Texas SPR

Subpart B

Work Program

September 1, 2025 – August 31, 2026

Certification and Disclaimer Statements

State Planning & Research Subpart B
Research, Development and Technology Transfer Program
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In cooperation with:
U.S. Department of Transportation
Federal Highway Administration

Research Program - SPR 0511(226)
Implementation Program - SPR 2026(001)
Innovation Program – SPR 2026(002)

Fiscal Year 2026
(September 1, 2025 – August 31, 2026)

Certification Statement

"I Kevin Pete, Director, of the Research and Technology Implementation Division (RTI), Texas Department of Transportation (TxDOT), do hereby certify that the State is in compliance with all requirements of 2 CFR 200 Uniform Guidance, 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."

DocuSigned by:
Kevin Pete
D77263CBF1F9429...

Director

8/21/2025

Date

Disclaimer Statement

The Federal Highway Administration's (FHWA) approval of reports constitutes acceptance of such reports as evidence of work performed but does not imply endorsement of a report's findings or recommendations. This report is prepared for FHWA-funded work and includes appropriate credit references and disclaimer statements. The preparation of this report has been financed in part through grant(s) from the Federal Highway Administration, U.S. Department of Transportation, under the State Planning and Research Program, Section 505 of Title 23, U.S. Code. The contents of this report do not necessarily reflect the official views or policy of the U.S. Department of Transportation.

Table of Contents

List of Tables

Page

List of Figures

Page

1. Texas Department of Transportation Mission, Goals, and Values

The Research and Technology Implementation Division is an office in the Texas Department of Transportation (TxDOT) and supports the department's Mission, Goals and Values, and the TxDOT 2023-2027 Strategic Plan adopted by the Texas Transportation Commission.

TxDOT's Mission, Goals, and Values guide RTI in their desire for excellence. They are as follows:

Mission Statement

Connecting You with Texas.

Vision

A forward-thinking leader delivering mobility, enabling economic opportunity, and enhancing quality of life for all Texans.

Values

- People
- Accountability
- Trust
- Honesty

Goals

- Promote Safety
- Deliver the Right Projects
- Focus on the Customer
- Foster Stewardship
- Optimize system Performance
- Preserve our Assets
- Value our Employees

2. Approval and Authorization Process

2.1. Funding Research-23 CFR 420.115(b)

The Code of Federal Regulations (CFR)—specifically 23 CFR 420.115(b)—says that the federal government is contractually obligated to authorize work funded by the Federal Highway Administration in whole or in part, pursuant to 23 U.S. Code (USC) 106. The CFR requires that appropriate funds be available for the full federal share of the cost of work authorized.

TxDOT funds research through its Research and Implementation Program, overseen by the TxDOT RTI Division. RTI and the Texas state-supported universities conducting the research or implementation executes all project agreements.

RTI provides the fiscal year (FY) 2026 State Planning and Research (SPR) Subpart B, Research, Development and Technology Transfer Work Program to the Texas FHWA Division Office for review and approval. After the FHWA division administrator for the SPR program gives authorization, RTI executes the project agreements.

2.2. Reporting Requirements-23 CFR 420.117

The CFR, specifically 23 CFR 420.117, requires that TxDOT issue a report for FHWA approval to continue the agreement between TxDOT and FHWA to carry out statewide transportation planning activities as authorized.

According to 23 CFR 420.117, RTI is responsible for program monitoring and reporting requirements. RTI assigns a team of subject matter experts and research project managers that forms the project monitoring committee (PMC) to monitor the activities and performances of all sub-recipients (state-supported universities) to assure that they are managing and performing the work satisfactorily and that they are meeting deadlines.

3. Program Overview

RTI executes a Cooperative Research and Implementation Agreement (CRIA) with each university or university system to conduct research projects. A CRIA contains a set of standard provisions required by state or federal law or agreed to between TxDOT and universities. To participate in the program, each must first execute a CRIA with TxDOT. RTI also publishes the Research Manual and the University Handbook. These two documents and the CRIA outline the provisions and processes of TxDOT's Research and Implementation Program. These documents can be found on our internet Site: http://www.txdot.gov/inside-txdot/forms-publications/publications/research.html

3.1 Types of Projects - Research and Implementation

Detailed information on the types of projects can be found in the Research Manual.

Both types of projects are conducted by Texas state-supported universities. The university identifies a Research Team that consists of a Project Supervisor and other university researchers, or graduate students who will conduct the project's work plan.

Each university participating in the program assigns a central point of contact (Liaison) to handle communication and administration for their projects.

3.1.1. Research Projects

A Research Project is a systematic controlled inquiry, often involving analytical or experimental activities, which seek to gain new knowledge, and which may involve development of new or revised products. The research types includes Basic Research - the study of phenomena, and of observable facts, without specific applications towards processes or products in mind; the primary purpose of this kind of research is to increase knowledge; Applied Research - the study of phenomena to gain knowledge or understanding necessary for determining the means by which a recognized need may be met; the primary purpose of this kind of research is to answer a question or solve a problem; or Development - the systematic use of the knowledge or understanding gained from research, directed toward the production of useful materials, devices, systems or methods, including design and development of prototypes and processes.

3.1.2. Implementation Projects

An Implementation Project is the adoption of a product for use, including Technology Transfer activities that lead to the adoption of a new technique or product by users and involves dissemination, demonstration, training, and other activities that lead to eventual innovation.

3.2. RTI Personnel and Contact Information

Table 1. RTI Personnel

Name	Position Title	Phone Number	Email Address
Kevin Pete	Division Director	512-416-4730	Kevin.Pete@txdot.gov
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3.3 Obligation of Funds

Table 2. Shows how the federal funds appropriated to the Texas SPR II program are obligated.

Table 2. Obligation of Federal Funds to SPR

Program	Funding Available	Federal Project	80% Federal	20% State
Research Program	$29,664,779.29	SPR 0511(226)	$23,731,823.43	$5,932,955.86
RTI Division Program Management	$2,483,626.54	SPR 0511(226)	$1,986,901.24	$496,725.31
Subtotal - Research Program	$32,148,405.83	SPR 0511(226)	$25,718,724.67	$6,429,681.17
Implementation Program	$4,225,766.21	SPR 2026(001)	$3,380,612.97	$845,153.24
Innovation Program	$1,320,000.00	SPR 2026(002)	$1,056,000.00	$264,000.00
Grand Total	$37,694,172.04	N/A	$30,155,337.64	$7,538,834.41

Table 3. Contracting Entities Receiving SPR Funds

Entity That Received SPR Funds	SPR Contribution
National Cooperative Highway Research Program (NCHRP)	$6,230,593.91
Pooled-fund projects (lead agencies)	$ 1,663,166.00
Transportation Research Board (TRB) dues	$766,368.40

3.4 Distribution of Funds to Universities

Figure 1: Distribution of Funds shows the funds budgeted for the Research Program.

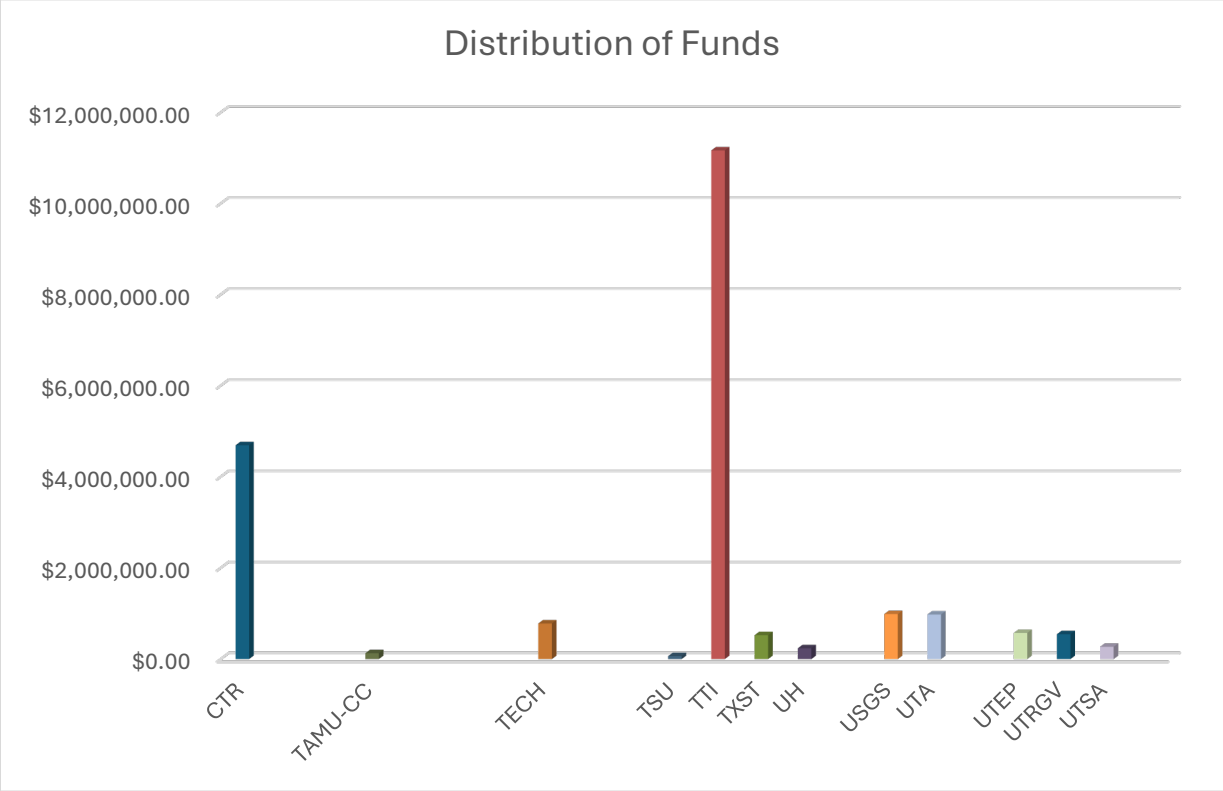


Table 4. Awards by University for Continuing Projects

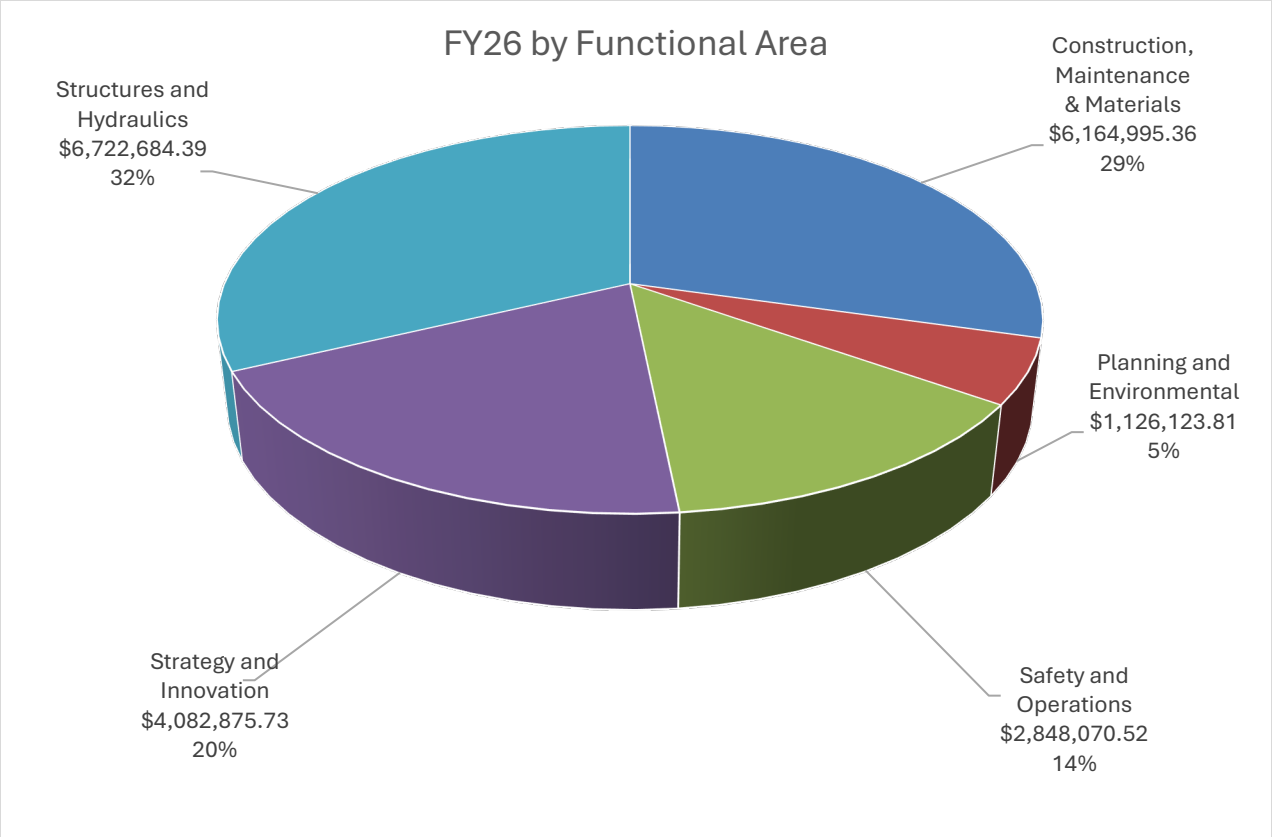
University	Budget for FY26
CTR	$4,691,438.93
TAMUCC	$128,811.25
TECH	$781,498.86
TSU	$64,686.60
TTI	$11,165,957.00
TXST	$523,920.14
UH	$237,001.25
USGS	$987,214.09
UTA	$977,697.94
UTEP	$572,688.75
UTRGV	$545,161.25
UTSA	$268,673.75
Grand Total	**$20,944,749.81**

3.5 Distribution of Funds by Functional Area

Table 5. Shows the funds budgeted to each research area for projects in FY26

Functional Area	Budget	80% Federal	20% State
Construction, Maintenance & Materials	$6,164,995.36	$4,931,996.29	$1,232,999.07
Planning and Environmental	$1,126,123.81	$900,899.05	$225,224.76
Safety and Operations	$2,848,070.52	$2,278,456.42	$569,614.10
Strategy and Innovation	$4,082,875.73	$3,266,300.58	$816,575.15
Structures and Hydraulics	$6,722,684.39	$5,378,147.51	$1,344,536.88
Total	$20,944,749.81	$16,755,799.85	$4,188,949.96

Figure 2. Annual SPR Work Program Budget by Functional Area



3.6 Acronyms and Abbreviations

Table 6. Lists acronyms used in this document.

Acronym	Definition
APER	Annual Performance and Expenditures Report
CFR	Code of Federal Regulations
CRIA	Cooperative Research and Implementation Agreement
CTR	University of Texas at Austin's Center for Transportation Research
FAC	Functional Area Committee
FHWA	Federal Highway Administration
FY	Fiscal Year
LAMAR	Lamar University
PVAMU	Prairie View A&M University
RFA	Request for Research Fund Authorization
RTI	Research and Technology Implementation Division
SFASU	Stephen F. Austin State University
SHSU	Sam Houston State University
SPR	State Planning and Research
TAMU	Texas A&M University
TAMU-C	Texas A&M University at Commerce
TAMU-CC	Texas A&M University at Corpus Christi
TAMUK	Texas A&M University–Kingsville
TAR	Texas A&M AgriLife Research
TARL	Tarleton State University
TECH	Texas Tech Univ Ctr for Multidisciplinary Transportation Research
TEES	Texas A&M Engineering Experiment Station
TEEX	Texas A&M Engineering Extension Service
TSU	Texas Southern University
TTI	Texas A&M Transportation Institute
TxDOT	Texas Department of Transportation
TXST	Texas State University
UH	University of Houston
UNT	University of North Texas
USC	U.S. Code
USDOT	U.S. Department of Transportation
USGS	United States Geological Survey
UTA	University of Texas at Arlington
UT-Dallas	University of Texas at Dallas
UTEP	University of Texas at El Paso
UTHSC	University of Texas Health Science Center
UT-Permian Basin	University of Texas Permian Basin
UTSA	University of Texas at San Antonio

Acronym	Definition
UT-Tyler	The University of Texas at Tyler

Acronym	Definition
WTAMU	West Texas A&M University

3.7 University Contact Information

Contact information for the contact persons from universities participating in the RTI research program (** is primary point of contact).

