LTRC Annual Research Program

Fiscal Year July 1, 2024 - June 30, 2025

FHWA Part B SPR Research Program
FAP Number SPR-0010(34)
&
FHWA Funded Research Program
&
FHWA LTAP Funded Program
&
FHWA STP Funded Program
&
Self-Generated Funded Research Program
&
Other DOTD Funded Projects

Conducted by:
Louisiana Department of Transportation and Development
Louisiana Transportation Research Center
In accordance with Louisiana R.S. 48.105
Which governs the creation and operation
Of the Louisiana Transportation Research Center

In cooperation with
United States Department of Transportation Federal Highway Administration
June 2024

April 25, 2024

Ms. Melinda Roberson
Louisiana Division Administrator
Federal Highway Administration
5304 Flanders Drive, Suite A
Baton Rouge, LA 70808

Attention: Ms. Mary Stringfellow

RE: FY 2024-2025 Louisiana Transportation Research Center Annual Work Program

Dear Ms. Roberson:

Enclosed please find the FY 2024-2025 Louisiana Transportation Research Center (LTRC) Annual Work Program for your review and approval. You will note that the program is divided into multiple sections reflecting all funding sources.

As delegated by the Secretary, Louisiana Department of Transportation and Development (LADOTD), I, Samuel B. Cooper, Jr., Director, Louisiana Transportation Research Center, of the State of Louisiana, do hereby certify, that the State is in compliance with all requirements of 23 CFR 420 Subpart B and 23 U.S.C. 505 and its implementing regulations with respect to the research, development, and technology transfer program, and contemplate no changes in statutes, regulations, or administrative procedures which would affect such compliance.

If I can provide additional information, please advise.

Sincerely,

Samuel B. Cooper, Jr., Ph.D., P.E.
Director

cc: Mr. Chad Winchester, P.E.
Dr. Tyson Rupnow, P.E.

U.S. Department of Transportation
Federal Highway Administration

Louisiana Division Office

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

June 14, 2024

In Reply Refer To:
HDA-LA

Samuel B. Cooper, Ph.D.
Director
Louisiana Transportation Research Center (LTRC)
Baton Rouge, LA

Subject: State FY 2024-2025 State Planning & Research (SPR) Work Program Part B

Dear Dr. Cooper:

This letter is in response to your submittal of the State Fiscal Year (FY) 2023-2024 Statewide Planning and Research (SPR) Work Program Part B. The original submittal from April 25, 2024, was reviewed and comments sent via email to Dr. Tyson Rupnow and Melissa Neyland. The revised SPR B Work Plan was submitted to the Federal Highway Administration (FHWA) on June 13, 2024. This revised version has been reviewed and is approved by FHWA Louisiana Division Office.

A separate request from the Louisiana Department of Transportation and Development's (LADOTD) Federal-aid section will be required to process the fiscal documents necessary to obligate the federal funds for this Work Program. Should you have any questions regarding this matter, please contact me at (225) 757-7610.

Sincerely yours,

MARY M STRINGFELLOW

Digitally signed by MARY M STRINGFELLOW
Date: 2024.06.18 07:10:06 -05'00'

Mary M. Stringfellow
Asset Programs Team Leader

cc: Ms. Dawn Sholmire, LADOTD Planning Division
Mr. Tyson Rupnow, LTRC
Ms. Melissa Neyland, LTRC
Ms. Tamaya Huff, 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
GT	Geotechnical
P	Pavements
B	Bituminous
SA	Safety
SS	Special Studies
C	Concrete
ST	Structures
TT	Technology Transfer
LTAP	Local Technical Assistance Program
PF	Pooled Fund (Louisiana Lead)

Project Status

A	Active
P	Proposed
RFP	Request for Proposal
SIO	Statistical Internal Order

AAR	Alkali aggregate reaction
AASHTO	American Association of State Highway Transportation Officials
ACI	American Concrete Institute
ACR	Alkali-carbonate reaction
ACRP	Airport Cooperative Research Program
ADT	Average daily traffic
ALF	Accelerated loading facility
AM	Additive manufacturing
AMRL	Asphalt and Materials Reference Laboratory
ANFIS	Adaptive neuro fuzzy inference system
ANN	Artificial neural network
AO	Aromatic oils
APWA	American Public Works Association
ASCE	American Society of Civil Engineers
ASR	Alkali-silica reaction
ATLaS	Accelerated Test Loading and Simulation
ATR-FTIR	Fourier-transformed infrared
AV	Autonomous vehicle
BBR	Bending beam rheometer
BMD	Balanced mix design
CAD	Computer aided drafting
CAV	Connected autonomous vehicle
CCRL	Cement and Concrete Reference Laboratory
CCTV	Closed circuit television
CE&I	Civil Engineering and Inspection
CEIA	Cooperative Education & Internship Association
CIP	Cast in place
COV	Coefficient of variation
CTM	Circular track meter
CPT	Concrete prism test
CPT	Cone penetrometer
CR	Crumb rubber
CUTC	Council of University Transportation Centers
DCP	Dynamic cone penetrometer
DFT	Dynamic friction tester
DIC	Digital image correlation
DIGGS	Data Interchange for Geotechnical and Geo-Environmental Specialists
DOT	Department of Transportation
DOTD	Louisiana Department of Transportation and Development
DSR	Dynamic shear rheometer
DSRC	Direct short range communications
ECC	Engineered cementitious composite
EDC	Every Day Counts
EMCRF	Engineering materials characterization and research facility
EPA	Environmental Protection Agency
EPD	Environmental product declaration
ERDP	Engineering Resource Development Program
ETG	Expert task group

FE	Finite element
FHWA	Federal Highway Administration
FRP	Fiber reinforced polymer
FSS	Fully soften shear strength
FY	Fiscal year
GHSA	Governors Highway Safety Association
GIS	Geographic information systems
GLTP	Geosynthetic load transfer platform
GPC	Gel permeation chromatography
GWP	Global warming potential
HCM	Highway Capacity Manual
HEMP	Hurricane Evacuation Modeling Package
HFA	Hydrated fly ash
HMA	Hot mixed asphalt
ICC	Internally cured concrete
ICTD	International Conference on Transportation & Development
IMRCP	Integrated modeling for road condition prediction
IRI	International roughness index
IT	Information technology
ITS	Intelligent Transportation System
LAPA	Louisiana Asphalt Pavement Association
LAPELS	Louisiana Professional Engineering & Land Surveying
LA PMS	Louisiana Pavement Management System
LCA	Life-Cycle Assessment
LEO	Louisiana employees online
LHSC	Louisiana Highway Safety Commission
LIDAR	Light detection and radar
LL	Liquid limit
LMS	Learning management system
LOS	Level of service
LPA	Local public agency
LPESA	Louisiana Parish Engineers and Supervisors Association
LRFD	Load and resistance factored design
LRSP	Local Road Safety Program
LSO	Learning solution online
LSU	Louisiana State University
LTA	Long term aged
LTAP	Louisiana Technical Assistance Program
LTRC	Louisiana Transportation Research Center
LWST	Locked wheel skid trailer
LWT	Loaded wheel tester
MASH	Manual for Assessing Safety Hardware
MCPT	Miniature concrete prism test
MEPDG	Mechanistic Empirical Pavement Design Guide
MPO	Metropolitan planning organization
MRI	Major Research instrumentation
MSE	Mechanically stabilized earth
MTS	Materials Test Systems

NASA	National Aeronautics and Space Agency
NCAT	National Center for Asphalt Technology
NCHRP	National Cooperative Highway Research Program
NDT	Non-destructive testing
NHS	National highway system
NHTSA	National Highway Transportation Safety Administration
NLTAPA	National Local Technical Assistance Program Association
NNBF	Natural and nature-based features
NPRM	Notice of proposed rulemaking
NSF	National Science Foundation
OCR	Over consolidation ratio
OGC	Open Ground Cloud
OGFC	Open graded friction course
OMC	Office of Multimodal Commerce
OTS	Office of Technology Services
PAV	Pressure aging vessel
PCC	Portland cement concrete
PCPT	Piezocone penetration test
PCR	Product category rule
PDH's	Professional development hours
PI	Performance index
PI	Principal Investigator
PJAL	Police Jury Association of Louisiana
PL	Plastic limit
PLC	Program logic command
PMTS	Project management tracking system
PMS	Pavement management system
PPC	Precast prestressed concrete
PRC	Project review committee
PRF	Pavement research facility
PSV	Polished stone value
QA	Quality assurance
QC	Quality control
RA	Research associate
RAP	Recycled asphalt pavement
RAS	Recycled asphalt shingles
RC	Reinforced concrete
RCC	Roller compacted concrete
RDM	Rolling density meter
RFP	Request for proposals
RH	Relative humidity
RITIS	Regional Integrated Transportation Information System
ROR	Run-off-road
RTFO	Rolling thin film oven
SARA	Saturates/Aromatics/Resins/Asphaltenes
SASHTO	Southeastern Association of State Highway and Transportation Officials
SBS	Styrene-Butadiene-Styrene
SCB	Semi-circular bend

SCPTu	Seismic piezocone penetration testing
SHSP	Strategic Highway Safety Plan
SLR	Sea level rise
SMA	Stone matrix asphalt
SN	Skid number
SOP	Standard operating procedure
SPS	Sandwich plate system
SPT	Standard penetration test
SRPC	Sustainable & Resilient Pavement Materials and Technologies Center
SSAM	Surrogate Safety Assessment Model
SSRB	Louisiana Standard Specifications for Roads and Bridges
STC	Southeast Transportation Consortium
SWCC	Soil-water characteristic curve
SWGEC	Southwest Geotechnical Engineering Conference
TA	Technical assistance
TBR	Traffic benefit ratio
T-FAST	Turner Fairbanks Highway Research Center Fast ASR Test
TFHRC	Turner Fairbanks Highway Research Center
TIM	Traffic Incident Management
TIMED	Transportation Infrastructure Model for Economic Development
TLC-FID	Thin-layer Chromatography and Flame Ionization Detection
TRB	Transportation Research Board
TSR	Tensile strength ratio
TTEC	Transportation Training and Education Center
TTI	Texas Transportation Institute
UAV	Unmanned aerial vehicle
UHPC	Ultra-high performance concrete
UHPFRC	Ultra-high performance fiber-reinforced concrete
ULL	University of Louisiana-Lafayette
UTC	University Transportation Center
UTM	Universal testing machine
USGA	United States Geological Administration
VMT	Vehicle miles traveled
WIM	Weigh in motion
WMA	Warm mix asphalt
XRD	X-ray diffraction
XRF	X-ray fluorescence

Table of Contents

FHWA SPR Work Program

Part B

FAP Number SPR-0010(34)

FHWA Funding

SPR Research Budget Recap	H#	Federal	State	Total
Administrative Budget	TBD	$774,525.60	$193,631.40	$968,157.00
Research Support Studies Budget	TBD	$1,371,980.00	$342,995.00	$1,714,975.00
Active Studies Budget	TBD	$3,871,581.60	$967,895.40	$4,839,477.00
Proposed Studies Budget	TBD	$1,733,216.80	$433,304.20	$2,166,521.00
Pooled Fund Lead State Studies Budget	H: 972490	$200,000.00	$0.00	$200,000.00
Total SPR Budget		$7,951,304.00	$1,937,826.00	$9,889,130.00

SPR External Collaboration Budget Recap	H#	Federal	State	Total
Pool Funded Studies	N/A	$200,000.00	$0.00	$200,000.00
TRB Correlations	N/A	$140,688.00	$35,172.00	$175,860.00
NCHRP	N/A	$996,948.00	$0.00	$996,948.00
Total SPR External Collaboration Budget		$1,337,636.00	$35,172.00	$1,372,808

IBRD Budget Recap		Total
Active Studies Budget	TBD	$0
Proposed Studies Budget	TBD	$0
Total IBRD Budget		$0

FHWA Funding

LTAP Budget Recap	H#	Federal	State	Total
LTAP	TBD	$542,938.00	$150,000.00	$692,938.00
LTAP Program Total		$542,938.00	$150,000.00	$692,938.00

STP: Technology Transfer Program Budget Recap	H#	Federal	Total
Technology Transfer Program and Operations	TBD	$1,528,260	$1,528,260
Workforce Development Program	TBD	$7,148,424	$7,148,424
Student Support Programs	TBD	$210,000	$210,000
Total STP Budget		$8,886,684	$8,886,684

Self-Generated Funding

Self-Generated Budget Recap	H#	Federal	State	Total
Active Studies Budget	N/A	$0	$0	$0
Proposed Studies Budget	N/A	$0	$0	$0
Total Self-Generated Budget				$0

Other DOTD Sections Funding

Other DOTD Sections Budget Recap	H#	Federal	State	Total
Active Studies Budget	TBD			$479,883
Proposed Studies Budget	TBD			$0
Total Other DOTD Sections Budget				$479,883

LTRC ANNUAL RESEARCH PROGRAM

SPR: TT-Fed/TT-Reg (80% Federal / 20% State)

FISCAL_YEAR 2024-2025

Funding	A/P	Project Type	SIO No.	Research No.	FY Budget	Total Cost	Agency	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	Page No.
Project Type: Administrative (80% Federal / 20% State)													
SPR: TT-Fed/TT-Reg - 5	P	ADM	DOTLT1000529	25-1PM	$968,157	$968,157	LTRC	Tyson Rupnow	Program Management	7/1/2024	6/30/2025		C-2
					$968,157	**$968,157**	**ADMINISTRATIVE BUDGET TOTALS**						
Project Type: Research Support (80% Federal / 20% State)													
SPR: TT-Fed/TT-Reg - 5	P	RS	DOTLT1000532	25-1TTRI	$467,623	$467,623	LTRC	Tyson Rupnow	Technology Transfer and Research Implementation	7/1/2024	6/30/2025		C-3
SPR: TT-Fed/TT-Reg - 5	P	RS	DOTLT1000535	25-1TRS	$370,159	$370,159	LTRC	Tyson Rupnow	Technical Research Surveillance	7/1/2024	6/30/2025		C-4
SPR: TT-Fed/TT-Reg - 5	P	RS	DOTLT1000531	25-1TA	$436,261	$436,261	LTRC	Tyson Rupnow	Technical Assistance	7/1/2024	6/30/2025		C-5
SPR: TT-Fed/TT-Reg - 5	P	RS	DOTLT1000536	25-1SSR	$50,000	$50,000	LTRC	Tyson Rupnow	DOTD Staff Support for Research	7/1/2024	6/30/2025		C-6
SPR: TT-Fed/TT-Reg - 5	P	RS	DOTLT1000534	25-1NPE	$37,046	$37,046	LTRC	Tyson Rupnow	New Product Evaluation	7/1/2024	6/30/2025		C-7
SPR: TT-Fed/TT-Reg - 6	P	RS	DOTLT1000533	25-1EQM	$353,887	$353,887	LTRC	Tyson Rupnow	Equipment Management	7/1/2024	6/30/2025		C-8
					$1,714,975	**$1,714,975**	**RESEARCH SUPPORT BUDGET TOTALS**						

LTRC ANNUAL RESEARCH PROGRAM

SPR: TT-Fed/TT-Reg (80% Federal / 20% State)

FISCAL YEAR 2024-2025

Funding	A/P	Project Type	SIO No.	Research No.	FY Budget	Total Cost	Agency	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	Page No.
Project Type: Bituminous (80% Federal / 20% State)													
SPR: TT-Fed/TT-Reg - 5	A	B	DOTLT1000511	24-1B	$148,866	$477,500	LTRC	Louay Mohammad	Sustainability through Development of Life-Cycle Information Models for Pavements in Louisiana	10/1/2023	9/30/2027		C-10
SPR: TT-Fed/TT-Reg - 5	A	B	DOTLT1000508	23-4B	$75,882	$82,258	LTRC	Saman Salari	Literature review of IDEAL-CT and IDEAL-RT tests methods for balanced mix design	3/4/2024	3/3/2025		C-11
SPR: TT-Fed/TT-Reg - 5	A	B	DOTLT1000423	22-1B	$120,706	$223,135	LTRC	Saman Salari	Evaluation of Saturates/Aromatics/Resins/Asphaltenes (SARA) Fractionation of asphalt binders in Louisiana	6/1/2022	5/31/2024	12/31/2024	C-12
SPR: TT-Fed/TT-Reg - 6	A	B	DOTLT1000461	23-2B	$30,717	$155,410	LTRC	Moses Akentuna	Evaluation of Non-Destructive Test Pilot Projects	8/22/2022	8/21/2024		C-13
SPR: TT-Fed/TT-Reg - 6	A	B	DOTLT1000460	23-1B	$26,000	$170,491	LTRC	Mostafa Elseifi	Effect of Mineral Fillers on the Moisture Resistance and Performance of HMA	6/1/2022	5/31/2024	2/28/2025	C-14
SPR: TT-Fed/TT-Reg - 6	A	B	DOTLT1000385	21-5B	$0	$79,156	LTRC	Moses Akentuna	Improvement of Open-Graded Friction Course (OGFC) Performance and Durability through Materials, Design, and Maintenance	9/1/2020	11/30/2022	9/30/2024	C-15
SPR: TT-Fed/TT-Reg - 6	A	B	30000112	10-1EMCRF	$110,378	$24,108,022	LTRC	Louay Mohammad	Sustainable and Resilient Pavement Materials and Technologies Center (SRPC)	7/1/2009	6/30/2015	6/30/2025	C-16
					$512,549	**$25,295,972**	**BITUMINOUS BUDGET TOTALS**						
Project Type: Concrete (80% Federal / 20% State)													
SPR: TT-Fed/TT-Reg - 6	A	C	DOTLT1000422	22-1C	$52,000	$205,097	LTRC	Zhen Liu	Influence of Internal Curing on Concrete's Permeability in Simulated Field Conditions	1/17/2022	1/16/2024	1/16/2025	C-17
					$52,000	**$205,097**	**CONCRETE BUDGET TOTALS**						
Project Type: Geotechnical (80% Federal / 20% State)													
SPR: TT-Fed/TT-Reg - 5	A	GT	DOTLT1000525	24-3GT	$98,000	$426,843	LTRC	Murad Abu-Farsakh	Statewide Calibration of CPT Direct Design Methods Using Static Load Test Data	5/1/2024	4/30/2027		C-18
SPR: TT-Fed/TT-Reg - 5	A	GT	DOTLT1000517	24-2GT	$31,550	$251,395	LTRC	Gavin Gautreau	Web-Based Tool to Advance Geotechnical Data Interchange and Reliability-Based Site Characterization	12/1/2023	11/30/2025		C-20
SPR: TT-Fed/TT-Reg - 5	A	GT	DOTLT1000471	23-2GT	$78,308	$197,665	LTRC	Nick Ferguson	Field Evaluation of Geophysical Applications for DOTD	2/6/2023	2/5/2025		C-22
SPR: TT-Fed/TT-Reg - 5	A	GT	DOTLT1000393	21-2GT	$74,137	$185,539	LTRC	Gavin Gautreau	Geotechnical Database, Phase IV	3/1/2021	2/28/2023	2/28/2025	C-23
SPR: TT-Fed/TT-Reg - 5	A	GT	DOTLT1000346	20-3GT	$74,400	$400,722	LTRC	Murad Abu-Farsakh	Development of a Design Methodology for Geosynthetic Reinforced Pavement using Finite Element Numerical Modeling	5/1/2020	4/30/2023	4/30/2025	C-25
SPR: TT-Fed/TT-Reg - 5	A	GT	DOTLT1000337	20-2GT	$85,000	$512,748	LTRC	Murad Abu-Farsakh	Instrumentation and Modeling of Geosynthetic Load Transfer Platform Performance	1/1/2020	6/30/2022	6/30/2025	C-27
SPR: TT-Fed/TT-Reg - 6	A	GT	DOTLT1000512	24-1GT	$88,700	$432,545	LTRC	Murad Abu-Farsakh	Evaluation and Incorporation of Site and Laboratory Variability into LRFD Design of Pile Foundations - Phase 2	11/1/2023	10/31/2026		C-29
SPR: TT-Fed/TT-Reg - 6	A	GT	DOTLT1000473	23-1GT	$96,900	$311,126	LTRC	Gavin Gautreau	LIDAR for Geotechnical Applications	3/1/2023	8/31/2025		C-31

SPR: TT-Fed/TT-Reg - 6	A	GT	30000111	10-1GERL	$188,500	$20,772,569	LTRC	Murad Abu-Farsakh	LTRC Support for Geotechnical Research at the Geotechnical Engineering Research Laboratory (GERL)	7/1/2010	6/30/2015	6/30/2027	C-32
					$815,496	**$23,491,152**	**GEOTECHNICAL BUDGET TOTALS**						

Project Type: Other (80% Federal / 20% State)

SPR: TT-Fed/TT-Reg - 5	A	Other	DOTLT1000215	18-1Other	$50,000	$2,717,696	LTRC	Vijaya Gopu	LTRC Proposal for the Support of Software Development and GIS Applications in LTRC Research	7/1/2017	6/30/2020	6/30/2027	C-34
SPR: TT-Fed/TT-Reg - 5	A	Other	30000169	11-1AD	$315,289	$5,621,122	LTRC	Vijaya Gopu	Administration of LTRC External Funding Programs	1/1/2008	6/30/2009	6/30/2027	C-35
					$365,289	**$8,338,818**	**OTHER BUDGET TOTALS**						

Project Type: Pavements (80% Federal / 20% State)

SPR: TT-Fed/TT-Reg - 5	A	P	DOTLT1000431	22-1P	$80,087	$169,270	LTRC	Jun Liu	Performance Index Rating and Maintenance Cost Assignment for Ramps, Acceleration and Deceleration Lanes in Louisiana	4/1/2022	6/30/2024	6/30/2025	C-36
SPR: TT-Fed/TT-Reg - 6	A	P	DOTLT1000519	24-1P	$148,950	$371,615	LTRC	Zhong Wu	Evaluation of Louisiana Maintenance and Rehabilitation Treatment Decision Matrix for Cost-effective and Timely Pavement Preservation	1/1/2024	12/31/2026		C-37
SPR: TT-Fed/TT-Reg - 6	A	P	DOTLT1000340	20-4P	$143,000	$402,068	LTRC	Zhong Wu	Assessment of LADOTD's friction aggregate sources through laboratory and accelerated testing	1/1/2020	12/31/2022	12/31/2024	C-38
SPR: TT-Fed/TT-Reg - 6	A	P	DOTLT1000272	19-2P	$53,300	$480,708	LTRC	Zhong Wu	Mechanistic Characterization of Asphalt Overlays for Pavement Rehabilitation and Preservation using Pavement ME Approach	8/1/2018	1/31/2021	10/31/2024	C-39
SPR: TT-Fed/TT-Reg - 6	A	P	DOTLT1000218	18-2P	$47,000	$315,000	LTRC	Qiming Chen	Mitigating Joint Reflective Cracks using Stone Interlayers: Case Study on Louisiana Highway 5, Desoto Parish	10/17/2017	10/16/2023	10/16/2026	C-40
SPR: TT-Fed/TT-Reg - 6	A	P	30000141	10-1ALF	$449,980	$26,093,061	LTRC	Zhong Wu	Management and Operation of the Pavement Research Facility	7/1/2009	6/30/2015	6/30/2027	C-41
					$922,317	**$27,831,723**	**PAVEMENTS BUDGET TOTALS**						

Project Type: Safety (80% Federal / 20% State)

SPR: TT-Fed/TT-Reg - 5	A	SA	DOTLT1000513	24-2SA	$145,000	$261,355	LTRC	Elisabeta Mitran	Older Road Users Safety in Louisiana: Understanding the Crash Contributing Factors	1/1/2024	12/31/2025		C-43
					$145,000	**$261,355**	**SAFETY BUDGET TOTALS**						

Project Type: Special Studies (80% Federal / 20% State)

SPR: TT-Fed/TT-Reg - 5	A	SS	DOTLT1000515	24-4SS	$80,000	$223,751	LTRC	Milhan Moomen	Improved Signalized Intersection Performance Using Computer Vision and Artificial Intelligence	1/1/2024	12/31/2025		C-44
SPR: TT-Fed/TT-Reg - 5	A	SS	DOTLT1000514	24-3SS	$100,000	$133,453	LTRC	Milhan Moomen	Evaluating Practical Applications of Unmanned Aerial Vehicles (UAVs) for Traffic Incident Response and Management.	1/1/2024	12/31/2025		C-45
SPR: TT-Fed/TT-Reg - 5	A	SS	DOTLT1000509	24-2SS	$105,207	$249,078	LTRC	Ruijie "Rebecca" Bian	Trip Generation for Various Sites	1/1/2024	12/31/2025		C-46

SPR: TT-Fed/TT-Reg - 5	A	SS	DOTLT1000495	24-1SS	$734,500	$899,500	Blue Streak Technologies	Cory Matessino	Updating and Migrating the Louisiana Transportation Research Center (LTRC) Project Management Tracking System (PMTS) from Louisiana State University Server to Office of Technology Services (OTS) Server(s)	10/16/2023	3/31/2024	4/15/2025	C-47
SPR: TT-Fed/TT-Reg - 5	A	SS	DOTLT1000472	23-8SS	$50,000	$158,964	LTRC	Milhan Moomen	Best Practices for Maintenance of Control of Access Fencing	1/1/2023	6/30/2024	12/31/2024	C-48
SPR: TT-Fed/TT-Reg - 5	A	SS	DOTLT1000468	23-5SS	$90,000	$210,850	LTRC	Milhan Moomen	Improved Incident Response through Coordinated, Interoperable Communications	1/1/2023	12/31/2025	12/31/2024	C-49
SPR: TT-Fed/TT-Reg - 5	A	SS	DOTLT1000463	23-4SS	$119,419	$258,849	LTRC	Ruijie "Rebecca" Bian	Statewide Non-Motorized Traffic Monitoring Study	7/1/2023	6/30/2025		C-50
SPR: TT-Fed/TT-Reg - 5	A	SS	DOTLT1000459	23-3SS	$50,000	$219,070	LTRC	Ashifur Rahman	Estimating HCM Default Parameters for Louisiana	1/1/2023	12/31/2024		C-51
SPR: TT-Fed/TT-Reg - 5	A	SS	DOTLT1000458	23-1SS	$35,417	$189,223	LSU	Hany Hassan	Safety and Traffic Operations at Cloverleaf Interchanges	8/1/2022	7/31/2024		C-52
SPR: TT-Fed/TT-Reg - 5	A	SS	DOTLT1000427	22-3SS	$22,227	$90,981	LTRC	Ruijie "Rebecca" Bian	Testing the Hurricane Evacuation Modeling Package (HEMP)	8/1/2022	1/31/2024	12/31/2024	C-53
SPR: TT-Fed/TT-Reg - 5	A	SS	DOTLT1000280	19-1SS	$195,318	$2,721,723	ULL	Elisabeta Mitran	LTRC Proposal for the Support of Research and Development in Special Studies	7/1/2019	6/30/2021	6/30/2027	C-54
SPR: TT-Fed/TT-Reg - 5	A	SS	DOTLT1000281	19-1ITS	$103,000	$3,905,189	ULL	Milhan Moomen	LTRC Proposal for the Support of Research and Development in ITS/Traffic	7/1/2019	6/30/2021	6/30/2027	C-55
SPR: TT-Fed/TT-Reg - 5	A	SS	30000125	10-1PLAN	$101,647	$10,895,402	LTRC	Ruijie "Rebecca" Bian	LTRC Proposal for the Support of Research and Development in Transportation Planning	7/1/2010	6/30/2015	6/30/2027	C-57
					$1,786,735	**$20,156,033**	**SPECIAL STUDIES BUDGET TOTALS**						

Project Type: Structures (80% Federal / 20% State)

SPR: TT-Fed/TT-Reg - 5	A	ST	DOTLT1000503	24-1ST	$87,000	$249,995	LSU	Ayman Okeil	Ultra High Performance Concrete Application In Link Slabs For Crack Mitigation	1/15/2024	1/14/2026		C-59
SPR: TT-Fed/TT-Reg - 5	A	ST	DOTLT1000457	22-3ST	$78,500	$383,004	LSU	Murad Abu-Farsakh	Evaluation of Embedded Pile Resistance on Scour Critical Bridges	5/2/2022	5/1/2025		C-60
SPR: TT-Fed/TT-Reg - 5	A	ST	DOTLT1000428	22-2ST	$14,592	$531,688	Wiss, Janney, Elstner Associates, Inc.	Gareth Rees	Skew Detection System Replacement on Vertical Lift Bridges Phase 2	2/1/2022	12/31/2022	9/30/2024	C-62
					$180,092	**$1,164,687**	**STRUCTURES BUDGET TOTALS**						

Project Type: TIRE (80% Federal / 20% State)

SPR: TT-Fed/TT-Reg - 5	A	TIRE	DOTLT1000550	25-1TIRE	$30,000	$30,000	LTU	Yang Xiao	Conversion of Methane to Transportation Fuels via Photo-Thermo Catalysis	7/1/2024	6/30/2025		C-63
SPR: TT-Fed/TT-Reg - 5	A	TIRE	DOTLT1000498	24-3TIRE	$30,000	$30,000	LTU	Roya Solhmirzaei	Structural Response Evaluation and Design of Ultra High Performance Concrete Bridge Girders	7/1/2024	6/30/2025		C-64
					$60,000	**$60,000**	**TIRE BUDGET TOTALS**						
					$4,839,477	**$106,804,837**	**SPR: TT-FED/TT-REG ACTIVE BUDGET TOTALS**						

LTRC ANNUAL RESEARCH PROGRAM

SPR: TT-Fed/TT-Reg (80% Federal / 20% State)

FISCAL YEAR 2024-2025

Funding	A/P	Project Type	SIO No.	Research No.	FY Budget	Total Cost	Agency	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	Page No.
Project Type: Bituminous (80% Federal / 20% State)													
SPR: TT-Fed/TT-Reg - 5	P	B			$136,589	$160,000	LTRC	Louay Mohammad	Effect of SARA Asphalt Binder Fractionations on Laboratory Performance of Asphalt Mixtures	7/1/2022	4/30/2024		C-66
SPR: TT-Fed/TT-Reg - 5	P	B			$99,000	$100,000	LTRC	Louay Mohammad	Implementation of Louisiana BMD Framework for QC/QA Specifications	7/1/2023	12/31/2024		C-67
SPR: TT-Fed/TT-Reg - 6	P	B			$84,000	$169,013	LTRC	Moses Akentuna	Assessment of the PaveScan RDM for Continuous Density Measurements in Louisiana	7/1/2024	6/30/2026		C-68
SPR: TT-Fed/TT-Reg - 6	P	B			$59,396	$85,000	LTRC	Louay Mohammad	Enhanced Interaction between Crumb Rubber Modifiers and Asphalt Binder to Improve Performance	7/1/2021	6/30/2023		C-69
SPR: TT-Fed/TT-Reg - 6	P	B			$108,868	$349,000	LTRC	Louay Mohammad	Enhancement of Mechanical Properties of Asphalt Cements and Asphalt Mixtures Containing Waste Plastic	7/1/2021	6/30/2023		C-70
SPR: TT-Fed/TT-Reg - 6	P	B			$83,000	$85,000	LTRC	Louay Mohammad	Enhancing Pavement Resiliency to Sea Level Rise Using Natural and Nature-Based Features in Louisiana	7/1/2021	6/30/2023		C-71
SPR: TT-Fed/TT-Reg - 6	P	B			$84,316	$350,000	LTRC	Louay Mohammad	Performance of Asphalt Pavements Containing Recycled Materials Under Accelerated Loading	7/1/2021	6/30/2023		C-72
SPR: TT-Fed/TT-Reg - 6	P	B			$75,000	$170,000	LTRC	Moses Akentuna	Validation of SCB Jc Prediction Model and Aging Correction Factor	7/1/2024	6/30/2026		C-73
					$730,169	**$1,468,013**	**BITUMINOUS BUDGET TOTALS**						
Project Type: Concrete (80% Federal / 20% State)													
SPR: TT-Fed/TT-Reg - 5	P	C			$80,000	$240,000	LTRC	Zhen Liu	Evaluation of T-Fast (TFHRC ASR Test) Test Method for Aggregate Acceptance	7/1/2023	6/30/2026		C-74
SPR: TT-Fed/TT-Reg - 6	P	C	DOTLT1000528	24-1C	$91,309	$258,117	LTRC	Tyson Rupnow	Investigation of Piezoelectric and Other Advanced Sensors in Concrete	7/1/2023	6/30/2025		C-75
					$171,309	**$498,117**	**CONCRETE BUDGET TOTALS**						
Project Type: Geotechnical (80% Federal / 20% State)													
SPR: TT-Fed/TT-Reg - 5	P	GT			$20,000	$200,000	LTRC	Murad Abu-Farsakh	Update on Evaluating the Magnitude and Time Rate of Consolidation Settlement of Embankments and other Infrastructures from Piezocone Penetration Tests (PCPT)	3/14/2023	3/29/2023		C-76
SPR: TT-Fed/TT-Reg - 5	P	GT			$20,000	$200,000	LTRC	Murad Abu-Farsakh	Use and Interpretation of Seismic Piezocone Penetration Testing (SCPTu) for Geotechnical Site Investigation	1/1/2018	12/31/2020		C-78
SPR: TT-Fed/TT-Reg - 6	P	GT			$20,000	$200,000	LTRC	Murad Abu-Farsakh	Evaluating the effect of pile installation, long-term scour and reduction in overburden pressure on pile capacity	2/28/2023	3/30/2023		C-79
SPR: TT-Fed/TT-Reg - 6	P	GT			$20,000	$200,000	LTRC	Murad Abu-Farsakh	Evaluation and development of CPT-based methods for estimating the ultimate axial capacity of drilled shafts	3/7/2023	3/23/2023		C-80
					$80,000	**$800,000**	**GEOTECHNICAL BUDGET TOTALS**						
Project Type: Pavements (80% Federal / 20% State)													

