) and the Department of Public Safety; Coordinated initiation of multidisciplinary Speed Management Workshops for LHSC; Conducted training and workshop related to highway safety; and Managed implementation process for 100 low cost safety improvement projects totaling more than \$13 million. 					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<ul style="list-style-type: none"> Coordinate Click it or Ticket activities with local agencies and LMA and the PJA as part of SHSP implementation strategy. Conduct training and outreach activities involving local agencies as part of SHSP and HSP efforts. Manage Local Road Safety projects to completion. 					

LTRC Annual Research Program
Fiscal Year 2010-2011

Title:	LOOP Environmental Monitoring: 2011-2013 Beach Elevation, Beach Vegetation, Land Loss and Habitat Changes Surveys			Project Status:	Proposed
Funding Source:	LOOP		Budget Category:	Other DOTD Sections	
State Project Number:			Project Start Date:	1/1/2011	
Research Project Number:			Completion Date	(original)	12/31/2013
Research Agency:			Completion Date	(revised)	
Principal Investigator:					
BUDGET STATUS					
Total Budget			Estimated 2010-2011 Budget		
Total Cost	(original)	\$150,000	Total		\$15,000
	(revised)				
Est. Expended to Date			Salaries	\$15,000	
FY 2009 - 2010 Budget			Equipment	(expendable)	
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		
PURPOSE AND SCOPE					
<p>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.</p>					
FISCAL YEAR 2009 - 2010 ACCOMPLISHMENTS					
FISCAL YEAR 2010-2011 PROPOSED ACTIVITIES					
<ul style="list-style-type: none"> • Conduct beach elevation survey in May, 2011. 					

This public document is published at a total cost of \$1,019. 66 copies of this public document were published in this first printing at a cost of \$1,019. The total cost of all printings of this document including reprints is \$1,019. This document was published by Louisiana State University, Graphic Services, 3555 River Road, Baton Rouge, Louisiana 70802, and Louisiana Transportation Research Center, to report and publish research findings for the Louisiana Transportation Research Center as required in R.S. 48:105. This material was duplicated in accordance with standards for printing by state agencies established pursuant to R.S. 43:31. Printing of this material was purchased in accordance with the provisions of Title 43 of the Louisiana Revised Statutes.