Table 7. Personnel from Participating Universities

Name (Liaison**)	University	Phone#	Email Address
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4. Fiscal Year 2026 Research and Implementation Program

RTI will execute additional projects identified in the FY 26 Request for Proposals (RFP) and hold project kick-off meetings for new projects. RTI Project Managers will oversee active projects to ensure the project's work plans are being executed by the awarded universities. Throughout the year, project progress meetings are held to discuss project status and gain advisement and guidance from the project monitoring committees. Close-out meetings will also occur throughout the year as projects close and contracts terminate. RTI will perform annual calls for research ideas and conduct project selection meetings with the various research committees consisting of subject matter experts throughout the state. Universities will also be invited to hear information regarding the Program and discuss potential research ideas. RTI will also publish video summary reports for most research projects, research digests, newsletters and a Program Book detailing information about the project's research results. In December, the Annual Performance and Expenditures Report (APER) will be developed and submitted to FHWA.

4.1 General Overview*

4.1.1. Research Program

- There are fifty-five (55) Research Projects that are continuations of active projects.
- New Research Projects will be added as modifications to the Work Program with FHWA approval. See Table X.
- There are ten (10) Implementation Projects that are continuations of active projects.
- There are thirty-five (35) Pooled Fund Projects; two (2) are Texas-led.

4.1.2. RTI Administration and University Support Projects

- There is one project that funds the Administration of the SPR Program (0-0050)
- There is one project that funds the Local Technical Assistance Program (5-7097-24)
- There is one project that funds the Research Transportation Library (0-9902-23)
- There is one project that funds the Digital Publication and Outreach Services in Support of Research (TBD)

4.1.3. RTI Administration and FHWA Grant Supported Projects

- There is one USDOT ADS grant project administered by the division with non-SPR funds (0-7099) and one USDOT grant project administered by the Maintenance (MNT) Division (0-9912-25) with matching TDCs.

4.2 List of Implementation Projects

Functional Area	Project No.	Project Title	Status
Construction, Maintenance & Materials	5-6048-07	Implementation of Centrifuge Technology for Pavement Design on Expansive Clays – Phase 2	Continuing
Construction, Maintenance & Materials	5-7025-01	Pilot Implementation of Surface Aggregate Classification of Reclaimed Asphalt Pavement	Continuing
Construction, Maintenance & Materials	5-7027-01	Implementation and Performance Monitoring of Accelerating Mix Designs for Cement Treated Base	Continuing
Construction, Maintenance & Materials	5-7074-01	Implementation of Recycled Crushed Concrete Aggregate in Class P Concrete	Continuing
Planning and Environmental	5-6674-03	Implementation of Asphalt Mixture Automated Testing System with Zero Intervention (AMAZE)	Continuing
Safety and Operations	5-7007-01	Weather Responsive Management Strategies Implementation	Continuing
Strategy and Innovation	5-7160-01	Implementing the ATSPM-In-The-Loop Simulation Solution with the TxDOT State-Wide ATSPM System Deployment Plan	Continuing
Strategy and Innovation	5-9908-24	Innovative Transportation Projects at TxDOT	Continuing
Structures and Hydraulics	5-6936-01	Implementation of Semi-integral Bridges in Texas	Continuing
Structures and Hydraulics	5-7041-01	Implementation of the NextGen Bridge Deck System in Texas	Continuing

4.3 List of Continuing Research Projects

Functional Area	Project No.	Project Title	Status
Construction, Maintenance & Materials	0-6674-04	Automated IDEAL Cracking and Rutting Tests	Continuing
Construction, Maintenance & Materials	0-7061-01	Scaling Up and Finalizing Ozone Ageing for Hot Mix Asphalt (HMA)	Continuing
Construction, Maintenance & Materials	0-7108	Evaluate the Importance of Fine Aggregates in Achieving Adequate Skid Resistance in TxDOT Hot Mix Asphalt Mixtures	Continuing
Construction, Maintenance & Materials	0-7141	Evaluation of Nano-Materials in Concrete for Improved Durability	Continuing
Construction, Maintenance & Materials	0-7143	Develop Methodologies for Reducing Costs in Full Depth Reclamation (FDR) Construction	Continuing
Construction, Maintenance & Materials	0-7145	Develop Rapid New Tests for Detecting Poor Quality Binders and RAP Materials	Continuing
Construction, Maintenance & Materials	0-7151	Develop Recommendations for Evaluating Surface Types and Aggregate Properties to Minimize Wet Weather Crashes	Continuing
Construction, Maintenance & Materials	0-7173	Develop Guidelines for Evaluation of Embankment Conditions in Bridge Approach Slabs and Pavement Structures	Continuing
Construction, Maintenance & Materials	0-7175	Develop Best Practices for Flexible Pavement Repairs	Continuing
Construction, Maintenance & Materials	0-7177	Identifying Pavement Improvement Projects for Enhanced Safety	Continuing
Construction, Maintenance & Materials	0-7185	Develop Enhanced Cold Recycling Methods and Specifications	Continuing
Construction, Maintenance & Materials	0-7186	Develop Next Generation of Hamburg Rutting Test for Asphalt Mixes	Continuing

Functional Area	Project No.	Project Title	Status
Construction, Maintenance & Materials	0-7195	Quantify Bridge and Pavement Consumption Due to Permitted Overweight/Oversized (OW/OS) Vehicles	Continuing
Construction, Maintenance & Materials	0-7197	Evaluate Effects of Recycled Asphalt Pavement (RAP) on Performance-Graded (PG) Binder Polymer Concentration	Continuing
Construction, Maintenance & Materials	0-7205	Evaluation of Adhesive Anchors in Concrete Pavement Applications	Continuing
Construction, Maintenance & Materials	0-7206	Develop Optimum 2-Mat Reinforcement Design in Continuously Reinforced Concrete Pavement (CRCP)	Continuing
Construction, Maintenance & Materials	0-7208	Evaluating Minimum Virgin Binder Contents for Durable Recycled Asphalt Pavement (RAP) Mixes	Continuing
Construction, Maintenance & Materials	0-7210	Evaluation of Low-Speed Profiler for Network-Level Pavement Management	Continuing
Construction, Maintenance & Materials	0-7211	Determine Hydroplaning Potential Using Existing Pavement Asset Data	Continuing
Construction, Maintenance & Materials	0-7212	Incorporating Lab Skid measurements into the Balanced Mix Design process	Continuing
Construction, Maintenance & Materials	0-7215	Predicting Field Performance of Pavement Markings Statewide in Texas	Continuing
Construction, Maintenance & Materials	0-7216	Enhancing Texas Mechanistic-Empirical Flexible Pavement Design System (TxME) Practice: Develop Enhanced Mix Aging Model and District-Level Calibration Guidance	Continuing
Construction, Maintenance & Materials	0-7218	Revisions for the TxDOT Pavement Management Information System (PMIS) Rater's Manual	Continuing
Construction, Maintenance & Materials	0-7225	Evaluation of Rapid Mix Design for Lime Treated Materials	Continuing
Construction, Maintenance & Materials	0-7227	Exploring the Use of Antioxidants to Substantially Increase Cracking Life of Asphalt Pavements	Continuing

Functional Area	Project No.	Project Title	Status
Planning and Environmental	0-7174	Develop an Interactive Statewide Production Rate Estimation Tool for Reliable Contract Time Determination	Continuing
Planning and Environmental	0-7219	Developing and Assessing eDNA Survey Methodology for Protected Mussel Species in Texas	Continuing
Planning and Environmental	0-7229	Develop an Intelligent Digital Assistant for Project Planning	Continuing
Planning and Environmental	0-7233	Incorporating Resilience Considerations in Transportation Asset Management Planning and Project Selection Process	Continuing
Safety and Operations	0-7190	Roadside Safety Device Analysis, Testing, and Evaluation Program	Continuing
Safety and Operations	0-7198	Traffic Control Device Analysis, Testing, and Evaluation Program	Continuing
Safety and Operations	0-7220	Develop Countermeasures to Lower Operating Speeds and Collisions on Arterial Roadways, and Reduce Vulnerable User Injuries	Continuing
Safety and Operations	0-7222	Develop Crash Predictive Methods for Frontage Roads Including Ramp Terminals, and Intersections with Crossroads in Texas	Continuing
Safety and Operations	0-7223	Conduct MASH Test Level 3 (TL-3) Evaluations of Concrete Barriers on Roadside Slopes	Continuing
Safety and Operations	0-7226	Analyze Operational and Safety Improvements Associated with Implemented Innovative Intersections in Texas	Continuing
Safety and Operations	0-7228	Identify and Evaluate Innovative Pedestrian Safety Countermeasures for Rural and Nighttime Environments	Continuing
Safety and Operations	0-7230	Improve Safety and Decrease Vehicle Fatalities by Improving Pavement Markings	Continuing
Strategy and Innovation	0-7181	Development of Digital Twins for Texas Bridges	Continuing

Functional Area	Project No.	Project Title	Status
Strategy and Innovation	0-7221	Develop Data Collection Requirements and Strategic Research Roadmap to Support the Digital Delivery Program	Continuing
Strategy and Innovation	0-7224	Improve Utility Investigations through AI Data Fusion and Reliable Quality Assessments	Continuing
Strategy and Innovation	0-7232	Improve Safety of Vehicles and Vulnerable Road Users at Intersections Integrating C-V2X and LiDAR Sensing Technologies	Continuing
Strategy and Innovation	0-7235	Leverage AI for Asset Inventories & Management	Continuing
Structures and Hydraulics	0-7095-01	Flood Assessment System for TxDOT (FAST)	Continuing
Structures and Hydraulics	0-7155	Develop/Refine Design Provisions for Headed and Hooked Reinforcement	Continuing
Structures and Hydraulics	0-7170	Evaluate Bridge Deck Condition and Replacement Methods	Continuing
Structures and Hydraulics	0-7172	Developing a Performance-Based Concrete Overlay Mix Design for Improved Resistance to Early-Age Cracking and Increased Durability	Continuing
Structures and Hydraulics	0-7179	Evaluate Safety End Treatments for Roadside Drainage Structures	Continuing
Structures and Hydraulics	0-7192	Develop Performance of Baseplate Connections in COSS and Traffic Signal Structures	Continuing
Structures and Hydraulics	0-7193	Develop Assessment and Mitigation Guidance for Ancillary Highway Structures with Existing Cracks	Continuing
Structures and Hydraulics	0-7203	Evaluate the Effectiveness of Dowels for Lateral Restraint of Prestressed Concrete Beams	Continuing
Structures and Hydraulics	0-7207	Determine Feasibility and Efficacy of Hollow Precast Straddle Bents	Continuing

Functional Area	Project No.	Project Title	Status
Structures and Hydraulics	0-7213	Develop Design Methodologies and Efficient Details for Triple I-Girder Steel Straddle Caps	Continuing
Structures and Hydraulics	0-7214	Develop Concrete Girder Splice Details with Application of Ultra-High-Performance Fiber-Reinforced Concrete (UHP-FRC)	Continuing
Structures and Hydraulics	0-7234	Address Knowledge Gaps in Scour Analyses for Cohesive and Other Challenging Channel Materials	Continuing
Structures and Hydraulics	0-7236	Develop Standardized LRFD Design Methods for Ancillary Highway Structure Foundations	Continuing
Structures and Hydraulics	9-1532	TPF-5(508) Concrete Bridge Engineering Institute (CBEI)	Continuing

4.4 List of New Research & Implementation Projects Pending Award & Approval

Functional Area	Project No.	Project Title	Status
Structures and Hydraulics	0-7238	Retrofitting TxDOT Prestressed Box Beams with Composite Cast In Place Concrete Deck	New
Structures and Hydraulics	0-7239	Synthesis: Assess Hazard and Vulnerability Prioritization for Texas Bridges and Tunnels	New
Structures and Hydraulics	0-7240	Synthesis: Increase Awareness and Use of Transportation Nature-Based Solutions	New
Construction, Maintenance & Materials	0-7241	Develop Best Practices for Temporary Pavement Design and Construction	New
Construction, Maintenance & Materials	0-7242	Designing and Constructing Permanent Stable Foundation Layers in Areas of Sulfate Rich Soils	New
Construction, Maintenance & Materials	0-7243	Develop and Demonstrate an Evaluation Process for Acceptance of Additives for Use in Forensic Analysis in Hot Mix Asphalt	New
Construction, Maintenance & Materials	0-7244	Develop Performance Models for Different Preventive Maintenance Treatments	New
Construction, Maintenance & Materials	0-7245	Develop Best Practices for Efficient and Beneficial TxDOT Constructability Reviews (CRs)	New
Construction, Maintenance & Materials	0-7246	Enhancing Flexible Pavement System 23 (FPS23) by Incorporating a Top- Down Cracking Model in Texas Mechanistic-Empirical Flexible Pavement Design System (TxME)	New
Construction, Maintenance & Materials	0-7247	Develop Heavy Duty Intersection Designs with High Performance Graded (HPG) Binder or Suitable Asphalt Mixtures	New
Construction, Maintenance & Materials	0-7248	Incorporating Pavement Structural Capacity into TxDOT Pavement Management Information System	New
Construction, Maintenance & Materials	0-7249	Update Standardized Measurement Systems and Laboratory Test Procedures to Improve Motorist Safety	New

Functional Area	Project No.	Project Title	Status
Construction, Maintenance & Materials	0-7250	Evaluate Thick Lift High Performance Grade (HPG) Mixes for Intersections, Border Checkpoints, and Other Locations with Slow Moving Heavy Traffic	New
Construction, Maintenance & Materials	0-7251	Update and Improve Pavement Management Information System (PMIS) Treatment Decisions and Effectiveness	New
Construction, Maintenance & Materials	0-7252	Investigate the Effects of Using of Reclaimed Asphalt Pavement (RAP) as Aggregate in Seal Coats	New
Planning and Environmental	0-7253	Develop Multi-Modal Maritime-Rail-Roadway Transportation Model for the Texas Inland and Intercoastal Waterways	New
Planning and Environmental	0-7254	Evaluating Texas Ports Readiness and Opportunities for Alternative Fuels	New
Planning and Environmental	0-7255	Determine Land Use Patterns, Travel, Regional Development, Population Trends, and Technology Change Impacts on Texas Energy Use and Carbon Emissions	New
Planning and Environmental	0-7256	Monitoring and Speciation of Particulate Matter Under 2.5 Microns (PM2.5) Composition across Texas Counties	New
Planning and Environmental	0-7257	The Effects of Road Types and Construction Activities on Particulate Matter and Development of Best Practices for PM2.5 Reduction	New
Planning and Environmental	0-7258	Using Unmanned Aerial Systems to Identify and Manage Protected Species Habitat	New
Safety and Operations	0-7259	Perform Assessment of TxDOT Safety Scoring Tools to Determine Effectiveness and Calibration	New
Safety and Operations	0-7260	Determine Metric Performance Rankings for Innovative Interchanges and Alternative Assessment	New
Safety and Operations	0-7261	Develop Guidance for Enhancing Work Zone Safety in the Construction of Innovative Intersections	New
Safety and Operations	0-7262	Develop and Evaluate Long Median Barrier Gate to Assist with Emergency Response	New