SPR: TT-Fed/TT-Reg - 5	P	P	DOTLT1000526	24-2P	$97,100	$149,100	LTRC	Qiming Chen	Developing a Methodology for Pavement Drainage System Rating	4/1/2022	11/14/2025		C-81
SPR: TT-Fed/TT-Reg - 5	P	P			$80,000	$250,000	LTRC	Qiming Chen	Development of a Database for Successfully Performing Pavement Sections in Louisiana	7/1/2023	6/30/2026		C-82
					$177,100	**$399,100**	**PAVEMENTS BUDGET TOTALS**						

Project Type: Safety (80% Federal / 20% State)

SPR: TT-Fed/TT-Reg - 5	P	SA	DOTLT1000510	24-1SA	$95,741	$250,000	LSU	Hany Hassan	Ground-in Edge and Centerline Rumble Strip/Rumble Stripe Evaluation/Best Practices	1/1/2024	6/30/2025		C-83
SPR: TT-Fed/TT-Reg - 5	P	SA			$80,000	$200,000	LTRC	Milhan Moomen	Assessing Speeding-Related Crashes in Louisiana to Support the Safe System Approach	8/1/2024	7/31/2026		C-84
					$175,741	**$450,000**	**SAFETY BUDGET TOTALS**						

Project Type: Special Studies (80% Federal / 20% State)

SPR: TT-Fed/TT-Reg - 5	P	SS	DOTLT1000524	24-6SS	$105,535	$226,000	LTRC	Ruijie "Rebecca" Bian	Statewide Lane Reconfiguration “Road Diet” Screening for Louisiana	1/1/2024	12/31/2025		C-85
SPR: TT-Fed/TT-Reg - 5	P	SS	DOTLT1000516	24-5SS	$100,000	$200,000	LTRC	Ruijie "Rebecca" Bian	An Evaluation of Pedestrian and Bicycle Facilities in Louisiana	8/1/2023	7/31/2025		C-86
SPR: TT-Fed/TT-Reg - 5	P	SS			$100,000	$250,000	LTRC	Milhan Moomen	Autonomous Vehicle Regulatory Landscape Review	8/1/2024	7/31/2026		C-87
SPR: TT-Fed/TT-Reg - 5	P	SS			$100,000	$220,000	LTRC	Ruijie "Rebecca" Bian	Complete Streets Means Trucks, Too: Integrating Freight Traffic Needs with Active Transportation Planning and Policy	8/1/2024	7/31/2026		C-88
SPR: TT-Fed/TT-Reg - 5	P	SS			$100,000	$250,000			School Bus Route Optimization and Traffic Congestion in School Zones	8/1/2024	7/31/2026		C-89
SPR: TT-Fed/TT-Reg - 5	P	SS			$100,000	$250,000	UNO	Guang Tian	Truck Parking Shortage: Improving Efficiency and Identifying Opportunities	10/1/2024	9/30/2026		C-90
					$605,535	**$1,396,000**	**SPECIAL STUDIES BUDGET TOTALS**						

Project Type: Structures (80% Federal / 20% State)

SPR: TT-Fed/TT-Reg - 5	P	ST			$80,000	$200,000			Bridge Damage Caused by Louisiana Traffic	8/19/2024	8/19/2026		C-91
SPR: TT-Fed/TT-Reg - 6	P	ST	DOTLT1000523	24-2ST	$87,000	$180,000			Redesign of Innovative gate Arms (Ramp Closure Gate)	7/1/2023	6/30/2025		C-92
					$167,000	**$380,000**	**STRUCTURES BUDGET TOTALS**						

Project Type: TIRE (80% Federal / 20% State)

SPR: TT-Fed/TT-Reg - 5	P	TIRE	DOTLT1000552	25-3TIRE	$30,000	$30,000	LSU		Evaluate the Impact of V2I Communication and AV Technologies on Signalized Intersection Performance	7/1/2024	6/30/2025		C-93
SPR: TT-Fed/TT-Reg - 5	P	TIRE	DOTLT1000551	25-2TIRE	$29,667	$29,667	ULL		Using Metal 3D Printing to Increase Quality and Resource-Efficiency of Construction Materials	7/1/2024	6/30/2025		C-94
					$59,667	**$59,667**	**TIRE BUDGET TOTALS**						
					$2,166,521	**$5,450,897**	**SPR: TT-FED/TT-REG PROPOSED BUDGET TOTALS**						

LTRC ANNUAL RESEARCH PROGRAM

SPR: Pooled Fund: TT-Fed (100% Federal)

FISCAL YEAR 2024-2025

Funding	A/P	Project Type	SIO No.	Research No.	FY Budget	Total Cost	Agency	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	Page No.
Project Type: Pooled Fund (100% Federal)													
SPR: Pooled Fund: TT-Fed	A	PF	DOTLT1000501	21-1PF	$200,000	$900,000	LTRC	Tyson Rupnow	Southeast Transportation Consortium - Phase II	2/1/2023	6/30/2025		C-96
					$200,000	**$900,000**	**SPR: POOLED FUND: TT-FED ACTIVE BUDGET TOTALS**						
					$200,000	**$900,000**	**POOLED FUND BUDGET TOTALS**						

FISCAL YEAR 2024-2025

Funding	A/P	Project Type	SIO No.	Research No.	FY Budget	Total Cost	Agency	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	Page No.
Project Type: LTAP (State = $150k / Federal = Remaining)													
LTAP: TT-Fed/TT-Reg	A	LTAP	DOTLT1000535	25-LTAP	$692,938	$692,938	LTRC	MaryLeah Coco	Local Technical Assistance Program (LTAP)	7/1/2024	6/30/2025		D-98
					$692,938	**$692,938**	**LTAP BUDGET TOTALS**						
					$692,938	**$692,938**	**LTAP: TT-FED/TT-REG ACTIVE BUDGET TOTALS**						
Project Type: Technology Transfer and Training (100% Federal)													
STP: TT-Fed	A	TT	DOTLT1000278	19-TDSS	$225,000	$1,809,194	LTRC	Vijaya Gopu	Training and Development Support Services	7/1/2018	6/30/2021	6/30/2027	E-101
STP: TT-Fed	A	TT	30000241	10-4AD	$10,000	$100,000	LTRC	Tyson Rupnow	Technology Transfer & Research Implementation Support for Louisiana Universities	1/1/2010	12/31/2013	6/30/2025	E-102
STP: TT-Fed	A	TT	30000320	08-1TSQ	$505,802	$2,712,073	LTRC	MaryLeah Coco	Technology Transfer Program and Operations (LSU)	7/1/2015	6/30/2018	6/24/2027	E-103
					$740,802	**$4,621,267**	**TECHNOLOGY TRANSFER AND TRAINING BUDGET TOTALS**						
STP: TT-Fed	P	TT	DOTLT1000541	25-TTRF	$200,000	$200,000	LTRC	MaryLeah Coco	Technology Transfer Registration Fees	7/1/2024	6/30/2025		E-105
STP: TT-Fed	P	TT	DOTLT1000542	25-COOP	$200,000	$200,000	LTRC	MaryLeah Coco	LA DOTD CO-OP Program	7/1/2024	6/30/2025		E-106
STP: TT-Fed	P	TT	DOTLT1000540	25-2TT	$147,600	$147,600	LTRC	MaryLeah Coco	LTRC Student Worker Program	7/1/2024	6/30/2025		E-107
STP: TT-Fed	P	TT	DOTLT1000539	25-1WDC	$4,262,407	$4,262,407	LTRC	MaryLeah Coco	Workforce Development Contracts	7/1/2024	6/30/2025		E-108
STP: TT-Fed	P	TT	DOTLT1000537	25-1WD	$1,366,017	$1,366,017	LTRC	MaryLeah Coco	Workforce Development	7/1/2024	6/30/2025		E-112
STP: TT-Fed	P	TT	DOTLT1000544	25-1TT	$37,500	$37,500	LTRC	MaryLeah Coco	Technology Transfer and Assistance for Senior Project Courses	7/1/2024	6/30/2025		E-114
STP: TT-Fed	P	TT	DOTLT1000543	25-1TSQ	$412,358	$412,358	LTRC	MaryLeah Coco	Technology Transfer Program and Operations (DOTD)	7/1/2024	6/30/2025		E-115
STP: TT-Fed	P	TT	DOTLT1000546	25-1SWD	$1,520,000	$1,520,000	LTRC	MaryLeah Coco	DOTD Staff Support for Workforce Development	7/1/2024	6/30/2025		E-118
					$8,145,882	**$8,145,882**	**TECHNOLOGY TRANSFER AND TRAINING BUDGET TOTALS**						
					$8,886,684	**$12,767,149**	**STP: TT-FED ACTIVE BUDGET TOTALS**						

LTRC ANNUAL RESEARCH PROGRAM

Other DOTD Sections (%Federal - Varies / %State - Varies)

FISCAL YEAR 2024-2025

Funding	A/P	Project Type	SIO No.	Research No.	FY Budget	Total Cost	Agency	Principal Investigator	Project Title	Start Date	End Date	End Date (Rev)	Page No.
Project Type: LTAP(%Federal - Varies / %State - Varies)													
Safety	A	LTAP	DOTLT1000547	25-LRSP	$379,989	$379,989	LTRC	MaryLeah Coco	Local Road Safety Program	7/1/2024	6/30/2025		G-120
					$379,989	**$379,989**	**LTAP BUDGET TOTALS**						
Project Type: Special Studies(%Federal - Varies / %State - Varies)													
Port Priority Program	A	SS	DOTLT1000419	22-2SS	$99,894	$250,500	ULL	Stephen Barnes	Economic Evaluation of Applications to the Port Construction and Development Priority Program	7/1/2021	6/30/2023	6/30/2025	G-122
					$99,894	**$250,500**	**SPECIAL STUDIES BUDGET TOTALS**						
					$479,883	**$630,489**	**OTHER DOTD SECTIONS ACTIVE BUDGET TOTALS**						

FHWA
Part B SPR Funded
Research Program

ADMINISTRATIVE LINE ITEMS
AND
RESEARCH SUPPORT STUDIES

LTRC Annual Research Program
Fiscal Year 2024-2025

Title:	**Program Management**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000529**	Project Start Date:		7/1/2024
Research Project Number:	25-1PM	Completion Date	(original)	6/30/2025
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Tyson Rupnow			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$968,157
	(revised)	
Est. Expended to Date		
FY 2023 - 2024 Budget		
FY Funds	(original)	
	(revised)	
Est. FY Expenditure		

Estimated 2024-2025 Budget		
Total		**$968,157**
Salaries		$968,157
Consumable Supplies & Materials		
Equipment	(non-expendable)	
Travel		
Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: The purpose of this project is to provide for LTRC executive staff salaries.

Objective(s): Employees charging to this line item include:
Samuel B. Cooper, Jr., Director
Sheri Hughes, Administrative Assistant
Tyson Rupnow, Associate Director, Research
Melissa Neyland, Administrative Assistant
Theresa Rankin, Administrative Specialist C
Samuel Cooper, III, Engineer 7
Zhongjie (Doc) Zhang, Engineer 7
Julius Codjoe, Engineer 7

Expected Benefits: Research program administration

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Research Program Administration

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

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000532**	Project Start Date:		7/1/2024
Research Project Number:	25-1TTRI	Completion Date	(original)	6/30/2025
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Tyson Rupnow			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$467,623
	(revised)	
Est. Expended to Date		
FY 2023 - 2024 Budget		
FY Funds	(original)	
	(revised)	
Est. FY Expenditure		

Estimated 2024-2025 Budget		
Total		**$467,623**
Salaries		$467,623
Consumable Supplies & Materials		
Equipment	(non-expendable)	
Travel		
Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: The purpose of this project is to document the technology transfer and research implementation efforts of the research staff.

Objective(s): The objective is to document the various technology transfer and implementation efforts of the research staff including presentation of findings at seminars, preparation of journal articles, webinar presentations, etc.

Expected Benefits: Benefits of technology transfer and research implementation are unparalleled. By actively working to implement research findings, the Department gains better products, processes, etc. Couple that with the various technology transfer activities the research staff are involved in, the transportation community at large has a resource to draw upon for Professional Development Hours, etc.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

More than 55 papers were submitted for publication in various journals and/or presented at the TRB Annual Meeting. Additionally numerous other papers, journal articles, and final reports were prepared and presented to various audiences across a wide variety of formats. Many LTRC employees participate in the specification writing and/or re-writing process as a result of completed LTRC research. Many LTRC employees serve as members of EDC initiative teams and/or on the STIC.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Technology transfer and research implementation.

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

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000535**	Project Start Date:		7/1/2024
Research Project Number:	25-1TRS	Completion Date	(original)	6/30/2025
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Tyson Rupnow			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$370,159
	(revised)	
Est. Expended to Date		
FY 2023 - 2024 Budget		
FY Funds	(original)	
	(revised)	
Est. FY Expenditure		

Estimated 2024-2025 Budget		
Total		**$370,159**
Salaries		$370,159
Consumable Supplies & Materials		
Equipment	(non-expendable)	
Travel		
Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: Technical research surveillance is for administration of LTRC research contracts by project engineers and participation on a wide variety of research panels.

Objective(s): The objectives of this project are to track employee effort spent on administrating contract research projects by our project engineers, participation on LTRC project and report review committees, and participation in/on external research activities and panels such as TRB, NCHRP, ACRP, FHWA Expert Task Groups, etc.

Expected Benefits: Benefits include accurate tracking of employee effort to provide a variety of services such as panel participation. Nearly all LTRC engineers participate on at leas one TRB committee with many also serving on one or more NCHRP Project Panels as well as other such as ACI, ASTM, etc.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

LTRC employees are members and serve on the following committees: NCHRP 10-104, 10-110, 14-4B, ASCE, ACI, LES, TRB committees AFP30, AFS20, AFS70, AKB10, AKB30, AKD20, AKG40, AKG80, ?AKM50, AMR20, AFK20, AFK40, AFK50, FHWA SPTWG, ASTM C04.20, D04.21, D04.22, D04.24, D04.25, D04.26, D04.44, D04.45, D04.46, and D04.99.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Technical research surveillance

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

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000531**	Project Start Date:		7/1/2024
Research Project Number:	25-1TA	Completion Date	(original)	6/30/2025
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Tyson Rupnow			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$436,261
	(revised)	
Est. Expended to Date		
FY 2023 - 2024 Budget		
FY Funds	(original)	
	(revised)	
Est. FY Expenditure		

Estimated 2024-2025 Budget		
Total		**$436,261**
Salaries		$436,261
Consumable Supplies & Materials		
Equipment	(non-expendable)	
Travel		
Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: Technical assistance (TA) is any assistance provided by LTRC research staff to others in the transportation community and/or the travelling public.

Objective(s): The objective of this project is to provide assistance on a variety of transportation topics to DOTD, local engineers, designers, materials suppliers, contractors, and the public.

Expected Benefits: Technical assistance allows for faster implementation and adoption of technologies, solutions to ongoing problems, and overall general relationship building.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

LTRC engineers and staff responded to over 100 different TA requests ranging from peer review of papers to local government issues, to specialized testing.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Technical Assistance

LTRC Annual Research Program
Fiscal Year 2024-2025

Title:	**DOTD Staff Support for Research**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000536**	Project Start Date:		7/1/2024
Research Project Number:	25-1SSR	Completion Date	(original)	6/30/2025
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Tyson Rupnow			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$50,000
	(revised)	
Est. Expended to Date		
FY 2023 - 2024 Budget		
FY Funds	(original)	
	(revised)	
Est. FY Expenditure		

Estimated 2024-2025 Budget		
Total		**$50,000**
Salaries		$50,000
Consumable Supplies & Materials		
Equipment	(non-expendable)	
Travel		
Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: This project is to provide a mechanism to show and document LTRC staff support for research activities outside of LTRC, specifically UTC support.

Objective(s): The objectives of this project are to document support for outside research activities that require matching monies where LTRC/DOTD use salaried employees time to meet that match.

Expected Benefits: Benefits of this project include meeting one of the legislative mandates for LTRC of enhancing higher education and promoting interagency relationships between the Department/LTRC and our Louisiana Universities.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

LTRC finished out support for the UTC TranSET Regional UTC held by LSU. Support was in the use of specialized testing equipment that LSU does not have the capabilities.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Staff support for outside research activities.

Title:	**New Product Evaluation**	**Project Status:**	**Proposed**
Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000534**	Project Start Date:		7/1/2024
Research Project Number:	25-1NPE	Completion Date	(original)	6/30/2025
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Tyson Rupnow			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$37,046
	(revised)	
Est. Expended to Date		
FY 2023 - 2024 Budget		
FY Funds	(original)	
	(revised)	
Est. FY Expenditure		

Estimated 2024-2025 Budget		
Total		**$37,046**
Salaries		$37,046
Consumable Supplies & Materials		
Equipment	(non-expendable)	
Travel		
Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: The purpose of this project is to evaluate new, or specialty, products or equipment for potential DOTD use.

Objective(s): The objective of this project is to identify and test potential/new special products for use in/on DOTD construction projects.

Expected Benefits: Adoption of new innovative equipment and products can lead to cost and/or time savings to the Department. Additionally other benefits such as longer service life, etc. can be realized.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

LTRC employees served on the Specialty Products Evaluation Committee providing guidance, insight, and specialized testing of new and innovative products for use on DOTD projects. LTRC evaluated 10 different new and innovative products.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Evaluate new products and equipment for potential DOTD use.

Title:	**Equipment Management**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg - 6**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000533**	Project Start Date:		7/1/2024
Research Project Number:	25-1EQM	Completion Date	(original)	6/30/2025
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Tyson Rupnow			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$353,887
	(revised)	
Est. Expended to Date		
FY 2023 - 2024 Budget		
FY Funds	(original)	
	(revised)	
Est. FY Expenditure		

Estimated 2024-2025 Budget		
Total		**$353,887**
Salaries		$283,887
Consumable Supplies & Materials		
Equipment	(non-expendable)	$70,000
Travel		
Other		

BUDGET JUSTIFICATIONS

Equipment: This covers non-expendable equipment needed to cover routine maintenance of equipment including the following: purchase of replacement parts, installation of said parts, etc. for the asphalt, concrete, geotechnical, pavements, and ITS research laboratories. Replacement parts do not exceed the $5000 threshold for FHWA reporting guidelines.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: The purpose of this project is to track the management of the many laboratories/facilities that LTRC operates and oversees.

Objective(s): The objectives include the following: routine equipment repair/maintenance, small/hand tool replacement, and accreditation activities.

Expected Benefits: Properly functioning equipment and accredited facilities are expected when this project is underway.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Maintained CCRL and AMRL accreditation of the laboratories, repaired the three-wheel polisher, continued working on repair of the ALF machine at the Pavement Research Facility, calibrations for multiple temperature/stress/length change devices, necessary routine equipment maintenance, fixed skid steer

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Equipment management.

FHWA
Part B SPR Funded
Research Program

CONTINUING RESEARCH

LTRC Annual Research Program
Fiscal Year 2024-2025

Title:	**Sustainability through Development of Life-Cycle Information Models for Pavements in Louisiana**	**Project Status:**	**Ongoing**

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**		**Budget Category:**		**FHWA**
SIO:	**DOTLT1000511**		Project Start Date:		10/1/2023
Research Project Number:	24-1B		Completion Date	(original)	9/30/2027
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Louay Mohammad				

BUDGET STATUS

Total Budget				**Estimated 2024-2025 Budget**		
Total Cost	(original)	$477,500		**Total**		**$148,866**
	(revised)					
Est. Expended to Date		$35,000		Salaries		$147,366
FY 2023 - 2024 Budget				Consumable Supplies & Materials		
FY Funds	(original)	$35,000		Equipment	(non-expendable)	
	(revised)			Travel		$1,500
Est. FY Expenditure		$35,000		Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: Principles of sustainability focus on goal of proactively bringing key environmental, social, and economic factors into decision-making process. Life-Cycle Assessment (LCA) is a technique used to analyze and quantify environmental impacts of a product, system, or process. LCA provides a comprehensive approach to evaluate total environmental burden of a product or process by examining all of the inputs and outputs over life cycle, from raw material production to end of life.

Objective(s): This research proposes to develop life-cycle assessment framework for asphalt mixtures and pavements in Louisiana, which will cover material production and initial construction, maintenance phase, in-service phase, and end-of-life phase.

Expected Benefits: The developed framework is expected to provide an immediately implementable guideline on the implementation of LCA for Louisiana pavements, which can help define pavement systems to support decision making regarding changes to policies and practices to reduce the impacts of pavements on humans and the environment (GWP), while identifying potential unintended negative consequences.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Task 1: Completed Conduct Lit Review
Task 2: Develop and Deliver Project Kick Off Training
Completed planning, in coordination with FHWA and LTRC staff, for a kick off meeting at LTRC's Center Transportation Training and Education Center. The Project Kick Off Training is scheduled for April 22-23, 2024at TTEC
Task 3: Conduct LCA Case Studies on Selected Projects and Collect EPDs
The research team invited two local contractors to collaborate and coordinate for the identification of suitable asphalt mixtures/plants as a candidate Case Study project(s)

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Task 3. Continue the conduct LCA Case Studies on Selected Projects and Collect EPDs
Task 4. Assist in the Development of Open-Sourced and Regional Binder EPDs

Title:	**Literature review of IDEAL-CT and IDEAL-RT tests methods for balanced mix design**	**Project Status:**	**Ongoing**

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000508**	Project Start Date:		3/4/2024
Research Project Number:	23-4B	Completion Date	(original)	3/3/2025
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Saman Salari			

BUDGET STATUS

Total Budget			**Estimated 2024-2025 Budget**		
Total Cost	(original)	$82,258	**Total**		**$75,882**
	(revised)				
Est. Expended to Date		$662	Salaries		$75,882
FY 2023 - 2024 Budget			Consumable Supplies & Materials		
FY Funds	(original)	$32,000	Equipment	(non-expendable)	
	(revised)	$3,000	Travel		
Est. FY Expenditure		$662	Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: Two new and convenient method has been developed to evaluate cracking and rutting behavior of asphalt mixtures. Proposed IDEAL-CT and IDEAL-RT developed over the simplicity idea and preliminary data shows high sensitivity and good correlations. Based on the essential need to investigate the balanced mixed design of mixtures, therefore, it has been proposed to study the current methods to determine their potentials.

Objective(s): The main purpose is to investigate the capabilities of IDEAL-CT and IDEAL-RT and their precision in evaluating the mixture performance.

Expected Benefits: It is expected that upon competition of this review the capabilities of the tests and their correlation to the field data will be determined and further decision can be made to research these methods further more.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

A comprehensive literature review was conducted to study the effectiveness of IDEA-CT and IDEAL-RT in predicting the field performance of asphalt mixtures and comparison continued.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Task 1 – Conduct Literature Review
Task 1 – Perform mixture testing and comparison
Task 2 – Prepare Final Report and Technical Summary

Title:	**Evaluation of Saturates/Aromatics/Resins/Asphaltenes (SARA) Fractionation of asphalt binders in Louisiana**	**Project Status:**	**Ongoing**

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000423**	Project Start Date:		6/1/2022
Research Project Number:	22-1B	Completion Date	(original)	5/31/2024
Research Agency:	LTRC	Completion Date	(revised)	12/31/2024
Principal Investigator:	Saman Salari			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$223,135
	(revised)	
Est. Expended to Date		$77,811
FY 2023 - 2024 Budget		
FY Funds	(original)	$120,000
	(revised)	$88,000
Est. FY Expenditure		$50,798

Estimated 2024-2025 Budget		
Total		**$120,706**
Salaries		$120,706
Consumable Supplies & Materials		
Equipment	(non-expendable)	
Travel		
Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: Due to everyday changes to chemical compositions of asphalt binders, it is essential to characterize the asphalt binder chemical fractions through fast and reliable methods such as SARA method.

Objective(s): The main purpose is to investigate the capabilities of SARA method comparing to the other chemical characterization methods such as GPC.

Expected Benefits: New SARA testing devices has the capability of testing in as few as 20 minutes. This capability in addition with lower testing materials (specifically solvents) can advance the ability of agencies and industry groups to chemically characterize the asphalt binder in fast and reliable method.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Literature review completed
Asphalt binders collected from suppliers in Louisiana
Asphalt binders continue to be tested with SARA device ; and
Preliminary Results of different SARA methods analyzed

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

-Task 1: Asphalt binders will continue to be tested with SARA device ;
-Task 2: Asphalt binders will be tested with GPC device ; and
-Task 3: Results of SARA methods will be analyzed and compared with GPC and other available results from the binders.

Title:	**Evaluation of Non-Destructive Test Pilot Projects**	**Project Status:**	**Ongoing**

Funding Source:	**SPR: TT-Fed/TT-Reg - 6**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000461**	Project Start Date:		8/22/2022
Research Project Number:	23-2B	Completion Date	(original)	8/21/2024
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Moses Akentuna			

BUDGET STATUS

Total Budget			**Estimated 2024-2025 Budget**		
Total Cost	(original)	$155,410	**Total**		**$30,717**
	(revised)				
Est. Expended to Date		$85,522	Salaries		$30,717
FY 2023 - 2024 Budget			Consumable Supplies & Materials		
FY Funds	(original)	$91,400	Equipment	(non-expendable)	
	(revised)	$71,000	Travel		
Est. FY Expenditure		$50,027	Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: LTRC researchers evaluated safer HMA testing methods. Field tests compared nuclear gauges with non-nuclear alternatives. Non-destructive testing techniques (NDT) proved viable for quality control (QC) and assurance (QA) with proper calibration. This research led to a pilot program to assess NDT's practicality for wider use in DOTD specifications. The current research seeks to evaluate the pilot program's findings and determine NDT's suitability for large-scale implementation.

Objective(s): The objective of this research is to evaluate the non-destructive testing (NDT) pilot projects and specifications.

Expected Benefits: The project aims to confirm the accuracy of density measurements obtained through non-destructive techniques (NDT) and assist in refining and enhancing the NDT specifications before their widespread adoption. Furthermore, the project will provide clear instructions and recommendations for districts and contractors to follow when implementing the NDT specifications.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Task 1 – Recorded non-destructive test readings from pilot projects
Task 2 – Analyzed density data

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Task 2 – Analyze density data
Task 3 – Prepare a draft project report

Title:	**Effect of Mineral Fillers on the Moisture Resistance and Performance of HMA**	**Project Status:**	**Ongoing**

Funding Source:	**SPR: TT-Fed/TT-Reg - 6**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000460**	Project Start Date:		6/1/2022
Research Project Number:	23-1B	Completion Date	(original)	5/31/2024
Research Agency:	LTRC	Completion Date	(revised)	2/28/2025
Principal Investigator:	Mostafa Elseifi			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$170,491
	(revised)	
Est. Expended to Date		$145,000
FY 2023 - 2024 Budget		
FY Funds	(original)	$65,000
	(revised)	$85,000
Est. FY Expenditure		$85,000

Estimated 2024-2025 Budget		
Total		**$26,000**
Salaries		$26,000
Consumable Supplies & Materials		
Equipment	(non-expendable)	
Travel		
Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: As part of the aggregate structure, a mineral filler is defined as the fraction of the aggregate blend with particle size in the range of 0 to 200 µm. Previous studies have shown that filler properties significantly affect the performance of asphalt mixtures against major distresses including fatigue cracking and rutting. The current Superpave mix design adopted in Louisiana only includes general limits on the dust to binder ratio with limited gradation requirements on the fillers.

Objective(s): The main objectives of the proposed study are two folds: (1) to evaluate the effects of various types of inert and active fillers on the moisture resistance and laboratory performance of asphalt mixtures and (2) to propose change to the specifications to optimize the use of mineral fillers in hot-mix asphalt (HMA).

Expected Benefits: This study will conduct a comprehensive laboratory evaluation of conventional and innovative mineral fillers including manufactured fillers obtained from industrial wastes and will identify the most promising fillers for enhanced mix durability and life-time extension. In addition, it will develop possible modifications to the current specifications for the acceptance of mineral fillers.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Task 1: The literature review is finalized, pending minor modifications from the PI.
Task 2: This task has been completed. Recently, the research team visited an asphalt contractor in Geismar, Louisiana, to obtain the necessary aggregate samples for the second mix.
Task 3: Progress on this task is underway and is progressing. The research team has measured the Ridgen voids and adhesive strength of three fillers to date (control, cement, and fly ash). Acquiring and testing a fourth filler (silica fume) is planned.
Task 4: This task is partially complete. The extended downtime of the compactor has impeded specimens' preparation. The research team aims to resolve this issue in the coming month.
Task 5: Progress on this task stands at 40% completion. Delays in testing specimens have occurred due to compactor malfunctions.
Task 6: A no-cost extension until 02/28 has been requested by the research team and was approved by LTRC.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

The research team aims to actively engage in the experimental program, striving to conclude the project by 02/28.
Task 2: This task will be completed.
Task 3: The completion of this task is planned for the next reporting period.
Task 4: As we work to repair the compactor, this task will be finalized in the next reporting period.
Task 5: Despite initial delays caused by the compactor, the research team will pursue significant progress on this task.
Task 6: The research team will compile the final report and technical summary for the project.

The results will be shared with the technical manager, and efforts to publish our findings at upcoming conferences will be pursued.

Title:	**Improvement of Open-Graded Friction Course (OGFC) Performance and Durability through Materials, Design, and Maintenance**	**Project Status:**	**Ongoing**

Funding Source:	**SPR: TT-Fed/TT-Reg - 6**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000385**	Project Start Date:		9/1/2020
Research Project Number:	21-5B	Completion Date	(original)	11/30/2022
Research Agency:	LTRC	Completion Date	(revised)	9/30/2024
Principal Investigator:	Moses Akentuna			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$79,156
	(revised)	
Est. Expended to Date		$85,811
FY 2023 - 2024 Budget		
FY Funds	(original)	
	(revised)	
Est. FY Expenditure		

Estimated 2024-2025 Budget		
Total		
Salaries		
Consumable Supplies & Materials		
Equipment	(non-expendable)	
Travel		
Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: The use of open-graded friction courses (OGFC) has major drawbacks: they are prone to aging-associated raveling, stripping, and clogging of voids, resulting in a shorter service life and higher maintenance costs. To design durable OGFCs, new materials and better design methods are needed. While current specifications address some aspects, they don't fully assess durability by considering factors like cracking and raveling.

Objective(s): The objective of this research is to provide an implementable guideline on the design, performance, and maintenance of OGFC with extended service life to improve driving safety and cost-effectiveness.

Expected Benefits: This study aims to assess the durability issues associated with OGFCs and the maintenance methods and practices used to address them.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Task 1 – Conducted a literature review.
Task 2 – Conducted a multi-state survey about their OGFC maintenance practices and durability issues.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Task 3 – Prepare an interim report on the findings from Tasks 1 and 2.

Title:	Sustainable and Resilient Pavement Materials and Technologies Center (SRPC)	Project Status:	Ongoing

Funding Source:	SPR: TT-Fed/TT-Reg - 6	Budget Category:	FHWA

SIO:	30000112	Project Start Date:		7/1/2009
Research Project Number:	10-1EMCRF	Completion Date	(original)	6/30/2015
Research Agency:	LTRC	Completion Date	(revised)	6/30/2025
Principal Investigator:	Louay Mohammad			

BUDGET STATUS

Total Budget			Estimated 2024-2025 Budget		
Total Cost	(original)	$345,000	**Total**		**$110,378**
	(revised)	$24,108,022			
Est. Expended to Date		$345,000	Salaries		$100,578
FY 2023 - 2024 Budget			Consumable Supplies & Materials		
FY Funds	(original)	$100,000	Equipment	(non-expendable)	
	(revised)	$70,000	Travel		$4,900
Est. FY Expenditure		$70,000	Other		$4,900

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: Climate change, and escalating costs of materials and energy provide motivation to explore innovative techniques for infrastructure preservation and rehabilitation with sustainable, resilient, and recyclable methods. Using recycled materials and sustainable alternatives methodologies can reduce energy consumption and greenhouse gas emission. Incorporating sustainable materials and technologies into transportation infrastructure will have a significant impact on longevity of our society.

Objective(s): The objectives are to engage in multi-disciplinary research, education, and technology transfer initiatives that are focused on evaluation and implementation of sustainable and resilient technologies in transportation industry. Interdisciplinary research will examine design, assessment, and repair for next generation of sustainable and resilience pavement infrastructure. Goals are to minimize non-renewable energy usage, reduce environmental impacts, and encourage use of emerging technologies.

Expected Benefits: To pursue the needs of DOTD to integrate cutting-edge cost-effective technologies and materials in current practices; place Louisiana on the leading edge of states in the area of transportation sustainability, resiliency, and provides LTRC with an excellent position to pursue its quest for national and international recognition in research capability of all aspects of sustainable, resilient, and recyclable pavement materials.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Established Center for Sustainable and Resilient Pavement Materials and Technologies
Developed and submitted proposals for external funding (FHWA Climate Challenge, TPF, etc) ;
Continued participation in technical assistance projects;
Conducted research relevant to the Center theme and DOTD needs, and
Developed and Promoted effective Sustainable Pavement Technologies for managing and preserving the infrastructure

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Develop and submit proposals for external funding;
Continue participation in the Louisiana DOTD Asphaltic Concrete Specification Committee;
Continue participation in technical assistance projects;
Continue the Conduct research relevant to the Center theme and DOTD needs, and
Conduct workshops and seminars.