Functional Area	Project No.	Project Title	Status
Safety and Operations	0-7263	Optimize Tradeoffs between Centerline Buffers, Lane Width, and Shoulders for Rural Undivided Highways	New
Safety and Operations	0-7264	Review Dynamic Message Sign (DMS) Messaging for Increased Understandability	New
Strategy and Innovation	0-7265	Evaluate Emerging Transportation Technologies and Advancements in Engineering and Roadway Safety Efforts Impact on Crashes	New
Strategy and Innovation	0-7266	Leveraging Crowd-Sourced Data and Artificial Intelligence for Timely Detection of Roadway Anomalies for Enhanced Situational Awareness and Rapid Response	New
Strategy and Innovation	0-7267	Utilizing Telematics Data as a Proxy to Identify Near-Crash Events and Hotspots	New
Structures and Hydraulics	0-7268	Develop Guidance on Drilled Shaft Response to Collision Force	New
Structures and Hydraulics	0-7269	Gauge the Trust and Optimize the Clay and Shale LRFD Design Criteria for Drilled Shaft Foundations	New
Structures and Hydraulics	0-7270	Establish Bridge Blast and Fire Damage Mitigation and Design Consideration	New
Strategy and Innovation	TBD	Texas Innovation Alliance (TIA)	New
Strategy and Innovation	5-9905-26	Texas Technology Task Force (T3F)	New

5. Continuing Projects by Functional Area

5.1 Construction, Maintenance and Materials

Project Number: 0-6674-04 University: TTI

Project Title: Automated IDEAL Cracking and Rutting Tests

Project Start Date: 09/01/2023 Termination Date: 08/31/2026

Project Status: Active Total Project Budget: $692,780.00

Project Manager: Martin Dassi Researcher: Fujie Zhou

Project Objectives: The objective of this project is to complete the design and construction of the automated test system and to deliver an automated IDEAL cracking and rutting test system working unit to the Receiving Agency's MTD lab. The automated test system, includes (1) specimen rapid cooling unit, (2) auto-air void measurement unit, (3) specimen conditioning unit for both room and high temperature, (4) automation arm unit, and (5) automated IDEAL cracking test (IDEAL-CT), IDEAL rutting test (IDEAL-RT), and indirect tensile (IDT) strength test unit, and (6) waste disposal unit. This automated test system shall shorten test time and improve lab safety, test efficiency and accuracy. The Performing Agency shall work closely with the Receiving Agency to build one automated lab test system. The Performing Agency shall conduct comprehensive parallel comparison with the standard (manual) test system to ensure that the automated test results align with the current standard tests. The Performing Agency shall develop a user manual for the automated test system. Additionally, the Performing Agency shall provide training and demonstrations to Receiving Agency lab technicians after delivering the automated test system.

Financials	FY26 Total Budget	80% Federal	20% State
Contract Total	$199,512.00	$159,609.60	$39,902.40

Project Number: 0-7061-01 University: CTR

Project Title: Scaling Up and Finalizing Ozone Ageing for Hot Mix Asphalt (HMA)

Project Start Date: 01/22/2025 Termination Date: 12/31/2027

Project Status: Active Total Project Budget: $554,753.73

Project Manager: Tom Schwerdt Researcher: Amit Bhasin

Project Objectives: Evaluating the cracking resistance of asphalt mixtures after long-term aging is essential to ensure its long-term performance. NCHRP project 9-54 recommended aging loose asphalt mixtures at 95C for a period of 4 to 8 days (depending on the location in Texas) to simulate 4 years of field aging at 6 mm below the pavement surface. Subsequently, TxDOT Project 0-7061 examined ways to reduce the time required for long-term aging without increasing the aging temperature to beyond 100C to avoid aging artifacts. Project 0-7061 concluded that 5 days of long-term aging at 95C could be reduced to approximately 2 days by increasing the pressure or approximately 1 day by exposing the mix to ozone. This research project shall: (1) develop a scalable prototype ozone aging oven that can used for routine implementation by mixture labs throughout the state, (2) optimize and standardize the ozone concentration to ensure repeatability and sensitivity, (3) provide a standard test method, training, and ozone aging equipment to Receiving Agency, and (4) conduct round robin testing to establish confidence with the test method and make any refinements to the standard test method if necessary.

Financials	FY26 Total Budget	80% Federal	20% State
Contract Total	$199,052.06	$159,241.65	$39,810.41

Project Number: 0-7108 University: UTEP

Project Title: Evaluate the Importance of Fine Aggregates in Achieving Adequate Skid Resistance in TxDOT Hot Mix Asphalt Mixtures

Project Start Date: 09/01/2021 Termination Date: 08/31/2026

Project Status: Active Total Project Budget: $863,000.00

Project Manager: Danny Souraphath Researcher: Imad Abdallah

Project Objectives: The lack of skid resistance has been an important issue for Receiving Agency pavement as many of them cannot hold adequate skid resistance in the long run, and even some newly constructed roads are observed to have poor skid resistance. Skid resistance is a function of the quality of the aggregate as well as the micro-and macro-texture of the surface. Those textures can be modified by using the appropriate type and amount of fine aggregates and fines in asphalt concrete. The main focus of the research is understanding the effects of fine aggregates and fines on the skid resistance of asphalt concrete since their impacts on the skid resistance and performance. The Performing Agency shall evaluate the current practices and research studies commissioned by Receiving Agency (in particular) and other states (in general) on the use of fine aggregates and fines in asphalt concrete to improve skid resistance. The major objective of this project shall be critical to evaluate the influence of fine aggregates and high-quality fines on the skid resistance of asphalt concrete.

Financials	FY26 Total Budget	80% Federal	20% State
Contract Total	$176,000.00	$140,800.00	$35,200.00

Project Number: 0-7141 University: CTR

Project Title: Evaluation of Nano-Materials in Concrete for Improved Durability

Project Start Date: 09/01/2022 Termination Date: 05/31/2026

Project Status: Active Total Project Budget: $630,022.25

Project Manager: Jade Adediwura Researcher: Raissa Ferron

Project Objectives: The application of nanotechnology in the construction industry has led to significant advancements in enhancing the mechanical properties of concrete through changing concrete's structure at the nano level. However, advancements in understanding how to leverage nanomaterials to combat durability issues has lagged behind the progress made on the mechanical property side. Concrete is susceptible to various physical and chemical degradation mechanisms that can reduce its service life. Historically, Class F fly ash has been used to address many of these degradation issues. However, with changes in fly ash quality and availability, identifying other materials that the Receiving Agency can use to protect concrete against durability issues are needed. Over the last 20 years, much progress has been made in using nanomaterials in concrete mixtures, for example, nanoparticles have even been used in high-volume fly ash cementitious systems to offset the negative effects of fly ash on rate of hydration and early-age strength gain. This project shall investigate the use of nanomaterials on the properties of concrete mixtures, with special emphasis placed on durability properties and self-healing capabilities. Various nanomaterials shall be used, alone and in combination with supplementary cementing materials (SCMs). The most promising mixtures shall be selected for field trails to validate laboratory findings.

Financials	FY26 Total Budget	80% Federal	20% State
Contract Total	$114,456.62	$91,565.30	$22,891.32

Project Number: 0-7143 University: TTI

Project Title: Develop Methodologies for Reducing Costs in Full Depth Reclamation (FDR) Construction

Project Start Date: 09/01/2022 Termination Date: 11/30/2025

Project Status: Active Total Project Budget: $679,483.50

Project Manager: Anne Smith Researcher: Stephen Sebesta

Project Objectives: Full depth reclamation (FDR) using emulsified asphalt or foamed asphalt continues to grow in usage throughout Texas. To date, almost all mixtures use a cement additive in the mix design. The cement additive reportedly contributes to early strength gain which can be particularly important for projects that require daily opening to heavy traffic. However, not all construction projects require daily opening to traffic, and some materials may provide adequate performance without the cement additive. Additionally, with potential cement supply shortages, design and construction of FDR layers using only the asphalt treatments could save materials cost, reduce schedule risk, and increase daily productivity since one less step would be required in the treatment process. The Performing Agency shall analyze the performance of asphalt-based FDR materials with and without the cement additive and evaluate the strength and stiffness properties of those mixes in the early, intermediate, and final curing stages. The Performing Agency shall leverage those results to determine the operational benefits and acceptability of placing traffic on the section for traffic control and construction staging, evaluate how the long-term performance of the layer may be impacted for pavement design, and make recommendations for mix design and construction specification updates.

Financials	FY26 Total Budget	80% Federal	20% State
Contract Total	$35,656.50	$28,525.20	$7,131.30

Project Number: 0-7145 University: CTR/TTI

Project Title: Develop Rapid New Tests for Detecting Poor Quality Binders and RAP Materials

Project Start Date: 09/01/2022 Termination Date: 02/29/2028

Project Status: Active Total Project Budget: $1,725,534.03

Project Manager: Anne Smith Researcher: Fujie Zhou

Project Objectives: Asphalt binders are one of the most expensive and critical materials used in the construction of the roadways in Texas, costing taxpayers hundreds of millions of dollars annually. It has been widely recognized that asphalt binders with the same performance grade (PG) can perform very differently due to changes in crude source, refining processes used, modification technique, and other factors. Several districts recently reported early cracking issues with some mixes which had historically performed well, while other districts had mix design and quality assurance (QA) problems when the binder source was switched and/or a different recycled asphalt pavement (RAP) stockpile was used. Thus, the objective of this project is to develop rapid new tests for detecting poor quality binders and RAP materials. To achieve this objective, the Performing Agencies shall review the literature to identify candidate tests that can be used for screening binders and RAP materials. The Performing Agencies shall further refine the most promising tests using laboratory mixture performance tests as a benchmark. The Performing Agencies shall also provide a standard test method and specification limit for each of the final test methods.

Financials	FY26 Total Budget	80% Federal	20% State
CTR	$70,862.65	$56,690.12	$14,172.53
TTI	$170,461.00	$136,368.80	$34,092.20

Project Number: 0-7151 University: TTI

Project Title: Develop Recommendations for Evaluating Surface Types and Aggregate Properties to Minimize Wet Weather Crashes

Project Start Date: 11/10/2022 Termination Date: 02/28/2026

Project Status: Active Total Project Budget: $599,992.25

Project Manager: Wade Odell Researcher: Bryan Wilson

Project Objectives: The current design methodology for asphalt and seal coat surfaces is limited when considering safety aspects like friction and surface texture, also known as skid resistance. The only requirement for asphalt or seal coats placed on high demand areas is that they use surface aggregate classification (SAC) A coarse aggregates. This approach has several shortcomings: • Does not consider the friction and texture of the final surface. • Does not consider the change in skid resistance versus trafficking. • SAC system is defined by the acid insolubility test, not a direct measurement of aggregate properties that mechanically generate skid resistance. • SAC categories are very broad with no distinction of the best and worst performing aggregates in each class. Consequently, some recent resurfacing projects have resulted in unacceptable skid resistance shortly after construction, even when SAC A aggregates were used. As such, there is a serious need to improve the current design process for asphalt and seal coat to ensure that the surfaces will have acceptable long-term skid resistance. The Performing Agencies shall develop a laboratory-based system to select the pavement surface type and coarse aggregate types that will provide adequate skid resistance over the life of the pavement surface.

Financials	FY26 Total Budget	80% Federal	20% State
Contract Total	$36,202.00	$28,961.60	$7,240.40

Project Number: 0-7173 University: TECH

Project Title: Develop Guidelines for Evaluation of Embankment Conditions in Bridge Approach Slabs and Pavement Structures

Project Start Date: 09/01/2023 Termination Date: 08/31/2026

Project Status: Active Total Project Budget: $716,613.77

Project Manager: Anne Smith Researcher: Hoyoung Seo

Project Objectives: Distresses of bridge approach slabs (BAS) and nearby pavement structures on roadway embankments are often caused by poor conditions in the embankments. The goal of this project is to develop guidelines for (1) evaluations of roadway embankment conditions and (2) maintenance strategies. The Performing Agency shall (a) conduct literature review and survey to synthesize information about the current state of the practice for embankment evaluations and repairs, (b) locate field test sections for new evaluations and monitoring of past repair performance, (c) conduct field investigations of the test sections and develop evaluation guidelines for embankment conditions, (d) identify causes of distresses and classify them, (e) develop maintenance strategies for the classified distress types and mechanisms, and conduct pilot field applications, and (f) develop training materials for the Receiving Agency.

Financials	FY26 Total Budget	80% Federal	20% State
Contract Total	$244,481.05	$195,584.84	$48,896.21

Project Number: 0-7175 University: TTI

Project Title: Develop Best Practices for Flexible Pavement Repairs

Project Start Date: 09/01/2023 Termination Date: 02/28/2026

Project Status: Active Total Project Budget: $413,069.00

Project Manager: Martin Dassi Researcher: Tito Nyamuhokya

Project Objectives: This research study aims to perform a study focusing on best practices for performing pavement preparatory work in advance of preventive maintenance (PM) surfacing contracts. The study shall respond to answer, "What are the best practices for repairing a roadway before a new surface is placed?" Seal coats or thin overlays are typical PM surfacing projects. The preparatory work performed by in-house maintenance forces or maintenance contracts may include crack sealing, fog seal, repairs, milling, and level-up. The preparatory work should be completed well before the PM contract. This study will identify the main flexible pavement repair types and investigate best practices for performing both in-house and contracted repairs. A procedure will be developed to determine the limits and type of flexible pavement repair. An evaluation process of the repair, including its performance and effects on the PM surfacing, will be developed.

Financials	FY26 Total Budget	80% Federal	20% State
Contract Total	$62,967.25	$50,373.80	$12,593.45

Project Number: 0-7177 University: TTI/UH

Project Title: Identifying Pavement Improvement Projects for Enhanced Safety

Project Start Date: 09/18/2023 Termination Date: 02/28/2026

Project Status: Active Total Project Budget: $478,160.00

Project Manager: Jade Adediwura Researcher: Nasir Gharaibeh

Project Objectives: The Performing Agencies shall develop a method and tool for analyzing safety-related pavement data to identify candidate pavement safety projects, such as cross-slope improvement projects and flushing treatment projects. The Performing Agencies shall assemble a dataset containing comprehensive data on the pavement, site condition, and crashes for a representative sample of on-system roadways. The Performing Agencies shall conduct a comprehensive analysis of the integrated dataset to identify critical combinations and thresholds of pavement conditions that may pose a safety hazard and use these factors to assess pavement susceptibility to crashes. The Performing Agencies shall quantify the pavement crash susceptibility based on measurable pavement characteristics such as cross-slope, geometrics, distresses (e.g., rutting, flushing), skid resistance, and roughness. Finally, the Performing Agencies shall develop a data analysis and visualization tool for assessing pavement crash susceptibility and recommending solutions to reduce crash risks. The Receiving Agency's districts will be able to use this tool to identify potential site-specific crash contributing factors and proactively select appropriate pavement safety improvement projects.

Financials	FY26 Total Budget	80% Federal	20% State
TTI	$78,825.75	$63,060.60	$15,765.15
UH	$9,968.75	$7,975.00	$1,993.75

Project Number: 0-7185 University: TTI

Project Title: Develop Enhanced Cold Recycling Methods and Specifications

Project Start Date: 09/19/2023 Termination Date: 08/31/2026

Project Status: Active Total Project Budget: $1,731,875.00

Project Manager: Katelyn Kasberg Researcher: Stephen Sebesta

Project Objectives: Texas continues to use cold recycling for pavement rehabilitation and performs a significant amount of full depth reclamation (FDR). While cement remains the most widely used treatment, use of asphalt emulsion and foamed asphalt continues to grow. This project shall identify and evaluate topics to strategically enhance cold recycling practices in Texas. This project shall perform a comprehensive performance analysis of recent as-built projects to identify strengths and opportunities for process enhancement. For cement, this project shall evaluate how cement type may influence mixture properties, analyze the Texas Flexible Pavement System (FPS) structural design assumptions based on current mix design and construction practices, and summarize methods to improve early trafficking. For emulsified and foamed asphalt, this project shall develop cold-in-place recycling (CIR) applications for Texas and identify, evaluate, and recommend enhanced pavement design procedures for cold recycling with asphalt binders. This project shall use all results to develop enhanced cold recycling project selection procedures, recommend updates to the Receiving Agency's specifications, and develop and perform training.

Financials	FY26 Total Budget	80% Federal	20% State
Contract Total	$560,403.00	$448,322.40	$112,080.60

Project Number: 0-7186 University: CTR/TTI

Project Title: Develop Next Generation of Hamburg Rutting Test for Asphalt Mixes

Project Start Date: 09/01/2023 Termination Date: 08/31/2026

Project Status: Active Total Project Budget: $634,305.00

Project Manager: Tom Schwerdt Researcher: Fujie Zhou

Project Objectives: The Hamburg Wheel Track (HWT) rutting test generally serves well as the standard rutting test for asphalt mixes in Texas; however, in the last several years, some premium mixes (i.e. stone matrix asphalt), designed with PG76-22 and low HWT rut depth, have experienced premature rutting failures under slow moving (or stop/ go) traffic in several Receiving Agency Districts. Such failures burden the Receiving Agency with extra cost. Furthermore, it was reported that the HWT test cannot accurately quantify the better rutting performance of some tougher mixes with highly modified asphalt (HiMA). Thus, the Performing Agency shall develop the next generation of HWT test to accurately screen out asphalt mixes that are prone to rutting failures. The Performing Agencies shall review the literature, survey Districts, and other state departments of transportation (DOTs) to identify the proper rutting test(s) and asphalt mixes for addressing the rutting failure caused by the slow-moving traffic. The Performing Agencies shall further develop the next generation of HWT test and associated acceptance criteria through finite element analysis, laboratory testing, field accelerated pavement testing and survey of in-service pavement intersections, round robin test, and recommendation of specification changes.

Financials	FY26 Total Budget	80% Federal	20% State
CTR	$20,000.00	$16,000.00	$4,000.00
TTI	$202,306.00	$161,844.80	$40,461.20

Project Number: 0-7195 University: CTR/TTI/UTSA

Project Title: Quantify Bridge and Pavement Consumption Due to Permitted Overweight/Oversized (OW/OS) Vehicles

Project Start Date: 09/01/2023 Termination Date: 02/28/2026

Project Status: Active Total Project Budget: $828,584.25

Project Manager: Jade Adediwura Researcher: Jorge Prozzi

Project Objectives: In 2012, the Rider 36 study indicated that damage caused to bridges and pavements by overweight (OW) vehicles surpassed the revenue collected by permit fees by approximately $200 million annually. This finding was corroborated by a recent 2022 study mandated by House Bill 2223, which quantified this gap at $168 million. Besides the revenue shortage to cover bridge and pavement maintenance and rehabilitation costs due to the damage cause by OW vehicles, the 2022 study also identified additional shortcomings that need to be urgently addressed. These shortcomings include: 1) lack of a methodology for periodically adjusting permit fees to account for changes in traffic patterns and configurations and higher inflation rates; 2) lack of accurate data and process for calculating annual vehicles-miles-travelled (VMT) by each permit type; 3) uncertainty in the identification of routes and number of trips for monthly, quarterly, or annual permits; 4) absence of a method and process to assess the damage caused by OW vehicles to the off-system bridges and highways. The Performing Agencies shall develop, recommend, and provide the Receiving Agency a well-established and documented step-by-step method to periodically update the permit fee structure.

Financials	FY26 Total Budget	80% Federal	20% State
CTR	$119,994.63	$95,995.70	$23,998.93
TTI	$15,000.00	$12,000.00	$3,000.00
UTSA	$60,153.00	$48,122.40	$12,030.60

Project Number: 0-7197 University: CTR/TTI

Project Title: Evaluate Effects of Recycled Asphalt Pavement (RAP) on Performance-Graded (PG) Binder Polymer Concentration

Project Start Date: 10/06/2023 Termination Date: 04/30/2026

Project Status: Active Total Project Budget: $593,006.28

Project Manager: Tom Schwerdt Researcher: Amit Bhasin

Project Objectives: Polymer additives are used to design high PG virgin binders that meet the PG requirements to protect the mix against rutting and cracking under the climate and traffic conditions of an HMA project. When RAP is added to the mixture, the effective binder may not meet the desired grade. This project shall quantify the extent to which polymer dilution is a problem that should be addressed in the Receiving Agency's HMA specifications and if so, develop specification language to address it. This project involves evaluating binder blends and mixtures with RAP. Both lab blended and commercial PG binders shall be evaluated for continuous grade, elasticity, polymer content, and other rheological parameters. Then these binders shall be mixed with recovered RAP binders at several percentages and retested to determine the same properties. Standard mixtures(s) shall also be used with several of these binders and various RAP percentages to measure mixture performance-related properties (cracking and rutting). The Performing Agency shall use the results from binder and mixture results on the impact of "virgin binder – RAP binder dilution" and work with the Receiving Agency to develop specification language for inclusion in the Receiving Agency's HMA specifications, as needed

Financials	FY26 Total Budget	80% Federal	20% State
CTR	$53,821.22	$43,056.98	$10,764.24
TTI	$15,307.00	$12,245.60	$3,061.40

Project Number: 0-7205 University: TTI

Project Title: Evaluation of Adhesive Anchors in Concrete Pavement Applications

Project Start Date: 09/01/2024 Termination Date: 08/31/2026

Project Status: Active Total Project Budget: $731,540.50

Project Manager: Martin Dassi Researcher: Dan Zollinger

Project Objectives: The Performing Agency shall perform a comprehensive evaluation of adhesive anchors used in concrete pavement applications, particularly full-depth repairs. The Performing Agency shall investigate the effects of sustained and cyclic loading on long term stiffness of the bond between the concrete, the adhesive grout, and the steel anchor. The potential benefits will lie in the suitability of adhesive anchors to perform in concrete pavement applications in addition to the development of recommendations for the use of adhesive anchors to minimize premature failures and to extend pavement service life by maintaining the stiffness of a repair made using drilled adhesive anchors.

Financials	FY26 Total Budget	80% Federal	20% State
Contract Total	$373,761.25	$299,009.00	$74,752.25

Project Number: 0-7206 University: TECH/TXST

Project Title: Develop Optimum 2-Mat Reinforcement Design in Continuously Reinforced Concrete Pavement (CRCP)

Project Start Date: 09/01/2024 Termination Date: 08/31/2027

Project Status: Active Total Project Budget: $737,885.85

Project Manager: Anne Smith Researcher: Moon Won

Project Objectives: The Performing Agencies shall develop optimum designs for longitudinal steel, including the amount of steel as well as the depths of each layer of steel. The Performing Agencies shall obtain detailed CRCP structural responses from field experiments, analyze the data, and develop the optimum steel designs for thick CRCP. The Performing Agencies shall develop and present field experimental plans to the Receiving Agency for its feedback and concurrence. Once the Receiving Agency approves, the Performing Agencies shall conduct field testing per the approved experimental plans and present the data and its analysis results as well as its implications to the Performing Agency. The Performing Agencies shall also provide any technical assistance that might be needed for the implementation of the findings.

Financials	FY26 Total Budget	80% Federal	20% State
TECH	$176,000.13	$140,800.10	$35,200.03
TXST	$68,797.50	$55,038.00	$13,759.50

Project Number: 0-7208 University: CTR/TTI

Project Title: Evaluating Minimum Virgin Binder Contents for Durable Recycled Asphalt Pavement (RAP) Mixes

Project Start Date: 09/01/2024 Termination Date: 08/31/2027

Project Status: Active Total Project Budget: $793,403.62

Project Manager: Katelyn Kasberg Researcher: Fujie Zhou

Project Objectives: Economic factors and environmental sustainability are driving the use of more reclaimed asphalt pavement (RAP); however, durability of those mixes has been a concern. Various approaches (e.g. limiting RAP usage, increasing lab-molded density, or balanced mix design (BMD)) have been tried to improve mix durability. All the approaches point to one essential factor for durable RAP mixes: minimum virgin binder content. Thus, the Performing Agency shall determine the minimum virgin binder content(s) for durable RAP mixes. The Performing Agencies shall review the literature to identify critical factors affecting RAP mix durability. Considering all those critical factors, the Performing Agencies shall develop and execute a statistically sound laboratory experimental design to develop the relationships between cracking properties measured by Overlay test and Ideal cracking test and mix components (e.g. virgin binder content) and their characteristics. Furthermore, the Performing Agencies shall assess field performance of RAP mixes and delineate the correlation between field performance and laboratory mix cracking properties. Subsequently, the Performing Agencies shall recommend minimum virgin binder contents based on the relationships among field performance, mix cracking properties, and mix components and their characteristics, and develop guidelines, update specifications, and organize training sessions.

Financials	FY26 Total Budget	80% Federal	20% State
CTR	$108,017.17	$86,413.74	$21,603.43
TTI	$186,019.50	$148,815.60	$37,203.90

Project Number: 0-7210 University: TTI

Project Title: Evaluation of Low-Speed Profiler for Network-Level Pavement Management

Project Start Date: 09/01/2024 Termination Date: 08/31/2026

Project Status: Active Total Project Budget: $504,752.00

Project Manager: Danny Souraphath Researcher: Charles Gurganus

Project Objectives: For pavement management and to understand the condition of its network, the Receiving Agency relies on high-speed inertial profilers to gather ride quality. However, a persistent challenge arises when assessing pavement smoothness at low speeds or under stop-and-go conditions (i.e., signalized intersections, stop-control intersections, high driveway density producing turning traffic, and congested roadways during peak-hour traffic) that compromises the accuracy of data collected by conventional profilers. For example, collecting ride quality measurements on a congested roadway with multiple driveways leads to acceleration and deceleration of the collection vehicle, potentially adding "false" dips into the measurements. If these dips are included in network-level measurements, these types of roadways could receive a poor condition score that is not indicative of the true pavement condition. Collecting data on roadways with signalized intersections and slow-moving congested traffic could have the same challenges. The Performing Agency shall explore the potential of low-speed profilers to enhance data collection accuracy in such scenarios. The Performing Agency shall evaluate the effectiveness of low-speed profilers in providing accurate pavement profile data, particularly in areas prone to low-speed or acceleration and deceleration operations. The Performing Agency shall validate the capabilities of low-speed profilers and recommend strategies for their integration into the Receiving Agency's pavement management practices, ultimately leading to a more accurate condition assessment.

Financials	FY26 Total Budget	80% Federal	20% State
Contract Total	$255,476.50	$204,381.20	$51,095.30

Project Number: 0-7211 University: CTR/TXST

Project Title: Determine Hydroplaning Potential Using Existing Pavement Asset Data

Project Start Date: 09/01/2024 Termination Date: 08/31/2026

Project Status: Active Total Project Budget: $496,746.67

Project Manager: Martin Dassi Researcher: Jorge A. Prozzi

Project Objectives: To accurately assess hydroplaning potential at the network-level, the following pieces of information are essential: transverse profile and rutting, macro- and micro-texture, pavement width, radius of curvature, superelevation, cross slope, and grade. To date, the Receiving Agency possesses all these pieces of information except for cross slope, which is one of the most important variables. Therefore, the Performing Agencies shall gather those data elements and compile a comprehensive project database. The Performing Agencies shall also identify critical data gaps and develop both a system and methodology for determining cross slope. The Performing Agencies shall: • Develop a set of two alternative models to calculate hydroplaning potential: (i) a model to predict water film thickness (WFT), and (ii) a model to predict hydroplaning speed (HS). • Determine hydroplaning potential at the network level across all 25 TxDOT Districts for all PMIS sections. • Establish correlations between hydroplaning potential and wet-weather crashes. • Generate heatmaps that illustrate hydroplaning potential and wet-weather crash occurrences highlighting areas where hydroplaning potential and wet-weather crashes intersect. • Establish correlations between highway geometry and the occurrence of crashes under both wet and dry conditions. • Develop recommendations to be incorporated into TxDOT's Wet Weather Accident Reduction Program.

Financials	FY26 Total Budget	80% Federal	20% State
CTR	$134,827.60	$107,862.08	$26,965.52
TXST	$103,887.50	$83,110.00	$20,777.50

Project Number: 0-7212 University: TTI

Project Title: Incorporating Lab Skid measurements into the Balanced Mix Design process

Project Start Date: 10/18/2024 Termination Date: 08/31/2027

Project Status: Active Total Project Budget: $688,699.00

Project Manager: Martin Dassi Researcher: Darlene Goehl

Project Objectives: The Performing Agency 1 shall develop and validate a laboratory test procedure to measure skid resistance of any surface mix. The Performing Agency 1 shall incorporate this test procedure into the Receiving Agency's Balanced Mix Design (BMD) process.

Financials	FY26 Total Budget	80% Federal	20% State
Contract Total	$241,950.00	$193,560.00	$48,390.00

Project Number: 0-7215 University: CTR/TTI/TXST/UTSA

Project Title: Predicting Field Performance of Pavement Markings Statewide in Texas

Project Start Date: 09/01/2024 Termination Date: 08/31/2028

Project Status: Active Total Project Budget: $908,930.52

Project Manager: Wade Odell Researcher: Adam Pike

Project Objectives: Pavement markings and markers are the primary means for an agency to provide longitudinal guidance to drivers. To be effective, markings and markers must be visible during all driving conditions, day, and night. A variety of pavement marking materials (binders and beads) and varying installation specifications (application type, material thickness) create a wide range of initial performance and maintained performance over a markings service life. Currently, markings are evaluated initially to ensure a minimum initial retro-reflectivity performance is obtained, but that initial performance has not been well researched to determine its impact on the overall durability and performance of the marking over its service life. The Performing Agencies shall explore various factors that affect pavement marking performance over the service life of the marking (pavement marking materials, installation specifications, pavement surface, traffic conditions, and geographic and climatic region) to develop performance models for Texas. Performance of a variety of markings and markers shall be evaluated at various field test areas. These same marking materials shall be evaluated through lab testing to explore accelerated weathering and wear tests that correlate with the field performance.

Financials	FY26 Total Budget	80% Federal	20% State
CTR	$6,034.07	$4,827.26	$1,206.81
TTI	$181,959.75	$145,567.80	$36,391.95
TXST	$7,025.63	$5,620.50	$1,405.13
UTSA	$66,962.00	$53,569.60	$13,392.40

Project Number: 0-7216 University: UTEP

Project Title: Enhancing Texas Mechanistic-Empirical Flexible Pavement Design System (TxME) Practice: Develop Enhanced Mix Aging Model and District-Level Calibration Guidance

Project Start Date: 09/01/2024 Termination Date: 08/31/2027

Project Status: Active Total Project Budget: $580,000.00

Project Manager: Danny Souraphath Researcher: Imad Abdallah

Project Objectives: The Performing Agency shall update the Flexible Pavement Design System (FPS) to FPS23, integrating the Texas Mechanistic-Empirical Flexible Pavement Design System (TxME) to enable Districts to compare one-term performance with the Mechanistic-Empirical (ME) design process. The Performing Agency shall (a) review protocols that accelerate laboratory mix aging process, (b) evaluate test methods that are more accessible to Districts, (c) develop a mix aging model, (d) identify key parameters to input into TxME, (e) conduct comparisons between FPS and TxME designs, and (f) support Districts by providing calibration methods, factors, or means for straightforward determination of parameters representative of local materials, mix designs and traffic conditions.