Title:	**Influence of Internal Curing on Concrete's Permeability in Simulated Field Conditions**	**Project Status:**	**Ongoing**

Funding Source:	**SPR: TT-Fed/TT-Reg - 6**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000422**	Project Start Date:		1/17/2022
Research Project Number:	22-1C	Completion Date	(original)	1/16/2024
Research Agency:	LTRC	Completion Date	(revised)	1/16/2025
Principal Investigator:	Zhen Liu			

BUDGET STATUS

Total Budget			**Estimated 2024-2025 Budget**		
Total Cost	(original)	$205,097	**Total**		**$52,000**
	(revised)				
Est. Expended to Date		$153,000	Salaries		$52,000
FY 2023 - 2024 Budget			Consumable Supplies & Materials		
FY Funds	(original)	$102,549	Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure		$70,000	Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: Most research conducted on surface resistivity requires strict sample conditioning, where specimens must remain in a 100% relative humidity (RH) condition from the moment of mold removal to testing time. This regime makes it difficult to observe the benefits of internal curing in situ, and as such, there is a need to quantify concrete's durability properties in more realistic conditions.

Objective(s): The objectives of this study are to: (1) Assess the influence of internal curing on concrete's transport properties in more realistic curing conditions, and (2) validate the results from surface resistivity with bulk diffusion testing.

Expected Benefits: This research will provide a better characterization of ICC in more realistic curing conditions. In addition, the inclusion of a bulk diffusion test will be beneficial to verify the results obtained from surface resistivity, thereby providing additional characterization of concrete's transport properties.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Task 3: Improved procedure and experiment setup for profile grinding and titration, and completed bulk diffusion readings for a portion of the samples.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Task 3: Complete comparative testing
Task 4: analyze data
Task 5: Publish Final Report

Title:	**Statewide Calibration of CPT Direct Design Methods Using Static Load Test Data**	**Project Status:**	**Ongoing**

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000525**	Project Start Date:		5/1/2024
Research Project Number:	24-3GT	Completion Date	(original)	4/30/2027
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Murad Abu-Farsakh			

BUDGET STATUS

Total Budget			**Estimated 2024-2025 Budget**		
Total Cost	(original)	$426,843	**Total**		**$98,000**
	(revised)				
Est. Expended to Date		$14,000	Salaries		$98,000
FY 2023 - 2024 Budget			Consumable Supplies & Materials		
FY Funds	(original)	$40,000	Equipment	(non-expendable)	
	(revised)	$14,000	Travel		
Est. FY Expenditure		$14,000	Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: Louisiana was one of pioneering states to implement CPT technology for evaluating the pile resistance. The project (17-2GT) evaluated 22 direct CPT design methods using 80 concrete test piles with majority located in southeastern of state, although piles used throughout the state. Therefore, it is necessary to add more database with spatial state coverage. Also, there is a need to use piezocone penetration tests (CPTu) for evaluating CPTu methods and expand the implementation to other pile types

Objective(s): 1) Group pile load tests (PLTs) into state regions and pile type for evaluating pile-CPT/CPTu methods. 2) Use Bayesian to enhance the statistically limited/scattered data. 3) Re-evaluate pile-CPT/CPTu design methods for different regions and different pile type. 4) Develop pile design methods using machine learning (ML). 5) Evaluate seismic CPT methods for generating load-settlement curve of PLTs. 6) Calibrate resistance factors for different design methods. 7) Update the LPD-CPT software.

Expected Benefits: Supplementing traditional pile design with CPT/CPTu methods will save exploration costs and prevent overturns cost by providing more data and more reliable design methods. Incorporating CPT/CPTu design methods in “LPD-CPT” software will help design engineers to estimate pile resistance efficiently without need of manual calculation. The accurate evaluation of pile resistance by CPT/CPTu methods can result in significant reduction in construction cost of bridge foundations and infrastructures.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Task 1: Started conducting literature review on all available CPT and CPTu direct pile design methods, pile design methods that utilizes seismic CPT data, Bayesian analysis, machine learning algorithms, different evaluation techniques, and reliability analysis methods.

Task 2: Started identifing and collecting data from new project sites from the Department of Transportation and Devel;opment (DOTD) archives that included static (and possible dynamic) load tests conducted on precast prestressed concrete (PPC) piles and other pile types.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES
Task 1: Continue conducting literature review on all available CPT and CPTu direct pile design methods, pile design methods that utilizes seismic CPT data, Bayesian analysis, machine learning algorithms, different evaluation techniques, and reliability analysis methods. Task 2: Continue identifing and collecting data from new project sites from the Department of Transportation and Devel;opment (DOTD) archives that included static (and possible dynamic) load tests conducted on precast prestressed concrete (PPC) piles and other pile types. Task 3: Start collecting all available CPT and CPTu tests and soil boring data from the identified project sites with pile load tests, and conduct additional CPTu tests close to pile load tests for all project sites with missing CPTu tests. Task 4: Plan for conducting seismic CPT tests close to pile load tests in selected project sites with pile load tests identified in Task 2. Task 5: Start grouping the collected PLTs and CPT/CPTu data based on pile type (i.e., PPC, H-pile, pipe piles, timber piles, and helical piles) for evaluation and LRFD calibration of pile-CPT/CPTu design methods. Task 6: Start grouping the collected PLTs and CPT/CPTu data into regions for regional evaluation and LRFD calibration of pile-CPT/CPTu design methods. Task 7: Start exploring statistical and Machine Learning Techniques for generateing/ enhancing the statistically limited or scattered Data. Task 8: Start evaluating the CPT/CPTu pile design methods for estimating the ultimate capacity of different pile types and/or different regions using statistical analysis, multidimentional unfolding, reliability/efficiency analysis, and any other evaluation criterion.

Title:	Web-Based Tool to Advance Geotechnical Data Interchange and Reliability-Based Site Characterization	Project Status:	Ongoing

Funding Source:	SPR: TT-Fed/TT-Reg - 5	Budget Category:	FHWA

SIO:	DOTLT1000517		Project Start Date:		12/1/2023
Research Project Number:	24-2GT		Completion Date	(original)	11/30/2025
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Gavin Gautreau				

BUDGET STATUS

Total Budget			Estimated 2024-2025 Budget		
Total Cost	(original)	$251,395	**Total**		**$31,550**
	(revised)				
Est. Expended to Date		$7,000	Salaries		$31,550
FY 2023 - 2024 Budget			Consumable Supplies & Materials		
FY Funds	(original)	$32,793	Equipment	(non-expendable)	
	(revised)	$12,000	Travel		
Est. FY Expenditure		$12,000	Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: AASHTO LRFD design code is undergoing a major rewrite to focus on reliability and data variability. The methodologies required to perform site characterization will become more difficult computationally. New tools will be needed to help engineers perform and review the required calculations. A web-based tool using DIGGS and existing DOTD gINT formats will greatly help the Department and its consultants adopt the upcoming design changes to stay in accordance with LRFD code.

Objective(s): *Develop a DOTD standardized DIGGS dictionary
*Develop a tool to convert DOTD data formats (gINT, HoleBASE, & OpenGround) to DIGGS.
*Develop a web-based platform capable of consuming DIGGSml files, interactively select soil borings, create a composite stratigraphy, plot soil properties, and derived parameters vs. elevation, and develop design profiles.
*In the web-based platform, automate the process of the statistical analyses detailed in FHWA GEC

Expected Benefits: *Develop a DOTD standardized DIGGS dictionary.
*Develop a tool to convert DOTD data formats (gINT, OGC) to DIGGS.
*Develop a web-based platform to consume & share DIGGSml files (DOTD, Consultants, Others), interactively select soil borings, create a composite stratigraphy, plot soil properties and derived parameters vs. elevation; develop design profiles.
*Automate the web process/statistical analyses detailed in FHWA GEC No. 5 to facilitate compliance with anticipated future LRFD code.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

The proposal was approved in early 2024. Work is just getting started. LADOTD has provided additional feedback to programmers on the feature implementation details and priorities. A virtual call is planned for late April or early May to review the platform's progress and provide feedback. This will also assist in our presentation collaboration for the Southwest Geotechnical Engineering Conference (SWGEC) on our work in late May.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES
Work will continue and virtual meetings will continue to share feedback and monitor progress. Integrations with the DOTD Geotechnical Database work will also be researched to capitalize on the features and functionality of Power BI. Additional presentations on our progress will likely occur during the Louisiana Transportation Conference in early 2025.

Title:	**Field Evaluation of Geophysical Applications for DOTD**	**Project Status:**	**Ongoing**

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000471**	Project Start Date:		2/6/2023
Research Project Number:	23-2GT	Completion Date	(original)	2/5/2025
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Nick Ferguson			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$187,665
	(revised)	$197,665
Est. Expended to Date		$75,445
FY 2023 - 2024 Budget		
FY Funds	(original)	$126,088
	(revised)	$52,140
Est. FY Expenditure		$52,140

Estimated 2024-2025 Budget		
Total		**$78,308**
Salaries		$58,308
Consumable Supplies & Materials		
Equipment	(non-expendable)	$20,000
Travel		
Other		

BUDGET JUSTIFICATIONS

Equipment: This equipment budget was originally for the 2023-2024 FY budget/proposal, however there has been a delay due to approval of purchase, vendor certification, and build-to-order/ship, etc. The purchase of the device will also be pulled from out source rather than initial planned with the project budget, thus a large difference in FY funs (original) to Est. FY expenditure.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: This project is a follow up project to 20-4GT, which was a literature review synthesis on geophysical technologies that may offer the Department benefits.

Objective(s): This project will evaluate geophysical technologies (the Electrical Resistivity device and others) to determine exact benefits and implementation needs for the Department.

Expected Benefits: Additional insight between soil borings and Cone Penetrometer Testing will benefit department designs by providing more confidence. It may also reduce the number of soil borings (high cost and time) or identify areas of concern for more in-depth study. The additional information may reduce foundation costs and or increase the confidence and safety of the design.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Task 1 - Completed literature review and device search regarding geophysical devices for Louisiana testing. The process of purchasing/shipping process on one device (Electrical Resistivity) has begun and has already proven to be beneficial from past contracts. Two other devices (seismic refraction and cross-hole tomography) have been selected to rent out for a short time frame once site plans have been established.
Task 2: Drafted site plans for ALF for LTRC & Vendors to perform and showcase geophysical devices for DOTD. 1-2 more construction sites will be needed once the newly purchased device is at LTRC (time frame is unexpectedly and exceptionally long).
Task 6: Drafted final report (intro, objectives, methodology, and discussion of results) where additional findings and results can be added as they are collected. Drafted report sections to include selecting the devices and the adversities regarding the approval of/acquiring the Electrical Resisitivity device. Revised plan of action to move forward from these adversities.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Task 3 - 4: Finalize site plans. Collect field data and conduct analysis/comparisons to determine beneficial and applicable devices for Louisiana.
Task 5: Recommend devices/geophysical methods and implementation steps following data analysis of Task 4.
Task 6: Complete final drafted report with results, conclusions, and implementation based on Task 3-5.

Title:	**Geotechnical Database, Phase IV**	**Project Status:**	**Ongoing**

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000393**	Project Start Date:		3/1/2021
Research Project Number:	21-2GT	Completion Date	(original)	2/28/2023
Research Agency:	LTRC	Completion Date	(revised)	2/28/2025
Principal Investigator:	Gavin Gautreau			

BUDGET STATUS

Total Budget			**Estimated 2024-2025 Budget**		
Total Cost	(original)	$185,539	**Total**		**$74,137**
	(revised)				
Est. Expended to Date		$132,000	Salaries		$74,137
FY 2023 - 2024 Budget			Consumable Supplies & Materials		
FY Funds	(original)	$73,725	Equipment	(non-expendable)	
	(revised)	$46,151	Travel		
Est. FY Expenditure		$46,151	Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: Phase I GIS work is no longer supported by ArcGIS software, and DOTD document management software (ContentManager) is moving to newer (File.NET). Additionally, increased computing power has changed the expectations for how geotechnical data should be stored and utilized. Geotechnical software, HoleBASE, an all-in-one enterprise database/data management solution, is now available to DOTD. Deep soil borings and cone penetrometer (CPT) data have not yet been incorporated into HoleBASE.

Objective(s): This project will research and assist with DOTD's implementation of Open Ground Cloud (OGC), the cloud-based version of HoleBASE. The implementation of Data Interchange for Geotechnical and Geo-Environmental Specialists (DIGGS) is a DOTD goal. DIGGS allows collection and transfer of geotechnical data from others through the (XML-based) geospatial standard schema. DIGGS is also a goal of the Federal Highway Administration (FHWA) and the American Society of Civil Engineers (ASCE) Geo-Institute

Expected Benefits: A robust, all-in-one database/mapping/management solution is the next step in growing our geotechnical database, enhancing design, and managing information about DOTD geotechnical assets.
- Increased efficiency – unified data (deep boring, CPT, shallow boring, DCP, pile load test);
- Fewer new borings/tests, where data already exists;
- Time savings in generating soil borings, figures, and design profiles;
- Reduced data input errors;
- More streamlined laboratory test reporting process.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Digital files from Ardaman, Terracon, and DOTD were uploaded to the OGC Database. To date, approximately 2367 projects have been uploaded to the ODC Database. Projects include historical PDFs of soil borings, digital borings as mentioned above, cone penetration tests (CPT), and pile load test sites. Section 67 has acquired Windows 10 laptops and has begun the transition from HoleBASE to OGC.

Additionally, Section 22 requires upgrade to KeyLAB software for deep geotechnical borings. DataForensics is assisting with the KeyLAB test template customizations and training to aid in the transfer of data from Section 22 to Section 67.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES
Proposed activities include finalizing the report, fully implementing KeyLAB for data entry by the Materials Laboratory, continuing to input historical data, and checking data through the use of Power BI software. Project Review Committee meetings will also be conducted to review and share results, recommendations via drafts and the final report. The project is scheduled to end in February 2024.

Title:	**Development of a Design Methodology for Geosynthetic Reinforced Pavement using Finite Element Numerical Modeling**	**Project Status:**	**Ongoing**

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000346**	Project Start Date:		5/1/2020
Research Project Number:	20-3GT	Completion Date	(original)	4/30/2023
Research Agency:	LTRC	Completion Date	(revised)	4/30/2025
Principal Investigator:	Murad Abu-Farsakh			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$300,302
	(revised)	$400,722
Est. Expended to Date		$324,355
FY 2023 - 2024 Budget		
FY Funds	(original)	$59,595
	(revised)	
Est. FY Expenditure		$71,500

Estimated 2024-2025 Budget		
Total		**$74,400**
Salaries		$74,400
Consumable Supplies & Materials		
Equipment	(non-expendable)	
Travel		
Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: Pavements built over weak subgrade soils are often associated with construction difficulties, which poses challenge to pavement engineers. The current practice in Louisiana is to stabilize weak subgrades with cement/lime to create a working platform. Geosynthetics can offer a cost-effective alternative solution to this problem by reinforcing the pavement. Although the benefits of geosynthetics in pavements are recognized, the mechanism of reinforcement is still not fully understood.

Objective(s): 1) Develop finite element models to simulate the performance of geosynthetic reinforced pavements built over subgrades of different strengths. 2) Evaluate the effect of different parameters on the benefits of geosynthetic reinforcement. 3) Study the effect of reinforcement properties for low, medium, and high volume traffic sections. 4) Develop a design method for geosynthetic-reinforced pavements within the mechanistic-empirical pavement design guide (MEPDG).

Expected Benefits: It is anticipated that the research team will develop a cost-effective design methodology that incorporates the benefits of geosynthetic reinforcement in flexible pavements within the context of MEPDG. The results will help the design engineers to select the proper parameters that enhance the geosynthetic benefits. This study will help accelerate the construction of pavements over weak and problematic subgrades, and reduce the cost of pavements construction in Louisiana.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Task 2- Developed finite element (FE) numerical models to simulate the geosynthetic reinforcement of pavement sections built over soft, medium, and stiff subgrade soils for medium and high volume roads.

Task 3- Verified and calibrated the developed FE models using the results of in-box laboratory CPL tests, and the results of accelerated load tests conducted on geosynthetic-reinforced sections built at ALF site.

Task 4- Conducted comprehensive FE parametric study to evaluate the effect of different variables and parameters contributing to the benefits of geosynthetic reinforcement of pavement built over soft, medium and stiff subgrade soils for medium and high volume roads.

Task 5- Developed regression models to evaluate the traffic benefit ratio (TBR), equivalent base modulus (Eequiv), and equivalent base thickness (Dequiv) for geosynthetic reinforcement of pavement built over weak, medium and stiff subgrades soil for low, medium and high roads. Started developing machine learning (ML) and artificial neural network (ANN) models to evaluate the TBR, Eequiv, and Dequiv for geosynthetic reinforcement of pavement built over weak, medium and stiff subgrades soil for low, medium and high volume roads.

Task 6- Developed design procedure based on mechanistic-empirical pavement design guide (MEPDG) for geosynthetic reinforced pavements built over weak, medium and stiff subgrades soil for low, medium and high volume roads.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES
Task 5- Continue developing regression models, and ML-ANN models to evaluate the TBR, Eequiv, and Dequiv for geosynthetic reinforcement of pavement built over weak, medium and stiff subgrades soil for medium and high volume roads. Start developing rut equation models for geosynthetic reinforcement of pavement built over weak, medium and stiff subgrades soil for low, medium and high volume roads. Task 6- Continue developing design procedure based on mechanistic-empirical pavement design guide (MEPDG) for geosynthetic reinforced pavements built over weak, medium and stiff subgrades soil for low, medium and high volume roads. Task 7- Start developing design charts and Tables based on mechanistic-empirical pavement design guide (MEPDG) for geosynthetic reinforced pavements built over weak, medium and stiff subgrades soil for low, medium and high volume roads. Task 8- Start conducting life cycle cost benefit for geosynthetic reinforced pavements built over weak, medium and stiff subgrades soil for low, medium and high volume roads. Task 9- Prepare final report.

Title:	**Instrumentation and Modeling of Geosynthetic Load Transfer Platform Performance**	**Project Status:**	**Ongoing**

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**		**Budget Category:**		**FHWA**
SIO:	**DOTLT1000337**		Project Start Date:		1/1/2020
Research Project Number:	20-2GT		Completion Date	(original)	6/30/2022
Research Agency:	LTRC		Completion Date	(revised)	6/30/2025
Principal Investigator:	Murad Abu-Farsakh				

BUDGET STATUS

Total Budget			**Estimated 2024-2025 Budget**		
Total Cost	(original)	$300,331	**Total**		**$85,000**
	(revised)	$512,748			
Est. Expended to Date		$414,660	Salaries		$80,300
FY 2023 - 2024 Budget			Consumable Supplies & Materials		$4,700
FY Funds	(original)	$87,500	Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure		$87,900	Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: Imposing significant embankment load over soft clay can cause bearing capacity failures, large settlement, lateral movement, and slope instability. Driven pile, drilled shafts or stone columns are commonly used in the construction of embankment on soft clay to improve the capability of soft clay. To reduce the cost by reducing the number of piles, geosynthetic reinforcement platform can be added below the embankment to work as load transfer platform to the pile caps.

Objective(s): The objectives of study are: 1) Monitor the short-term and long-term behavior of geosynthetic load transfer platforms (GLTP) in Louisiana; 2) Evaluate and verify (or modify) important design factors and parameters for GLTP: load distribution (between the piles, geogrid, and soft soil), settlement, and lateral thrust; 3) Conduct finite element parametric study to evaluate the effect of different variables and parameters on the performance of GLTPs; and 4) Propose design and construction guidence.

Expected Benefits: The use of GLTP technology beneath the embankment and above the supporting piles has shown evidence to be a cost-effective design in many projects in USA and the world. To realize the potential benefits of using GLTP for pile-supported embankments in Louisiana, LA DOTD plans to build GLTP for three bridge projects. It is anticipated that the DOTD design method for GLTP will be improved based on the collected data from field instrumentations, and hence reduce the cost.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS
Task 3: Completed the instrumentation of the foundation soil, geosynthetic load transfer platform (GLTP), and MSE wall for the Project No. 1234, Port Allen Canal Bridge, LA 1. Instrumented the foundation soil and the GLTP at the project No. 2375, Amite River, Baton Rouge. Task 4: Monitored the performance of GLTP during the construction at the project No. 1234, Port Allen Canal Bridge, LA 1, and the project No. 2375, Amite River, Baton Rouge. Continued monitering the performance of GLTP-MSE wall at the project No. 1234, LA 1, after completing the construction. Task 5: Conducted Load Tests at the project site No. 1234, Port Allen Canal Bridge, LA 1, using Heavy weight dump Trucks. Task 6: Developed 2D and 3D finite element (FE) models to simulate the behavior of GLTP pile-supported embankment for the cases of piles tip on dense sand soil, and piles tip on stiff clay soil. Developed 3D FE numerical models to simulate the behavior of geosynthetic LTP piles-supported embankment for five case studies in literature and selected cases from the FE parametric study. Task 7: Verified the FE models using measurements of field monitoring of fully instrumented GLTP on piles-supported embankment cases in literature. Task 8: Conducted 2D and 3D FE parametric study to evaluate the effect of different variables and parameters on the behavior of GLTP pile-supported embankments for the cases of piles tip on dense sand and piles tip on clay. Compared the FE results with available analytical methods for designing GLTP in literature. Task 9: Continued monitoring the performance of the GLTP-MSE wall at at the project No. 1234, Port Allen Canal Bridge, LA 1 after completing the construction at the site. Task 10: Analyzed the collected data from the instrumentation at the project No. 1234, Port Allen Canal Bridge, LA 1.
FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES
Task 3: Complete the instrumention at the GLTP project No. 2375, Amite River, Baton Rouge. Task 4: Continue monitoring the performance of the GLTP at the project site No. 2375, Amite River, Baton Rouge, during the construction of embankment. Task 5: Plan for conducting load tests using heavy trucks after the end of constructionon of GLTP at the project site No. 2375, Amite River, Baton Rouge. Task 6: Continue developing FE models to simulate the behavior of GLTP pile-supported embankment for the cases of piles tip on sand and stiff clay of different soil layering. Task 8: Continue conducting comprehensive FE parametric study to evaluate the effect of different variables and parameters on the behavior of GLTP pile-supported embankments, for the cases of piles tip on sand and stiff clay of different soil layering. Compare the results with the analytical GLTP design methods in literature. Develop a new analytical method for the design of geosynthetic LTP pile-supported embankments from the results of parametric study and analyses of case studies. Task 9: Continue analyzing the collected data from the instrumentation from truck loading and long-term monitoring at the project No. 1234, Port Allen Canal Bridge, LA 1. Start analyzing the collected data after completing the construction of geosynthetic LTP pile-supported embankment at Amite River site.

Title:	**Evaluation and Incorporation of Site and Laboratory Variability into LRFD Design of Pile Foundations - Phase 2**	**Project Status:**	**Ongoing**

Funding Source:	**SPR: TT-Fed/TT-Reg - 6**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000512**	Project Start Date:		11/1/2023
Research Project Number:	24-1GT	Completion Date	(original)	10/31/2026
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Murad Abu-Farsakh			

BUDGET STATUS

Total Budget			**Estimated 2024-2025 Budget**		
Total Cost	(original)	$432,545	**Total**		**$88,700**
	(revised)				
Est. Expended to Date		$51,400	Salaries		$88,700
FY 2023 - 2024 Budget			Consumable Supplies & Materials		
FY Funds	(original)	$51,100	Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure		$51,400	Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: Geotechnical engineering deals with high spatial variation of soil properties in horizontal and vertical directions leading to uncertainty in geotechnical and deep foundation design. The variation in soil properties will affect the accuracy/reliability of measured data that can result in either underdesign (cause failure), or overdesign (extra cost) of infrastructure foundations. There is a need to incorporate these variations into load and resistance factor design (LRFD) of deep foundationns.

Objective(s): The objectives of this research: 1) Evaluate and incorporate spatial variability of soil properties. 2) Evaluate number, type and distribution of soil borings and/or in-situ tests on pile design. 3) Study the effect of gap between soil borings and in-situ testing on pile design. 4) Evaluate number of pile load tests on pile design. 5) Evaluate distribution and location of soil borings and in situ testing on pile design. 6) Evaluate variability of pile static/dynamic load tests on pile design.

Expected Benefits: This study will provide the design engineers with tools to evaluate the spatial site variability of soil properties in the field (i.e., coefficient of variations, COV), as well as variations of measured soil properties in the laboratory. This study will also provide means to incorporate/implement the site/lab soil variability into LRFD design of deep foundations. It is anticipated that this study will improve accuracy, safety, reduce cost, and reduce risk of design of deep foundations.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Task 1: Started conducting literature review relevant to evaluation and incorporation of spatial site variability into the Load and Resistance factor Design (LRFD) of pile foundations.

Task 2: Identified several project sites from the Department of Transportation and Development (DOTD) archives with multiple CPT tests and/or multiple soil borings in order to evaluate the spatial site variability.

Task 4: Started evaluating the spatial variability of soil type and design parameters for the identified sites in Task 2 using Bayesian analysis, machine learning algorithms, and available special interpolation techniques.

Task 6: Started incorporating the special site variability (both vertically and horizontally) evaluated from CPT tests into LRFD design of piles using the semi-variogram approach.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES
Task 1: Continue conducting literature review relevant to evaluation and incorporation of spatial site variability into the Load and Resistance factor Design (LRFD) of pile foundations. Task 2: Continue identifying several project sites from DOTD archives with multiple CPT tests and/or multiple soil borings and colecting data in order to evaluate the spatial site variability. Task 3: Looking for project sites with electric resistivity (ER) survey to evaluate the spatial variability and fill the gap between the soil borings and CPT tests. Task 4: Continue evaluating the spatial variability of soil type and design parameters for the identified sites in Task 2 using Bayesian analysis, machine learning algorithms, and available special interpolation techniques. Task 5: start evaluating the effect of number and type of measurements and lab/in-situ testing methods on the reliability of geotechnical design parameters. Task 6: Continue incorporating the special site variability (both vertically and horizontally) evaluated from CPT tests into LRFD design of piles using the semi-variogram approach. Task 9: Start evaluating the effect of locations and distribution of soil borings/CPT tests within specific site on reliability analysis for LRFD pile design. Task 11: Start evaluating the effect of number of static/dynamic tests on LRFD design of pile foundations.

Title:	**LIDAR for Geotechnical Applications**	**Project Status:**	**Ongoing**

Funding Source:	**SPR: TT-Fed/TT-Reg - 6**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000473**	Project Start Date:		3/1/2023
Research Project Number:	23-1GT	Completion Date	(original)	8/31/2025
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Gavin Gautreau			

BUDGET STATUS

Total Budget			**Estimated 2024-2025 Budget**		
Total Cost	(original)	$311,126	**Total**		**$96,900**
	(revised)				
Est. Expended to Date		$97,772	Salaries		$96,900
FY 2023 - 2024 Budget			Consumable Supplies & Materials		
FY Funds	(original)	$90,508	Equipment	(non-expendable)	
	(revised)	$79,791	Travel		
Est. FY Expenditure		$79,791	Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: Light detection and radar (LIDAR) is a method for measuring distances. The data can be collected from land tripods, automobiles, drones and fixed wing airplanes. DOTD has begun collecting LIDAR on state highways. LIDAR data can be utilized for many purposes; the primary reasons are likely not geotechnical related. However, the data can be utilized for inventory purposes (Geotechnical Asset Management) and change detection of embankment slopes (inspections and problem identification).

Objective(s): Explore the utilization of LIDAR within DOTD and develop interfaces to tap into this data for geotechnical purposes. Recurring datasets of the same location could be compared to determine changing slopes. These large datasets may require Machine Learning or special software to open this data to the geotechnical section. Small scale drone-based LIDAR scans could be collected to supplement and define with more precision, problematic slopes that may be difficult, or hazardous, to access.

Expected Benefits: The proposed research would utilize an existing dataset within DOTD and provide a user interface for the Geotechnical Section to utilize this data for management of slopes and other geotechnical assets. More accurate location of soil boring elevations (from the office) would also be a benefit.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Continue the work to access LiDAR data for Geotechnical Applications within the DOTD(and outside the DOTD). The project with the assistance of LSU staff collected an initial set of LiDAR resources that included internal and external sources. Initial efforts that seem fruitful include assisting Section 30 with an index (GIS based polygons that identify the data, type of scan, area, precision, size of file, etc. of historical scans. The process of linking the data to ARCmap is in progress.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

LTRC Looks to purchase a LiDAR Drone that can be utilized on this project. Additionally, efforts to connect an existing LiDAR camera to a mobile back pack are underway. Section 30 will also assist with multiple visits to the Vicksburg Bridge to scan the site and utilize change detection. Work on compiling the database and the research report will continue.

Title:	LTRC Support for Geotechnical Research at the Geotechnical Engineering Research Laboratory (GERL)	Project Status:	Ongoing

Funding Source:	SPR: TT-Fed/TT-Reg - 6	Budget Category:	FHWA

SIO:	30000111		Project Start Date:		7/1/2010
Research Project Number:	10-1GERL		Completion Date	(original)	6/30/2015
Research Agency:	LTRC		Completion Date	(revised)	6/30/2027
Principal Investigator:	Murad Abu-Farsakh				

BUDGET STATUS

Total Budget			Estimated 2024-2025 Budget		
Total Cost	(original)	$523,000	**Total**		**$188,500**
	(revised)	$20,772,569			
Est. Expended to Date		$20,952,169	Salaries		$95,500
FY 2023 - 2024 Budget			Consumable Supplies & Materials		$28,000
FY Funds	(original)	$160,000	Equipment	(non-expendable)	$30,000
	(revised)		Travel		$22,500
Est. FY Expenditure		$179,600	Other		$12,500

BUDGET JUSTIFICATIONS

Supplies: Calibration of triaxial and shear test machines: $3,000.
Calibrated of in-situ test devises (Geogauge, LFWD, etc.): $2,000.
Desktop computers for two graduate students: 2 x $2000 = $4,000.
Annual license for PLAXIS 2D finite element software: $1,500.
Annual license for PLAXIS 3D finite element software: $2,000.
Misc/Replacement parts for Humboldt testing devise: $2,000.
Triaxial, direct shear and consolidation tests parts (Dial Gauges, cables, molds, etc.): $4,000
Fixing the in-box cyclic plate load test (instruments, wires, cables, etc.): $4,000.
Pump filters, oil change, materials, etc. for Geotech Lab: $2,500.
General Laboratory supplies and materials: $3,000.

Equipment: Purchase 8600 Data loggers for field testing: $10,000.
Purchase CR300 Data logger for Shape Array Accelerometer: 10,000.
Update the data acquisition system for the Cyclic Plate Load Test Actuator: $10,000.

Travel: Attend TRB Conference for PI and one RA: 2 x $2500 = $5000
Attend TRB for three graduate student: 3 x $2000 = $6000
Attend Geocongress Conference for PI and one RA: 2 x $3000 = $6000
Attend Geocongress for one graduate student: $2500
Attend DFI conference: $3000

Other: Maintainance:
Maintain the MTS testing machine: $6,000.
Maintain the large-size direct shear test device: $4,000.
Maintain the Soil-water Characteristic Curve (SWCC) testing device for matric suction: $2,500.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: Transportation infrastructures in Louisiana, such as bridges and highways, are very essential for the state's residents and businessmen. Many challenges are facing the state to improve/modernize their transportation infrastructures that need to be identified, addressed and solved. Improving analysis, design, and construction of the geotechnical aspects of infrastructures is very vital. Therefore, problem statements and proposals need to be developed to solve the challenges.

Objective(s): The objectives of this study are: perform studies to meet the beneficiary requirements for geotechnical testing, technical assistance and research; advance the state-of-the-art in geotechnical research; maintain laboratory testing equipment; maintain in-situ testing devises and monitoring instruments, provide development, support and training of new and innovative techniques, and software for advancing transportation system, and develop problem statements and research proposals.

Expected Benefits: It is anticipated that improving and maintaining modern and safe infrastructures will have a direct impact toward improving the quality of life and boost healthy economic growth in Louisiana. The development of new methodologies for geotechnical infrastructure's analysis, design and construction will help improve the accuracy/reliability of design, accelerate construction, and reduce material/labor cost, resulting in safer and more cost-effective infrastructure design.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS
- Developed potential ideas and problem statements for future LTRC research projects, - Provided geotechnical testing support and technical assistance for DOTD, - Provided guidance on improving the quality of laboratory testing to DOTD, - Developed research proposal on "Evaluation and Incorporation of Site and Laboratory Variability into LRFD Design of Pile Foundations – Phase 2", - Developed research proposal on "Statewide Calibration of CPT Direct Design Methods Using Static Load Test Data", - Published several technical papers and proceedings on the findings of LTRC research projects, - Published two final reports, - Attended several engineering workshops and conferences, - Maintained in-situ testing devises and measuring/monitoring instrumentation systems, - Maintained laboratory testing equipments, - Maintained various softwares related to CPT applications.
FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES
- Provide geotechnical and geosynthetic testing support and technical assistance for DOTD, - Provide support and training for implementation of findings of research studies, - Develop research proposals and problem statements for future activities, - Develop research proposal on "Use and Interpretation of Seismic Piezocone Penetration Testing (SCPTu) for Geotechnical Site Investigation", - Develop research proposal on "Update on Evaluating the Magnitude and Time Rate of Consolidation Settlement of Embankments and other Infrastructures from Piezocone Penetration Tests (PCPT)", - Develop research proposal on "Evaluation and Development of CPT-based Methods for Estimating the Ultimate Axial Capacity of Drilled Shafts", - Publish research findings on technical papers, proceedings and reports, - Maintain laboratory testing equipments, - Maintain in-situ testing devises and measuring/monitoring instrumentation aystems, - Maintain and upgrade the various CPT software applications.