Financials	FY26 Total Budget	80% Federal	20% State
Contract Total	$194,000.00	$155,200.00	$38,800.00

Project Number: 0-7218 University: TECH/TTI/TXST

Project Title: Revisions for the TxDOT Pavement Management Information System (PMIS) Rater's Manual

Project Start Date: 09/01/2024 Termination Date: 08/31/2027

Project Status: Active Total Project Budget: $729,643.60

Project Manager: Wade Odell Researcher: Darlene Goehl

Project Objectives: The Receiving Agency Pavement Management Information System (PMIS) Rater's Manual is in need of revision. Several distress rating definitions for different pavement types in the current manual are confusing or outdated and can be improved to assess the condition of such pavements more accurately and consistently. The Performing Agencies shall review, analyze, and propose changes to the current distress rating definitions for flexible and concrete (jointed and continuously reinforced) pavements. The Performing Agencies shall hold collaborative workshops to gather input from Receiving Agency's Maintenance Division and districts on pavement condition data collection challenges using the current manual. The Performing Agencies shall assess the impact of the rating changes to the PMIS scores and recommend changes to distress utility curves if needed. In collaboration with the Receiving Agency, the Performing Agencies shall make adjustments to determine acceptable impacts. The Performing Agencies shall develop a revised PMIS Rater's Manual based on the research results and through collaboration between the Performing Agencies and the Receiving Agency.

Financials	FY26 Total Budget	80% Federal	20% State
TECH	$72,260.49	$57,808.39	$14,452.10
TTI	$124,554.00	$99,643.20	$24,910.80
TXST	$52,116.25	$41,693.00	$10,423.25

Project Number: 0-7225 University: UTEP

Project Title: Evaluation of Rapid Mix Design for Lime Treated Materials

Project Start Date: 09/01/2024 Termination Date: 08/31/2027

Project Status: Active Total Project Budget: $545,000.00

Project Manager: Danny Souraphath Researcher: Rajib Mallick

Project Objectives: The project will develop guidelines for a rapid mix design with small samples for lime-treated materials for TxDOT. The following objectives shall be achieved: 1. Conduct a literature review and summarize state-of-the practice and key findings; 2. Review and summarize mix design methods currently in use for lime treated materials; 3. Conduct a comprehensive lab program comparing existing procedures with small sample methods; 4. Develop a lab mix design method for lime treatment that is similar in methodology, with accelerated methods of mix design currently in use or under development for asphalt-based and cement-based treatments; 5. Demonstrate the procedures for upcoming construction projects; 6. Develop recommended test procedures and updates to specifications. The scope of the work consists of a comprehensive testing and analysis program for a set of carefully selected soils and base course, with a range of plasticity index and clay minerals, and the development of a mix design procedure that shall result in a significant reduction in turnaround time and amount of materials required for mix design. The work shall evaluate and compare physical, chemical and mechanical test properties of the samples designed according to the current method and the selected potential methods, to recommend the most optimum curing, moisture conditioning and testing methods. The conclusions and recommendations will be provided in the form of specification updates for effective implementation. The results of this study will allow TxDOT to design good performing, durable and long-lasting lime-treated layers, and allow them to harmonize the mix designs for different types of treatments.

Financials	FY26 Total Budget	80% Federal	20% State
Contract Total	$183,000.00	$146,400.00	$36,600.00

Project Number: 0-7227 University: CTR/TTI

Project Title: Exploring the Use of Antioxidants to Substantially Increase Cracking Life of Asphalt Pavements

Project Start Date: 09/01/2024 Termination Date: 08/31/2027

Project Status: Active Total Project Budget: $800,330.85

Project Manager: Martin Dassi Researcher: Amit Bhasin

Project Objectives: Cracking dictates the service life of asphalt pavements. Oxidative aging of the asphalt binder renders the binder brittle and susceptible to cracking. Higher number of high temperature days further exacerbates rate of oxidation and reduction in the service life of an asphalt pavement. Recent coordinated studies by a global consortium of researchers have identified generic chemicals that can act as antioxidants to significantly reduce the oxidative aging of asphalt and increase its cracking resistance and service life. Similarly, commercial additive manufacturers are also exploring the development and deployment of antioxidant additives. In this project the Performing Agencies shall review the literature and interface with existing national and international studies to identify the most promising antioxidant(s) for use with asphalt binders as a modifier. The Performing Agencies shall conduct laboratory studies on asphalt binders and mixtures to evaluate the efficacy of these antioxidants. The Performing Agencies shall also conduct workshops with stakeholders and conduct cost-benefit analysis to develop plans for pilot test sections and facilitate the deployment of such sections with districts and industry partners. Finally, the Performing Agencies shall also present metrics that can be used for specification and quality control purposes by the Receiving Agency.

Financials	FY26 Total Budget	80% Federal	20% State
CTR	$160,576.70	$128,461.36	$32,115.34
TTI	$131,750.00	$105,400.00	$26,350.00

Project Number: 5-6048-07 University: CTR

Project Title: Implementation of Centrifuge Technology for Pavement Design on Expansive Clays – Phase 2

Project Start Date: 10/11/2023 Termination Date: 08/31/2027

Project Status: Active Total Project Budget: $939,433.17

Project Manager: Danny Souraphath Researcher: Jorge Zornberg

Project Objectives: The Receiving Agency Pavement Manual establishes thresholds of the Potential Vertical Rise (PVR) that shall not be exceeded in the design of roads founded on expansive clays (e.g., a maximum allowable PVR of 1.5 in. for main lanes). Using the PVR as an index, these thresholds have been established from field empirical evidence collected over decades to identify roads with excessive levels of distress triggered by the presence of expansive clays. However, there are two significant sources of uncertainty in the thresholds adopted by the Pavement Manual, which have heavily compromised roadway designs: (1) Inaccuracies in the determination of the PVR, the original version of which relies heavily on outdated data and correlations, and (2) Inconsistencies in the documentation of the levels of distress typical of roadways founded on expansive clays. The Receiving Agency has developed technology for accurate determination of PVR and has also developed adequate protocols for roadway performance over expansive clays. The primary objective of this implementation project is to generate accurately determined PVR data and calibrate it against consistently obtained levels of roadway distress.

Financials	FY26 Total Budget	80% Federal	20% State
Contract Total	$341,667.68	$273,334.14	$68,333.54

Project Number: 5-7025-01 University: TTI

Project Title: Pilot Implementation of Surface Aggregate Classification of Reclaimed Asphalt Pavement

Project Start Date: 02/01/2024 Termination Date: 08/31/2027

Project Status: Active Total Project Budget: $660,716.00

Project Manager: Katelyn Kasberg Researcher: Sheng Hu

Project Objectives: The Performing Agency shall assist the Receiving Agency with implementing the surface aggregate classification (SAC) for reclaimed asphalt pavement (RAP) developed in research project 0-7025, Develop Surface Aggregate Classification of Reclaimed Asphalt Pavement. The Performing Agency shall implement and verify the methodology of SAC-A RAP classification in a minimum of four (4) Receiving Agency Districts. In each selected Receiving Agency District, the Performing Agency shall work with lab and pavement engineers and their staff to characterize the RAP in terms of SAC, design surface mixtures with the RAP, evaluate the friction and skid resistance of mixtures, and construct and monitor the selected test sections in each Receiving Agency District. The Performing Agency shall then use the data generated in these test sections to develop and teach implementation workshops for Receiving Agency Districts.

Financials	FY26 Total Budget	80% Federal	20% State
Contract Total	$186,543.00	$149,234.40	$37,308.60

Project Number: 5-7027-01 University: TTI

Project Title: Implementation and Performance Monitoring of Accelerating Mix Designs for Cement Treated Base

Project Start Date: 09/01/2024 Termination Date: 05/31/2027

Project Status: Active Total Project Budget: $626,247.00

Project Manager: Martin Dassi Researcher: Stephen Sebesta

Project Objectives: The Performing Agency shall apply the accelerated mix design procedure to real pavement designs, encouraging utilization of the new test procedure, enabling the identification of potential areas of improvement, and demonstrating the mechanistic design check. The Performing Agency shall work with a minimum of three (3) Receiving Agency Districts to conduct demonstration projects with performance monitoring. The Performing Agency shall conduct initial performance monitoring on the constructed projects. This monitoring aims to assess the effectiveness of the accelerated design, validate the stability of the designed pavement by evaluating pavement conditions, and enhance the estimated resilience modulus.

Financials	FY26 Total Budget	80% Federal	20% State
Contract Total	$205,611.75	$164,489.40	$41,122.35

Project Number: 5-7074-01 University: CTR

Project Title: Implementation of Recycled Crushed Concrete Aggregate in Class P Concrete

Project Start Date: 07/19/2024 Termination Date: 05/31/2027

Project Status: Active Total Project Budget: $498,500.00

Project Manager: Jade Adediwura Researcher: Kevin J. Folliard

Project Objectives: The successful use of recycled concrete aggregate (RCA) in continuously reinforced concrete pavement (CRCP) in a field trial near Sealy, TX under TxDOT Project 0-7074 demonstrated the potential for increasing the sustainability of concrete paving while still achieving target performance. Based on the progress made under TxDOT 0-7074 and in line with ongoing TxDOT and FHWA initiatives to reduce the carbon footprint of new concrete construction, this implementation project aims to build upon the previous trial near Sealy, while expanding the depth and breadth of the implementation to include significantly longer trial sections with a wider range of RCA replacement levels. The Performing Agency shall facilitate implementation of the project findings by documenting the results of laboratory and field studies in the Research Report of the TxDOT Research project "Increase the Allowable Content of Recycled Crushed Concrete Fine Aggregate in Class P Concrete ". The Research Report shall include specific recommendations on the use of recycled crushed concrete fine and coarse aggregate into Class P concrete.

Financials	FY26 Total Budget	80% Federal	20% State
Contract Total	$156,766.41	$125,413.13	$31,353.28

Project Number: 0-7174 University: TTI

Project Title: Develop an Interactive Statewide Production Rate Estimation Tool for Reliable Contract Time Determination

Project Start Date: 09/01/2023 Termination Date: 02/28/2026

Project Status: Active Total Project Budget: $374,458.25

Project Manager: Anne Smith Researcher: David Jeong

Project Objectives: Understanding and estimating realistic production rates of major work items in a highway project are critical to determining a reasonable project contract time, evaluating the contractor's baseline schedule, monitoring progress schedules, and ultimately completing the project on time. The Performing Agency shall leverage the Receiving Agency's historical project data to obtain the as-built information of production rates of various work items, and shall develop a) an expanded version of the Receiving Agency's construction production rates table, b) an interactive tool that can generate color-coded heat maps to visualize feasible ranges of production rates of major work items across Texas, and c) implementation guidance and recommendations. An advanced and interactive production rate estimation tool could significantly help the Receiving Agency achieve the goal of completing highway projects on time. The Performing Agency's decision-aid tool could significantly improve the Receiving Agency's practice in determining more accurate production rates, resulting in more accurate contract time determination, the contractor's baseline schedule evaluation, and progress schedule monitoring. The Performing Agency shall aid in providing higher certainty and reliability of data-driven and practical production rates to expand the Receiving Agency's current construction production rates table.

Financials	FY26 Total Budget	80% Federal	20% State
Contract Total	$72,606.75	$58,085.40	$14,521.35

Project Number: 0-7219 University: UTRGV

Project Title: Developing and Assessing eDNA Survey Methodology for Protected Mussel Species in Texas

Project Start Date: 01/10/2025 Termination Date: 12/31/2027

Project Status: Active Total Project Budget: $1,452,743.75

Project Manager: Tom Schwerdt Researcher: Richard Kline

Project Objectives: The proposed project shall develop environmental DNA (eDNA) assays to detect 12 target mussel species in Texas waterways from collected water samples. We propose to compare the detection levels of current USFWS mussel survey techniques with the results of the developed eDNA assays. A combination of Unionid multispecies metabarcoding assays and species-specific assays employing nested PCR shall be developed and compared for their detection limits on the 12 mussel species. Seasonal and environmental factors shall be tested, as well as limits of detection and detection by distance from source to determine best practices for eDNA sampling for the 12 species. We propose to directly inform the TXDOT where, when, and how to use eDNA for monitoring freshwater mussels. Fully developed and tested protocols will be delivered to TXDOT in the form of field and laboratory manuals.

Financials	FY26 Total Budget	80% Federal	20% State
Contract Total	$545,161.25	$436,129.00	$109,032.25

Project Number: 0-7229 University: UTA

Project Title: Develop an Intelligent Digital Assistant for Project Planning

Project Start Date: 09/01/2024 Termination Date: 08/31/2026

Project Status: Active Total Project Budget: $226,172.00

Project Manager: Tom Schwerdt Researcher: Mohsen Shahandashti

Project Objectives: The Receiving Agency manages an extensive repository of electronic and digital data about past projects. An intelligent decision support tool is essential for processing and making sense of the available data to improve the accuracy of estimating project cost and duration as well as supporting management decisions such as resource allocation, project prioritization, risk assessment, and strategic planning. However, special attention should be given to the security of such a tool as it accesses an unprecedented large amount of data and communicates with key Receiving Agency planners. Any unauthorized access could potentially impact the fair bidding process. The overall goal is to develop a Secure Construction Project Planning Digital Assistant (Secure-CPPDA).

Financials	FY26 Total Budget	80% Federal	20% State
Contract Total	$113,454.00	$90,763.20	$22,690.80

Project Number: 0-7233 University: UTA

Project Title: Incorporating Resilience Considerations in Transportation Asset Management Planning and Project Selection Process

Project Start Date: 10/01/2024 Termination Date: 08/31/2026

Project Status: Active Total Project Budget: $319,915.92

Project Manager: Danny Souraphath Researcher: Jinzhu Yu

Project Objectives: This project aims to advance resilience-based transportation asset management (TAM) planning and project selection through the systematic integration of resilience for various assets. It encompasses five primary tasks: 1. Collecting asset and hazard datasets and integrating those diverse datasets for accurate disruption scenario analysis and asset condition assessment. 2. Performing vulnerability assessment based on asset conditions and disruption scenario analysis. 3. Developing a resilience-based TAM framework for various assets, which involves synthesizing insights from literature review and interviews with the Resilience Working Group to (i) identify resilience metrics for different asset types, (ii) conduct lifecycle cost analysis, (iii) develop a decision-making model for resource allocation, and (iv) conducting sensitivity analysis to identify critical factors for improving resilience and investment prioritization. 4. Creating a user-friendly tool to operationalize the proposed framework. 5. Conducting pilot studies to demonstrate the resilience-based TAM framework. This project benefits district transportation authorities by improving resource allocation, asset resilience, and project selection. Through structured evaluation of trade-offs between competing TAM objectives like resilience and cost-effectiveness, and investment prioritization, this project ensures efficient resource allocation and long-term resilience under resource constraints. Ultimately, this project establishes the groundwork for the resilience-based TAM Plan and Statewide Resiliency Plan.

Financials	FY26 Total Budget	80% Federal	20% State
Contract Total	$164,901.81	$131,921.45	$32,980.36

Project Number: 5-6674-03 University: TTI

Project Title: Implementation of Asphalt Mixture Automated Testing System with Zero Intervention (AMAZE)

Project Start Date: 12/01/2024 Termination Date: 08/31/2026

Project Status: Active Total Project Budget: $430,000.00

Project Manager: Martin Dassi Researcher: Fujie Zhou

Project Objectives: The Performing Agency shall assist the Receiving Agency with implementing Asphalt Mixture Automated Testing System with Zero Intervention (AMAZE) developed in research project 0-6674-03, "Automated IDEAL Cracking and Rutting Tests'. The Performing Agency shall write test procedures tailored for AMAZE. Working with the Receiving Agency, the Performing Agency shall enhance AMAZE to measure specimen dimension and handle field cores with various thickness. The Performing Agency shall then use the findings and data generated from this implementation project to develop and teach implementation workshop for the Receiving Agency.

Financials	FY26 Total Budget	80% Federal	20% State
Contract Total	$230,000.00	$184,000.00	$46,000.00

Project Number: 0-7190 University: TTI

Project Title: Roadside Safety Device Analysis, Testing, and Evaluation Program

Project Start Date: 09/01/2023 Termination Date: 11/30/2026

Project Status: Active Total Project Budget: $2,542,402.75

Project Manager: Wade Odell Researcher: Roger Bligh

Project Objectives: The Road to Zero has targeted a goal of zero deaths and serious injuries on Texas roadways. Recent trends in Texas indicate a continued increase in highway fatalities each of the past three years. In 2021, roadway departure crashes were responsible for 40 percent of all crash-related fatalities in Texas, which is the largest single category by crash type. In October 2021, Federal Highway Administration (FHWA) designated Texas as one of 16 Roadway Departure Focus States based on being over-represented on three (3) different roadway departure crash fatality metrics. Roadside safety devices are a key element of an effective roadway departure safety strategy. These safety devices shield motorists from roadside hazards such as non-traversable terrain and fixed objects, thereby reducing injuries and fatalities associated with roadway departure crashes.

Financials	FY26 Total Budget	80% Federal	20% State
Contract Total	$840,382.25	$672,305.80	$168,076.45

Project Number: 0-7198 University: TTI

Project Title: Traffic Control Device Analysis, Testing, and Evaluation Program

Project Start Date: 09/01/2023 Termination Date: 11/30/2026

Project Status: Active Total Project Budget: $1,637,159.25

Project Manager: Tom Schwerdt Researcher: Melissa Finley

Project Objectives: Traffic control devices (TCDs) are the primary means of communicating highway information to road users and play a key role in highway automation. The design, application, and maintenance of TCDs is under constant transformation as new technologies, methodologies, and policies are introduced. In addition, vehicle technologies and the roadway infrastructure industry are rapidly evolving, spurred by technology advancements, customer demand, changes in the vehicle fleet, and changes in national and state policies. The Performing Agency shall provide the Receiving Agency a mechanism to quickly and effectively conduct high priority evaluations of issues related to TCDs. The TCD issues to be evaluated in this project could represent new devices or technologies, new applications of an existing device or technology, TCD material performance, changes in the Receiving Agency's practices regarding a TCD, or other TCD related needs. Examples of various evaluations include human factors, machine vision performance, safety and operational effects, visibility assessments, and cost effectiveness analyses. The activities conducted through this project shall support the development of TCD related policy, specifications, guidelines, handbooks, and training.

Financials	FY26 Total Budget	80% Federal	20% State
Contract Total	$559,399.25	$447,519.40	$111,879.85

Project Number: 0-7220 University: CTR/TTI

Project Title: Develop Countermeasures to Lower Operating Speeds and Collisions on Arterial Roadways, and Reduce Vulnerable User Injuries

Project Start Date: 09/01/2024 Termination Date: 08/31/2026

Project Status: Active Total Project Budget: $469,775.05

Project Manager: Anne Smith Researcher: Fengxiang Qiao

Project Objectives: The Performing Agency shall investigate the effectiveness of arterial-focused speed management countermeasures for application across Texas. The Performing Agency shall quantify the costs and benefits of road and vehicle design, operations, enforcement, and other countermeasure types across a range of settings (for uncontrolled-access arterials under different traffic, road type/context, and land use conditions), resulting in a Texas Arterial Speed Management Toolkit and reports.

Financials	FY26 Total Budget	80% Federal	20% State
CTR	$75,732.02	$60,585.62	$15,146.40
TTI	$165,488.75	$132,391.00	$33,097.75

Project Number: 0-7222 University: TTI/TXST

Project Title: Develop Crash Predictive Methods for Frontage Roads Including Ramp Terminals, and Intersections with Crossroads in Texas

Project Start Date: 09/01/2024 Termination Date: 08/31/2026

Project Status: Active Total Project Budget: $392,825.00

Project Manager: Jade Adediwura Researcher: Srinivas Geedipally

Project Objectives: Currently, no frontage specific intersection or ramp terminal predictive methods are available, and transportation engineers typically apply methods developed for non-frontage road intersections to evaluate their safety. Additionally, no guidelines exist to select the appropriate distance between adjacent ramps and/or intersections, ramp type and their orders, and distance between ramps and driveways. The first objective of this project is to develop Safety Performance Functions (SPFs) and Crash Modification factors (CMFs) for ramp terminals and intersections of frontage roads with crossroads. The second objective of this project is to evaluate the safety impact of weaving on the frontage road versus weaving on the freeway. The Performing Agencies shall collect site characteristics data and develop crash predictive methods for different types of frontage road segments and intersections on frontage roads, including ramp terminals. The Performing Agencies shall develop these models by area type (i.e., large urban, small urban, suburban/fringe, and rural), Receiving Agency's regions, and facility type (one-way and two-way). These models will supplement the generic SPFs developed in the Receiving Agency's 0-7083 project. The Performing Agencies shall incorporate the crash predictive methods into spreadsheet tools to facilitate the analysis and to support project design decisions of frontage roads. The Performing Agencies shall also develop a framework for selecting an appropriate configuration for frontage road segments and intersections, and as well guidance for the minimum distance from ramp terminal to crossroad intersection and a need for lane additions.

Financials	FY26 Total Budget	80% Federal	20% State
TTI	$164,215.25	$131,372.20	$32,843.05
TXST	$30,358.75	$24,287.00	$6,071.75

Project Number: 0-7223 University: TTI

Project Title: Conduct MASH Test Level 3 (TL-3) Evaluations of Concrete Barriers on Roadside Slopes

Project Start Date: 09/01/2024 Termination Date: 08/31/2026

Project Status: Active Total Project Budget: $489,145.25

Project Manager: Wade Odell Researcher: Nauman Sheikh

Project Objectives: Concrete barriers are designed and crash tested for placement on flat terrains. In-field installations of concrete barriers are sometimes placed on slopes adjacent to roadways. By placing the barrier on a slope, the effective height of the barrier that engages an errant vehicle may be reduced since the vehicle may be airborne as it contacts the barrier on a downward slope. Consequently, the barrier may not be able to safely contain and redirect the vehicle. The Performing Agency shall evaluate the performance of the Receiving Agency's 32-inch tall F-shape and 42-inch tall single slope barrier when placed on roadside or median slopes of up to 4H:1V. The Performing Agency shall develop guidance for placement of these barriers using finite element simulation analysis and full-scale crash testing. The guidance shall determine the maximum allowable slope for each barrier type and any placement offsets required from the edge of the roadway or from the bottom of the ditch. The Performing Agency shall evaluate the performance of the barriers using the impact conditions and evaluation criteria specified in the Manual for Assessing Safety Hardware (MASH) for Test Level 3 for longitudinal barriers.

Financials	FY26 Total Budget	80% Federal	20% State
Contract Total	$309,361.75	$247,489.40	$61,872.35

Project Number: 0-7226 University: TTI/TXST

Project Title: Analyze Operational and Safety Improvements Associated with Implemented Innovative Intersections in Texas

Project Start Date: 09/01/2024 Termination Date: 08/31/2026

Project Status: Active Total Project Budget: $417,931.00

Project Manager: Tom Schwerdt Researcher: Marcus Brewer

Project Objectives: Innovative intersection designs (e.g., diverging diamond interchanges [DDIs], displaced left turns [DLTs], median U-turns [MUTs], and restricted crossing U-turns [RCUTs]) and modern roundabouts are increasingly used in Texas and throughout the country to remove conflict points and redistribute turning traffic from traditional intersections, improving operational efficiency and promoting increased safety. While their use is growing and their benefits have been demonstrated, Texas still has a limited number of innovative intersections, and there is a need to increase the use of these intersections throughout the state. Because many of these intersection types and their design elements are not commonly used in Texas, there is a natural tendency to be cautious about their use. Providing information to help promote these treatments for use in appropriate locations will be important to their successful adoption and implementation. The Performing Agency shall build on recent research to document the benefits of innovative intersections, develop case studies of successfully implemented intersections in Texas, and provide resources for practitioners to use in support of new implementations across the state.

Financials	FY26 Total Budget	80% Federal	20% State
TTI	$193,253.00	$154,602.40	$38,650.60
TXST	$18,000.00	$14,400.00	$3,600.00

Project Number: 0-7228 University: CTR

Project Title: Identify and Evaluate Innovative Pedestrian Safety Countermeasures for Rural and Nighttime Environments

Project Start Date: 09/01/2024 Termination Date: 08/31/2026

Project Status: Active Total Project Budget: $554,222.69

Project Manager: Danny Souraphath Researcher: Randy Machemehl

Project Objectives: The Performing Agency shall investigate effective countermeasures to reduce nighttime pedestrian crashes across the state of Texas. A systems-oriented approach will be central to the analysis, recognizing that pedestrian safety involves infrastructure, driver behavior, and pedestrian actions. This approach moves beyond assigning blame to individuals and focuses on collective responsibility for creating a safer environment. This work will focus on nighttime-specific pedestrian crossing safety countermeasures by identifying and evaluating the costs and feasibility of implementation. Based on experiences in other cities and communities, this work will identify high-interest pedestrian safety crossing treatments. The Performing Agency shall develop a targeted, prioritized list of potential benefits, cost, considerations, and gaps in knowledge about these treatments.

Financials	FY26 Total Budget	80% Federal	20% State
Contract Total	$248,112.98	$198,490.38	$49,622.60

Project Number: 0-7230 University: TTI/TXST

Project Title: Improve Safety and Decrease Vehicle Fatalities by Improving Pavement Markings

Project Start Date: 09/01/2024 Termination Date: 08/31/2027

Project Status: Active Total Project Budget: $499,998.00

Project Manager: Wade Odell Researcher: Bahar Dadashova

Project Objectives: The Receiving Agency's "End the Streak" goal is to end all fatalities on Texas roads by 2050 as there has not been a day without a death on Texas roadways since November 7, 2000. New strategies must be implemented, such as increasing the efficacy of pavement striping and retroreflective pavement markers in several Receiving Agency districts and monitoring the crash statistics before and after pavement marking and marker improvements over time. The Performing Agency shall target pavement marking retro-reflectivity and contrast and shall include the development and implementation of an experimental study design to assess their safety and economic effectiveness.

Financials	FY26 Total Budget	80% Federal	20% State
TTI	$143,209.00	$114,567.20	$28,641.80
TXST	$8,000.00	$6,400.00	$1,600.00

Project Number: 5-7007-01 University: CTR

Project Title: Weather Responsive Management Strategies Implementation

Project Start Date: 01/29/2024 Termination Date: 01/31/2026

Project Status: Active Total Project Budget: $467,045.35

Project Manager: Katelyn Kasberg Researcher: Chandra Bhat

Project Objectives: Receiving Agency personnel who work in responding to extreme weather can greatly benefit from the ability to monitor live activities and analyze recent treatment progress. Handwritten brine logs can be supplemented with automated recordkeeping. Sensing of winter operations (WinterOps) such as plowing, brine spraying, and gravel spreading is accomplished through the use of the GPS fleet tracking system already equipped in all Receiving Agency vehicles, along with the installation of a few low-cost items. WinterOps activities are then tracked without any special interaction required from the driver or operations personnel. Integration of visualizations with GIS systems provide powerful ways to use the collected data for improving safety, operations, and public communications

Financials	FY26 Total Budget	80% Federal	20% State
Contract Total	$92,557.52	$74,046.02	$18,511.50

Project Number: 0-7095-01 University: CTR/USGS

Project Title: Flood Assessment System for TxDOT (FAST)

Project Start Date: 02/26/2024 Termination Date: 01/31/2027

Project Status: Active Total Project Budget: $5,850,241.20

Project Manager: Jade Adediwura Researcher: David R. Maidment

Project Objectives: The Receiving Agency wishes to move from a reactive to a proactive response during flood emergency operations. Real-time flood map services provide valuable information for the Receiving Agency flood decision making. The National Weather Service initiated the operation of real-time flood inundation maps for Texas in October 2023. Performing Agency 1 shall create a Flood Assessment System for TxDOT (FAST) as an additional set of real-time flood maps to describe flood impact on the road and bridge system. These maps will be distributed to the Receiving Agency Maintenance staff as web services and tested in large scale flood emergency response exercises conducted with The Receiving Agency Districts. Performing Agency 2 shall operate and maintain 80 RQ-30 stream gages to support flood forecasting and decision making. Performing Agency 2 shall refine the targeted approach for RQ-30 velocity sensor calibrations to support timely rating development using velocimetry. As many of the 80 RQ-30 gauges as possible will be added to the Interagency Flood Risk Management (InFRM) Flood Decision Support Toolbox. Combining novel gauging techniques with inundation mapping provides real-time streamflow information and transportation flood impacts that enable scenario planning and proactive actions to flood events. This project will be a continuation of Project 0-7095 “Evaluating Improved Streamflow Measurement at TxDOT Bridges.”

Financials	FY26 Total Budget	80% Federal	20% State
CTR	$994,396.82	$795,517.46	$198,879.36
USGS	$987,214.09	$789,771.27	$197,442.82

Project Number: 0-7155 University: TTI

Project Title: Develop/Refine Design Provisions for Headed and Hooked Reinforcement

Project Start Date: 09/01/2022 Termination Date: 02/28/2026

Project Status: Active Total Project Budget: $999,401.25

Project Manager: Tom Schwerdt Researcher: Kinsey Skillen

Project Objectives: The usefulness of reinforced concrete is dependent on sufficient anchorage between concrete and reinforcing steel. Sufficient anchorage occurs when reinforcing steel is embedded into the concrete a distance referred to as the development length. When this length of embedment is achieved the reinforcing steel is expected to reach or exceed stresses beyond yield. Geometric constraints within structural members may prevent straight lengths of reinforcement from developing their yield strength, such as straight bars being terminated within a beam-column joint. In these cases, the addition of a hook or headed bar attachment provides a more efficient anchorage mechanism compared to straight bars. Both hooked and headed bars have shorter development lengths than straight bars. However, the current American Association of State Highway and Transportation Officials (AASHTO) Load and Resistance Factor Design Bridge Design Specifications (LRFD) Bridge Design Specification (9th edition) has not developed standard details for headed reinforcement in bridge structures. In addition, current AASHTO LRFD design provisions for hooked bars are adapted from the American Concrete Institute (ACI) 318-14 Building Code Requirements for Structural Concrete. Considerable revisions to the current ACI 318-19 specification for the design of hooked reinforcement, which require increased lengths (50 to 70 percent longer) relative to previous code cycles, necessitates the Receiving Agency to revisit its current design practice for hooked reinforcement. This research seeks to provide the Receiving Agency with clear and concise design guidance for engineers to use both hooked and headed bar attachments in Receiving Agency bridge structures. The Performing Agencies shall accomplish this through large-scale experimental testing of specimens with hooked and headed bars representative of Receiving Agency bridge structures and current design practice.