Title:	**LTRC Proposal for the Support of Software Development and GIS Applications in LTRC Research**	**Project Status:**	**Ongoing**

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000215**	Project Start Date:		7/1/2017
Research Project Number:	18-1Other	Completion Date	(original)	6/30/2020
Research Agency:	LTRC	Completion Date	(revised)	6/30/2027
Principal Investigator:	Vijaya Gopu			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$352,390
	(revised)	$2,717,696
Est. Expended to Date		$603,063
FY 2023 - 2024 Budget		
FY Funds	(original)	$50,000
	(revised)	$7,500
Est. FY Expenditure		$7,397

Estimated 2024-2025 Budget		
Total		**$50,000**
Salaries		$50,000
Consumable Supplies & Materials		
Equipment	(non-expendable)	
Travel		
Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: Problem Statement: The purpose of this project is to provide a fiscal year structured resource allocation plan for transportation applications originally developed at Louisiana Transportation Research Center (LTRC).

Objective(s): Objective(s): The tasks will cover development, upgrading, implementation, and maintenance of customized software, relational databases, servers and GIS (Geographic Information Systems).

Expected Benefits: Expected Benefits: Provide IT and GIS solutions as applied research implemented into DOTD processes and procedures.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

CPT program re-write was completed and presented to the PI and DOTD with resounding success.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Continue GIS and computer support as needed to LTRC.

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

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:	**30000169**	Project Start Date:		1/1/2008
Research Project Number:	11-1AD	Completion Date	(original)	6/30/2009
Research Agency:	LTRC	Completion Date	(revised)	6/30/2027
Principal Investigator:	Vijaya Gopu			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$211,428
	(revised)	$5,621,122
Est. Expended to Date		$4,042,557
FY 2023 - 2024 Budget		
FY Funds	(original)	$306,412
	(revised)	
Est. FY Expenditure		$306,412

Estimated 2024-2025 Budget		
Total		**$315,289**
Salaries		$304,789
Consumable Supplies & Materials		
Equipment	(non-expendable)	
Travel		$10,500
Other		

BUDGET JUSTIFICATIONS

Travel: TRB Annual Meeting - $2,200; CUTC Summer Meeting - $1,000; NSF Board Meetings - $1,800; AASHTO Bridge Meeting - $1,200; DOTD dissemination meetings (in-state travel) - $3,800

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: Problem Statement: Enhance the external research funding at LTRC. Identify funding opportunities at the national, regional and state level in the broad area of transportation engineering, planning and management and organize single or multi-campus faculty teams/clusters – multi-disciplinary when needed -- that hold the most promise for being successful in attracting this competitive funding. Pursuit of these opportunities will be channeled through LTRC.

Objective(s): Objective(s): To cover administrative costs handled under contract to support LTRC research, development and technology transfer external funding program.
Expected Benefits: The efforts of this program will generate external funding for university faculty and support the research needs of DOTD. Participation in national level research efforts and programs enhance the stature of LTRC and address the critical needs of the state.

Expected Benefits: Tasks carried out with support of external agencies -- NSF, FHWA, etc. -- enable workforce development in critical areas of the transportation sector.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Coordination of TIRE program and TIRE projects, held LTRC town-hall meetings at all state universities with engineering programs, explored opportunities for submitting proposals to advance bridge engineering education and practice, supported LAPELS Board in its effort to promote professional registration of university faculty, serves on the LAPELS board, coordinate the LTRC UTC (university Transportation Center) site projects and the UTC support studies through their completion after gaining funding from the UTC program, and disseminated the results of the NSF (National Science Foundation) project on field monitoring and measurement education.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

-Continue coordination of TIRE program and TIRE projects;
-Hold LTRC town-hall meetings at all state universities with engineering programs
-Coordinate submission of a revised NSF MRI (Major Research Instrumentation) proposal in this fiscal year
-Explore opportunities for submitting proposals to advance bridge engineering education and practice
-Support LAPELS Board in its effort to promote professional registration of university faculty
-Coordinate the LTRC UTC site projects and the UTC support studies through their completion after gaining funding from the UTC program

Title:	Performance Index Rating and Maintenance Cost Assignment for Ramps, Acceleration and Deceleration Lanes in Louisiana	Project Status:	Ongoing

Funding Source:	SPR: TT-Fed/TT-Reg - 5	Budget Category:	FHWA

SIO:	DOTLT1000431	Project Start Date:		4/1/2022
Research Project Number:	22-1P	Completion Date	(original)	6/30/2024
Research Agency:	LTRC	Completion Date	(revised)	6/30/2025
Principal Investigator:	Jun Liu			

BUDGET STATUS

Total Budget			Estimated 2024-2025 Budget		
Total Cost	(original)	$169,270	**Total**		**$80,087**
	(revised)				
Est. Expended to Date		$78,182	Salaries		$50,087
FY 2023 - 2024 Budget			Consumable Supplies & Materials		
FY Funds	(original)	$88,087	Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure		$58,570	Other		$30,000

BUDGET JUSTIFICATIONS

Other: Other: An amount of $30,000 has been budgeted for the rental of a zero-speed profiler, equipment critical for the completion of the project, for at least 1-month.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: Roughness is an important parameter for rating the overall condition of roadways. However, operational conditions on ramps, roundabouts, and other urban roadways make it difficult for modern inertial profilers to provide valid roughness values for these sections of roadways. Therefore, it is imperative to devise a means to accurately rate roughness for cost-effective maintenance of these sections of the highway system by road agencies.

Objective(s): (1) Ascertain any differences in international roughness (IRI) and performance index (PI) values of Louisiana DOTD's analysis lanes as compared to ramps, acceleration, or declaration lanes; (2) develop a framework for measuring and characterizing IRI and PI values for ramps, acceleration, and deceleration lanes; (3) and establish and provide guidelines to address additional treatment costs specific to ramps, acceleration, and deceleration lanes at the project and network levels.

Expected Benefits: Guidelines will be developed for measuring and characterizing IRI and PI values for ramps, acceleration, and deceleration lanes. Further, the research team intends to develop a framework for assigning maintenance trigger values and treatment costs for all components of the highway system. These guidelines will assist DOTD engineers to select cost-effective treatment methods for the prompt performance of maintenance activities on Louisiana roads.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Task 3- continued to execute the proposed test plan.
Task 4- continued to analyze field and PMS data.
Task 5: Initiated to develop a framework to measure and characterize IRI and PI values.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Task 3: Complete the execution of the proposed test plan.
Task 4: Complete analysis of field and PMS data.
Task 5: Complete development of a framework to measure and characterize IRI and PI values.
Task 6: Complete development of guidelines to address additional treatment costs specific to ramps, acceleration, and deceleration lanes.
Task 7: Complete and submit a draft final report.

Title:	Evaluation of Louisiana Maintenance and Rehabilitation Treatment Decision Matrix for Cost-effective and Timely Pavement Preservation	Project Status:	Ongoing

Funding Source:	SPR: TT-Fed/TT-Reg - 6	Budget Category:	FHWA

SIO:	DOTLT1000519	Project Start Date:		1/1/2024
Research Project Number:	24-1P	Completion Date	(original)	12/31/2026
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Zhong Wu			

BUDGET STATUS

Total Budget			Estimated 2024-2025 Budget		
Total Cost	(original)	$371,615	**Total**		**$148,950**
	(revised)				
Est. Expended to Date		$30,000	Salaries		$148,950
FY 2023 - 2024 Budget			Consumable Supplies & Materials		
FY Funds	(original)	$140,300	Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure		$70,000	Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: Louisiana DOTD currently uses pavement condition index based decision matrix in its maintenance and rehabilitation treatment selection. However, some of the trigger index values adapted in the decision matrix table w ere developed from few projects with few years and log-miles of distress data. To ensure the optimum timing and cost-effective selection of various maintenance and rehabilitation treatments, there is a need to review, modify, and update the current decision matrix table adapted.

Objective(s): 1) Analyze PMS data and assess the optimum timing/cost-effectiveness for a number of treatment methods including thin overlays, micro-surfacing, crack sealants, and in-depth stabilization. 2) Provide modification recommendations to the PMS decision matrix in order to ensure optimum timing and cost-effectiveness selection of treatment methods.

Expected Benefits: The study will provide the DOTD Pavement preservation and PMS office updated triggers and performance models for cost-effective and timely maintenance and rehabilitation of pavements. Results of the study will immediately be implementable by pavement preservation and PMS office.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

- Conducted the literature review on various pavement treatment selections, related data gathering and data mining strategies as well as state-of-the-art analytical tools.
- Collected historical records on selected pavement sections for micro-surfacing and thin overlay treatments, including the as-built plan, treatment age, traffic and weather information, pavement surface distress conditions before and after the treatment and the treatment construction costs.
- Analyzed the trigger values of micro-surfacing and thin-overlays based on before and after treatment performance using pavement condition indices, and compared the cost and performance of pavement sections with and without the selected treatments.
-Presented the research methodology at the 2024 Southeast Pavement Preservation Partnership meeting.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

- Continue project selection for all DOTD's pavement maintenance and rehabilitation treatment types, including chip seal, ultra-thin overlay, medium overlay, structural overlay and reconstruction.
- Construct decision-tree based models using the PMS-recorded pre-treatment pavement conditions (i.e. the alligator cracking, random cracking, patching, rut, and roughness indices) to determine what a true and representative range would be for all distress indices currently used in the DOTD Treatment Decision Matrix.
- Develop performance prediction models for various treatment types and pavement condition indices. The developed analytical models will be then used in the evaluation and modification of the index-based trigger values for cost-effective and timely treatment selection.

Title:	**Assessment of LADOTD's friction aggregate sources through laboratory and accelerated testing**	**Project Status:**	**Ongoing**

Funding Source:	**SPR: TT-Fed/TT-Reg - 6**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000340**	Project Start Date:		1/1/2020
Research Project Number:	20-4P	Completion Date	(original)	12/31/2022
Research Agency:	LTRC	Completion Date	(revised)	12/31/2024
Principal Investigator:	Zhong Wu			

BUDGET STATUS

Total Budget			**Estimated 2024-2025 Budget**		
Total Cost	(original)	$402,068	**Total**		**$143,000**
	(revised)				
Est. Expended to Date		$250,270	Salaries		$143,000
FY 2023 - 2024 Budget			Consumable Supplies & Materials		
FY Funds	(original)	$129,500	Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure		$110,000	Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: Due to high variations in the aggregate production and shipments, it is common to get significantly different polished stone value (PSV) results from a same aggregate type shipped-in at a different time. Aggregate suppliers certainly have concerns when the aggregates fail to meet their target PSV values. Therefore, there is an urgent need to better assess friction aggregate sources and formalize the use of aggregate friction testing procedure for DOTD.

Objective(s): 1) Assess the PSV test variations in term of sources, shipment, and operators. 2) Evaluate a new aggregate friction testing procedure. 3) Determine the threshold friction design values for commonly-used wearing mixtures. 4) Validate and update a set of lab and field correlations of pavement surface friction characteristics measured and developed from projects of 09- 2B and 12-5P.

Expected Benefits: A potential outcome of this project will provide DOTD a new and improved laboratory aggregate friction testing protocol that can be used for initial source approval as well as for predicting field friction performance.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Task 3 - Completed the laboratory aggregate polishing tests on seven different coarse aggregates using a a three-wheel polishing device (TWPD). Four mixed-aggregate ring samples were prepared and tested to investigate the friction characteristics of blended aggregates used in asphalt mix design.
Task 4 - Performed in-situ asphalt pavement surface friction measurements on five existing pavement segments using dynamic friction tester (DFT), circular track meter (CTM), and the locked wheel skid trailer (LWST) devices. British pendulum tester friction numbers were also collected.
Task 5 - Analyzed the repeatability of TWPD tests; developed lab-field frictional characteristics correlation models among various measurement results including the skid number, DFT value, CTM number, laser profile texture value, lab polishing cycle, and traffic index.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Task 5 - Continue to perform field friction tests on selected pavement segments to verify the developed lab vs. field correlation models.
Task 6 - Develop a new aggregate friction rating and testing procedure based on the TWPD test for DOTD implementation.
Task 7 - Prepare the final report.

Title:	**Mechanistic Characterization of Asphalt Overlays for Pavement Rehabilitation and Preservation using Pavement ME Approach**	**Project Status:**	**Ongoing**

Funding Source:	**SPR: TT-Fed/TT-Reg - 6**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000272**	Project Start Date:		8/1/2018
Research Project Number:	19-2P	Completion Date	(original)	1/31/2021
Research Agency:	LTRC	Completion Date	(revised)	10/31/2024
Principal Investigator:	Zhong Wu			

BUDGET STATUS

Total Budget			**Estimated 2024-2025 Budget**		
Total Cost	(original)	$319,442	**Total**		**$53,300**
	(revised)	$480,708			
Est. Expended to Date		$423,000	Salaries		$53,300
FY 2023 - 2024 Budget			Consumable Supplies & Materials		
FY Funds	(original)	$5,400	Equipment	(non-expendable)	
	(revised)	$63,000	Travel		
Est. FY Expenditure		$40,000	Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: For a smooth transition from the 1993 AASHTO pavement design guide to the newly-developed Pavement ME Design for DOTD, there is a need to perform local-calibration of distress models for both pavement structural and preservation overlays in Louisiana. In addition, the pavement design engineers of DOTD have encountered several design issues in new asphalt and concrete pavement designs when using a previously-calibrated Pavement ME software.

Objective(s): 1) Address the existing Pavement ME's new pavement design issues encountered by the DOTD design engineers. 2) Evaluate the performance and existing trigger system of possible pavement preservation overlay strategies using Pavement ME. 3) Update local-calibration factors of Pavement ME and develop a set of optimum design inputs for both pavement rehabilitation and preservation asphalt overlays for DOTD implementation.

Expected Benefits: 1) A detailed implementation plan for Pavement ME's rehabilitation module with a set of updated, local calibration factors and Louisiana design inputs. 2) A set of recommended design inputs for pavement preservation overlay using the Pavement ME. 3) Solutions for the existing Pavement ME Design software issues currently encountered.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Task 10 - Reviewed the construction as-built plans and inserted new pavement condition measurement data based on the current Pavement Management System for all newly selected rigid pavement projects.
Task 11 - Perform a local calibration of pavement distress models for pavement design of new flexible, semi-rigid, and asphalt structural overlay pavements based on Pavement ME Design Software version 2.6 and the new online version 3.0. Specifically, a detail evaluation was performed on the reflective cracking models used in the Pavement ME software for soil cement pavements, asphalt overlay over composite pavements and other asphalt overlay types. In addition, the local calibration of new rigid pavement design has been in progress.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Task 11 - After the completion of the Pavement ME Design's local calibration for DOTD pavement design, a design guideline document containing various Louisiana pavement design inputs and local-calibrated distress models will be prepared for the implementation.
Task 12 - Prepare the project final report and technical summary documentation.

Title:	**Mitigating Joint Reflective Cracks using Stone Interlayers: Case Study on Louisiana Highway 5, Desoto Parish**	**Project Status:**	**Ongoing**

Funding Source:	**SPR: TT-Fed/TT-Reg - 6**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000218**	Project Start Date:		10/17/2017
Research Project Number:	18-2P	Completion Date	(original)	10/16/2023
Research Agency:	LTRC	Completion Date	(revised)	10/16/2026
Principal Investigator:	Qiming Chen			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$210,000
	(revised)	$315,000
Est. Expended to Date		$197,000
FY 2023 - 2024 Budget		
FY Funds	(original)	$40,000
	(revised)	
Est. FY Expenditure		$38,000

Estimated 2024-2025 Budget		
Total		**$47,000**
Salaries		$47,000
Consumable Supplies & Materials		
Equipment	(non-expendable)	
Travel		
Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: Reflective cracking in HMA overlays represents a serious challenge associated with pavement rehabilitation. In 2011, LTRC completed a study to evaluate and compare the performance of different crack control treatments in Louisiana for composite pavements. Stone interlayers were not one of the treatments discovered from a survey of DOTD engineers in the study and therefore were not evaluated. The scope of this research is also expanded to include a TA study involving fracture slab approaches.

Objective(s): The purpose of this project is to monitor the effectiveness of stone interlayers and fracture slab approaches in composite pavements, determine the effect of stone depth in mitigating reflective cracks at the transverse and longitudinal joints, and measure the movement of the portland cement concrete (PCC) transverse joints under traffic loading.

Expected Benefits: The results of the study may be used to recommend improved pavement design and preservation procedures.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Task 1: Literature Review on rubblization and break and seat
Task 3: Data mining the Pavement Management Systems database for projects involving rubblization and break and seat
Task 5: Field tests (Performed FWD tests on some of projects involving rubblization and break and seat)

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Task 1: Literature Review (continue w orking on literature review)
Task 3: Data mining the Pavement Management Systems database (continue collecting distress information on projects involving stone layers, rubblization and break and seat)
Task 5: Field tests (Continue performing field test on projects involving stone layers, rubblization and break and seat)

Title:	**Management and Operation of the Pavement Research Facility**	**Project Status:**	**Ongoing**

Funding Source:	**SPR: TT-Fed/TT-Reg - 6**	**Budget Category:**	**FHWA**

SIO:	**30000141**	Project Start Date:		7/1/2009
Research Project Number:	10-1ALF	Completion Date	(original)	6/30/2015
Research Agency:	LTRC	Completion Date	(revised)	6/30/2027
Principal Investigator:	Zhong Wu			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$1,730,000
	(revised)	$26,093,061
Est. Expended to Date		$19,150,672
FY 2023 - 2024 Budget		
FY Funds	(original)	$470,600
	(revised)	$380,000
Est. FY Expenditure		$345,000

Estimated 2024-2025 Budget		
Total		**$449,980**
Salaries		$334,980
Consumable Supplies & Materials		$100,000
Equipment	(non-expendable)	
Travel		$10,000
Other		$5,000

BUDGET JUSTIFICATIONS

Supplies: The $100,000 budget covers the routine maintenance supplies, machine repair (parts and labor), and daily operational costs at the DOTD's Pavement Research Facility. The following supplies and operational items are included in the budget:
Parts replacement and mechanic repairing of ALF, parts replacement and mechanic repairing of ATLaS30, building supplies, computer and software upgrade, steel braided cable, pillow block bearing, hydraulic oil filters, electrical solenoids, electrical cables/connector, electrical fuses, pressure relief valve, cable lube spray, poly grease, lawn weed killer, mouse/snake traps, toiletries, wasp spray, gasoline, mower and tractor maintenance.Travel: Travel: TRB Annual meeting (3 attendees) - $7,500
Attend a pavement conference (1 attendee) - $2,500

Other: The $5,000 cost will cover as-needed professional services, such as moving of ATLaS30 or ALF to new testing locations.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: Pavement Research Facility (PRF) is a full-scale accelerated pavement research facility designed to determine in situ true performance for different pavement structures and materials using two heavy vehicle simulator loading devices. The research purpose is to investigate economical and practical alternatives related to the current design and construction practices, and provide implementable pavement solutions for DOTD in solving issues in pavement structure, construction and materials.

Objective(s): The objective of this study is to provide for the management and operation structure at the PRF site in performing full scale accelerated pavement testing for DOTD. A manager and two operators will be funded in this facility. The scope of the work includes management of the facility, machine maintenance and operation, preparation of plans for individual experiments, construction, pavement instrumentation and accelerated pavement testing.

Expected Benefits: Research results obtained at PRF can lead directly to implementable recommendations for DOTD in terms of new pavement structure design, paving material selection and construction, better monitoring of statewide pavement performance and advanced analytical tools for pavement structure analysis. PRF provides LTRC with an excellent position to pursue its quest for national and international excellence in research capability in full-scale accelerated pavement testing.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

- Provided technical assistance in pavement testing, instrumentation and equipment procurement for LTRC.
- Completed the loading test on the ECC pavement test sections and conducted forensic measurements.
- Upgraded the control system software (PLC) for the ALF device.
- Developed a research proposal on "Evaluation of Louisiana Maintenance and Rehabilitation Treatment Decision Matrix for Cost-Effective and Timely Pavement Preservation".
- Published several technical journal and conference papers on the findings of LTRC research projects.
- Published one final report.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES
- Maintain the PRF site and the ATLaS30 device in good working conditions as well as other loading and maintenance equipment. - Provide technical assistance in pavement testing, instrumentation and equipment procurement for LTRC. - Provide support and training for implementation of Pavement ME Design for DOTD. - Develop research proposals on accelerated pavement testing, pavement preservation treatments and sustainable paving materials. - Publish research findings in technical papers, proceedings and reports. - Continue the maintenance and repair of the control system issues related to the ALF device.

Title:	**Older Road Users Safety in Louisiana: Understanding the Crash Contributing Factors**	**Project Status:**	**Ongoing**

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000513**	Project Start Date:		1/1/2024
Research Project Number:	24-2SA	Completion Date	(original)	12/31/2025
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Elisabeta Mitran			

BUDGET STATUS

Total Budget			**Estimated 2024-2025 Budget**		
Total Cost	(original)	$261,355	**Total**		**$145,000**
	(revised)				
Est. Expended to Date		$18,109	Salaries		$144,870
FY 2023 - 2024 Budget			Consumable Supplies & Materials		
FY Funds	(original)	$127,500	Equipment	(non-expendable)	
	(revised)	$65,000	Travel		$130
Est. FY Expenditure		$65,000	Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: Older people are involved in more crashes than any other age group. Due to the increasing trends in fatality and serious injury rates per capita of drivers and pedestrians over the age of 65, Louisiana met the criteria to qualify for the Federal Highway Administration Older Driver and Pedestrian Special Rule 23 U.S.C. 148(g)(2). In order to achieve the Louisiana's Destination Zero Deaths and to address current increasing crash trends, we must find ways to improve safety of older road users.

Objective(s): The objectives of this study are to investigate the factors contributing to older road users crashes in Louisiana and to recommend effective countermeasures to support the SHSP strategies in reducing traffic fatalities and severe injuries.

Expected Benefits: This project will provide DOTD, Louisiana SHSP team, and other highway safety stakeholders with a deeper and more comprehensive understanding of factors influencing older road users' crashes. The study findings could be used as part of Destination Zero Deaths' efforts to reach the goal of zero fatalities and serious injuries on our roadways.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Task 1 - Literature Review was completed.
Task 2 – Comprehensive crash analysis is underway.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Task 2– Comprehensive crash analysis to be finalized.
Task 3– Interim report to be submitted for review.
Task 4- Modeling older road users crash risk.

Title:	**Improved Signalized Intersection Performance Using Computer Vision and Artificial Intelligence**	**Project Status:**	**Ongoing**

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000515**	Project Start Date:		1/1/2024
Research Project Number:	24-4SS	Completion Date	(original)	12/31/2025
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Milhan Moomen			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$223,751
	(revised)	
Est. Expended to Date		$3,000
FY 2023 - 2024 Budget		
FY Funds	(original)	$4,000
	(revised)	$4,000
Est. FY Expenditure		$4,000

Estimated 2024-2025 Budget		
Total		**$80,000**
Salaries		$4,000
Consumable Supplies & Materials		
Equipment	(non-expendable)	
Travel		
Other		$76,000

BUDGET JUSTIFICATIONS

Other: The amount is for subcontract for the Co-PI.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: This project is proposed to support performance-based approaches to traffic signal operations, maintenance, management, and design. It aims to provide tools for automating the evaluation of signalized intersection performance

Objective(s): 1. Assess the feasibility and accuracy of using computer vision technology for performance evaluation at signalized intersections.
2. Use computer vision and artificial intelligence to automatically convert data from video recordings at selected intersections into trajectories of road users.
3. Develop tools for DOTD traffic engineers to understand why road users show current behaviors and assist in determining what measures can be implemented to improve safety and efficiency at intersection

Expected Benefits: This project could help gain insights into traffic patterns, identify potential conflicts, assess safety risks, optimize signal timings, and develop strategies to improve safety and efficiency.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Task 1: Literature review is ongoing and will be completed in the fiscal year.
Task 2: Data collection and processing has commenced.
Task 3: Feasibility assessment is ongoing.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Task 4: Object detection will commence.
Task 5: Trajectory extraction will begin.
Task 6: Behaviour analysis will commence.
Task 7: The writing of the final report will start in the fiscal year.

Title:	**Evaluating Practical Applications of Unmanned Aerial Vehicles (UAVs) for Traffic Incident Response and Management.**	**Project Status:**	**Ongoing**

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000514**	Project Start Date:		1/1/2024
Research Project Number:	24-3SS	Completion Date	(original)	12/31/2025
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Milhan Moomen			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$133,453
	(revised)	
Est. Expended to Date		$19,628
FY 2023 - 2024 Budget		
FY Funds	(original)	$19,628
	(revised)	$19,628
Est. FY Expenditure		$19,628

Estimated 2024-2025 Budget		
Total		**$100,000**
Salaries		$100,000
Consumable Supplies & Materials		
Equipment	(non-expendable)	
Travel		
Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: The use of Unmanned Aerial Vehicles (UAVs) in traffic incident management (TIM) shows a lot of promise. UAVs provide a great utility in providing aerial videos of incidents in areas which may not be covered by cameras. UAV videos may be transmitted to response staff in real-time for a better situational awareness, verification of secondary incidents, and allow for informed decisions to be made.

Objective(s): 1. Assess the feasibility of UAV use in Louisiana's traffic incident management (TIM) and monitoring.
2. Document issues and challenges in drone use for incident response.
3. Develop an information guide on UAV use for TIM.

Expected Benefits: The use of UAVs will be most beneficial in remote or rural areas where CCTV cameras and communication may be limited. With videos and pictures from the UAVs, response personnel will be able to make informed decisions with regards to incident response. Safety of response personnel at incident scenes may also be enhanced by providing better situational awareness.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Task 1. Literature review has been completed.
Task 2. Engagement of with stakeholders has been completed.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Task 3. Scenario selection and pilot test planning will be completed.
Task 4. Pilot tests will begin and be completed.
Task 5. Documentation of limitations of UAVs in TIM will be completed.
Task 6. Development of an informational guide will commence.
Task 8. A benefit-cost analysis will be started.
Task 9: The preparation of a final report will commence.

Title:	**Trip Generation for Various Sites**	**Project Status:**	**Ongoing**

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000509**	Project Start Date:		1/1/2024
Research Project Number:	24-2SS	Completion Date	(original)	12/31/2025
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Ruijie "Rebecca" Bian			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$249,078
	(revised)	
Est. Expended to Date		$61,004
FY 2023 - 2024 Budget		
FY Funds	(original)	$100,000
	(revised)	
Est. FY Expenditure		$61,004

Estimated 2024-2025 Budget		
Total		**$105,207**
Salaries		$15,389
Consumable Supplies & Materials		
Equipment	(non-expendable)	
Travel		
Other		$89,818

BUDGET JUSTIFICATIONS

Other: Other budget is for sub-contracts to consultants. The breakout sheet is attached to the proposal.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: The 11th edition of the ITE Trip Generation Manual is missing several site codes. LTRC Project 18-4SS sought to confirm trip generation for strip malls and provided updated information specific to Louisiana for existing site codes in the ITE Trip Generation Manual. This proposal is to develop new trip generation (new site codes) for various types of sites that currently have no codes in the ITE manual. There may be the need to update some existing codes too.

Objective(s): Identify site codes currently included in the 11th Edition of the ITE Trip Generation Manual and confirm or update those using local data. Several uses that are of concern include the following: apartments, boat/RV storage, drive-thru daiquiri shops, car washes, Dollar General stores, Chick-fil-a restaurants, Vineyard/Event Centers and Restaurants with Specialty Markets. Poll DOTD Districts to prioritize list.

Expected Benefits: This will help traffic engineers more accurately assess a development's impact to the state highway system.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Task 1: Conducted literature review
Task 2: Selected sample of locations for surveys and developed a schedule of measurement. (48 sites are selected and approved by PRC members)
Task 3: Conducted the pilot test of the Smart Micro Radar devices
Task 4: Started collecting data based on schedule developed in Task 2.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Task 4: Continue data collection
Task 5: Verification of the data
Task 6: Data cleaning
Task 7: Data analysis

Title:	**Updating and Migrating the Louisiana Transportation Research Center (LTRC) Project Management Tracking System (PMTS) from Louisiana State University Server to Office of Technology Services (OTS) Server(s)**	**Project Status:**	**Ongoing**

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000495**	Project Start Date:		10/16/2023
Research Project Number:	24-1SS	Completion Date	(original)	3/31/2024
Research Agency:	Blue Streak Technologies	Completion Date	(revised)	4/15/2025
Principal Investigator:	Cory Matessino			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$250,000
	(revised)	$899,500
Est. Expended to Date		$160,000
FY 2023 - 2024 Budget		
FY Funds	(original)	$250,000
	(revised)	$165,000
Est. FY Expenditure		$160,000

Estimated 2024-2025 Budget		
Total		**$734,500**
Salaries		$734,500
Consumable Supplies & Materials		
Equipment	(non-expendable)	
Travel		
Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: The Louisiana Transportation Research Center (LTRC) has spent considerable effort, time, and money in the development of the LTRC Project Management Tracking System (PMTS) web based application. This application is used by DOTD personnel, outside consultants, and university personnel to update individual research projects. Additionally financial information for individual projects is tracked as well as final report status, etc.

Objective(s): (1) Update the existing PMTS targeting a .NET 6 (or newer) using C3 syntax; (2) Remove the Microsoft Word and Excel reports and replace them with a generic form output; (3) Update all security features; (4) Creation of a link to automatically update the financial information on a daily basis; (5) Migration of newly updated PMTS to OTS serviers; (6) Export and transfer all existing PMTS data to the new platform; and (7) Creation of a digital user manual for new users.

Expected Benefits: A newer, more updated version of PMTS that is more secure to outside attacks, being continually backed-up and proper server support from OTS.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Project has started and the following has been accomplished this FY: (1) New login page with updated OTS compliant security has been created; (2) Section 33 and 19 performance measures portions have been discussed and are in design; (3) Architecture framework has been discussed and system administration portions are under design; My PMTS page is under development currently.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Complete the remainder of the project including the My PMTS page, all remaining system administration functions, publication submission and tracking functions, and the Section 19 and 33 performance measures.

Title:	Best Practices for Maintenance of Control of Access Fencing	Project Status:	Ongoing

Funding Source:	SPR: TT-Fed/TT-Reg - 5	Budget Category:	FHWA

SIO:	DOTLT1000472		Project Start Date:		1/1/2023
Research Project Number:	23-8SS		Completion Date	(original)	6/30/2024
Research Agency:	LTRC		Completion Date	(revised)	12/31/2024
Principal Investigator:	Milhan Moomen				

BUDGET STATUS

Total Budget			Estimated 2024-2025 Budget		
Total Cost	(original)	$158,964	**Total**		**$50,000**
	(revised)				
Est. Expended to Date		$130,211	Salaries		$50,000
FY 2023 - 2024 Budget			Consumable Supplies & Materials		
FY Funds	(original)	$65,043	Equipment	(non-expendable)	
	(revised)	$65,043	Travel		
Est. FY Expenditure		$65,043	Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: Access control fencing has been identified as a maintenance issue for the Louisiana DOTD, especially in the vicinity of high-AADT urban areas w here run-off-road (ROR) crashes into fencing are more frequent. In addition to budgetary constraints in regular repair or replacement of old fencing, these ROR damages pose considerable challenges in the proper maintenance for the DOTD. This project researches into best fencing regulation and practices to minimize maintenance costs.

Objective(s): 1. Determine the best maintenance practices of access control fencing.
2. Develop an informational guide for access control fencing maintenance w hich may aid in updating existing fencing policy.
3. Determine alternative fencing and other practices to low er maintenance costs.

Expected Benefits: This research will provide additional understanding of the policy, guidance and maintenance practices with respect to access control fencing across the nation. Fencing policy in Louisiana can be updated from a know ledge of best practices obtained from this study.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Task 1. Completion of review of Louisiana fencing maintenance practices (Literature and Information review).
Task 2. Completion of review of maintenance strategies and survey of other jurisdictions.
Task 3. Completion of sending surveys to all 50 states.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Task 4. Finalizing of recommendations.
Task 5. Completion and submission of final report.

Title:	**Improved Incident Response through Coordinated, Interoperable Communications**	**Project Status:**	**Ongoing**

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000468**	Project Start Date:		1/1/2023
Research Project Number:	23-5SS	Completion Date	(original)	12/31/2025
Research Agency:	LTRC	Completion Date	(revised)	12/31/2024
Principal Investigator:	Milhan Moomen			

BUDGET STATUS

Total Budget			**Estimated 2024-2025 Budget**		
Total Cost	(original)	$210,850	**Total**		**$90,000**
	(revised)				
Est. Expended to Date		$166,995	Salaries		$90,000
FY 2023 - 2024 Budget			Consumable Supplies & Materials		
FY Funds	(original)	$103,647	Equipment	(non-expendable)	
	(revised)	$103,647	Travel		
Est. FY Expenditure		$103,647	Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: Traffic incidents on U.S. highways require a coordinated and efficient response to reduce exposing travelers' and responders lives to risk and to lower delays. This research will carry out an operational and functional needs assessment of TIM in Louisiana to determine areas that may be improved with an interoperable web-based communication platform known as Mutualink. The study will identify implementation issues, conduct a Field Operations Test and undertake a benefit-cost analysis

Objective(s): 1. Carry out an operational needs assessment and a performance evaluation of the state's TIM.
2. Perform a functional analysis of the Mutualink system.
3. Carry out a benefit cost analysis of integrating Mutualink into the state's TMC.