Financials	FY26 Total Budget	80% Federal	20% State
Contract Total	$22,695.50	$18,156.40	$4,539.10

Project Number: 0-7170 University: TTI

Project Title: Evaluate Bridge Deck Condition and Replacement Methods

Project Start Date: 01/01/2023 Termination Date: 03/31/2026

Project Status: Active Total Project Budget: $734,786.00

Project Manager: Wade Odell Researcher: Anna Birely

Project Objectives: Bridge decks usually have a minimum service life of 50 years but many bridge decks in Texas far exceed that value and are showing concerning signs of deck soffit cracking. Deck replacement is performed to take advantage of the good existing condition of the super- and sub-structures; however, since replacement is expensive (up to 40% of the cost of a new bridge), especially over concrete girders, it is critical to have sound decision and appropriate design and construction methods for this work to protect public safety and use bridge preservation funds wisely. While life-cycle cost analysis can be beneficial when assessing the overall deck condition relative to the condition of the rest of the deck, it does not address the risk of a punch through failure. The outcomes of this project will aid the Receiving Agency's Bridge Division and districts to have accurate assessments of cast-in-place (CIP) bridge deck conditions to make sound decisions about emergency repairs, regular repairs, deck overlay, and deck replacement to preserve bridge assets while minimizing the risk of punch through.

Financials	FY26 Total Budget	80% Federal	20% State
Contract Total	$91,406.25	$73,125.00	$18,281.25

Project Number: 0-7172 University: TXST

Project Title: Developing a Performance-Based Concrete Overlay Mix Design for Improved Resistance to Early-Age Cracking and Increased Durability

Project Start Date: 09/01/2023 Termination Date: 08/31/2026

Project Status: Active Total Project Budget: $700,370.51

Project Manager: Anne Smith Researcher: Anthony Torres

Project Objectives: Concrete bridge decks are exposed to a wide range of environmental and mechanical distress that can lead to severe deterioration. Typical bridge deck deterioration starts with shrinkage cracks, and additional cracks may occur due to traffic loads and effects such as temperature and moisture fluctuations. Cracking can lead to water and chloride ingress, causing corrosion of the reinforcement and further damage to the structure. In Texas, several concrete overlay mix design options are available, however, they are prescriptive-based. Although convenient, prescriptive-based designs have led to inconsistencies between mixtures and batches during placement, especially when mobile mixers are used. Additionally, as individual materials in prescriptive concrete overlay mix designs evolve and newer or alternative materials become available; e.g., Type IL cements and alternative supplementary cementitious materials (SCMs), unexpected and unanticipated behavior can occur. Furthermore, as bridge decks age there will be a need to preserve service life and ensure long-term performance of concrete overlay mix designs through performance-based specifications. This project aims at developing a robust performance-based, non-UHPC, mix design specification for concrete overlays to achieve low cracking and superior long-term durability. Developing such a specification that is adaptable to shifts in material technology will ensure long-term success in practice.

Financials	FY26 Total Budget	80% Federal	20% State
Contract Total	$235,734.51	$188,587.61	$47,146.90

Project Number: 0-7179 University: TTI

Project Title: Evaluate Safety End Treatments for Roadside Drainage Structures

Project Start Date: 09/01/2023 Termination Date: 08/31/2026

Project Status: Active Total Project Budget: $863,759.75

Project Manager: Martin Dassi Researcher: Sofokli Caskalli

Project Objectives: Drainage is a critical element of roadside design and often calls for the use of cross-drainage and parallel-drainage culverts. If untreated, the ends of the drainage structures can become roadside hazards that can result in serious injury when an errant vehicle leaves the roadway. The most cost-effective strategy is often to make the culvert end traversable using grates comprised of pipe runners across the culvert end. The Performing Agency shall investigate the safety performance of traversable cross-drainage and parallel-drainage culvert end treatments installed on roadside slopes. The Performing Agency shall address the various design variations of safety end treatments supported by current standards to investigate the safety performance. The Performing Agency shall develop design guidance to recommend slopes and size, length, and spacing of the pipe runners for both cross-drainage and parallel-drainage culverts that comply with the American Association of State Highway and Transportation Officials (AASHTO) Manual for Assessing Safety Hardware (MASH). The Performing Agency shall use full-scale crash testing to aid with validating the design guidance.

Financials	FY26 Total Budget	80% Federal	20% State
Contract Total	$290,870.00	$232,696.00	$58,174.00

Project Number: 0-7192 University: TTI/UTEP

Project Title: Develop Performance of Baseplate Connections in COSS and Traffic Signal Structures

Project Start Date: 09/01/2023 Termination Date: 08/31/2026

Project Status: Active Total Project Budget: $988,604.75

Project Manager: Wade Odell Researcher: Stefan Hurlebaus

Project Objectives: The Receiving Agency cantilever overhead sign structures (COSS) and traffic signal pole structures have a socketed fillet welded connection between the column and the baseplate. While economical, this connection has a low fatigue-resistance threshold. Some current and past Receiving Agency designs and contractor submitted alternates involving multi-sided bent plate columns were not designed using fatigue provisions. Fatigue provisions did not exist in the design specification of the time. The Receiving Agency is currently updating various ancillary structure standards for Load and Resistance Factor Design - Luminaires and Traffic Signals (LRFD-LTS) specifications, which does include fatigue provisions. Research is needed to ascertain the best connection type and design, while balancing economy and performance for new structures. The Performing Agencies shall identify the fatigue life of existing structures, including critical cases and means of repair and retrofit, in this research. The results of this research will lead to improved ancillary structure details with mitigated fatigue risk, as well as a method of identifying existing inventory with fatigue risks. The objectives of this research are to (1) outline fabrication practices and economic considerations that may affect proposed connection type and design, (2) develop an inventory database of COSS and traffic signal pole structures that are representative, (3) utilize structural modeling to identify from within the inventory critical cases that should be advanced to a testing program, (4) develop and execute a targeted testing program that isolates critical design parameters for the fatigue performance of both the critical cases found in the inventory and recommended connection types and designs, (5) provide recommendations for connection types and designs based on fatigue provisions, and (6) provide recommendations for identifying fatigue-critical of existing inventory

Financials	FY26 Total Budget	80% Federal	20% State
TTI	$315,295.75	$252,236.60	$63,059.15
UTEP	$19,688.75	$15,751.00	$3,937.75

Project Number: 0-7193 University: CTR/TTI

Project Title: Develop Assessment and Mitigation Guidance for Ancillary Highway Structures with Existing Cracks

Project Start Date: 09/01/2023 Termination Date: 08/31/2026

Project Status: Active Total Project Budget: $1,493,580.09

Project Manager: Wade Odell Researcher: Todd Helwig

Project Objectives: Ancillary structures (AS) exist in a wide variety of applications critical to safety and daily needs of the travelling public (e.g. HMIP, COSS, and traffic signals). The long-term corrosion performance of these structures is of utmost importance to prevent deterioration and extend the structural design life and safety. While hot-dipped galvanizing provides excellent long-term behavior for corrosion control of these critical structures, over the past 20 years this process has been found to create extensive cracking of welds on base plate connections that is detrimental to the fatigue lives of these poles. Although improved details are used in new designs, thousands of HMIP, COSS, and signal poles exist in Texas with varying levels of cracking in the welds between the baseplates and pole shafts. The research outlined in this proposal identifies and provides critical assessment parameters and guidance for the Receiving Agency to determine if cracks should be monitored, repaired, or the structural component replaced. The proposed research includes a representative assessment of weld cracking in the AS inventory, the development of monitoring hardware and techniques, the development and assessment of repair techniques, and the development of certification methods/standards for inspection personnel.

Financials	FY26 Total Budget	80% Federal	20% State
CTR	$383,020.40	$306,416.32	$76,604.08
TTI	$183,583.75	$146,867.00	$36,716.75

Project Number: 0-7203 University: TTI

Project Title: Evaluate the Effectiveness of Dowels for Lateral Restraint of Prestressed Concrete Beams

Project Start Date: 09/01/2024 Termination Date: 08/31/2026

Project Status: Active Total Project Budget: $452,754.00

Project Manager: Martin Dassi Researcher: Petros Sideris

Project Objectives: The Receiving Agency has utilized dowels in bents to provide lateral restraint of prestressed concrete beams., These dowels are often misplaced, which creates various construction issues, while their presence complicates bearing pad replacement. The Performing Agency shall provide research findings to the Receiving Agency to make informed decisions on stopping the use of such dowels, the Performing Agency shall perform a thorough literature review to: (i) summarize the state-of-art, state-of–the-practice and key findings, and (ii) address questions relating to unintended consequences from removal of these dowels during erection of the girders, construction of the deck, and long-term performance and stability. The performing agency shall perform an investigation on the state-of-the-practice of all state Department of Transportations (DOTs) throughout the country, focusing on practices from DOTs with similar hazard exposure. The performing agency shall perform a parametric finite element (FE) study on multiple the Receiving Agency bridge (and girder) designs to investigate the performance under all major load combinations and limit states (from service to ultimate conditions) over the lifetime of the bridge accounting for Texas-related exposure conditions. The performing agency shall perform six (6) large-scale tests on girder-to-bent/abutment connections to quantify the contribution of dowels in the performance of the connections.

Financials	FY26 Total Budget	80% Federal	20% State
Contract Total	$226,616.25	$181,293.00	$45,323.25

Project Number: 0-7207 University: TTI/UTSA

Project Title: Determine Feasibility and Efficacy of Hollow Precast Straddle Bents

Project Start Date: 10/01/2024 Termination Date: 08/31/2027

Project Status: Active Total Project Budget: $1,298,699.50

Project Manager: Danny Souraphath Researcher: Kinsey Skillen

Project Objectives: Bent caps provide a critical load path between girder reactions and bent columns. Supporting considerable reactions over long spans, bent cap cross-sections grow substantial, necessitating robust cast-in-place designs that have stood the test of time. However, the considerable weight and time required for their construction present challenges that undermine their apparent simplicity.

Financials	FY26 Total Budget	80% Federal	20% State
TTI	$434,329.00	$347,463.20	$86,865.80
UTSA	$141,558.75	$113,247.00	$28,311.75

Project Number: 0-7213 University: CTR/TECH

Project Title: Develop Design Methodologies and Efficient Details for Triple I-Girder Steel Straddle Caps

Project Start Date: 09/01/2024 Termination Date: 08/31/2027

Project Status: Active Total Project Budget: $1,201,065.20

Project Manager: Martin Dassi Researcher: Todd Helwig

Project Objectives: Straddle caps are frequently required in congested settings in urban environments that preclude the use of central piers due to intersecting roadways. The research focuses on the behavior of three-girder steel straddle caps that offer solutions for each of these desired configurations. Efficient details that maximize the effectiveness of the straddle cap at resisting bending, shear, and torsion will be developed. The work will result in design methodologies that allow engineers to effectively analyze and design straddle caps to produce economical and structurally-efficient systems.

Financials	FY26 Total Budget	80% Federal	20% State
CTR	$401,804.78	$321,443.82	$80,360.96
TECH	$103,233.66	$82,586.93	$20,646.73

Project Number: 0-7214 University: UTA

Project Title: Develop Concrete Girder Splice Details with Application of Ultra-High-Performance Fiber-Reinforced Concrete (UHP-FRC)

Project Start Date: 09/01/2024 Termination Date: 08/31/2027

Project Status: Active Total Project Budget: $899,189.85

Project Manager: Jade Adediwura Researcher: Shih-Ho Chao

Project Objectives: The project aims to leverage Ultra-High-Performance Fiber-Reinforced Concrete (UHP-FRC) to enhance the flexural and shear strengths, cracking resistance, durability, and bond between concrete and reinforcing bars in girder splices for the Receiving Agency's precast girder bridges. This project shall develop efficient UHP-FRC splice details to connect simply supported precast girders at pier locations, using the Simple for Dead and Continuous for Live Load (SDCL) approach for the splice design. The UHP-FRC girder splice can eliminate bridge expansion joints, reducing maintenance costs and enhancing durability. Objectives include conducting a literature review, developing UHP-FRC mix designs and construction methods, determining splice and girder end reinforcing details, and evaluating connection performance under live load conditions. The project shall provide comprehensive UHP-FRC splice construction guidelines for the Receiving Agency's girder and composite deck bridges, aiming to improve structural integrity, durability, and maintenance efficiency.

Financials	FY26 Total Budget	80% Federal	20% State
Contract Total	$412,484.50	$329,987.60	$82,496.90

Project Number: 0-7234 University: TTI

Project Title: Address Knowledge Gaps in Scour Analyses for Cohesive and Other Challenging Channel Materials

Project Start Date: 09/01/2024 Termination Date: 08/31/2026

Project Status: Active Total Project Budget: $559,829.50

Project Manager: Katelyn Kasberg Researcher: Jean-Louis Braiud

Project Objectives: The Performing Agency shall address two gaps in scour knowledge: pressure scour for cohesive soils and cohesive soils/rocks characterization for scour analyses. Pressure scour occurs when the water reaches the bridge's low chord; this increases the scour depth. Guidelines exist for cohesionless soils but not for cohesive soils. The Performing Agency shall perform a series of Computational Fluid Dynamics (CFD) simulations and/or flume tests to generate the input necessary and expand the SRICOS method to the pressure flow situation in cohesive soils. The Performing Agency shall perform advanced testing on cohesive soils/rocks characterization for scour analyses. Advanced testing examples include the Erosion Function Apparatus (EFA) (Performing Agency) and Scour Testing devices (Federal Highway Administration (FHWA)). The Performing Agency shall determine if the Slake Durability Test (SDT) can be a reasonable surrogate for input in scour depth calculations by collecting samples at a maximum of up to 20 bridges around Texas, and by conducting parallel testing on cohesive soils/rocks such as shale, caliche, and sandstone.

Financials	FY26 Total Budget	80% Federal	20% State
Contract Total	$283,490.50	$226,792.40	$56,698.10

Project Number: 0-7236 University: TECH

Project Title: Develop Standardized LRFD Design Methods for Ancillary Highway Structure Foundations

Project Start Date: 09/01/2024 Termination Date: 08/31/2026

Project Status: Active Total Project Budget: $371,864.43

Project Manager: Wade Odell Researcher: Hoyoung Seo

Project Objectives: The Receiving Agency's current standards for design of ancillary highway structure foundations are based on allowable stress design (ASD) framework and need to be updated to the load and resistance factor design (LRFD) framework to be compliant with AASHTO policy. The goal of this project is to develop standardized LRFD design methods for foundations of various ancillary traffic structures that are compliant with AASHTO requirements while maintaining an efficient design and the ease-of-use of a standard. The Performing Agency shall (a) perform literature review and summarize the state of the practice and key findings of standards and design criteria for traffic structure foundations of the Receiving Agency and other DOTs, (b) identify soil parameters and associated testing methods that can be used in updated standards, (c) evaluate the Receiving Agency's current traffic structure standards for foundation design by comparing design outcomes from the Receiving Agency's standards and those from other DOTs for various soil and loading conditions, (d) develop new LRFD design criteria for updates to the applicable standards, and (e) prepare design examples using the new LRFD design criteria.

Financials	FY26 Total Budget	80% Federal	20% State
Contract Total	$185,523.53	$148,418.82	$37,104.71

Project Number: 5-6936-01 University: CTR

Project Title: Implementation of Semi-integral Bridges in Texas

Project Start Date: 02/15/2024 Termination Date: 12/31/2026

Project Status: Active Total Project Budget: $780,032.31

Project Manager: Jade Adediwura Researcher: Jorge Zornberg

Project Objectives: The Performing Agency shall validate predicted semi-integral bridge performance against actual semi-integral bridge performance; particularly regarding backfill placement requirements. In particular, the geotextile-confined backfill will be monitored to assess its impact on (1) the lateral earth pressures induced due to cycles of temperature-induced backfill movements and (2) the settlements of the backfill material. The new approach, developed in research project 0-6936, is expected to reduce lateral earth pressures and decrease settlements. This validation of field performance shall facilitate the development of a standard detail and commentary for the Bridge Design Manual as well as the compilation of additional design and construction guidelines. The Performing Agency shall also monitor the semi-integral bridge at China Creek, in the Wichita Falls District using the wireless field monitoring system installed during research project 0-6936.