Expected Benefits: An improved TIM in Louisiana will lead to shorter response times that will result in fewer fatalities and increased responder safety. Also, recommendations made towards integrating interoperability into TIM will provide guidance in using advances made in communication technology to enhance TIM.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Task 1: Information review on TIM has been completed.
Task 2: Evaluation of TIM system on interstates and state highways completed.
Task 4: Research on available interoperable solutions has been completed.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Task 3: A needs analysis of TIM and incident communication by agency is ongoing and will be completed in the fiscal year.
Task 5: The documentation of lessons learned from other agencies on planning and implementing interoperable communications will be completed in the fiscal year.
Task 6: Recommendations on improving TIM and implementing interoperable communications in Louisiana will be completed.

Title:	**Statewide Non-Motorized Traffic Monitoring Study**	**Project Status:**	**Ongoing**

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000463**	Project Start Date:		7/1/2023
Research Project Number:	23-4SS	Completion Date	(original)	6/30/2025
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Ruijie "Rebecca" Bian			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$258,849
	(revised)	
Est. Expended to Date		$77,813
FY 2023 - 2024 Budget		
FY Funds	(original)	$139,430
	(revised)	
Est. FY Expenditure		$110,882

Estimated 2024-2025 Budget		
Total		**$119,419**
Salaries		$69,059
Consumable Supplies & Materials		
Equipment	(non-expendable)	
Travel		
Other		$50,360

BUDGET JUSTIFICATIONS

Other: Other budget is for a sub-contract to a consultant. The breakout sheet is attached to the proposal.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: Non-motorized traffic count data are collected and kept in different formats, which creates barriers in data sharing. In addition, a strategy is need in installing permanent counters at a strategic set of fixed locations and rotating a set of temporary counters to gain a better knowledge of network-wide volume. How will emerging technologies and data products help expand the utility of the observed counts?

Objective(s): The current project is to search for the best approaches to integrate non-motorized traffic (e.g., bicyclist/pedestrian) counting into the routine motorized traffic counting practice in Louisiana.

Expected Benefits: Including non-motorized traffic (e.g., bicyclist/pedestrian) counting into the routine motorized traffic counting practice will help state DOTs understand pedestrian and bicyclist travel patterns; select and prioritize projects improving multimodal access; ensure projects will be designed to balance multimodal travel needs for communities' benefits; and evaluate outcomes achieved from invested projects from multiple perspectives.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Task 1: Reviewed emerging data sources, methods, and technologies for non-motorized traffic counting.
Task 2: Continued collecting, managing, and mapping non-motorized traffic counting data. (This task will continue throughout the entire project time)
Task 3: Tested and refined expansion factors for short-term counters.
Task 4: Tested non-motorized traffic data from one data product vendor (i.e., Strava).

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Task 2: Continue collecting, managing, and mapping non-motorized traffic counting data. (This task will continue throughout the entire project time)
Task 4: Test non-motorized traffic data from more data product vendors (e.g., Replica) if possible.
Task 5: Evaluate opportunities for expanding counting locations.
Task 6: Prepare the final report.

Title:	**Estimating HCM Default Parameters for Louisiana**	**Project Status:**	**Ongoing**

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000459**	Project Start Date:		1/1/2023
Research Project Number:	23-3SS	Completion Date	(original)	12/31/2024
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Ashifur Rahman			

BUDGET STATUS

Total Budget			**Estimated 2024-2025 Budget**		
Total Cost	(original)	$219,070	**Total**		**$50,000**
	(revised)				
Est. Expended to Date		$156,290	Salaries		$50,000
FY 2023 - 2024 Budget			Consumable Supplies & Materials		
FY Funds	(original)	$156,290	Equipment	(non-expendable)	
	(revised)	$156,290	Travel		
Est. FY Expenditure		$156,290	Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: The default values from Highw ay Capacity Manual are more generic and may not suit the local driving conditions. For example, there is a need of a headway defaults for different roadways that suit the local driving conditions for the traffic analysis

Objective(s): To evaluate few HCM default parameters like saturation flow rate, headway, percentage of heavy vehicles for the level of service, and peak-hour factor and check if the HCM default values are applicable in Louisiana.

Expected Benefits: The values found will be used to help improve traffic analysis in the state which ultimately would benefit all decision makers and stakeholders.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Task 1: Literature review was completed.
Task 2: Population list of intersection was developed and approved by the PRC.
Task 3: Sample List of Intersections has been generated and approved by the PRC.
Task 4: Sample data have been collected by recording 511 camera footage.
Task 5: The video observation to collect field data has started and ongoing.
Task 7: The report writing has been partially completed.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Task 4: Complete video data collection for all sites.
Task 5: Complete the video observation in the lab.
Task 6: Complete analysis to estimate HCM parameters.
Task 7: The final report including field observation details will be completed.

Title:	Safety and Traffic Operations at Cloverleaf Interchanges	Project Status:	Ongoing

Funding Source:	SPR: TT-Fed/TT-Reg - 5	Budget Category:	FHWA

SIO:	DOTLT1000458	Project Start Date:		8/1/2022
Research Project Number:	23-1SS	Completion Date	(original)	7/31/2024
Research Agency:	LSU	Completion Date	(revised)	
Principal Investigator:	Hany Hassan			

BUDGET STATUS

Total Budget			Estimated 2024-2025 Budget		
Total Cost	(original)	$130,000	**Total**		**$35,417**
	(revised)	$189,223			
Est. Expended to Date		$153,806	Salaries		$35,417
FY 2023 - 2024 Budget			Consumable Supplies & Materials		
FY Funds	(original)	$64,123	Equipment	(non-expendable)	
	(revised)	$105,208	Travel		
Est. FY Expenditure		$105,208	Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: At the intersection of two fully controlled access facilities or when left turns at-grade are forbidden, a cloverleaf interchange is the simplest design that can be used. A cloverleaf interchange is suitable in a rural setting where right-of-way is not an issue and weaving is minor. However, cloverleaf interchanges can be also suitable in urban regions as well based on site condition.

Objective(s): 1. Assess the safety and operational performances of cloverleaf interchanges in Louisiana as compared to the traditional diamond interchanges.
2. Use safety and traffic analysis to predict future performance of cloverleaf and diamond interchanges in Louisiana.
3. Suggest countermeasures/alternative interchange solution that should be implemented if a cloverleaf / diamond interchange is not an appropriate alternative based on their predicted future performance.

Expected Benefits: The study findings will enable transportation authorities to predict future performance of cloverleaf and diamond interchanges in Louisiana. Also, actionable countermeasures will be suggested if a cloverleaf / diamond interchange isn't an appropriate alternative based on their predicted future performance.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Task 3: Microsimulation Analysis is complete (100%).
Task 4: crash data analysis is complete (100%).
Task 5: Preparing Conclusions and recommendations is complete (100%).
Task 6: Preparing final report (50% complete). The plan is to send the final report for RRC review by first week of May.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Address any comments received from PRC committee and LTRC editor on the final report and submit the revised final report accordingly.

Title:	**Testing the Hurricane Evacuation Modeling Package (HEMP)**	**Project Status:**	**Ongoing**

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000427**	Project Start Date:		8/1/2022
Research Project Number:	22-3SS	Completion Date	(original)	1/31/2024
Research Agency:	LTRC	Completion Date	(revised)	12/31/2024
Principal Investigator:	Ruijie "Rebecca" Bian			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$90,981
	(revised)	
Est. Expended to Date		$55,000
FY 2023 - 2024 Budget		
FY Funds	(original)	$58,588
	(revised)	
Est. FY Expenditure		$68,754

Estimated 2024-2025 Budget		
Total		**$22,227**
Salaries		$22,227
Consumable Supplies & Materials		
Equipment	(non-expendable)	
Travel		
Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: LTRC has developed a computer package that allows estimation of evacuation traffic depending on storm characteristics and decisions made by Emergency Managers. It has been set up to operate in the New Orleans area and requires testing to validate its ability to replicate past storms. Testing of the computer package is necessary to determine the accuracy and usefulness of the package.

Objective(s): This project focuses on testing the developed Hurricane Evacuation Modeling Package (HEMP) in different storm scenarios and improving HEMP's performance. The objectives of this project include:
•Improve and validate prediction accuracy of the developed package
•Improve its fitness to actual emergency operations in Louisiana
•Improve its computation speed
•Explore enhancing HEMP's capabilities

Expected Benefits: A program that predicts the consequences of alternative management evacuation decisions allowing informed decision makings.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Task 1: Finalized the demand modeling code
Task 2: Checked the simulation setup and traffic simulation code update needs
Task 3: Improved simulation processing speed (e.g., the demand estimation time is cut from 4 hours to 20 minutes)
Task 4: Compared demand estimation results with survey responses
Task 5: Discussed possible capability improvements

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Task 1: Continue improving the demand modeling code during the project time (if any new potential is identified)
Task 2: Finalize coding in traffic simulation
Task 3: Continue improving simulation processing speed during the project time (if any new potential is identified)
Task 4: Compare traffic simulation results with actual traffic counts
Task 5: Finalize possible capability improvements
Task 6: Prepare the final report

Title:	**LTRC Proposal for the Support of Research and Development in Special Studies**	**Project Status:**	**Ongoing**

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000280**	Project Start Date:		7/1/2019
Research Project Number:	19-1SS	Completion Date	(original)	6/30/2021
Research Agency:	ULL	Completion Date	(revised)	6/30/2027
Principal Investigator:	Elisabeta Mitran			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$494,396
	(revised)	$2,721,723
Est. Expended to Date		$725,985
FY 2023 - 2024 Budget		
FY Funds	(original)	$121,000
	(revised)	$134,000
Est. FY Expenditure		$107,667

Estimated 2024-2025 Budget		
Total		**$195,318**
Salaries		$174,318
Consumable Supplies & Materials		$3,000
Equipment	(non-expendable)	$3,000
Travel		$15,000
Other		

BUDGET JUSTIFICATIONS

Travel: Travel budget for PI and students to attend:
-TRB annual meeting-$5,000
-Lifesavers Conference-$2,500
-International Conference-$5,000
-GHSA-$2,500

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: The focus of LTRC on highway safety-related research has increased over the past 10 years as Louisiana adopted the strategic vision “Destination Zero Deaths” and committed in 2009 to halve fatalities and severe injuries by 2030. The Louisiana Strategic Highway Safety Plan (SHSP) uses a comprehensive, data-driven, multidisciplinary approach to identify the most severe traffic safety problems and the most effective approaches to solve them.

Objective(s): The purpose of this project is to provide long-term professional assistance to the Louisiana Department of Transportation and Development (DOTD) on the management and conduct of research for special studies-related matters. Projects to be managed can include safety and other special studies, as necessary.

Expected Benefits: The benefits of this project include specialized technical expertise for the management of ongoing research program to investigate special studies questions, especially in the area of highway safety.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Task 1. Plan, develop, and manage the assigned LTRC research work program in the special studies/safety is ongoing.
Task 2. Provide authoritative review of contract research in the area of special studies/safety. This task is ongoing.
Task 3. Coordinate efforts to disseminate and implement the research findings is ongoing.
Task 4. Continue to conduct transportation engineering research projects, as needed. Task is ongoing.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Task 1. Continue to plan, develop, and manage the assigned LTRC research work program in the special studies/safety.
Task 2. Continue to provide authoritative review of contract research in the area of special studies/safety.
Task 3. Continue to coordinate efforts to disseminate and implement the research findings.
Task 4. Continue to conduct transportation engineering research projects, as needed.

Title:	**LTRC Proposal for the Support of Research and Development in ITS/Traffic**	**Project Status:**	**Ongoing**

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000281**	Project Start Date:		7/1/2019
Research Project Number:	19-1ITS	Completion Date	(original)	6/30/2021
Research Agency:	ULL	Completion Date	(revised)	6/30/2027
Principal Investigator:	Milhan Moomen			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$872,706
	(revised)	$3,905,189
Est. Expended to Date		$315,989
FY 2023 - 2024 Budget		
FY Funds	(original)	$94,248
	(revised)	$94,248
Est. FY Expenditure		$94,248

Estimated 2024-2025 Budget		
Total		**$103,000**
Salaries		$20,000
Consumable Supplies & Materials		$5,000
Equipment	(non-expendable)	$15,000
Travel		$25,000
Other		$38,000

BUDGET JUSTIFICATIONS

Supplies: Supplies: This is estimated for the purchase of several project related supplies and w ill be itemized when actually needed to be purchased.

Equipment: Equipment: Anticipated ITS equipment (cameras, w ireless services, counting devices, etc.) with an individual cost of an item not to exceed $5,000

Travel: Travel: The $25,000 travel budget is for the follow ing conferences:
1. TRB (6 attendees) - $15,000
2. GRITS (2 attendees) - $5,000
3. ITE (2 attendees) - $5,000

Other: Other: The estimated budget is for the follow ing activities:
1. Deepmetrics - $5,000
2. Consultation - $18,000
3. Data Point - $10,000
5. Vissim - $5,000

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: To conduct research for special studies-related matters, specifically for Intelligent Transportation System (ITS) and traffic engineering related topics.

Objective(s): The objective is to provide long-term professional assistance to DOTD on the management and conduct of research for special studies-related matters, specifically for ITS and traffic engineering-related topics. No specific research documents will be produced from this project. How ever, each study identified under this project will have its ow n proposal developed, complete with objectives, scope of work, deliverables, and amount/resources required to undertake the study.

Expected Benefits: It would benefit all the designers, planners, decision makers, and stakeholders especially in DOTD's ITS and traffic engineering areas.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Task 1: Re-Evaluate the Vision of LTRC's Intelligent Transportation System (ITS) Laboratory and Re-align w ith Transportation Needs of LTRC and LaDOTD to Better Serve the Public.
Task 2: Develop Research Protocols and Initiatives.
Task 3: Strategically Plan Ow n Project Schedules and Quantity of Resources to Participate in Research Projects.
Task 4: Coordinate Information.
Task 5: Assume Leadership Roles in Forming and Maintaining Productive Working Relationships.
Task 6: Build and Maintain a Strong Research Program.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES
Continue with Task 1: Re-Evaluate the Vision of LTRC's Intelligent Transportation System (ITS) Laboratory and Re-align with the Transportation Needs of LTRC and DOTD to Better Serve the Public. Continue with Task 2: Develop Research Protocols and Initiatives. Continue with Task 3: Strategically Plan Own Project Schedules and Quantify Resources to Participate in Research Projects. Continue with Task 4: Coordinate Information. Continue with Task 5: Assume Leadership Roles in Forming and Maintaining Productive Working Relationships. Continue with Task 6: Build and Maintain a Strong Research Program.

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

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:	**30000125**	Project Start Date:		7/1/2010
Research Project Number:	10-1PLAN	Completion Date	(original)	6/30/2015
Research Agency:	LTRC	Completion Date	(revised)	6/30/2027
Principal Investigator:	Ruijie "Rebecca" Bian			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$358,462
	(revised)	$10,895,402
Est. Expended to Date		$9,084,796
FY 2023 - 2024 Budget		
FY Funds	(original)	$86,978
	(revised)	
Est. FY Expenditure		$76,108

Estimated 2024-2025 Budget		
Total		**$101,647**
Salaries		$77,897
Consumable Supplies & Materials		$1,250
Equipment	(non-expendable)	
Travel		$10,000
Other		$12,500

BUDGET JUSTIFICATIONS

Travel: The budget is for travel to the Transportation Research Board Annual Meeting (~3 attendees) and the ASCE International Conference on Transportation & Development (~1 attendee).

Other: The budget is for potential equipment maintenance need.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: This project provides long-term professional assistance to the Louisiana Department of Transportation and Development on transportation planning and other matters. Research is conducted on topics from LTRC's research program, technical assistance requests from DOTD, and external research solicitations.

Objective(s): This project is to satisfy research needs and requirements from DOTD. This project also encourages graduate students to participate in the LTRC research program.

Expected Benefits: The research results and technical assistance are expected to facilitate DOTD's transportation planning activities. This project also affords LTRC the opportunity to support the enhancement of higher education.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Task 1: Research activities. (1) Supervised three graduate students and four undergrad students at LSU. (2) Developed three conference sessions and presented at 2024 Transportation Research Board Annual Meeting (TRB), the American Society of Civil Engineers (ASCE) International Conference on Transportation & Development (ICTD), and four additional conferences. (3) Published one journal article and one conference proceeding within the fiscal year to date. (4) Developed two internal research proposals: "Trip Generation for Various Sites" and "24-6SS: Statewide Lane Reconfiguration 'Road Diet' Screening for Louisiana." (5) Developed three external research proposals and one external problem statement. (6) Worked on one external research project.(7) Worked on multiple internal projects as described in Task 2. (8) Finalized one internal project report "22-5SS: Analyzing Human Mobility for Active Transportation Planning in Louisiana."

Task 2: Project management. Worked on internal projects 22-3SS, 22-5SS, 23-4SS, and 24-2SS. Project 24-6SS is expected to start within the fiscal year.

Task 3: Teaching. No teaching task is assigned in the fiscal year.

Task 4: Service. Served on technical committees and professional societies. (1) Served on three TRB Standing Committees/Council and one ASCE committee as a member. (2) Served on the Louisiana Complete Streets Advisory Council as a member. (3) Reviewed 31 journal articles, 25 problem statements, 1 external proposal, and 1 FHWA Notice of Proposed Rulemaking (NPRM) in 2023. (4) Provided technical assistance to DOTD "Evaluate the use of Integrated Modeling for Road Condition Prediction (IMRCP) system in Louisiana." (5) Served as a panel member for two NCHRP projects: 08-164 and 08-181.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES
Task 1: Research activities. Keep supervising students, publishing research results, and developing proposals for new projects. Task 2: Project management. Keep working on projects 22-3SS, 23-4SS, 24-2SS, and 24-6SS. Developing proposals for two new projects. Task 3: Service. Continue serving on technical committees and professional societies.

Title:	**Ultra High Performance Concrete Application In Link Slabs For Crack Mitigation**	**Project Status:**	**Ongoing**

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**		**Budget Category:**		**FHWA**
SIO:	**DOTLT1000503**		Project Start Date:		1/15/2024
Research Project Number:	24-1ST		Completion Date	(original)	1/14/2026
Research Agency:	LSU		Completion Date	(revised)	
Principal Investigator:	Ayman Okeil				

BUDGET STATUS

Total Budget				**Estimated 2024-2025 Budget**		
Total Cost	(original)	$249,995		**Total**		**$87,000**
	(revised)					
Est. Expended to Date		$20,000		Salaries		$60,000
FY 2023 - 2024 Budget				Consumable Supplies & Materials		$25,000
FY Funds	(original)	$100,000		Equipment	(non-expendable)	
	(revised)			Travel		$2,000
Est. FY Expenditure		$20,000		Other		

BUDGET JUSTIFICATIONS

Supplies: The purchase of supplies to support the proposed research is estimated to cost $25,000. This cost is mainly for materials used for testing UHPC mix trials in the lab. Also, the cost of licensing a software
package to be used for the simulation of the hybrid bridge deck system is budgeted under this item. No single supply item to exceed $500.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: The performance of link slabs under different scenarios was investigated in a field study of the Ouachita River bridge through LTRC Project 14-1ST. It was found that link slabs perform well in a floating span configuration up to a segment length of 540 ft. Due to the tension experienced by these link slabs, transverse deck cracking along the gap between adjacent spans was observed. It was also found that notches in the deck did not arrest cracks as was hypothesized.

Objective(s): The objective of this project is to investigate the feasibility of using UHPC in link slab regions of bridge decks.

Expected Benefits: Extending the service life of bridges in general, and bridge decks in particular, is of great importance to bridge owners. Bridge decks are known to deteriorate faster than their supporting beams. Eliminating deck cracking, especially in link slabs in the vicinity of girder ends can have a great impact on the longevity of the deck, and consequently the entire bridge. This will translate into savings related to maintenance costs and even replacement costs.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Task 1 - Conduct a literature review of research on UHPC applications in bridge construction.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Task 2 - Selection of an UHPC mix suitable for link slab applications, and
Task 3 - Identify a bridge with link slab detail about to be bid for construction in consultation with DOTD.

Title:	**Evaluation of Embedded Pile Resistance on Scour Critical Bridges**	**Project Status:**	**Ongoing**

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000457**	Project Start Date:		5/2/2022
Research Project Number:	22-3ST	Completion Date	(original)	5/1/2025
Research Agency:	LSU	Completion Date	(revised)	
Principal Investigator:	Murad Abu-Farsakh			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$383,004
	(revised)	
Est. Expended to Date		$163,100
FY 2023 - 2024 Budget		
FY Funds	(original)	$82,700
	(revised)	
Est. FY Expenditure		$82,600

Estimated 2024-2025 Budget		
Total		**$78,500**
Salaries		$73,800
Consumable Supplies & Materials		$4,700
Equipment	(non-expendable)	
Travel		
Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: Problem Statement: Louisiana DOTD frequently evaluates channel geometry to determine if scour has impact on embedded foundation. In many cases, the resistance of embedded piles' estimated using nearby soil borings and on same static analysis methods used to design piles have shown that the pile resistance in many cases is less than the dead load reaction for the given pile. It is possible that the static equilibrium design methods are not adequate for this type of bridge evaluation that needs in

Objective(s): 1) Complete additional structural load tests to confirm whether a bridge is safe to traffic load. 2) Explore methods to evaluate resistance of embedded piles for bridges subjected to critical scour. 3) Evaluate direct cone penetration test (CPT) methods to determine the best method for estimating the embedded pile resistance. 4) Incorporate long-term effect of pile resistance (scour, setup). 5) Identify bridges that will be replaced to confirm the best method by loading pile prior to demolition.

Expected Benefits: A standardized method of estimating the geotechnical resistance of embedded piles will help provide a more rapid response in determining whether it is safe or not to load post a bridge after any scour event. This will help ensure the safety of bridges to vehicles and passengers prior to open the bridge to traffic, and help prioritize bridge replacement projects.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Task 1- conducted literature review relevent to methods and techniques for evaluating the current resistance of in-place piles for in-service bridges.

Task 2- Identified four bridges to be demolished to cut and conduct static pile load test, and prepared notes on cutting and conducting static load testing of a selected pile for inclusion on design plan of the 4 bridges that to be demolished.

Task 3- Performed CPT and seismic CPT (SCPT) tests on the seven proof load test bridges to obtain soil information and properties close to the pile bent.

Task 4- Analyzed the results of seven proof load tests and corresponding CPT/SCPT data for the seven sites; and analyzed the results of CPT and seismic CPT tests for the seven proof load tests for evaluating the ultimate capacity of tested piles.

Task 5- Analyzed 14 fully instrumented test piles using the top-performed 8 direct pile-CPT methods. Collected data from literature on pile load tests that were tested up to 30 years after installation. Collected pile load test data from literature for 5 piles subjected to long-term aging and scour. Continued updating the curves of consolidation and aging setup with time. Continued simulating the effect of pile installation on the surrounding stress state and the effect of scour on the reduction in pile capacity using ABAQUS software.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES
Task 1-Continue literature review relevent to methods and techniques for evaluating the current resistance of in-place piles for in-service bridges. Task 2- Continue identifying bridges with critical scour to conduct additional proof load tests. Identify new bridges to be demolished to cut and conduct a single static pile load test. Identify new bridges to be demolished to cut and conduct a single static pile load test to evaluate the long-term "aging" pile capacity. Task 3- Perform CPT and seismic CPT tests through the bridge deck for any new proof load test sites and any potential bridges to be demolished. Task 4- Continue analysing the test results of all previously conducted proof load tests. Continue analysing the CPTu and siezmic CPT tests for any new proof load tests and/or single static load test on demolished bridge sites. Task 5- Continue exploring different techniques for extrapolating the incomplete load-displacement curves for the proof load tests to evaluate the ultimate pile capacity. Continue evaluating the potential use of seismic CPT tests for extrapolating the incomplete load-displacement curves from proof load tests. Task 6- Collect as much as possible pile load tests from literature that were tested up to 30 years after pile installation. Continue analysing the collected data from literature on pile load tests that were tested up to 30 years after installation. Continue analysing the data for consolidation and aging setup effects. Continue simulating the effect of pile installation on the surrounding stress state and the effect of global and local scour on the reduction of pile capacity using ABAQUS software.

Title:	**Skew Detection System Replacement on Vertical Lift Bridges Phase 2**	**Project Status:**	**Ongoing**

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000428**	Project Start Date:		2/1/2022
Research Project Number:	22-2ST	Completion Date	(original)	12/31/2022
Research Agency:	Wiss, Janney, Elstner Associates, Inc.	Completion Date	(revised)	9/30/2024
Principal Investigator:	Gareth Rees			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$460,000
	(revised)	$531,688
Est. Expended to Date		$487,114
FY 2023 - 2024 Budget		
FY Funds	(original)	$18,937
	(revised)	$227,214
Est. FY Expenditure		$227,214

Estimated 2024-2025 Budget		
Total		**$14,592**
Salaries		$14,592
Consumable Supplies & Materials		
Equipment	(non-expendable)	
Travel		
Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: For a tower drive vertical lift bridge, failure to maintain span longitudinal or transverse skew can lead to jamming of the movable span in its guides and, without adequate protection, can lead to a catastrophic bridge failure. Phase 1 of this study yielded some recommendations for the replacement of the differential selsyn used with new electric / electronic components.

Objective(s): The objective of this of this project is to: (1) analyze the control system and determine how to interface the encoder system into the existing electrical ladder logic (2) determine the scope of work required to implement the installation (3) perform the installation (4) calibrate and test the installation (5) provide support personnel and time for troubleshooting the installation for a period of 6 months.

Expected Benefits: A reliable skew detection system with replacement components readily available in the market.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Task 2. Finalized schedule and costs.
Task 3. Final coordination and installation.
Task 4. Adjust and calibrate the equipment to be able to correctly display skew as well as trip the electrical system when the bridge gets too far out of skew.
Task 4. Submit report.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Task 5. Post installation visits to check on status.

Title:	**Conversion of Methane to Transportation Fuels via Photo-Thermo Catalysis**	**Project Status:**	**Ongoing**

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000550**	Project Start Date:		7/1/2024
Research Project Number:	25-1TIRE	Completion Date	(original)	6/30/2025
Research Agency:	LTU	Completion Date	(revised)	
Principal Investigator:	Yang Xiao			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$30,000
	(revised)	
Est. Expended to Date		
FY 2023 - 2024 Budget		
FY Funds	(original)	
	(revised)	
Est. FY Expenditure		

Estimated 2024-2025 Budget		
Total		**$30,000**
Salaries		$26,415
Consumable Supplies & Materials		$3,585
Equipment	(non-expendable)	
Travel		
Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: The Haynesville Shale play in North Louisiana contains vast amounts of shale gas with methane as a primary component. The ultimate goal of this project is to convert methane to ethanol as a transportation fuel via photo-thermo catalysis.

Objective(s): Thje objectives of this research are as follows:
1. Develop an experimental framework to study the principles of photo-thermo catalysis
2. Test and optimize the photo-thermal catalytic performance of methane to ethanol over a semiconductor-supported metallic catalyst
3. Elucidate the mutual effects of light and heat in photo-thermo catalysis

Expected Benefits: If successful, a sustainable source of ethanol can be produced and used as a gasoline additive for high octane rating.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Start and complete the project.

Title:	**Structural Response Evaluation and Design of Ultra High Performance Concrete Bridge Girders**	**Project Status:**	**Ongoing**

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000498**	Project Start Date:		7/1/2024
Research Project Number:	24-3TIRE	Completion Date	(original)	6/30/2025
Research Agency:	LTU	Completion Date	(revised)	
Principal Investigator:	Roya Solhmirzaei			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$30,000
	(revised)	
Est. Expended to Date		
FY 2023 - 2024 Budget		
FY Funds	(original)	$30,000
	(revised)	
Est. FY Expenditure		

Estimated 2024-2025 Budget		
Total		**$30,000**
Salaries		$24,231
Consumable Supplies & Materials		$5,569
Equipment	(non-expendable)	
Travel		$200
Other		

BUDGET JUSTIFICATIONS

Supplies: The $5569 budget for consumable supplies will be used to purchase supplies with a single supply item not to exceed $1000.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: The growing interest in using UHPFRC in bridge engineering is being hindered by a lack of design guidelines. To address the noted issue, in this project the structural response of UHPFRC girders will be evaluated under different loading conditions using experimental testing, numerical modeling, and machine learning algorithms. The key advantages of using UHPFRC in bridge girders are high shear strength, enhanced post-cracking response, and tensile strain hardening characteristics.

Objective(s): The main objectives of this research project include evaluating the structural response of UHPFRC girders subjected to different loading configurations, studying the feasibility of eliminating shear reinforcement, and developing simplified design expressions.

Expected Benefits: These benefits also result in financial savings related to reductions in the size of bridge girders, reduced use of materials, reduced or eliminated shear reinforcement, reduced load demands, and maintenance costs.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Project start date was delayed for one year due to PI pregnancy and maternal leave.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Start and complete the research project.

FHWA
Part B SPR Funded
Research Program

PROPOSED RESEARCH

LTRC Annual Research Program
Fiscal Year 2024-2025

Title:	**Effect of SARA Asphalt Binder Fractionations on Laboratory Performance of Asphalt Mixtures**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**			**Budget Category:**	**FHWA**
SIO:			Project Start Date:		7/1/2022
Research Project Number:			Completion Date	(original)	4/30/2024
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Louay Mohammad				

BUDGET STATUS

Total Budget				**Estimated 2024-2025 Budget**		
Total Cost	(original)	$160,000		**Total**		**$136,589**
	(revised)					
Est. Expended to Date				Salaries		$135,089
FY 2023 - 2024 Budget				Consumable Supplies & Materials		
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		$1,500
Est. FY Expenditure				Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: The 2018 DOTD Specifications require a criterion for critical strain energy release rate, Jc, obtained from Semi Circular Bend (SCB) test as a part of its balanced asphalt mixture design. Asphalt binder aging has a significant effect on long-term performance of asphalt pavement. It causes embrittlement of asphalt binder due to the changes in rheological properties and chemical composition of asphalt binders.

Objective(s): The objective of this study is to compare chemical properties of asphalt binders characterized in LTRC Project 22-1B to the corresponding asphalt mixtures' SCB critical strain energy release rate, Jc.

Expected Benefits: Finding of this research will substantially increase understanding of the effect of chemical properties of various asphalt binders on intermediate temperature cracking resistance of asphalt mixtures. Specifically, those mixtures with increased use of recycled materials. Further, results will promote the use of sustainable technologies in Louisiana's flexible pavement construction.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Task 1 – Conduct Literature review
Task 2 – Identify Asphalt Binders Characterized in LTRC Project 22-1B
Task 3 – Develop Asphalt Mixture Design and Conduct of Laboratory SCB testing
Task 4 – Perform Data analyses

Title:	Implementation of Louisiana BMD Framework for QC/QA Specifications	Project Status:	Proposed

Funding Source:	SPR: TT-Fed/TT-Reg - 5	Budget Category:	FHWA

SIO:		Project Start Date:		7/1/2023
Research Project Number:		Completion Date	(original)	12/31/2024
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Louay Mohammad			

BUDGET STATUS

Total Budget			Estimated 2024-2025 Budget		
Total Cost	(original)	$100,000	**Total**		**$99,000**
	(revised)				
Est. Expended to Date			Salaries		$99,000
FY 2023 - 2024 Budget			Consumable Supplies & Materials		
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: The 2016 DOTD Specifications require a criterion for critical strain energy release rate, Jc, obtained from Semi Circular Bend (SCB) test as a part of its balanced asphalt mixture design. SCB test is performed on long term aged (LTA) compacted samples (5 days at 85°C). However, practices of QC/QA are time-sensitive. Thus, it is impractical to include LTA SCB samples during QC and QA testing.

Objective(s): The objective of this study is to develop a practical LTA protocol for asphalt mixes. The proposed LTA protocol is envisioned to be rapid, easy, and reliable, and requires shorter sample conditioning time for plant-produced asphalt mixture samples than AASHTO R30, which makes it practical for implementation of SCB in QC/QA testing

Expected Benefits: The main product of this research will be an implementable specification for the use of the SCB test in QC/QA practices in the state of Louisiana. It is anticipated that findings will complement the current 2018 Louisiana DOTD Specifications for Roads and Bridges, and provide efficient proactive measures to ensure that mixtures are produced and compacted as expected for an extended service life against cracking.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Task 1: Conduct a comprehensive literature review on studies relevant to long-term aging of asphalt mixtures and identify promising aging procedures;
Task 2: Develop laboratory experiments for asphalt binder chemical and rheological properties and asphalt mixture SCB Jc testing;
Task 3: Identify field projects and collect component materials of plant-produced asphalt mixtures; and
Task 4: Conduct laboratory experiments and perform data analysis

Title:	**Assessment of the PaveScan RDM for Continuous Density Measurements in Louisiana**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg - 6**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		7/1/2024
Research Project Number:			Completion Date	(original)	6/30/2026
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Moses Akentuna				

BUDGET STATUS

Total Budget				**Estimated 2024-2025 Budget**		
Total Cost	(original)	$169,013		**Total**		**$84,000**
	(revised)					
Est. Expended to Date				Salaries		$84,000
FY 2023 - 2024 Budget				Consumable Supplies & Materials		
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: Asphalt pavements are crucial for transporting goods in the US, and their quality depends on the quality of the materials and the construction technique used. To improve durability, road agencies have focused on increasing the density of asphalt layers. However, current random testing methods might miss small defects. Newer technologies, like PaveScan, can continuously measure density and improve quality control. This study aims to evaluate PaveScan for asphalt density measurement in Louisiana.

Objective(s): The objectives of this research are to:
(1) Evaluate the PaveScan rolling density meter (RDM) for continuous asphalt mat and joint density measurements.
(2) Propose a framework for asphalt mat and longitudinal joint construction and quality control and/or assurance through continuous density measurements.

Expected Benefits: It is anticipated that guidelines will be proposed for using continuous density measurement for asphalt pavement quality assurance and/or control during construction. These guidelines will assist Louisiana to efficiently monitor pavement density during construction, resulting in pavement sections with limited defects and longer service lives.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

The following activities are expected to be performed
Task 1: Conduct a literature review and survey
Task 2: Develop a test plan
Task 3: Execute the proposed test plan

Title:	**Enhanced Interaction between Crumb Rubber Modifiers and Asphalt Binder to Improve Performance**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg - 6**	**Budget Category:**	**FHWA**

SIO:		Project Start Date:		7/1/2021
Research Project Number:		Completion Date	(original)	6/30/2023
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Louay Mohammad			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$85,000
	(revised)	
Est. Expended to Date		
FY 2023 - 2024 Budget		
FY Funds	(original)	
	(revised)	
Est. FY Expenditure		

Estimated 2024-2025 Budget		
Total		**$59,396**
Salaries		$57,896
Consumable Supplies & Materials		
Equipment	(non-expendable)	
Travel		$1,500
Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: Addition of crumb rubber (CR) particles to asphalt binders and asphalt mixtures is a sustainable construction technology that ensures waste tires are disposed of in an environmentally sustainable manner. Crumb rubber modifiers have been found to improve durability of asphalt pavements through increased rutting and cracking performance.

Objective(s): Objectives of this study are to identify thermally stable aromatic oils (AOs) for enhancement of interaction between CR particles and asphalt binder during CR modification of asphalt binders; (2) evaluate effects of CR type (ambient, cryogenic, proprietaries) and dosage rate on asphalt binder and mixture performance, and (3) evaluate effects of AO type and dosage rate on asphalt binder and mixture performance.

Expected Benefits: Findings from this research will offer incorporation of high contents of CR particles into asphalt binders and asphalt mixtures. This will reduce cost of highway construction and the adoption of sustainable construction practices to protect the environment

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Task 1: Conduct Literature Review
Task 2: Develop a Statistically Based Laboratory Experiment
Subtask 2.1: Chemical Characterization of CR Particles and Aromatic Oils
Subtask 2.2: Asphalt binder Experiment (Base Asphalt binder + soaked [CR + AO])
Chemical, rheological, microstructural characterization
Subtask 2.3: Asphalt Mixture Experiment
Characterization at high-, intermediate-, and Low-temperatures
Moisture susceptibility evaluation
Task 3. Perform Laboratory Experiment of Task 2

Title:	**Enhancement of Mechanical Properties of Asphalt Cements and Asphalt Mixtures Containing Waste Plastic**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg - 6**	**Budget Category:**	**FHWA**

SIO:		Project Start Date:		7/1/2021
Research Project Number:		Completion Date	(original)	6/30/2023
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Louay Mohammad			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$349,000
	(revised)	
Est. Expended to Date		
FY 2023 - 2024 Budget		
FY Funds	(original)	
	(revised)	
Est. FY Expenditure		

Estimated 2024-2025 Budget		
Total		**$108,868**
Salaries		$107,368
Consumable Supplies & Materials		
Equipment	(non-expendable)	
Travel		$1,500
Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: There is a growing interest in adoption of more sustainable technologies for road pavement design and construction in order to protect the environment and to provide other economic benefits. In 2017, US EPA reported that approximately 35.5M tons of waste plastic was generated, which represents over 100% increase in waste plastic generation in 27 years. Despite benefits obtained from waste plastics, there are many challenges associated with their use in asphalt pavements.

Objective(s): The objectives of the research are to (1) evaluate low-, intermediate- and high temperature properties of waste plastics in asphalt cements and asphalt mixtures; and (2) assess economic and environmental impacts, health and safety, and long-term durability associated with use of waste plastics materials in asphalt mixtures.

Expected Benefits: It is anticipated that results from this research will recommend revisions to Louisiana's asphalt specifications for incorporating waste plastics in asphalt cements and mixtures. Further, results will promote the use of sustainable technologies in Louisiana's flexible pavement construction.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Task 1. Conduct Literature Review and Survey
Task 2- Develop Statistically Based Laboratory Experiment
Task 3- Develop Compatibilizers and Waste Plastic Experiment
Task 4- Perform Asphalt Cement Experiment

Title:	**Enhancing Pavement Resiliency to Sea Level Rise Using Natural and Nature-Based Features in Louisiana**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg - 6**	**Budget Category:**	**FHWA**

SIO:		Project Start Date:		7/1/2021
Research Project Number:		Completion Date	(original)	6/30/2023
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Louay Mohammad			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$85,000
	(revised)	
Est. Expended to Date		
FY 2023 - 2024 Budget		
FY Funds	(original)	
	(revised)	
Est. FY Expenditure		

Estimated 2024-2025 Budget		
Total		**$83,000**
Salaries		$83,000
Consumable Supplies & Materials		
Equipment	(non-expendable)	
Travel		
Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: Climate change and sea level rise (SLR) are significantly increasing risk of severe high tide flooding in many coastal and adjacent inland areas and exacerbating flood risk associated with hurricanes and coastal storms. Surface transportation systems in coastal areas, including roadway corridors, are becoming increasingly vulnerable to flooding, inundation and erosion. Inundation weakens pavement structure with varying degrees of structural deterioration that reduces pavements' service life.

Objective(s): The objective of this study is to evaluate the effectiveness of nature-based hybrid structures including dikes, wetlands and dunes incorporated with natural materials that are native to the area, with or without sheet piles, for reducing the impact of SLR and extreme events on roadways.

Expected Benefits: The developed practice is expected to provide an immediately implementable guideline on the design and construction of roads with the evaluated Natural and Nature-Based Features (NNBF) for achieving coastal roadways with enhanced resilience.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Task 1: Conduct a comprehensive literature review on studies relevant to roadway damage caused by flooding events, and application of NNBF for improving the resilience of coastal roadways.
Task 2: Evaluate the effectiveness of nature-based hybrid structures such as dikes, wetlands and dunes incorporated with natural materials that are native to the area, with or without sheet piles.
Task 3: Quantify the frequency, magnitude and duration of inundation events with/without NNBF utilizing existing storm surge and wind wave models with flexible meshes.

Title:	**Performance of Asphalt Pavements Containing Recycled Materials Under Accelerated Loading**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg - 6**	**Budget Category:**	**FHWA**

SIO:		Project Start Date:		7/1/2021
Research Project Number:		Completion Date	(original)	6/30/2023
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Louay Mohammad			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$350,000
	(revised)	
Est. Expended to Date		
FY 2023 - 2024 Budget		
FY Funds	(original)	
	(revised)	
Est. FY Expenditure		

Estimated 2024-2025 Budget		
Total		**$84,316**
Salaries		$82,816
Consumable Supplies & Materials		
Equipment	(non-expendable)	
Travel		$1,500
Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: Recycling of construction materials in flexible pavements is cost effective offers key element of sustainability in transportation infrastructure through reduction in use of virgin materials and eliminates needs for landfill areas. Reclaimed Asphalt Pavement (RAP) is commonly used because of its high compatibility with newly produced asphalt mixtures. Further, Reclaimed Asphalt Shingles (RAS) and waste plastics have become another promising candidate green construction material.

Objective(s): The objective of this research is to assess the applicability of “green” construction and performance alternatives such as RAS, increased amount of RAP, and waste plastics in Louisiana asphalt paving projects under accelerated loading.

Expected Benefits: Findings from this research results will be used to update asphalt mixture specifications in the Louisiana Specifications for Roads and Bridges. Further, results will promote the use of sustainable technologies in Louisiana’s flexible pavement construction.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Task 1 – Conduct Literature review
Task 2 – Develop experimental factorial,
Task 3 – Perform laboratory asphalt mixture design and performance testing for mixtures to be used in Task 4
Task 4 – Prepare construction documents for construction of test lanes
Task 5 – Monitor construction of test lanes as per bid documents

Title:	**Validation of SCB Jc Prediction Model and Aging Correction Factor**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg - 6**	**Budget Category:**	**FHWA**

SIO:		Project Start Date:		7/1/2024
Research Project Number:		Completion Date	(original)	6/30/2026
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Moses Akentuna			

BUDGET STATUS

Total Budget			**Estimated 2024-2025 Budget**		
Total Cost	(original)	$170,000	**Total**		**$75,000**
	(revised)				
Est. Expended to Date			Salaries		$75,000
FY 2023 - 2024 Budget			Consumable Supplies & Materials		
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: The Balanced Mix Design (BMD) framework helps road agencies to design a durable mix for a by considering how the pavement will resist common distresses like rutting and cracking. The SCB test is a reliable way to measure cracking resistance, but it takes too long to complete. To address this, researchers developed a prediction model and aging correction factor to estimate SCB results quickly. This study aims to validate these tools for use in Louisiana.

Objective(s): The aim of the proposed study is to validate the SCB Jc prediction model and aging correction factor concept developed as part of LTRC project 19-4B.

Expected Benefits: By validating a prediction model and aging correction factor, this research hopes to guide state agencies in quality control/quality assurance (QC/QA) processes. This would significantly reduce the time needed to age asphalt mixtures before the SCB test, leading to faster results and improved efficiency.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

The following tasks are expected to be performed:
Task 1: Conduct a literature review
Task 2: Develop a test plan
Task 3: Execute the proposed test plan

LTRC Annual Research Program
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Title:	**Evaluation of T-Fast (TFHRC ASR Test) Test Method for Aggregate Acceptance**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:		Project Start Date:		7/1/2023
Research Project Number:		Completion Date	(original)	6/30/2026
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Zhen Liu			

BUDGET STATUS

Total Budget			**Estimated 2024-2025 Budget**		
Total Cost	(original)	$240,000	**Total**		**$80,000**
	(revised)				
Est. Expended to Date			Salaries		$80,000
FY 2023 - 2024 Budget			Consumable Supplies & Materials		
FY Funds	(original)	$80,000	Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: A newly developed test from researchers at Turner-Fairbank Highway Research Center (TFHRC) promises accurate Alkali-Silica Reactivity (ASR) aggregate source testing in as little as 21-days of age.

Objective(s): In this project, the T-FAST test will be investigated for potential use by the Department for aggregate acceptance on the AML. Note that FHWA is currently undergoing a Round-Robin set of testing to determine the precision and bias of the proposed test method.

Expected Benefits: Implementation of the results would give the Department the ability for aggregate acceptance at a much shorter timeframe than currently available.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Write the proposal and identify research tasks;
Conduct literature review;
Begin sample preparation and testing.

Title:	**Investigation of Piezoelectric and Other Advanced Sensors in Concrete**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg - 6**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000528**	Project Start Date:		7/1/2023
Research Project Number:	24-1C	Completion Date	(original)	6/30/2025
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Tyson Rupnow			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$200,000
	(revised)	$258,117
Est. Expended to Date		$30,000
FY 2023 - 2024 Budget		
FY Funds	(original)	$84,000
	(revised)	$30,000
Est. FY Expenditure		$29,200

Estimated 2024-2025 Budget		
Total		**$91,309**
Salaries		$90,809
Consumable Supplies & Materials		$500
Equipment	(non-expendable)	
Travel		
Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: Advancements in sensor type and capability are rapidly advancing. A new breed of sensors utilizing piezoelectric potential have been developed. This project will investigate utilization of these new, and other potential sensors, for use in concrete non-destructive testing.

Objective(s): Review the state of the practice for piezoelectric sensors and other newly developed technology for NDT testing of concrete materials. Procure promising technology and conduct a variety of field tests in various locations across the State.

Expected Benefits: New NDT test methods have the potential to eliminate the need for casting cylinders, testing on hardened concrete, predicting sawcut time, etc. If NDT testing sensors allow for a reduction of cylinders, the Department stands to realize savings due to a potential reduction in claims, increased safety, etc.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Literature review completed (partially) for the proposal purposes. Proposal submitted for approval (April 2024). Expect to switch from proposed project to ongoing in May/June 2024. Laboratory testing will be partially completed with existing sensors already obtained.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Continue sample preparation and testing as this project will have been moved from proposed to ongoing (Expected Late May or June 2024). Continue search for advanced sensors for inclusion in this study. Move from laboratory testing to field testing of sensors already purchased.

Title:	**Update on Evaluating the Magnitude and Time Rate of Consolidation Settlement of Embankments and other Infrastructures from Piezocone Penetration Tests (PCPT)**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:		Project Start Date:		3/14/2023
Research Project Number:		Completion Date	(original)	3/29/2023
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Murad Abu-Farsakh			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$200,000
	(revised)	
Est. Expended to Date		
FY 2023 - 2024 Budget		
FY Funds	(original)	
	(revised)	
Est. FY Expenditure		

Estimated 2024-2025 Budget		
Total		**$20,000**
Salaries		$20,000
Consumable Supplies & Materials		
Equipment	(non-expendable)	
Travel		
Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: The construction of embankments on soft soils requires accurate estimation of magnitude and rate of settlement to conduct rational and safe design.

A previous study was conducted to evaluate several methods for estimating consolidation parameters from piezocone penetration test (PCPT), and a new method was proposed. The study was based on limited lab data and sites. New PCPT methods were developed since then. The developed embankment settlement software was never finalized, verified and tested.

Objective(s): The main objective of this research study is to update methods for accurate estimation of the magnitude and time rate of consolidation settlement of embankments and other infrastructures over cohesive soils from piezocone penetration test (PCPT) data and dissipation test data, and to upgrade, verify, and finalize the developed software to include in-situ PCPT data, standard penetration test (SPT) data and laboratory-evaluated soil boring data.

Expected Benefits: This study will provide an updated on the best methods for estimating the magnitude and time rate of consolidation settlements utilizing the piezocone penetration and dissipation tests for use in Louisiana. The findings of this study will significantly help improve the estimation of settlements for embankments, MSE walls, Bridges and other infrastructures for safe analysis and design, which can help reduce the construction cost, and result in more resilient geotechnical infrastructure.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES
Task 1- Conduct comprehensive literature review on relevant work on estimating the consolidation parameters and embankment settlement from the piezocone penetration and dissipation test data. Task 2- Identify new construction embankment sites for field instrumenting and monitoring of consolidation settlement with time. Task 3- Drill boreholes to retrieve soil samples for laboratory consolidation tests, and conduct in-situ piezocone penetration and dissipation tests to evaluate the consolidation parameters needed to calculate the magnitude and time rate of consolidation settlement of cohesive soils as well as the value of overconsolidation ratio (OCR). Task 4- Start analyzing the laboratory and PCPT data for estimating the magnitude and time rate of consolidation settlement of monitored embankments using the different PCPT methods.

Title:	**Use and Interpretation of Seismic Piezocone Penetration Testing (SCPTu) for Geotechnical Site Investigation**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:		Project Start Date:		1/1/2018
Research Project Number:		Completion Date	(original)	12/31/2020
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Murad Abu-Farsakh			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$200,000
	(revised)	
Est. Expended to Date		
FY 2023 - 2024 Budget		
FY Funds	(original)	
	(revised)	
Est. FY Expenditure		

Estimated 2024-2025 Budget		
Total		**$20,000**
Salaries		$20,000
Consumable Supplies & Materials		
Equipment	(non-expendable)	
Travel		
Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: The piezocone penetration test (CPTu) is a preferred in-situ test for subsurface investigation. The addition of geophone to CPTu (SCPTu) will enhance the geotechnical investigation by providing four independent measurements: tip resistance, sleeve friction, porewater pressure, and shear wave velocity (Vs). The Vs can be used to evaluate small-strain shear modulus (Go), which is appropriate to analyses of foundation systems, retaining walls, and problems involving cyclic and seismic loadings.

Objective(s): The objective of this study are: identifying available methods to evaluate small-strain shear modulus (Go) and damping coefficient (C) from SCPTu; conducting SCPTu tests on selected sites; modify/develop models to evaluate Go and C for Louisiana soils; apply Go and C values to evaluate pile capacity using PDA and CAPWAP cases; develop load-deformation curves for selected test piles for comparison with measured data; and develop model to evaluate undrained shear strength (Su) from SCPTu data.

Expected Benefits: The proposed research project will help the DOTD to better evaluate the initial shear modulus (Go) and damping coefficient of subsurface soils for various design applications, such as the dynamic analysis of driven piles and the establishment of load deformation curves of piles. This is expected to result in cost effective and safer axial and lateral capacity design of piles.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Task 1 - Conduct comprehensive literature review on the use of Seismic Piezocone Penetration Testing (SCPTu) for geotechnical engineering applications such as evaluating the static and dynamic soil properties, evaluate small-strain shear modulus (Go) and damping coefficient (C), evaluate the undrained shear strength, Su, establish pile load-deformation curve, etc.

Task 2 - Identify old and new project sites for conducting Seismic Piezocone Penetration Testing (SCPTu) and soil borings.

Task 3 - Start collecting in-situ test data for selected sites using SCPTu.

Task 4 - Start collecting soil samples for laboratory testing to evaluate the Go and C from samples retrieved from soil borings of same sites.

Title:	**Evaluating the effect of pile installation, long-term scour and reduction in overburden pressure on pile capacity**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg - 6**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		2/28/2023
Research Project Number:			Completion Date	(original)	3/30/2023
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Murad Abu-Farsakh				

BUDGET STATUS

Total Budget				**Estimated 2024-2025 Budget**		
Total Cost	(original)	$200,000		**Total**		**$20,000**
	(revised)					
Est. Expended to Date				Salaries		$20,000
FY 2023 - 2024 Budget				Consumable Supplies & Materials		
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: An accurate estimation of capacity of driven piles taking into consideration the effect of installation, scour, and changes in overburden stresses is a challenge to design engineers.
The behavior of piles during installation in terms of stress charge, soil densification, and change in soil properties are unknown, which depends on many factors.
The current design considers the scour effect only for sand layers by reducing the overburden pressure, it does not consider the effect on clay/silt soil.

Objective(s): The main objective of this research study is to evaluate the effect of pile installation, long-term scour, and reduction in overburden pressure on the strength and stress state of surrounding soils for better analysis and design of pile foundations, especially using direct pile-CPT methods.

Expected Benefits: This study will provide DOTD engineers with design methodology and tools to estimate the ultimate capacity of piles that takes into consideration the effect of pile installation and subsequent effects of scour and reduction in overburden pressure. The findings of this study will help improve the reliability and accuracy of estimating the ultimate pile capacity, thus results on reducing the construction cost of pile foundations, and having safer and resilient bridges and other infrastructure.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Task 1- Conduct comprehensive literature review on relevant work on the effect of pile installation, long-term scour, and reduction in overburden pressure on the strength and stress state of surrounding soils.

Task 2- Develop finite element models to simulate the effect of pile installation, and subsequent consolidation setup.

Task 3- Develop finite element models to simulate the effect of long-term scour and reduction on overburden pressure.

Task 4- Consider any available analytical method for considering the effect of pile installation, long-term scour, and reduction in overburden pressure for design of piles, including the FHWA method.

Title:	**Evaluation and development of CPT-based methods for estimating the ultimate axial capacity of drilled shafts**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg - 6**	**Budget Category:**	**FHWA**

SIO:		Project Start Date:		3/7/2023
Research Project Number:		Completion Date	(original)	3/23/2023
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Murad Abu-Farsakh			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$200,000
	(revised)	
Est. Expended to Date		
FY 2023 - 2024 Budget		
FY Funds	(original)	
	(revised)	
Est. FY Expenditure		

Estimated 2024-2025 Budget		
Total		**$20,000**
Salaries		$20,000
Consumable Supplies & Materials		
Equipment	(non-expendable)	
Travel		
Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: The use of drilled shaft foundations has increased significantly due to their ability to carry large loads. The current practice in calculating ultimate capacity of drilled shafts is based on static analysis from soil boring and lab tests.

The development and incorporation of the direct CPT method(s) for design of drilled shafts is expected to provide more accurate and cost effective estimation of the ultimate capacity of drilled shafts, and hence save labor time and money for Louisiana.

Objective(s): The main objective of this study is to evaluate and develop direct CPT methods for calculating the ultimate capacity of drilled shafts and to calibrate the corresponding resistance factors for LRFD design of drilled shaft utilizing CPT data.

Expected Benefits: The research study will provide DOTD engineers with design methodology and tools to calculate the ultimate capacity of drilled shafts efficiently using the CPT data. The locally calibrated resistance factors for the CPT-based design methods will be provided. The findings of this study is expected to improve the accuracy of estimating the ultimate capacity of drilled shafts compared to the currently used static method, thus reducing the construction cost of drilled shaft foundations.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Task 1- conduct literature review on relevant research work on direct methods for estimating the ultimate capacity of drilled shafts from CPT data.

Task 2- Identify and collect all drilled shaft load tests that were performed in Louisiana from LA DOT archives.

Task 3- Start conducting CPT tests close to drilled shaft tests.

Task 4- Start analyze the drilled shaft tests and the corresponding CPT data.

Title:	**Developing a Methodology for Pavement Drainage System Rating**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000526**	Project Start Date:		5/15/2024
Research Project Number:	24-2P	Completion Date	(original)	11/14/2025
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Qiming Chen			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$149,100
	(revised)	
Est. Expended to Date		
FY 2023 - 2024 Budget		
FY Funds	(original)	$8,800
	(revised)	
Est. FY Expenditure		$8,800

Estimated 2024-2025 Budget		
Total		**$97,100**
Salaries		$97,100
Consumable Supplies & Materials		
Equipment	(non-expendable)	
Travel		
Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: The DOTD Highway Needs Database contains a drainage condition field that has not been updated for approximately 20 years. The DOTD highway maintenance section once proposed a drainage condition Level of Service (LOS) but never implemented it.

Objective(s): The objective of this research is to explore the use of existing pavement and LiDAR data to develop a pavement drainage system rating index as part of pavement condition assessment in Louisiana, potentially by creating a drainage rating index as part of pavement condition assessment.

Expected Benefits: Developing a robust and advanced system for assessing drainage conditions will lead to more informed decision-making in pavement design, maintenance, and rehabilitation. The societal impact of enhanced road safety through reduced hydroplaning incidents and heightened pavement durability is immeasurable.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

The project has not started yet. We have held two PRC meetings, one on 02/20/2024 and the other on 4/15/2024. The project is expected to start on 5/15/2024.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Task 1: Conduct Literature Review
Task 2: Conduct a State Wide Survey
Task 3: Examine and Evaluate Drainage Condition with Existing Pavement Data and LiDAR Data

Title:	**Development of a Database for Successfully Performing Pavement Sections in Louisiana**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:			Project Start Date:		7/1/2023
Research Project Number:			Completion Date	(original)	6/30/2026
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	Qiming Chen				

BUDGET STATUS

Total Budget				**Estimated 2024-2025 Budget**		
Total Cost	(original)	$250,000		**Total**		**$80,000**
	(revised)					
Est. Expended to Date				Salaries		$80,000
FY 2023 - 2024 Budget				Consumable Supplies & Materials		
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: In Louisiana, there are asphalt pavements that were constructed over 15 years ago and have continued to provide excellent service to the public. However, there has been limited effort thus far to identify and extract insights from these successful pavement sections. Research documenting and analyzing the successful asphalt pavements with extended lifespans in Louisiana could greatly assist DOTD in identifying optimal practices for constructing durable asphalt pavements.

Objective(s): (1) document and analyze the successful asphalt pavements with extended lifespans in Louisiana; (2) identify the best practices that contribute to the extended lifespan; (3) tailor pavement design recommendations to optimize durability and longevity.

Expected Benefits: Extracting lessons from our successes will not only serve to educate the next generation of DOTD pavement engineers by leveraging past experiences but also assist current decision-makers in making more informed choices regarding pavement types and material selections for ongoing projects. Moreover, this resource can be utilized by DOTD's specification unit to meticulously evaluate the department's specifications.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

The project has not started yet. We are currently in the process of preparing the proposal for the PRC meeting.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Task 1. Literature Review – Conduct a thorough and comprehensive analysis of existing literature on the evaluation and rating of asphalt pavement performance, focusing on the key factors that impact pavement durability and quality.
Task 2. Selection of successful HMA Pavement Sections – Work with the PRC committee members to establish clear criteria for identifying successful pavement sections. Collaborate with different districts to gather nominations of pavement sections they believe are worth evaluating. Visit each nominated site to assess and confirm the list of outstanding asphalt pavement sections for inclusion in the project.

Title:	**Ground-in Edge and Centerline Rumble Strip/Rumble Stripe Evaluation/Best Practices**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000510**	Project Start Date:		1/1/2024
Research Project Number:	24-1SA	Completion Date	(original)	6/30/2025
Research Agency:	LSU	Completion Date	(revised)	
Principal Investigator:	Hany Hassan			

BUDGET STATUS

Total Budget			**Estimated 2024-2025 Budget**		
Total Cost	(original)	$250,000	**Total**		**$95,741**
	(revised)				
Est. Expended to Date			Salaries		$93,241
FY 2023 - 2024 Budget			Consumable Supplies & Materials		
FY Funds	(original)	$120,000	Equipment	(non-expendable)	
	(revised)	$28,889	Travel		$2,500
Est. FY Expenditure		$28,889	Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: Rumble strips are grooved or raised patterns placed in the road surface to transmit sound and vibration to the drivers. Despite their benefits, challenges remain to install rumble strips and stripes that can simultaneously provide enough warning noise for drivers and not bother residents/businesses nearby. Therefore, it is critical to investigate the different design and implementations of rumble strips/stripes in Louisiana to ensure safety and address the noise concerns.

Objective(s): The primary objective of this research is to evaluate the patterns, placement, and noise level of the rumble strip/rumble stripe installed on Louisiana highways to ensure that the best standards are used. Specifically to: compare existing special rumbles details in Louisiana versus best practices, measure and assess the in-vehicle and outside noise levels produced from various types of rumble strips, compare the measured noise to the acceptable noise levels, and provide recommendations.

Expected Benefits: The findings of this research will assist transportation authorities in Louisiana in addressing complaints received from residents regarding noise generated by rumble strips in their neighborhoods as well as assist DOTD in selecting best type/pattern of rumble stripes for future installations.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Task 1. Literature review.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Task 2. Document the current practice in Louisiana;
Task 3: Compare Louisiana's rumble strips with the best practices;
Task 4. Submit interim report.

Title:	**Assessing Speeding-Related Crashes in Louisiana to Support the Safe System Approach**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:		Project Start Date:		8/1/2024
Research Project Number:		Completion Date	(original)	7/31/2026
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Milhan Moomen			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$200,000
	(revised)	
Est. Expended to Date		
FY 2023 - 2024 Budget		
FY Funds	(original)	
	(revised)	
Est. FY Expenditure		

Estimated 2024-2025 Budget		
Total		**$80,000**
Salaries		$80,000
Consumable Supplies & Materials		
Equipment	(non-expendable)	
Travel		
Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: The role of speed in traffic crashes is a complex issue as reducing traffic speeds and speeding-related crashes continue to pose challenges. In order to move forward with the Safe System Approach implementation in Louisiana, there is a need to identify speeding-related crashes to be able to implement effective countermeasures to manage and mitigate the risk of speed as a contributing factor in road crashes.

Objective(s): The purpose of this study is to perform a comprehensive analysis of speeding-related crashes and speed data on non-interstate roadways in Louisiana to understand the magnitude of the problem. Specific objectives: perform comprehensive analysis of fatal and serious injurie crashes, investigate operating speed on the identified high-risk locations using probe data collected from the Regional Integrated Transportation Information System (RITIS) platform, and provide recommendations.

Expected Benefits: The results of the research will provide DOTD, LHSC, and other safety stakeholders with a deeper understanding of factors influencing speeding-related crashes to improve safety for all Louisiana road users and to reach the goal of Destination Zero Deaths. Furthermore, identifying locations with the highest speeding crash risk enables DOTD and the SHSP Implementation Team to prioritize budget allocations and to implement effective strategies in support of the Safe System Approach implementation.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

To be determined based on the approved research proposal.

Title:	**Statewide Lane Reconfiguration "Road Diet" Screening for Louisiana**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000524**	Project Start Date:		1/1/2024
Research Project Number:	24-6SS	Completion Date	(original)	12/31/2025
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Ruijie "Rebecca" Bian			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$226,000
	(revised)	
Est. Expended to Date		
FY 2023 - 2024 Budget		
FY Funds	(original)	$56,082
	(revised)	$17,000
Est. FY Expenditure		$17,000

Estimated 2024-2025 Budget		
Total		**$105,535**
Salaries		$72,734
Consumable Supplies & Materials		
Equipment	(non-expendable)	
Travel		
Other		$32,801

BUDGET JUSTIFICATIONS

Other: Other budget is for a sub-contract to a consultant. The breakout sheet is attached to the proposal with no equipment costs exceeding the $5,000 FHWA threshold.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: Not all the road segments marked with higher active transportation investment suitability have sufficient space in their existing conditions to accommodate non-motorists (e.g., bicyclists and pedestrians). Road diet is a solution that works within the existing Right-of-Way to improve safety, operations, and/or expand multimodal access or address other needs.

Objective(s): The objective of this research is to investigate opportunities for and feasibility of implementing road diets on roadways as well as identifying other underutilized utility rights-of-way/easements to help Louisiana develop a network accommodating non-motorized travel needs while optimizing use of publicly owned land.

Expected Benefits: Results from this research will help DOTD develop its own Road Diet Strategy to guide future construction and preservation projects to make systematic multimodal access improvements.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Task 1: Literature review.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Task 2: Compile necessary GIS files for screening.
Task 3: Screen the compiled network to assess road diet opportunity and feasibility.
Task 4: Develop case study examples.
Task 5: Start collecting stakeholder opinions.

Title:	**An Evaluation of Pedestrian and Bicycle Facilities in Louisiana**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000516**	Project Start Date:		8/1/2023
Research Project Number:	24-5SS	Completion Date	(original)	7/31/2025
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Ruijie "Rebecca" Bian			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$200,000
	(revised)	
Est. Expended to Date		
FY 2023 - 2024 Budget		
FY Funds	(original)	
	(revised)	
Est. FY Expenditure		

Estimated 2024-2025 Budget		
Total		**$100,000**
Salaries		$45,000
Consumable Supplies & Materials		
Equipment	(non-expendable)	
Travel		
Other		$55,000

BUDGET JUSTIFICATIONS

Other: The $55,000 estimated as "other" is expected to be for the co-PI who will be a subcontractor

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: Prior to accommodating new facilities or devising plans for pedestrian and bicycle transportation, it is imperative to gain insights into the current state of existing infrastructure and its associated attributes. It is, also extremely important to recognize the deficiencies linked to the present infrastructure qualities that impact the seamless movement of pedestrians and cyclists.

Objective(s): The main objectives of this research are to: (i) Evaluate the bicycle and pedestrian infrastructure in several Louisiana cities by estimating the Level of Service (LOS) for facilities experiencing high pedestrian and cycling traffic (ii) Conduct a qualitative assessment to collect stakeholder opinions regarding infrastructure quality and pinpoint areas requiring improvements, and (iii) Develop recommendations to identify areas for potential infrastructure enhancement or addition.

Expected Benefits: The study is expected to ensure that infrastructure assessments are tailored to the distinctive needs and dynamics of Louisiana. This evaluation framework stands as a precursor to deploying pedestrian and bicycle improvements that are both efficient and contextually relevant. Moreover, the methodologies to be devised in this study extend beyond just the assessment of existing infrastructure. They establish a groundwork for evaluating new facilities.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

To be determined by Project Review Committee (PRC).

Title:	**Autonomous Vehicle Regulatory Landscape Review**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:		Project Start Date:		8/1/2024
Research Project Number:		Completion Date	(original)	7/31/2026
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Milhan Moomen			

BUDGET STATUS

Total Budget			**Estimated 2024-2025 Budget**		
Total Cost	(original)	$250,000	**Total**		**$100,000**
	(revised)				
Est. Expended to Date			Salaries		$45,000
FY 2023 - 2024 Budget			Consumable Supplies & Materials		
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		$55,000

BUDGET JUSTIFICATIONS

Other: The $55,000 estimated as "other" is expected to be for the co-PI who will be a subcontractor

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: Research is needed into basic requirements for different aspects of the AV system. For instance, what is the minimum requirement for object detection by AVs? What are the basic infrastructure needs and environmental conditions to safely operate AVs on highways? Also, how are these AV systems similar across vendors?

Objective(s): The research should also answer questions related to the minimum functional requirements for the navigation, localization, planning, and control systems of AVs in Louisiana. It informs on what DOTD must do to leverage AV operations for TSMO. It will provide recommendations for autonomous truck policies and regulations to facilitate the safe and efficient development and adoption of autonomous truck technologies throughout the state of Louisiana to ensure both safety and accessibility.

Expected Benefits: This project will provide DOTD with the necessary information so they can enhance the innovation, safety, and efficiency of LA's transportation system and support the efficient movement of trucks within the nation's supply chain. Importantly, the research will identify the basic requirements for AV operation within the state.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

To be determined by Project Review Committee (PRC).

Title:	**Complete Streets Means Trucks, Too: Integrating Freight Traffic Needs with Active Transportation Planning and Policy**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:		Project Start Date:		8/1/2024
Research Project Number:		Completion Date	(original)	7/31/2026
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Ruijie "Rebecca" Bian			

BUDGET STATUS

Total Budget			**Estimated 2024-2025 Budget**		
Total Cost	(original)	$220,000	**Total**		**$100,000**
	(revised)				
Est. Expended to Date			Salaries		$45,000
FY 2023 - 2024 Budget			Consumable Supplies & Materials		
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		$55,000

BUDGET JUSTIFICATIONS

Other: The $55,000 is for subcontract for the co-PI.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: Complete streets are intended to accommodate all users, but they aren't doing as good of a job in accommodating trucks, which are critical to goods movement. Conflicts can occur where bicyclists and pedestrians interact with truck traffic: specific design features emphasized by Complete Streets such as tighter turning radii, curb extensions, narrower lanes, roundabouts, and protected bike lanes have the potential to restrict truck movement, loading, and unloading activities.

Objective(s): The objectives of this project are to understand the extent of the conflicts in Louisiana to directly integrate freight planning and traffic patterns into Complete Streets policy implementation activities and to develop recommended mitigation actions to reduce the conflicts between freight vehicles and non-motorized road users.

Expected Benefits: This research provides immediate implementation benefit, with the results of the spatial and crash analysis shared with DOTD as well as local and regional transportation authorities to highlight existing areas of concern and, importantly, potential future conflicts for proposed but not-yet constructed projects. It is expected to model an analytic process and tools, which may be incorporated into future project development and planning processes to ensure a more “complete” version.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

To be determined based on the approved research proposal.

Title:	**School Bus Route Optimization and Traffic Congestion in School Zones**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:		Project Start Date:		8/1/2024
Research Project Number:		Completion Date	(original)	7/31/2026
Research Agency:		Completion Date	(revised)	
Principal Investigator:				

BUDGET STATUS

Total Budget		
Total Cost	(original)	$250,000
	(revised)	
Est. Expended to Date		
FY 2023 - 2024 Budget		
FY Funds	(original)	
	(revised)	
Est. FY Expenditure		

Estimated 2024-2025 Budget		
Total		**$100,000**
Salaries		$100,000
Consumable Supplies & Materials		
Equipment	(non-expendable)	
Travel		
Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: Student ride time often exceeds 30 minutes. Bus drivers are in short supply. Fleet replacements are on the horizon. There is a distinct need for centralized bus route planning and optimization. Every school district in Louisiana shares the bussing challenge and would benefit from a research-driven planning and management approach.

Objective(s): The proposed research would use simulation software to analyze and optimize bus routes and to establish locations for shared neighborhood bus stops. Additionally, this research seeks to create an online, automated process that would allow riders' guardians to register for bus service, identify the closest existing bus stop, and request a new bus stop. It will also address congestion issues.

Expected Benefits: The research will quantify potential safety improvements, ride-time improvements, roadway maintenance reductions, and commuter traffic impacts. It will also seek answers with respect to traffic congestion in school zones. The economical and efficient resolution would be to see a decrease in car riders and an increase in bus riders.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

To be determined by Project Review Committee (PRC).

Title:	**Truck Parking Shortage: Improving Efficiency and Identifying Opportunities**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:		Project Start Date:		10/1/2024
Research Project Number:		Completion Date	(original)	9/30/2026
Research Agency:	UNO	Completion Date	(revised)	
Principal Investigator:	Guang Tian			

BUDGET STATUS

Total Budget			**Estimated 2024-2025 Budget**		
Total Cost	(original)	$250,000	**Total**		**$100,000**
	(revised)				
Est. Expended to Date			Salaries		$100,000
FY 2023 - 2024 Budget			Consumable Supplies & Materials		
FY Funds	(original)		Equipment	(non-expendable)	
	(revised)		Travel		
Est. FY Expenditure			Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: Nationally there are more than 11 truck drivers for every one parking space. The Truck Parking Safety Improvement Act would set aside $755 million of the Highway Trust Fund for states to finance projects aimed at increasing the number of parking spaces for commercial truck drivers. However, parking is generally a local land use issue, and many cities lack effective codes and regulations to accommodate and manage their commercial truck parking needs.

Objective(s): In coordination with the American Trucking Association, this research aims to address these truck parking issues with long-term and short-term solutions. The long-term solution is to develop a guidebook for truck parking ordinances that local jurisdictions would be willing to adopt and eventually help build more truck parking spaces. The short-term solution is to identify what truck parking exists, how it is managed, and what and where Variable Message Signage (VMS) exists for truck drivers.

Expected Benefits: The guidance and sample ordinances produced from this research will provide DOTD with the necessary tools to work with local and regional governments to shape and/or improve upon local codes. The research will also aid local and state governments in achieving the intent of Jason's Law Truck Parking Survey (MAP-21; P.L. 112-141), by increasing safe parking options for truck drivers.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

To be determined based on the approved research proposal.

Title:	**Bridge Damage Caused by Louisiana Traffic**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:		Project Start Date:		8/19/2024
Research Project Number:		Completion Date	(original)	8/19/2026
Research Agency:		Completion Date	(revised)	
Principal Investigator:				

BUDGET STATUS

Total Budget		
Total Cost	(original)	$200,000
	(revised)	
Est. Expended to Date		
FY 2023 - 2024 Budget		
FY Funds	(original)	
	(revised)	
Est. FY Expenditure		

Estimated 2024-2025 Budget		
Total		**$80,000**
Salaries		$73,000
Consumable Supplies & Materials		$4,000
Equipment	(non-expendable)	
Travel		$3,000
Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: The traffic loads include three groups of vehicles: (1) legal vehicles which do not exceed state and federal provisions; (2) illegal vehicles exceeding the weight, size, or weight and size limits operating without permits; and (3) permitted vehicles, which can legally exceed the legal limits after purchasing the permit. It is important to know what part of the total damage can be attributed to different categories and classes of vehicles.

Objective(s): Objective of the proposed research is to determine the life consumption for bridges in Louisiana caused by various groups of vehicles, including 13 classes (as defined by FHWA), permit vehicles, and illegally overloaded vehicles. The traffic data will use the available WIM and permit records, collected on on a continuous basis by DOTD.

Expected Benefits: The major accomplishment of the proposed research is the development of the bridge damage assessment model to determine bridge consumption by different legal and permit vehicle categories.
The developed methodology will quantify the relative loss of the design life consumed by vehicles of different weights and configurations. The proposed approach is an efficient tool to assess the damage caused by the traffic operating in Louisiana. Thus, it will provide a rational basis to develop a fair and

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Task 1. Contact DOTD to access the traffic data from available WIMs and permit records collected on a continuous basis by DOTD.

Title:	**Redesign of Innovative gate Arms (Ramp Closure Gate)**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg - 6**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000523**	Project Start Date:		7/1/2023
Research Project Number:	24-2ST	Completion Date	(original)	6/30/2025
Research Agency:		Completion Date	(revised)	
Principal Investigator:				

BUDGET STATUS

Total Budget		
Total Cost	(original)	$180,000
	(revised)	
Est. Expended to Date		
FY 2023 - 2024 Budget		
FY Funds	(original)	
	(revised)	
Est. FY Expenditure		$30,000

Estimated 2024-2025 Budget		
Total		**$87,000**
Salaries		$52,000
Consumable Supplies & Materials		$32,000
Equipment	(non-expendable)	
Travel		$3,000
Other		

BUDGET JUSTIFICATIONS

Supplies: Proving Grounds Research Facility testing services
Reproduction of test results
Vendor to provide construction fabrication/materials services
Computer Operations (Computer equipment usage fee and network support services

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: The Ramp Closure Gate design that was evaluated by TTI did not pass MASH (H.014518). To be efficient the system must pass MASH and be able to remain on the roadways so that they can be deployed rapidly when a closure is declared.

Objective(s): Conduct an evaluation of the existing Ramp Closure Gate design and propose a redesign that meets the functional requirement and passes MASH. The final design should utilize a majority of materials currently stocked by the Department.

Expected Benefits: To streamline the response to severe weather incidents and to greatly reduce the time required to close sections of the Interstate and other highways, which become unsafe to travel during severe weather, to ensure safety for the travelling public.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

The PRC has recommended that TTI perform the study based on the proposal that was submitted to LTRC Contract signing is under way. As a result, Task 1 that addresses literature search will be partially completed if not fully by the end of FY 2023-2024.

Task 1 - Conducting literature search

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Task 2 - Redesign of Ramp Closure Gate
Task 3 - Plan for Computer Simulations and Laboratory Testing
Task 4 - Crashworthiness Evaluation via Computer Simulations and Laboratory Testing

Title:	**Evaluate the Impact of V2I Communication and AV Technologies on Signalized Intersection Performance**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000552**	Project Start Date:		7/1/2024
Research Project Number:	25-3TIRE	Completion Date	(original)	6/30/2025
Research Agency:	LSU	Completion Date	(revised)	
Principal Investigator:				

BUDGET STATUS

Total Budget		
Total Cost	(original)	$30,000
	(revised)	
Est. Expended to Date		
FY 2023 - 2024 Budget		
FY Funds	(original)	
	(revised)	
Est. FY Expenditure		

Estimated 2024-2025 Budget		
Total		**$30,000**
Salaries		$29,620
Consumable Supplies & Materials		$380
Equipment	(non-expendable)	
Travel		
Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: Connected and autonomous vehicles (CAV) are poised to revolutionize urban mobility with far reaching effects on safety, efficiency, and sustainability. In order to reach that potential, large scale integration of vehicle to X (V2X) technology is a must.

Objective(s): The objective of this study is to quantify the performance improvement resulting in the integration of vehicle-to-infrastructure and CAV technologies at signalized intersections in Baton Rouge.

Expected Benefits: This project may accelerate large-scale deployment of Dedicated Short-Range Communications (DSRC) infrastructure in Louisiana providing safe and energy efficient solutions to automotive industries and guidelines to city and state planners and engineers.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Start and complete the project.

Title:	**Using Metal 3D Printing to Increase Quality and Resource-Efficiency of Construction Materials**	**Project Status:**	**Proposed**

Funding Source:	**SPR: TT-Fed/TT-Reg - 5**	**Budget Category:**	**FHWA**

SIO:	**DOTLT1000551**	Project Start Date:		7/1/2024
Research Project Number:	25-2TIRE	Completion Date	(original)	6/30/2025
Research Agency:	ULL	Completion Date	(revised)	
Principal Investigator:				

BUDGET STATUS

Total Budget		
Total Cost	(original)	$29,667
	(revised)	
Est. Expended to Date		
FY 2023 - 2024 Budget		
FY Funds	(original)	
	(revised)	
Est. FY Expenditure		

Estimated 2024-2025 Budget		
Total		**$29,667**
Salaries		$25,508
Consumable Supplies & Materials		$4,159
Equipment	(non-expendable)	
Travel		
Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: A large source of CO2 production an inefficiency of structural steel fabrication is related to the transportation of finished parts. The onset of additive manufacturing technologies may allow owners the ability to 3D print high-end construction materials at a shorter lead time with a lower cost.

Objective(s): Perform high-quality metallic construction of a structure using 3D printing.

Expected Benefits: The proposed research will shed much needed light on key components of the applications of 3D printing in transportation applications with respect to quality, reduced carbon emissions, and shorter lead times.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Start and complete the project

FHWA
Part B SPR Funded
Research Program

POOLED FUND
LOUISIANA
LEAD STATE RESEARCH

LTRC Annual Research Program
Fiscal Year 2024-2025

Title:	**Southeast Transportation Consortium - Phase II**	**Project Status:**	**Ongoing**

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

SIO:	**DOTLT1000501**	Project Start Date:		2/1/2023
Research Project Number:	21-1PF	Completion Date	(original)	6/30/2025
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	Tyson Rupnow			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$900,000
	(revised)	
Est. Expended to Date		$25,000
FY 2023 - 2024 Budget		
FY Funds	(original)	$200,000
	(revised)	$25,000
Est. FY Expenditure		$25,000

Estimated 2024-2025 Budget		
Total		**$200,000**
Salaries		$180,000
Consumable Supplies & Materials		
Equipment	(non-expendable)	
Travel		$20,000
Other		

BUDGET JUSTIFICATIONS

Travel: Travel is budgeted for Pooled Fund State Members to travel to the annual meeting.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: The current Southeast Transportation Consortium (STC) is nearing its second extension to round out 10 years of productive work. In that 10 year period at least 12 research products have been produced on a wide variety of topics of interest to the AASHTO Region 2 member states. Additionally, the technology transfer and idea sharing between the states has benefited all immensely.

Objective(s): (1) Discuss and screen potential research or synthesis projects; (2) Conduct research and synthesis studies; (3) Hold a multi-state peer exchange for up to five (5) STC member states on a topic of their choosing; (4) Communicate and disseminate research results and innovative practices through publications and other technology transfer activities;

Expected Benefits: Increased knowledge sharing as well as tackling common research interests between STC Member states.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Started 5 synthesis/research projects, held an annual meeting and peer exchange in Greenville, SC with one upcoming in Lexington, KY.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Continue research/synthesis efforts and hold another annual meeting with a peer exchange at a location to be determined.

FHWA
LTAP Funded Program

LTRC Annual Research Program
Fiscal Year 2024-2025

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

Funding Source:	**LTAP: TT-Fed/TT-Reg**		**Budget Category:**		**FHWA**
SIO:	**DOTLT1000535**		Project Start Date:		7/1/2024
Research Project Number:	25-LTAP		Completion Date	(original)	6/30/2025
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	MaryLeah Coco				

BUDGET STATUS

Total Budget				**Estimated 2024-2025 Budget**		
Total Cost	(original)	$692,938		**Total**		**$692,938**
	(revised)					
Est. Expended to Date				Salaries		$385,480
FY 2023 - 2024 Budget				Consumable Supplies & Materials		$22,000
FY Funds	(original)			Equipment	(non-expendable)	$8,000
	(revised)			Travel		$68,000
Est. FY Expenditure				Other		$209,458

BUDGET JUSTIFICATIONS

Supplies: Supplies necessary to conduct technology transfer and workforce development activities for the LA LTAP program. Supplies to be purchased for use only in research and technical activities.

Equipment: No individual item will exceed $5,000.

Travel: -Travel for statewide delivery of required courses for the transportation community
-Travel for professional development
-Travel for both pre and post event management activities
-Travel for assistance with onsite course registration and management
-Travel for statewide specification meetings
-Travel for statewide meetings

Other: -Professional Services (Special Projects): $50,000
-Course material production (printing, copying, binding, etc): $21,000
-Professional services (instructors): $100,000
-Professional services (LPA on Line/CBT Module): $38,458

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: LTRC's Local Technical Assistance Program (LTAP) stimulates the progressive transfer of highway technology through training, work force development and technical assistance. A cooperative effort of DOTD, FHWA and LSU, LTAP leverages the expertise and resources of these organizations for the benefit of local transportation and public works agencies.

Objective(s): 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.

Expected Benefits: LTAP offers training, technical assistance, newsletters, and a multimedia lending library.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS
-Delivered 8 in-person offerings of “Roads Scholar #9: Signing from the Ground Up” courses [155 attendees] -Delivered 8 in-person offerings of “Roads Scholar #3: Drainage: The Key to Roads That Last” courses [150 attendees] -Delivered 10 in-person offerings of “Safety of Vulnerable Road Users” workshops [222 attendees] -Delivered 8 in-person offerings of “Roads Scholar #1: Basics of a Good Road” courses [153 attendees] -Delivered 4 in-person offerings of “Chainsaw Safety and Precision Felling” courses [419 attendees] -Delivered 6 in-person offering of “Roads Scholar #6: Heavy Equipment Safety & Maintenance” courses [203 attendees] -Delivered Local Public Agency (LPA) training: 3 in-person offerings of “LPA Qualification Core Training” 2-day course [101 attendees], & 2 offerings of the “LPA Construction, Engineering, and Inspection (CE&I)” [54 attendees] -Provided one-on-one technical assistance to 1 local agencies upon request (City of Central) in support of implementing pavement preservation practices -Organized and facilitated the Fall [125 attendees] and Spring conferences [109 attendees] of the Louisiana Parish Engineers and Supervisors Association (LPESA); supported 4 Board Meetings and 1 General Assembly Meeting at PJAL Convention. -Delivered 4 webinars as part of the quarterly “LPESA Virtual Showcase” series [80 attendees] -Co-hosted with APWA Baton Rouge branch 1 in-person offering of Public Works Employee Safety Training seminars [70 attendees] -Co-hosted with St. Landry Parish/AOK Services 1 in-person offering of “Day of Trees” seminar [39 attendees] -Hosted FHWA Local Rural Road Owner’s Manual Work Group 2-Day Meeting [18 attendees] -Attended NCHRP 17-124 First Panel Meeting -Support implementation and outreach efforts for the following EDC-7 initiatives: Strategic Workforce Development; Nighttime Visibility for Safety, and Enhancing Performance with Internally Cured Concrete -Promoted FHWA, DOTD, and LTRC programs and initiatives to local agencies including IIJA/BIL funding opportunities. -Presented at the 2023 NLTAPA Annual Conference, 2024 NLTAPA South Central Region Meeting, 2023 DSITE Fall and Winter Meetings, 2023 TRB Low Volume Roads Conference, and 2023 NACE Annual Meeting, among other professional meetings -Exhibitor booths at the Conventions of the Police Jury Association of Louisiana (PJAL) and Louisiana Municipal Association; provided information on LTAP programs, training, and technical assistance. -Produced and disseminated 4 quarterly “Technology Exchange” newsletters, 12 monthly “Local Connections” e-mail bulletins, 6 Leadership Digest Email Bulletins, numerous training and course announcement email bulletins.
FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES
-Revise content and deliver offerings of “Roads Scholar #8: Integrated Successful Supervision for Local Road Supervisors” course [10 sessions]; integrate into “Louisiana Leadership for the Locals” program -Revise content and deliver offerings of “Roads Scholar #5A: Safety: A Common Sense Approach for the Public Works Professional” course [10 sessions] -Revise content and deliver offerings of “Roads Scholar #15: Operational Safety for the Public Works First Responders” course [10 sessions] -Deliver “Chainsaw Safety and Precision Felling” course [4 sessions] -Revise content and deliver offerings of “Tractor/Mower Safety Training” course [6 sessions] -Deliver training on the new MUTCD updates workshop in conjunction with FHWA [6 sessions] -Deliver series of Local Public Agency training workshops, involving the LPA Qualification Core Training (2-day training), and LPA Construction, Engineering, & Inspection (CE&I) (1-day training) courses [2 series] -Continue to provide technical assistance to local agencies in support of implementing pavement preservation practices, drainage -Organize and facilitate the Fall and Spring conferences of LPESA -Deliver webinars as part of the quarterly “LPESA Virtual Showcase” series [4 sessions estimated] -Deliver joint trainings with the Louisiana Chapter of APWA [2 sessions] -Support implementation and outreach activities associated with EDC-6 initiatives: Crowdsourcing for Advancing Operations, Next-Generation TIM: Integrating Technology, Data, and Training; Strategic Workforce Development; and EDC-7, including Nighttime Visibility for Safety. -Participate in FHWA EDC Summit sessions for EDC-7 Initiatives -Promote FHWA, DOTD, and LTRC programs and initiatives to local agencies -Provide technical resource speakers for activities of local and regional affiliates of partner organizations: APWA, LMA, ITE, and NLTAPA, Louisiana Safety Summit 2024, LTC 2025 -Exhibitor booth at the annual Police Jury Association of Louisiana (PJAL) Convention and the annual Louisiana Municipal Association (LMA) Convention; provide information on LTAP programs, training, and technical assistance -Produce and disseminate quarterly “Technology Exchange” newsletters [4 est.] and monthly “Local Connections” e-mail bulletins [12 est.]

FHWA
STP Funded
Technology Transfer &
Education Program

LTRC Annual Research Program
Fiscal Year 2024-2025

Title:	**Training and Development Support Services**	**Project Status:**	**Ongoing**

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

SIO:	**DOTLT1000278**	Project Start Date:		7/1/2018
Research Project Number:	19-TDSS	Completion Date	(original)	6/30/2021
Research Agency:	LTRC	Completion Date	(revised)	6/30/2027
Principal Investigator:	Vijaya Gopu			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$441,453
	(revised)	$1,809,194
Est. Expended to Date		$798,000
FY 2023 - 2024 Budget		
FY Funds	(original)	$225,000
	(revised)	
Est. FY Expenditure		$142,000

Estimated 2024-2025 Budget		
Total		**$225,000**
Salaries		$210,000
Consumable Supplies & Materials		
Equipment	(non-expendable)	
Travel		$15,000
Other		

BUDGET JUSTIFICATIONS

Travel: -Travel for statewide delivery of required courses for the transportation community
-Travel for professional development
-Travel for both pre and post event management activities
-Travel for assistance with onsite course registration and management
-Travel for statewide specification meetings
-Travel for statewide meetings

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: The Training and Development Support Services will be involved in the management of the Louisiana Department of Transportation and Development's Structured Training Unit Learning Management System (LMS), which is a mandated system by the State of Louisiana Division of Administration.

Objective(s): This project will be responsible for coordinating and maintaining the LEO/LSO (Louisiana Employees Online/Learning Solution Online) system for the Technology Transfer and Training programs as well as other related training. The project will assist in implementing programs that are time sensitive and critical to the DOTD meeting the various training and program requirements.

Expected Benefits: Meet internal and external customer needs in order to provide time sensitive programs for the Louisiana Department of Transportation and Development (DOTD).

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

-Managed the conversion to the new LMS over 15 months, and the project is mostly complete.
-Aiding in re-writing the department training policy to reflect usage of the new system, developing and revising training programs, and documenting new programs.
-Working with district trainers across the state to verify changes made were appropriate and writing guides on the usage of the system.
-Conducted multiple trainings for LTRC-DOTD personnel on using the new LMS
-Monitored compliance with DOTD training requirements and provided reporting to management as mandated by the state. Compliance for the fiscal year was approximately 99%.
-Rewrote DOTD webpages due to changes required by the new LMS.
-Setting up new computers for users in OTS environment
-Installation and configuration of new software for users
-Aided in acquisition and programming of new training laptops
-Preparation for conferences and meetings
-Involved with replacement of current EMS system
-Involved with moving current VM servers to OTS environment

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

-Evaluate and fine tune training requirements in the LMS and make modifications as required by DOTD management.
-Work with CPTP to schedule people who have not completed Louisiana Civil Service mandated supervisory training.
-Continue to work with Loss Prevention for record keeping and compliance with training..
-Continue documenting procedures, creating user guides and training others on using the new system.
-Continue to monitor and assist in efforts to maintain a high level of compliance with required training.
-Review reporting in new LMS and request additional reporting to meet DOTD needs.
-Continue all IT support services for LTRC campus and employees.

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

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

SIO:	**30000241**	Project Start Date:		1/1/2010
Research Project Number:	10-4AD	Completion Date	(original)	12/31/2013
Research Agency:	LTRC	Completion Date	(revised)	6/30/2025
Principal Investigator:	Tyson Rupnow			

BUDGET STATUS

Total Budget			**Estimated 2024-2025 Budget**		
Total Cost	(original)	$100,000	**Total**		**$10,000**
	(revised)				
Est. Expended to Date		$82,416	Salaries		
FY 2023 - 2024 Budget			Consumable Supplies & Materials		
FY Funds	(original)	$10,000	Equipment	(non-expendable)	
	(revised)	$4,395	Travel		$10,000
Est. FY Expenditure		$4,393	Other		

BUDGET JUSTIFICATIONS

Travel: Travel budget is for dissemination of research results by university and consultant partners. Each trip is independently approved by LTRC Administration with funds not to generally exceed $1000 per trip. Funds cover airfare, per diem, and hotel costs.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: Controlling travel to present research results is a significant issue with many of our external contracts wanting to attend conferences in exotic locations such as Italy, France, etc. This project was created over 10 years ago to combat that very spending issue.

Objective(s): 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. Travel funds are dispersed on a case by case basis as it applies to providing a benefit to Louisiana.

Expected Benefits: The benefits of this project are twofold: (1) presentation of Louisiana Research promotes the excellent research work conducted and completed utilizing LTRC funds, and (2) other entities are able to view these presentations and ask questions and even adopt portions or all of the research product as well.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Sent five (5) university researchers to the Transportation Research Board (TRB) meeting using monies from this project to offset a portion of their travel costs.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Send contract researchers to present upon findings of LTRC contract research projects.

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

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

SIO:	**30000320**	Project Start Date:		7/1/2015
Research Project Number:	08-1TSQ	Completion Date	(original)	6/30/2018
Research Agency:	LTRC	Completion Date	(revised)	6/24/2027
Principal Investigator:	MaryLeah Coco			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$361,546
	(revised)	$2,712,073
Est. Expended to Date		$1,688,434
FY 2023 - 2024 Budget		
FY Funds	(original)	$417,608
	(revised)	
Est. FY Expenditure		$387,500

Estimated 2024-2025 Budget		
Total		**$505,802**
Salaries		$450,802
Consumable Supplies & Materials		$17,500
Equipment	(non-expendable)	$15,000
Travel		$11,250
Other		$11,250

BUDGET JUSTIFICATIONS

Supplies: Supplies necessary to conduct technology transfer and workforce development activities for the public information and media team.

Supplies to be purchased for use only in research and technical activities.

Equipment: This budget item is comprised of various items all not to exceed $5,000 on an individual basis.

Travel: -Travel for professional development
-Travel for both pre and post event management activities
-Travel for statewide photography and videography
-Travel for statewide meetings

Other: Contracts for external technology transfer initiatives.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: This program is responsible for developing and maintaining publication design, graphic design, website, database maintenance, public relation press packages, Section 504/508 compliance, and editing of all media projects for the Louisiana Transportation Research Center and Louisiana Department of Transportation and Development on a statewide level. In addition, this program is responsible for the production of all reports and production pieces for the Louisiana Legislature.

Objective(s): The objectives of this study are to: Disseminate information on new technologies and methodologies to the Louisiana Department of Transportation and Development (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.

Expected Benefits: Dissemination of technology transfer, training, and research initiatives to the transportation community as a whole.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS
-Managed Adobe Cloud licenses for DOTD employees -Continued development of Project Manager's Manual interactive updates for DOTD -Coordinated asphalt scholarship application process (ASCE and LAPA) -Designed 4 issues of Technology Exchange for LTAP -Working through backlog of document published prior to Oct. 2018 for accessibility issues -Managed online SASHTO scholarship application process -Compiled and produced LTRC annual report (22-23) -Maintained regular posting of all LTRC publications on website and social media channels -Support for all Section 33 users managing the Registration Management System, replaced contractor through LSU WAE process -Worked on move to OTS VM servers -Updated structured training web/intranet presence -Updated templates for Section 19 and 33 to reflect new logo launch for FY 24-25 -Accessibility overview presentation for Section 33 -Updated LTRC historical timeline, began work on interactive timeline -Facebook: 982 followers, LinkedIn: 860 followers, X: 201 followers -43 social media posts (36,806 impressions on LinkedIn 7/1/23 – 3/6/24) -Created an accessible Word template for DOTD Operations; developed and taught workshop on how to use template -Published 4 Tech Today Newsletters -Created Adobe Spark pages to share on social media for LTRC and LTAP -Created and designed Constant Contact emails to disseminate Tech Todays electronically -Edited 9 Final Reports/Technical Summaries -Published 12 Project Capsules -Published 12 Final Reports/Technical Summaries -Edited 2 training manuals -Continued to apply disclaimer watermark for safety reports and stay updated concerning new disclaimer requirements -Continued to apply accessibility requirements for all newly published work -Continued to implement new Word template -Continued to maintain document information form for library liaison -Updated Tech Today interdepartmental mailing list to reflect new leadership and section heads -Developed and published press release for 2024 SASHTO scholarship winners -Pre-flight and deliver 9 TRB posters -Various Plotter Printing projects -Film and Production-DOTD Human Resources Recruitment Video -Film and Production-LTRC Training- AASHTO T-85 Specific Gravity and Absorption of Course Aggregate -Film and Production-LTRC Training- AASHTO T-84 Specific Gravity and Absorption of Fine Aggregate -Film and Production-LTRC Training- TR327 Theoretical Maximum Specific Gravity of Asphaltic Concrete Mixture -Film and Production-LTAP- Basic Flagger Instruction Updates -Film and Production-LTRC Infomercial- Recycling Waste Plastics in Asphalt Mixture -Post Production-LTRC/West Virginia University- Intro to FRP Composite Materials- Webinar Series -Post Production-LTAP Zoom Edits- Flashing Yellow Arrows, Roundabouts -Post Production- 6 custom map animations -Post Production- 2 DOTD Pre-rolls -Logo Design- LTC -Logo Design- LTRC -Event Photography- ROADEO -LTRC Employee Headshots -1,830 YouTube Subscribers
FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES
-LTC 2025: marketing, web, registration, media, and publication support -Revise TTEC section of the website -Implement new LTRC and LTC branding -Continued preparation of project capsules, and review draft final reports -Continued web/graphics support in all current areas -Continued work on 508 accessibility issues for PDFs -Continued management of social media channels -Photograph all LTRC and LADOTD events -Video all LTRC and LADOTD events -Readily available for any special assistance requested from Secretary's office -Continued training and support for online registration management system -Publish 4 Tech Today newsletters -Layout 4 Tech Exchange newsletters -Continued accessibility training development for internal staff/DOTD -Update Publications & Digital Media standard operating procedures; create SOP for LTC publications duties -Complete move to OTS VM servers -Update LTRC informational video

LTRC Annual Research Program
Fiscal Year 2024-2025

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

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

SIO:	**DOTLT1000541**	Project Start Date:		7/1/2024
Research Project Number:	25-TTRF	Completion Date	(original)	6/30/2025
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	MaryLeah Coco			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$200,000
	(revised)	
Est. Expended to Date		
FY 2023 - 2024 Budget		
FY Funds	(original)	
	(revised)	
Est. FY Expenditure		

Estimated 2024-2025 Budget		
Total		**$200,000**
Salaries		
Consumable Supplies & Materials		
Equipment	(non-expendable)	
Travel		
Other		$200,000

BUDGET JUSTIFICATIONS

Other: Statewide technology transfer and research activities related to workforce development.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

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

Objective(s): Strengthen the technology transfer, training, education, and other opportunities to Louisiana's parish and municipality and public works agencies.

Expected Benefits: Provide access to cost effective workforce development activities that will lead to better trained public works agencies.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

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

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

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

Title:	**LA DOTD CO-OP Program**	**Project Status:**	**Proposed**

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

SIO:	**DOTLT1000542**	Project Start Date:		7/1/2024
Research Project Number:	25-COOP	Completion Date	(original)	6/30/2025
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	MaryLeah Coco			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$200,000
	(revised)	
Est. Expended to Date		
FY 2023 - 2024 Budget		
FY Funds	(original)	
	(revised)	
Est. FY Expenditure		

Estimated 2024-2025 Budget		
Total		**$200,000**
Salaries		$200,000
Consumable Supplies & Materials		
Equipment	(non-expendable)	
Travel		
Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: The Louisiana Department of Transportation and Development (DOTD) Co-Op program is a cooperative endeavor between the DOTD and Louisiana universities with accredited engineering programs, providing practical experience to junior and senior level undergraduates through part-time employment in public transportation engineering work.

Objective(s): This program is intended to enhance the educational process by providing opportunities for participants to explore their interest in transportation engineering through practical experience; provide opportunities for DOTD to evaluate participants of this program as potential employees; and enhance the educational process by providing opportunities for students to explore their interest in transportation engineering through practical experience.

Expected Benefits: Student will have the opportunity to work in their related career field. Increase the students' employability in their career field of engineering. Increase the students' potential to advance within their career field.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

-15 undergraduate students participated in the Co-op program at various DOTD districts/sections.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

-Place approximately 15 students in various DOTD districts/sections across the state;
-Continue end of semester presentations in a face-to-face or virtual format;
-Retain students in the Co-Op program each semester/quarter; and
-Attend/participate in engineering related career fairs held throughout the state of Louisiana

LTRC Annual Research Program
Fiscal Year 2024-2025

Title:	**LTRC Student Worker Program**	**Project Status:**	**Proposed**

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

SIO:	**DOTLT1000540**	Project Start Date:		7/1/2024
Research Project Number:	25-2TT	Completion Date	(original)	6/30/2025
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	MaryLeah Coco			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$147,600
	(revised)	
Est. Expended to Date		
FY 2023 - 2024 Budget		
FY Funds	(original)	
	(revised)	
Est. FY Expenditure		

Estimated 2024-2025 Budget		
Total		**$147,600**
Salaries		$147,600
Consumable Supplies & Materials		
Equipment	(non-expendable)	
Travel		
Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: To pay salaries for undergraduate students employed to provide support in fulfilling necessary job tasks on various Louisiana Transportation Research Center (LTRC) projects.

Objective(s): Employee undergraduate students in the field of research, technology transfer, education, and training.

Expected Benefits: Offer undergraduate students employment experience in research, technology transfer, education, and training in state government, specifically transportation, that will expose them to public service opportunities post graduation.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Thirty (30) undergraduate students were employed by LTRC to provide support in fulfilling necessary job tasks on various LTRC projects, research, technology transfer, training, and education initiatives.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

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

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

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

SIO:	**DOTLT1000539**	Project Start Date:		7/1/2024
Research Project Number:	25-1WDC	Completion Date	(original)	6/30/2025
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	MaryLeah Coco			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$4,262,407
	(revised)	
Est. Expended to Date		
FY 2023 - 2024 Budget		
FY Funds	(original)	
	(revised)	
Est. FY Expenditure		

Estimated 2024-2025 Budget		
Total		**$4,262,407**
Salaries		$1,564,000
Consumable Supplies & Materials		$136,400
Equipment	(non-expendable)	$125,000
Travel		$49,600
Other		$2,387,407

BUDGET JUSTIFICATIONS

Supplies: Supplies to be purchased for use only in research and technical activities.

Equipment: Special purpose equipment to be purchased for use only in research and technical activities.

-$40K: LTRC and TTEC Digital Directory
-$12K: Business Continuity Back ups (Audio DSP, Audio DSP Blade, Crestron Scaler, Video TX and RX)
-$15K: Travel Projector and Projector Screen Upgrade
-$5K: AV Rack Mounted Commercial Grade Monitors
-$25K: LTRC Conference Room-Dante AV system upgrade
-$28K: Multi Window Video Processor upgrade (100, 101, 160, 175, 179)

Software/Licensing:
-$1,500: Visix Support Renewal
-$11.5K: Articulate Subscription Renewal
-$4K: Adobe License Renewal
-$16K: Accruent/EMS Software renewal
-$38K: ASTM Standards
-$28K: IHS Engineering Workbench
-$6K: EOS.web

Travel: Travel: Travel for statewide delivery of required courses for the transportation community.
-Travel for professional development
-Travel for both pre and post conference management activities
-Travel for assistance with onsite course registration and management
-Travel for statewide district trainer meetings
-Travel for course facilitation

Other: Contracts for external workforce development initiatives.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: 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, and supervisory training. The scope of this project also includes providing individual registration fees for Louisiana Department of Transportation and Development (DOTD) employees to attend workshops/courses/conferences.

Objective(s): Provide specialized support statewide to the DOTD as well as specialized services to departmental section heads in the delivery of training, creation of competency models, technology integration, technology transfer of technical and non-technical efforts, and special projects that represent a variety of stakeholders in Louisiana.

Expected Benefits: A platform to share ideas. Promotes innovative technology implementation throughout the transportation community. Enhances collaboration between the state, local, federal, university, and transportation community partners.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

-Held over 550 events hosting approximately 6,000 attendees in the TTEC Building;
-Hosted 2023 Louisiana Transportation Conference with 1,881 attendees and vendors
-Used EMS to schedule and report classes and attendee numbers for LTRC
-A total of 15 undergraduate students participated in the Co-op program at various DOTD districts/sections throughout the School Year
-Hosted Co-op in person student presentations and video-conferenced other DOTD areas in the fall and spring
-Attended and participated in 7 career fairs
-One (1) EI hired into the Engineer Resource Development Program (ERDP) rotated through various DOTD sections and districts throughout Louisiana. This number is low due to low applications
-One (1) EI successfully hired into DOTD: Section 24 Road Design
-Member of Cooperative Education and Internship Association (CEIA)
-EI's will be hired into the ERDP before the end of this FY
-FHWA Grant awarded for $52,085
-Hosted two AASHTO STEM Outreach Solutions workshops (formerly TRAC and RIDES) March 2024
-Member of the AASHTO's STEM Outreach Solutions Program Committee- Vice Chair
-Added 355 new items and 299 new titles to the LTRC library online catalog
-508 Compliances: maintained and included in negotiation process with database subscription vendors
-Consolidate duplicate materials
-Inventory and consolidate physical and online materials
-Renewed ASTM Standards
-Renewed AASHTO Publications via Engineering Workbench
-Renewed EOS.web
-Renewed Movable Library Stack Maintenance via AOS Office Designs
-NTKN-National Transportation Knowledge Network (the regional TKNs were merged into the National TKN)
-SLA-Special Libraries Association, Transportation Community
-TRB-AJE45-Standing Committee on Information and Knowledge Management- Member
-TRB-B0002-TRB Information Services Committee- Friend
-TRB- E0006(1)-TRT (Transportation Research Thesaurus) - Friend
-TRB- ABG20 Standing Committee on Transportation Education and Training-Friend
-Held 8 NHI courses training
-Requested and informed employees of available NHI Webinars
-342 Employees attended 159 individual registration events
-Secured funding assistance from VBR for the 2025 LTC March 2025 in Baton Rouge, LA
-Secured contract for meeting space, exhibitor space, and overnight accommodations for the 2024 Highway Safety Summit
-National and Louisiana Chapter of the Society of Government Meeting Professionals (SGMP) Member
-2021-Present Louisiana Chapter of the Society of Government Meeting Professional (SGMP) 1st Vice President
-2021-Present Louisiana Chapter of the Society of Government Meeting Professional (SGMP) Treasurer
-Facilitated 4 Conflict Management classes
-Facilitated 7 Professional Writing classes
-Used the RMS for registration and tracking
-Coordinated and managed 2024 PE Review
-Coordinated and managed Highway Capacity Analysis
-Coordinated and managed Traffic Engineering Process and Report classes
-Coordinated and managed Cart CRASH Tool workshop (4)
-Coordinated and managed CPR/AED course, Stop the Bleed course (2)
-Coordinated and managed Testsuite TWE
-Coordinated and managed SIDRA Roundabout and Design Analysis
-Coordinated and managed IMAS Traffic Signal Technician Level 2
-Coordinated and managed Crowdsourcing for Advancing Transportation Operations (4)
-Coordinated and managed Interoperable Connectivity (V2X) Foundational Training
-Coordinated and managed Intro to Crash Analysis (4)
-Coordinated and managed Professionalism and Ethics Requirement for Engineers and Surveyors
-Coordinated and managed Intro to Safety Data
-TTEC 100 Epson Projector Upgrade- Increased Lumens and Fast LED
-Audio upgrade and expansion 101,160, 175, and 179
-Lighting upgrade 179, 175, 160, and 101
-Procured new training tables 179 and 175
-Procured LTRC Admin lobby and office furniture
-Procured overhead cameras for training rooms
-Renewed Visix
-Renewed Articulate
-Renewed Adobe
-Renewed Accruent/EMS
-Professional member of Avixa
-Coordinated and managed 59 UNO Microsoft Office classes
-Coordinated and managed 16 ArcGIS classes
-Coordinated and managed 19 ATTSA classes
-Coordinated and managed 12 CADD classes
-Society of Human Resource Management member (SHRM)
-Association for Talent Development (ATD)- Baton Rouge Chapter- President-Elect- Baton Rouge Chapter
-Facilitated 7 Foundations of Leadership Development classes
-Facilitated 11 Emotional Intelligence classes
-Facilitated 4 Organizational Culture classes

-Facilitated 2 Managing Across Generations & Transformational Leadership class

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

-Continue to facilitate and host events at TTEC
-Continue additions to and updating of library materials into the online catalog
-Continue to monitor 508 Compliance pertaining to the LTRC Library page
-Renew ASTM Standards
-Renew AASHTO Publications- Engineering Workbench
-Renew EOS
-Renew Moveable Library stack AOS Office Designs
-Continue to schedule and use EMS reporting for LTRC
-Continue to register employees for professional development trainings/workshops/conferences.
-Continue to suggest and schedule NHI courses
-Continue to offer NHI Webinars
-Conduct, host, plan, and present at 2025 LTC March 2025 in Baton Rouge, LA
-RFP, negotiate and secure contract for meeting and exhibitor space for the 2025 Louisiana Transportation Conference Approximately 1600 attendees; 185 vendors
-RFP, negotiate and secure contracts for overnight accommodations for the 2025 Louisiana Transportation conference Locations TBD. Approximately 800 room nights.
-Request and secure funding assistance from Visit Baton Rouge for expenses incurred with the 2025 Louisiana Transportation Conference (facility rental, shuttle/transportation, conference attendee parking fees, etc.)
-Secure dates for the 2027 Louisiana Transportation Conference
-Secure dates and begin preliminary planning for SASHTO 2028
-Update and complete the LTRC Conference/Event Planning Guide
-Attend the Society of Government Meeting Professionals 2023 National Education Conference
-Facilitate Professional Writing Skills classes
-Facilitate Conflict Management classes
-Host IMSA-Signal Technician 1 Class
-Host IMSA- Signal Technician 2 Class
-Host IMSA Sign Technician class
-Coordinate PE Review 2024
-Host Traffic Engineering Software Training class
-Continue to deliver Leadership classes around the state as needed
-Continue to offer UNO Microsoft Office courses
-Continue to offer and increase GIS and CADD courses
-Continue to host ATTSA courses
-Continue to schedule Mechanics courses training
-Continue to suggest and conduct training through NHI and FHWA
-Submit RFP's as needed throughout the year (about 3 per year)
-Continue to offer and conduct courses as needed and/or requested
-Continue to write contracts/proposals for required and/or requested training as needed
-Request PO's as warranted
-Continue to use the RMS for course registration and tracking
-Update student manual as needed
-Secure Louisiana Transportation Conference (2025 LTC) items
-Purchase Buisness Continuity Back up (Audio DSP and DSP Blade, Crestron Scaler, Video Tx and Rx)
-Digital Directory/Visix (LTRC and TTEC)
-Travel Projector and Travel Screen Upgrade

LTRC Annual Research Program
Fiscal Year 2024-2025

Title:	**Workforce Development**	**Project Status:**	**Proposed**

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

SIO:	**DOTLT1000537**	Project Start Date:		7/1/2024
Research Project Number:	25-1WD	Completion Date	(original)	6/30/2025
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	MaryLeah Coco			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$1,366,017
	(revised)	
Est. Expended to Date		
FY 2023 - 2024 Budget		
FY Funds	(original)	
	(revised)	
Est. FY Expenditure		

Estimated 2024-2025 Budget		
Total		**$1,366,017**
Salaries		$1,346,017
Consumable Supplies & Materials		$10,000
Equipment	(non-expendable)	
Travel		$10,000
Other		

BUDGET JUSTIFICATIONS

Supplies: Supplies for technology transfer activities - no single item to exceed $5,000Travel: Statewide travel for structured and specialized training program delivery.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

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

Objective(s): Deliver structured and specialized training programs to Louisiana Department of Transportation and Development (DOTD) personnel and other transportation partners statewide.

Expected Benefits: Expand the knowledge base of all employees and give employees a greater understanding of their responsibilities within their role within the organization while offering professional growth opportunities.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS
-SuccessFactors (active for (15) months on 17 April): 636 Items; 114 Curricula; 95 Programs; 159 Assignment Profiles; 119 WBT courses; 22 self-study courses that require a proctored exam (13 Test.com/9 Penn-Foster). -Revised Policies, Catalogs and Forms (2):PPM 59, Workforce Development and DOTD Course Catalog. -New Policies, Catalogs and Forms (5): DOTD Training Requirements Catalog; Course Substitution Request (in progress); Employee Training Status Check (in progress); LTRC Training and Education Website (in progress); Publications Ordering Process (in progress). -Revised WBT courses (6): DOTD 2024 Ethics – Louisiana Board of Ethics; DOTD HR EEO 2024 – 25 Biennial Meeting; DOTD 2024 Prevent Sexual Harassment for Employees; DOTD 2024 Prevent Sexual Harassment for Supervisors; DOTD LP Hazardous Materials Annual Refresher WBT; DOTD STC PCC Paving Introduction. -New WBT courses (1): DOTD STEq Trailer Mounted Attenuator WBT. -Exams added to Test.com (6): Duties and Responsibilities of Personnel Assigned To Movable Bridges; Electrical Maintenance 203: Transformer A/C; Electrical Safety and Protection STT 205; HMA Plant Re-Certification; Maintenance Plan Study Guide; PCC Paving Introduction. -Revised Courses and Performance Evaluations (5): Embankment & Base Course Certification Performance Evaluation; HMA Paving Certification Performance Evaluation; HMA Plant Certification Performance Evaluation; HMA Plant PowerPoint Presentation; In-Place Density Authorization Performance Evaluation. -Revised Manuals (2): PCC Structural Concrete Inspection Vol. 1; PCC Structural Concrete Inspection Vol. 2. -Revised Forms (4): Authorization For Inspection Form; Certification For Inspection Form; Initial Certification Form; Request to Transfer from Department to Non-Departmental Status Form. -142 Re-Certifications -100 Initial Certifications -78 Certifications -55 Authorizations -71 Specialty Areas

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES
-Review PPM 59, catalogs, exams and SuccessFactors content each July -Complete revision of Course Substitution Request -Complete revision of Employee Training Status Check -Complete LTRC Training and Education Website revision -Complete automation of Publications Ordering Process -Reduce and maintain population for SCS CPTP Supervisory Group training courses -Revise Administrative Manual for Certifications -Revise Base Course and Embankment Manual -Revise Structural Concrete Manual -Revise at least (3) performance evaluations

LTRC Annual Research Program
Fiscal Year 2024-2025

Title:	**Technology Transfer and Assistance for Senior Project Courses**	**Project Status:**	**Proposed**

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

SIO:	**DOTLT1000544**	Project Start Date:		7/1/2024
Research Project Number:	25-1TT	Completion Date	(original)	6/30/2025
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	MaryLeah Coco			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$37,500
	(revised)	
Est. Expended to Date		
FY 2023 - 2024 Budget		
FY Funds	(original)	
	(revised)	
Est. FY Expenditure		

Estimated 2024-2025 Budget		
Total		**$37,500**
Salaries		
Consumable Supplies & Materials		
Equipment	(non-expendable)	
Travel		
Other		$37,500

BUDGET JUSTIFICATIONS

Other: Items for research and technology transfer purposes only.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

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

Objective(s): Senior Design Projects allow students to sharpen learned engineering skills in a real-world environment. These include: problem analysis, design analysis, experimentation, use of leading CAD and analysis software, innovation, communication skills, and teamwork, often within an interdisciplinary team.

Expected Benefits: Through this senior design project, students will be exposed to products, engineering practices and culture, allowing them to assess the transferability of these skills into their future employability opportunities. This experience of collaborative problem solving, respectful interaction and coordination to achieve a shared goal allows engineers-to-be to develop important teamwork skills that are valued by employers.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Participation from two universities: Louisiana Tech University (1 project) and University of Louisiana at Lafayette (1 project).

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

Continue to provide technology transfer and assistance for senior project engineering courses.

Title:	**Technology Transfer Program and Operations (DOTD)**	**Project Status:**	**Proposed**

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

SIO:	**DOTLT1000543**	Project Start Date:		7/1/2024
Research Project Number:	25-1TSQ	Completion Date	(original)	6/30/2025
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	MaryLeah Coco			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$412,358
	(revised)	
Est. Expended to Date		
FY 2023 - 2024 Budget		
FY Funds	(original)	
	(revised)	
Est. FY Expenditure		

Estimated 2024-2025 Budget		
Total		**$412,358**
Salaries		$412,358
Consumable Supplies & Materials		
Equipment	(non-expendable)	
Travel		
Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: This program is responsible for developing and maintaining publication design, graphic design, website, database maintenance, public relation press packages, Section 504 compliance, and editing of all media projects for the Louisiana Transportation Research Center and Louisiana Department of Transportation and Development on a statewide level. In addition, this program is responsible for the production of all reports and production pieces for the Louisiana Legislature.

Objective(s): The objectives of this study are to: Disseminate information on new technologies and methodologies to the Louisiana Department of Transportation and Development (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.

Expected Benefits: Dissemination of technology transfer, training, and research initiatives to the transportation community as a whole.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS
-Managed Adobe Cloud licenses for DOTD employees
-Continued development of Project Manager's Manual interactive updates for DOTD
-Coordinated asphalt scholarship application process (ASCE and LAPA)
-Designed 4 issues of Technology Exchange for LTAP
-Working through backlog of document published prior to Oct. 2018 for accessibility issues
-Managed online SASHTO scholarship application process
-Compiled and produced LTRC annual report (22-23)
-Maintained regular posting of all LTRC publications on website and social media channels
-Support for all Section 33 users managing the Registration Management System, replaced contractor through LSU WAE process
-Worked on move to OTS VM servers
-Updated structured training web/intranet presence
-Updated templates for Section 19 and 33 to reflect new logo launch for FY 24-25
-Accessibility overview presentation for Section 33
-Updated LTRC historical timeline, began work on interactive timeline
-Facebook: 982 followers, LinkedIn: 860 followers, X: 201 followers
-43 social media posts (36,806 impressions on LinkedIn 7/1/23 – 3/6/24)
-Created an accessible Word template for DOTD Operations; developed and taught workshop on how to use template
-Published 4 Tech Today Newsletters
-Created Adobe Spark pages to share on social media for LTRC and LTAP
-Created and designed Constant Contact emails to disseminate Tech Todays electronically
-Edited 9 Final Reports/Technical Summaries
-Published 12 Project Capsules
-Published 12 Final Reports/Technical Summaries
-Edited 2 training manuals
-Continued to apply disclaimer watermark for safety reports and stay updated concerning new disclaimer requirements
-Continued to apply accessibility requirements for all newly published work
-Continued to implement new Word template
-Continued to maintain document information form for library liaison
-Updated Tech Today interdepartmental mailing list to reflect new leadership and section heads
-Developed and published press release for 2024 SASHTO scholarship winners
-Pre-flight and deliver 9 TRB posters
-Various Plotter Printing projects
-Film and Production-DOTD Human Resources Recruitment Video
-Film and Production-LTRC Training- AASHTO T-85 Specific Gravity and Absorption of Course Aggregate
-Film and Production-LTRC Training- AASHTO T-84 Specific Gravity and Absorption of Fine Aggregate
-Film and Production-LTRC Training- TR327 Theoretical Maximum Specific Gravity of Asphaltic Concrete Mixture
-Film and Production-LTAP- Basic Flagger Instruction Updates
-Film and Production-LTRC Infomercial- Recycling Waste Plastics in Asphalt Mixture
-Post Production-LTRC/West Virginia University- Intro to FRP Composite Materials- Webinar Series
-Post Production-LTAP Zoom Edits- Flashing Yellow Arrows, Roundabouts
-Post Production- 6 custom map animations
-Post Production- 2 DOTD Pre-rolls
-Logo Design- LTC
-Logo Design- LTRC
-Event Photography- ROADEO
-LTRC Employee Headshots
-1,830 YouTube Subscribers
-Prepared 12 Draft Project Capsules
-Provided Technical Review for 12 Final Reports
-Served on interview panel for ERDP and Editor applicants
-Provided engineering experience verification for former ERDP interns seeking PE licensure

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES
-Continue to prepare project capsules, and review draft final reports
-Continue to provide Technology Transfer Manager comments for biannual reports (awaiting response from Tyson)
-Continue to serve as ERDP engineer-of-record (e.g. interview panels, experience verification)
-LTC 2025: marketing, web, registration, media, and publication support
-Revise TTEC section of the website
-Implement new LTRC and LTC branding
-Continued preparation of project capsules, and review draft final reports
-Continued web/graphics support in all current areas
-Continued work on 508 accessibility issues for PDFs
-Continued management of social media channels
-Photograph all LTRC and DOTD events
-Video all LTRC and DOTD events
-Readily available for any special assistance requested from Secretary's office
-Continued training and support for online registration management system
-Publish 4 Tech Today newsletters
-Layout 4 Tech Exchange newsletters
-Continued accessibility training development for internal staff/DOTD
-Update Publications & Digital Media standard operating procedures; create SOP for LTC publications duties
-Complete move to OTS VM servers
-Update LTRC informational video

Title:	**DOTD Staff Support for Workforce Development**	**Project Status:**	**Proposed**

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

SIO:	**DOTLT1000546**	Project Start Date:		7/1/2024
Research Project Number:	25-1SWD	Completion Date	(original)	6/30/2025
Research Agency:	LTRC	Completion Date	(revised)	
Principal Investigator:	MaryLeah Coco			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$1,520,000
	(revised)	
Est. Expended to Date		
FY 2023 - 2024 Budget		
FY Funds	(original)	
	(revised)	
Est. FY Expenditure		

Estimated 2024-2025 Budget		
Total		**$1,520,000**
Salaries		$1,520,000
Consumable Supplies & Materials		
Equipment	(non-expendable)	
Travel		
Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

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

Objective(s): Provide for the strategic planning, program development, and delivery management of the workforce development programs for the Louisiana Department of Transportation and Development (DOTD) personnel by non-LTRC employees.

Expected Benefits: Development, implementation, and evaluation of human resource and organizational development initiatives for the Louisiana Department of Transportation and Development (DOTD).

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

-Course development and delivery of Local Public Agency (LPA) training;
-DOTD employee structured training;
-Human Resources training, maintenance related training; and
-Meeting involvement related to DOTD's Transportation Training Curriculum Council.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

-Course development and delivery of Local Public Agency (LPA) training;
-DOTD employee structured training;
-Human Resources training, maintenance related training; and
-Meeting involvement related to DOTD's Transportation Training Curriculum Council.

Other DOTD Funded Projects

LTRC Annual Research Program
Fiscal Year 2024-2025

Title:	**Local Road Safety Program**	**Project Status:**	**Ongoing**

Funding Source:	**Safety**		**Budget Category:**		**Other DOTD Sections**
SIO:	**DOTLT1000547**		Project Start Date:		7/1/2024
Research Project Number:	25-LRSP		Completion Date	(original)	6/30/2025
Research Agency:	LTRC		Completion Date	(revised)	
Principal Investigator:	MaryLeah Coco				

BUDGET STATUS

Total Budget				**Estimated 2024-2025 Budget**		
Total Cost	(original)	$379,989		**Total**		**$379,989**
	(revised)					
Est. Expended to Date				Salaries		$307,458
FY 2023 - 2024 Budget				Consumable Supplies & Materials		
FY Funds	(original)			Equipment	(non-expendable)	
	(revised)			Travel		
Est. FY Expenditure				Other		$72,531

BUDGET JUSTIFICATIONS

Other: Contracts for Special Services for the Local Road Safety Program.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: The purpose of the Louisiana Local Road Safety Program (LRSP) is to identify key safety needs and guide investment decisions to achieve reductions in fatalities and serious injuries on local rural public roadways.

Objective(s): To work in cooperation with the Louisiana Department of Transportation and Development's (DOTD's) Highway Safety Office to implement and manage the Local Road Safety Program (LRSP)in addition to providing support to other statewide road safety initiatives at both the state and local levels.

Expected Benefits: The LRSP offers a proactive approach for local road agencies to address safety issues. The LRSP can show the public and policy makers that something is being done to systematically reduce severe crashes, thereby, building trust with local government officials, key stakeholders, and the general public.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

-Delivered 7 in-person offerings of "Basics of Work Zone Safety with Basic Flagger" mini-workshops [151 attendees]
-Developed, customized, and presented 10 in-person offerings of a Vulnerable Road Users (VRU's) countermeasures workshop [18 attendees]
-Facilitated/Coordinated 2 in-person sessions of the FHWA Pedestrian Safety Workshop [50 attendees]
-Conducted 2 RSAs with the CenLa Regional Safety Coalition. Spoke with representative from Lafayette regarding a proposed RSA at ULL. RSA Workshops are offered to all Regional Safety Coalitions upon request."
-Continued promotion, facilitation, and implementation of parish-level road safety plans and regional-level SS4A Safety Plans.
-Managed application submittal process for HSIP projects on locally owned roadways, providing preliminary technical evaluation and tracking through the selection process.
-Processed and evaluated 19 individual Local Road Safety Project inquiries, pre-applications, or applications this fiscal year.
-Worked with Crash Data Engineer to update the Top 20 and Other 44 Parish Profiles and provide technical assistance and training to local agency users on their use
-Partnered with CARTS and DOTD Safety Section to improve accessibility and utilization of roadway, crash, and traffic volume data.
-Provided technical assistance on local road safety projects using crash profiles, crash data analysis, and other sources. Continued to promote new Crash Data tools developed by CARTS and DOTD's Highway Safety Section to local agencies and regional stakeholders
-Coordinated with LADOTD Highway Safety Section to provide technical assistance and capacity building to the Regional Safety Coordinators, Coalitions, LPAs, and other SHSP stakeholders, including on-site visits; participation in coalition meetings; RSA training, and other activities in the Strategic Highway Safety Plan and regional action plans.
-Continued supporting the SHSP and related Infrastructure and Operations initiatives, including serving as Statewide Emphasis Area co-chair, Work Zone Safety Task Force member, and additional safety-related EDC initiatives.
-Continued to promote the implementation of DOTD's Louisiana Statewide Roadway Departure Plan.
-Participated in DOTD's Safety Road Show and Statewide I/O Meeting and attended two regional Safety Road Show meetings.
-Assisted SRTPPP/LRSP Program Manager in the presentation of the SRTPPP Call for Projects webinar for local agencies
-Promoted Local Road Safety through external partner publications such as Police Jury Association of Louisiana Magazine, Louisiana Municipal Association e-news, American Planning Association Magazine, etc.
-Exhibitor booths at the Police Jury Association of Louisiana (PJAL); Louisiana Municipal Association (LMA); and Louisiana Transportation Conference; providing information on LRSP, training, and technical assistance.
-Prepared for and facilitated LPESA's Fall Conference in Alexandria from 9/26/2023 to 9/28/2023
-Participated in the National Summit on Rural Road Safety in Oklahoma City from 9/11/2023 to 9/15/2023
-Participated in the NLTAPA Safety Circuit Rider engagement group and the NLTAPA Safety Work Group
-Attended Operation LifeSaver board meetings and worked with DOTD's Rail Safety Group on initiatives to improve safety at local road crossings, including outreach to local agencies regarding proper signing and markings

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES

-Deliver "Basics of Work Zone Safety with Basic Flagger" mini-workshops upon request [12 sessions estimated]
-Develop, customize, and present a workshop on using the updated 2017 to 2021 Parish Profiles, providing technical assistance and training to local public agencies. The focus will be on parishes without a Local Road Safety Plan, then, if needed, support LRS Plan revisions for older plans.
-Present session at DOTD's 2024 Louisiana Safety Summit summarizing the results of the Parish Profile Workshops
-Conduct follow-up training activities in VRU Safety by request from local agencies and other SHSP Stakeholders in response to feedback from the "Safety of Vulnerable Road Users Workshop" classes conducted in FFY 2023, including continued technical support for the VRU Assessment.
-Present session(s) at DOTD's 2025 Louisiana Transportation Conference
-Promote and facilitate the development and implementation of parish-level road safety plans (ongoing)
-Manage the application submittal process for DOTD's Highway Safety Improvement Program projects on locally owned roadways (ongoing)
-Provide Crash Data analysis and promote new Crash Data tools developed by CARTS and DOTD's Highway Safety Section to local agencies and regional stakeholders (ongoing)
-Provide technical assistance and capacity building to the Regional Safety Coordinators, Coalitions, LPAs, and other SHSP stakeholders, including on-site visits; participation in coalition meetings; RSA training, and other activities in the Strategic Highway Safety Plan and regional action plans (ongoing)
-Support SHSP and related Infrastructure and Operations initiatives and additional safety-related EDC initiatives (ongoing)
-Promote the implementation of DOTD's Louisiana Statewide Roadway Departure Plan (ongoing)
-Promote Local Road Safety through external partner publications such as Police Jury Association of Louisiana Magazine, Louisiana Municipal Association e-news, American Planning Association Magazine, etc. (ongoing)
-Participate in the NLTAPA Safety Circuit Rider engagement group and NLTAPA Safety Work Group (ongoing)
-Participate in Operation LifeSaver board meetings and to work with LA DOTD's Rail Safety Group on initiatives to improve safety at local road crossings, including outreach to local agencies regarding proper signing and markings (ongoing)
-Participate in and present at the Statewide DOTD/SHSP 2025 Safety Road Show webinar as well as at the in-person DOTD/SHSP 2025 Road Shows for DOTD District and SHSP Regional Infrastructure and Operations stakeholders (ongoing)
-Coordinate with CARTS and LA DOTD sections engaged in local data collection to enhance quality, accessibility, and utilization of all available data (ongoing)
-Work with Crash Data Engineer to disseminate the Top 20 and Other 44 Parish Profiles and provide technical assistance and training to local agency users on their use
-Investigate development of a live and/or virtual class series on Systemic Safety, and Vulnerable Road User Safety, incorporating Proven Safety Countermeasures, Systemic Risk Factors, traffic calming, and related local issues utilizing FHWA and NHTSA resources.
-Present Road Safety Assessment workshops upon request for Regional Safety Coalitions, incorporating an actual RSA, as part of the updated SHSP 2022 Strategic Plan.

Title:	**Economic Evaluation of Applications to the Port Construction and Development Priority Program**	**Project Status:**	**Ongoing**

Funding Source:	**Port Priority Program**	**Budget Category:**	**Other DOTD Sections**

SIO:	**DOTLT1000419**	Project Start Date:		7/1/2021
Research Project Number:	22-2SS	Completion Date	(original)	6/30/2023
Research Agency:	ULL	Completion Date	(revised)	6/30/2025
Principal Investigator:	Stephen Barnes			

BUDGET STATUS

Total Budget		
Total Cost	(original)	$86,862
	(revised)	$250,500
Est. Expended to Date		$148,329
FY 2023 - 2024 Budget		
FY Funds	(original)	$54,788
	(revised)	$63,350
Est. FY Expenditure		$63,350

Estimated 2024-2025 Budget		
Total		**$99,894**
Salaries		$99,894
Consumable Supplies & Materials		
Equipment	(non-expendable)	
Travel		
Other		

BUDGET JUSTIFICATIONS

Budget amounts do not require justifications.

PROBLEM STATEMENT, OBJECTIVE(S) AND EXPECTED BENEFITS

Problem Statement: The Port Priority Program through DOTD must ensure the State of Louisiana is receiving the required minimum rate of return on the State's investment and the applicants are meeting the required benefit cost ratio. Economic evaluations of applications submitted to the Port Priority Program need to be performed by an economist with a doctorate degree in economics, knowledgeable of Louisiana laws, knowledgeable of Louisiana ports and their activities, and be familiar with the Port Priority Program.

Objective(s): The objective of this project is to perform research and analysis of Port Priority Program applications to ensure the State is receiving the required minimum rate of return on the State's investment.

Expected Benefits: These evaluations will ensure that all applications to the Port Priority Program are considered using a consistent set of metrics and methodology to help the State of Louisiana prioritize strategic investments in ports to help stimulate economic activity.

FISCAL YEAR 2023 - 2024 ACCOMPLISHMENTS

Completed each of the project-related tasks noted below for 7 program applications.

Task 1: Preliminary Meetings With Project-Sponsoring Ports
Preliminary meetings will be scheduled as needed with project-sponsoring ports.
Task 2: Preliminary Review of Applications
All future applications submitted to the program during the project period will be reviewed.
Task 3: Application Review Meetings
Meetings to discuss applications submitted to the program during the project period will be scheduled as needed.
Task 4: Theoretical Benefit-Cost Validity Check
All future applications submitted to the program during the project period will undergo a theoretical benefit-cost validity check.
Task 5: Verification of Claims
All future applications submitted to the program during the project period will have key claims verified by the PI.
Task 6: Benefit-Cost Calculations
Benefit-cost calculations will be completed for all future applications submitted to the program during the project period.
Task 7: Development of Quarterly and Biannual Reports
Quarterly reports will be completed during all quarters when applications are received and biannual reports will be completed for all future reporting periods.
Task 8: Presentations and Project Support
Future presentations and project support will occur as needed.

FISCAL YEAR 2024-2025 PROPOSED ACTIVITIES
Expect to complete each of the project-related tasks noted below for up to 11 program applications. Task 1: Preliminary Meetings With Project-Sponsoring Ports Preliminary meetings will be scheduled as needed with project-sponsoring ports. Task 2: Preliminary Review of Applications All future applications submitted to the program during the project period will be reviewed. Task 3: Application Review Meetings Meetings to discuss applications submitted to the program during the project period will be scheduled as needed. Task 4: Theoretical Benefit-Cost Validity Check All future applications submitted to the program during the project period will undergo a theoretical benefit-cost validity check. Task 5: Verification of Claims All future applications submitted to the program during the project period will have key claims verified by the PI. Task 6: Benefit-Cost Calculations Benefit-cost calculations will be completed for all future applications submitted to the program during the project period. Task 7: Development of Quarterly and Biannual Reports Quarterly reports will be completed during all quarters when applications are received and biannual reports will be completed for all future reporting periods. Task 8: Presentations and Project Support Future presentations and project support will occur as needed.

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	2023 RPIC PROBLEM STATEMENTS
Final Ranking	**PROBLEM STATEMENT TITLE**
1	Redesign of Innovative Gate Arms (Ramp Closure Gate)
2	T-FAST (TFHRC ASR Test) Investigation
3	Piezoelectric and other advanced sensors in concrete
4	Ground-in Edge and Centerline Rumble Strip/Rumble Stripe Evaluation/Best Practices
5	Cost-Effectiveness and Sustainability of Pavement Preservation and Maintenance Methods
6	Update on Evaluating the Magnitude and Time Rate of Consolidation Settlement of Embankments and other Infrastructures from Piezocone Penetration Tests (PCPT)
7	Evaluation of composite pavement consisting of RCC and asphalt overlay
8	Traffic Signal foundations
9	Bridge Superstructure and Substructure Selection and Optimization
10	Statewide Lane Reconfiguration “Road Diet” Screening for Louisiana
11	ULTR HIGH PERFORMANCE CONCRETE APPLICATION IN LINK SLABS FOR CRACK MITIGATION
12	Autonomous Trucking Regulatory Landscape Review
13	Web-Based Tool to Advance Geotechnical Data Interchange and Reliability-Based Site Characterization

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14	Trip Generation for Various Sites
15	Development of a Practical Long-Term Aging Protocol for Semi-Circular Bend (SCB) Test
16	Evaluating Practical Applications of Unmanned Aerial Vehicles (UAVs) for Traffic Incident Response and Management.
17	Vulnerability Assessment of Pavement to Flooding in Louisiana
18	TRUCK PARKING SHORTAGE: IMPROVING EFFICIENCY AND IDENTIFYING OPPORTUNITIES
19	Older Drivers Safety in Louisiana: Understanding the Crash Contributing Factors
20	Evaluation and Calibration of Pavement Treatment Triggers, Treatment Selection, and Performance Models for the Cost-effective Pavement Preservation.