Financials	FY26 Total Budget	80% Federal	20% State
Contract Total	$238,107.07	$190,485.66	$47,621.41

Project Number: 5-7041-01 University: CTR

Project Title: Implementation of the NextGen Bridge Deck System in Texas

Project Start Date: 09/01/2024 Termination Date: 04/30/2027

Project Status: Active Total Project Budget: $442,088.48

Project Manager: Danny Souraphath Researcher: Oguzhan Bayrak

Project Objectives: In this implementation project, the Performing Agency shall conduct instrumentation, monitoring, and inspection into two selected bridges in collaboration with the Receiving Agency to ensure the successful implementation of the NextGen Bridge Deck System. The collected data shall facilitate the evaluation of constructability and serviceability and offer a comparative analysis with conventional bridge deck systems.

Financials	FY26 Total Budget	80% Federal	20% State
Contract Total	$183,859.25	$147,087.40	$36,771.85

Project Number: 9-1532 University: CTR

Project Title: TPF-5(508) Concrete Bridge Engineering Institute (CBEI)

Project Start Date: 06/21/2023 Termination Date: 05/31/2027

Project Status: Active Total Project Budget: $6,422,458.90

Project Manager: Tom Schwerdt Researcher: Oguzhan Bayrak

Project Objectives: The objective of TPF-5(508) Concrete Bridge Engineering Institute (CBEI) Transportation Pooled Fund (TPF) is to create a national resource for innovative workforce development programs and implementation of new technologies in the field of concrete bridges, establishing a consortium of member states. CBEI shall be the center of concrete bridge related research, education, and training at the Performing Agency, the University of Texas at Austin in the Cockrell School of Engineering. The Performing Agency shall work with bridge stakeholders (primarily state and federal transportation agencies) and seek input from industry groups representing the concrete bridge community to develop pioneering, practical, and effective programs that will have national impact with the goal of addressing issues encountered in concrete bridges and implementing plans to work toward ensuring resiliency expectations for concrete bridges. The Performing Agency's specific objectives are to develop and implement the following services with coordinated input from members of the pooled fund: •Three training programs which will include both classroom and hands-on training Concrete Bridge Deck Construction Inspection Program Concrete Materials for Bridges Program Post-tensioning (PT) Laboratory •The Concrete Solutions Center •The Bridge Component Collection •The Technology Development Program The Performing Agency shall also implement the components of the Concrete Solutions Center comprised of workshops, seminars, and project technical support. The Performing Agency shall develop and administer the Technology Development Program for the evaluation and implementation of new and emerging technologies in the field of concrete bridges.

Financials	FY26 Total Budget	100% Federal*	80% Federal**	20% State***
Contract Total	$587,771.28	$503,032.24	$67,791.23	$16,947.81

* Corresponds to the states' FY '26 contributions (100% federal share).
** Corresponds to FHWA's FY '26 contribution and funding for FHWA's special project (Task 10).
***Corresponds to Texas' state match of FHWA's FY '26 contribution and special project (Task 10).

Project Number: 0-7181 University: UH

Project Title: Development of Digital Twins for Texas Bridges

Project Start Date: 09/01/2023 Termination Date: 08/31/2026

Project Status: Active Total Project Budget: $505,286.00

Project Manager: Wade Odell Researcher: Vedhus Hoskere

Project Objectives: Bridges are a critical component of transportation infrastructure, providing safe and efficient travel for millions of people every day. However, bridge maintenance can be complex and expensive, and it is challenging to detect problems early before they become more significant and costly to repair. Digital twins offer a solution to this challenge, providing a comprehensive and efficient means of obtaining, integrating, processing, and storing high-fidelity information about the current geometry and condition of a bridge. Developing digital twins of Texas bridges is a significant undertaking, as it requires collecting and integrating data from multiple sources, including sensors and unmanned aerial systems (UASs). Moreover, the resulting data must be complete and usable without overtaxing existing computer systems at TxDOT, which presents challenges related to data compression and redundancy. To address these challenges, this research proposes an outcome-based framework for the development of digital twins of TxDOT bridges. This framework will be extensively validated across real-world conditions through data collection and digital twin construction efforts from 30 (or as many as requested and agreed to) TxDOT bridges. The resulting guidelines and procedures will provide a means for comprehensively and efficiently collecting, integrating, processing, and storing geo-referenced, multi-sensor, and high-fidelity information about the current geometry and condition of a bridge. To enable early identification of bridge maintenance needs, the researchers will investigate and assess feasibility and requirements for aligning multi-temporal models and detecting and quantifying changes over time both with manual observation and automatically. The prototype routines for alignment and change detection developed will be integrated into the digital twinning framework for direct use by TxDOT. Additionally, the performing agency will prepare and test training materials to teach project managers, maintenance supervisors, and other personnel on field collection and planning of 3D data, digital twin development, and data processing and modeling. These training materials will include operational recommendations and guidance on data collection plans, reviews and approval, and safety. The proposed research will provide a clear path for the digital transformation and integration of TxDOT bridge inspections, design, and maintenance activities, enabling more scientific decision-making and bridge management practices with broad impacts to TxDOT operations.

Financials	FY26 Total Budget	80% Federal	20% State
Contract Total	$155,216.25	$124,173.00	$31,043.25

Project Number: 0-7221 University: TAMUCC/TTI

Project Title: Develop Data Collection Requirements and Strategic Research Roadmap to Support the Digital Delivery Program

Project Start Date: 10/14/2024 Termination Date: 09/30/2026

Project Status: Active Total Project Budget: $1,082,763.75

Project Manager: Danny Souraphath Researcher: Cesar Quiroga

Project Objectives: The Performing Agencies shall aide the Receiving Agency in transitioning from GeoPak to OpenRoads Designer (ORD) by researching how to extract 3D models from multiple data sources, develop and test procedures to extract 3D models, and develop and test automated workflows for change detection, quality control, and 3D model updating. The Performing Agencies shall also develop a strategic research roadmap to support the Receiving Agency's Digital Delivery Section within the Design Division.

Financials	FY26 Total Budget	80% Federal	20% State
TAMUCC	$128,811.25	$103,049.00	$25,762.25
TTI	$379,689.00	$303,751.20	$75,937.80

Project Number: 0-7224 University: TTI

Project Title: Improve Utility Investigations through AI Data Fusion and Reliable Quality Assessments

Project Start Date: 09/01/2024 Termination Date: 08/31/2026

Project Status: Active Total Project Budget: $1,033,156.75

Project Manager: Wade Odell Researcher: Cesar Quiroga

Project Objectives: Identifying and documenting existing utility facilities within the proposed right-of-way (ROW) is crucial for successful project delivery. There is a need to leverage data collection technology's strengths and minimize weaknesses for a more robust and reliable determination of utility locations and develop and test metrics to assess the utility investigation quality levels in ways that make sense to project design teams. Improvements shall lead to a better stakeholder understanding to communicate the quality levels commonly used by the SUE industry (D, C, B, and A), the basis for assessing utility investigation deliverable quality, and would be able to tie quality levels to quantifiable performance metrics such as positional accuracy, error, and completeness, which are common in engineering and surveying when collecting field data for a project

Financials	FY26 Total Budget	80% Federal	20% State
Contract Total	$430,385.25	$344,308.20	$86,077.05

Project Number: 0-7232 University: TTI/UTA

Project Title: Improve Safety of Vehicles and Vulnerable Road Users at Intersections Integrating C-V2X and LiDAR Sensing Technologies

Project Start Date: 09/03/2024 Termination Date: 10/31/2026

Project Status: Active Total Project Budget: $621,404.75

Project Manager: Jade Adediwura Researcher: David Bierling

Project Objectives: Crash risks associated with permissive left turns (PLTs), vulnerable road users (VRUs), and wrong way driving (WWD) appear to be among the top attributing factors for fatal and incapacitating crashes at signalized intersections, raising alarming safety concerns. The cellular vehicle-to-everything (C-V2X) communication and innovative traffic detection technologies such as light detection and ranging (LiDAR) sensing have the potential to reduce crashes related to these factors and enhance intersection safety. The Performing Agencies shall develop, test, and demonstrate a prototype system integrating C-V2X communication and innovative traffic detection technologies to improve safety of all road users at signalized intersections. Another objective is to provide the Receiving Agency with guidelines for statewide implementation of the integrated system for intersection safety improvement. The Performing Agencies shall: (1) Review the literature on safety improvement systems utilizing C-V2X and innovative traffic detection systems; (2) Assess user needs and design a system architecture that satisfies user requirements; (3) Develop, test, demonstrate, and evaluate a prototype system that integrates C-V2X communication, LiDAR and other advanced traffic detection technologies to detect and mitigate crash risks involving PLTs, VRUs, and WWD at signalized intersections; and (4) Develop guideline documents containing implementation procedures and use case scenarios.

Financials	FY26 Total Budget	80% Federal	20% State
TTI	$192,240.50	$153,792.40	$38,448.10
UTA	$124,893.50	$99,914.80	$24,978.70

Project Number: 0-7235 University: TSU/UH

Project Title: Leverage AI for Asset Inventories & Management

Project Start Date: 10/14/2024 Termination Date: 06/30/2026

Project Status: Active Total Project Budget: $387,140.65

Project Manager: Wade Odell Researcher: Zheyong Bian

Project Objectives: The Performing Agency shall expand the Receiving Agency's Transportation Asset Management Plan (TAMP) which currently only includes pavements and bridges. Other state departments of transportation (DOTs) have already included five additional assets: traffic signals, sign supports, pavement markings, and highway buildings, acknowledging their importance to the safety and integrity of the roadway network. This effort shall increase the value of various data sources to assist in informed procurement decisions.

Financials	FY26 Total Budget	80% Federal	20% State
TSU	$64,686.60	$51,749.28	$12,937.32
UH	$71,816.25	$57,453.00	$14,363.25

Project Number: 5-7160-01 University: UTA

Project Title: Implementing the ATSPM-In-The-Loop Simulation Solution with the TxDOT State-Wide ATSPM System Deployment Plan

Project Start Date: 09/01/2024 Termination Date: 08/31/2026

Project Status: Active Total Project Budget: $308,597.33

Project Manager: Danny Souraphath Researcher: Taylor Li

Project Objectives: This project shall introduce automated traffic signal performance measures or ATSPM systems to all stages of traffic signal projects in Texas. The benefits of ATSPM systems have been broadly recognized by agencies. The Receiving Agency is also in the process of state-wide ATSPM deployment. Nonetheless, the ATSPM system is poised to evaluate the traffic signal performance in the field because all the performance measures are traffic signal data generated by controllers. Therefore, access to the real ATSPM systems is limited to a small portion of traffic signal stakeholders, and these stakeholders may not take advantage of ATSPM during traffic signal planning and design due to a lack of data. In a research project sponsored by Receiving Agency, the Performing Agency demonstrated the use a microscopic traffic simulation engine to generate the needed traffic signal data for real-world ATSPM systems to generate performance measures. With the developed insights and software tools from that project, the Performing Agency will assist and facilitate the Receiving Agency to implement the delivered ATSPM-in-the-loop simulation engine toward a regular task for ATSPM-enhanced traffic signal planning and design. This project shall also expand the developed ATSPM-in-the-loop simulation platform to meet all the practical needs for the Receiving Agency's ATSPM deployment effort. This project will increase the TRL from 7 to 9 by assisting Receiving Agency to develop a practical solution to increase stakeholders' access to and acceptance of the ATSPM concept in various types of traffic signal projects.

Financials	FY26 Total Budget	80% Federal	20% State
Contract Total	$161,964.13	$129,571.30	$32,392.83

Project Number: 5-9908-24 University: TTI

Project Title: Innovative Transportation Projects at TxDOT

Project Start Date: 01/01/2024 Termination Date: 02/28/2027

Project Status: Active Total Project Budget: $7,108,387.00

Project Manager: Shelley Pridgen Researcher: Bob Brydia

Project Objectives: From time to time, TxDOT districts produce ITS and other technology and process innovations that improve Roadway/worker safety, improve roadway efficiency, and/or produce cost savings. This contract leverages the capabilities of TTI to identify, develop, and scale district innovations that are ready to deploy across the state, so that TxDOT can capture the full benefit of 25 different districts with particular insights, creativity and innovative thinking. TTI will investigate innovative district practices and develop plans at a district and statewide level to share and scale innovation across the state. By harvesting the real-world knowledge already contained within TxDOT, new avenues will open to improve roadway safety, efficiency and produce cost savings impacting the millions of travelers across the state. Additionally, by cataloging and bringing together these innovations, divisions and districts can work together to make sure that solutions are developed in such a way that unified systems and interoperability occur throughout the state.

Financials	FY26 Total Budget	80% Federal	20% State
Contract Total	$2,373,173.00	$1,898,538.40	$474,634.60

6. Pooled Fund Projects

Pooled-fund projects are for planning, research, development, or technology transfer project activities administered by FHWA and are supported by two or more participants. These projects address an issue of significant or widespread interest related to highway, public, or intermodal transportation. The research is intended to address a new area or provide information that will complement or advance previous investigations of the subject matter.

As 23 CFR 420.205 describes, "To promote effective use of available resources, the State DOTs are encouraged to cooperate with other State DOTs, the FHWA, and other appropriate agencies to achieve RD&T objectives established at the national level and to develop a technology transfer program to promote and use those results. This includes contributing to cooperative RD&T programs such as the NCHRP, the TRB, and transportation pooled fund studies as a means of addressing national and regional issues and as a means of leveraging funds."

Pooled-fund projects are a very effective means of leveraging precious research funds.
Table 8. shows the pooled-fund projects that Texas participates in.
The following are project descriptions of the pooled-fund projects where Texas is contributing funds:

Table 8. FY 2026 Pooled-Fund Projects.

Project	Title	Study No.	Lead Agency	Start-End Date	FY26 Commitment
8-8516	Clear Roads Winter Highway Operations Phase III Pooled Fund	TPF-5(479)	Minnesota Department of Transportation	2022-2026	$25,000.00
8-8517	Center for the Aging Infrastructure: Steel Bridge Research, Inspection, Training and Education Engineering Center - SBRITE (Continuation)	TPF-5(486)	Indiana	2022-2027	$50,000.00
8-8519	ENTERPRISE- PHASE III (Phase II Continuation)	TPF-5(490)	Michigan Department of Transportation	2022-2026	$30,000.00
8-8520	Safety Service Patrol Standardization and Management Practices	TPF-5(489)	FHWA	2021-2025	$25,000.00
8-8522	Transportation Management Centers Pooled Fund Study Phase II	TPF-5(487)	FHWA	2022-2027	$50,000.00

Project	Title	Study No.	Lead Agency	Start-End Date	FY26 Commitment
8-8523	Roadside Safety Pooled Fund - Phase 3	TPF-5(501)	Washington Department of Transportation	2023-2027	$65,000.00
8-8527	Emerging Data Streams for Pavement (Asset) Health Monitoring and Management	TPF-5(513)	Virginia Department of Transportation	2023-2028	$30,000.00
8-8530	Highway Safety Manual 2nd Edition (HSM2) Implementation	TPF-5(516)	FHWA	2023-2028	$16,000.00
8-8531	Concrete Bridge Engineering Institute (CBEI)	TPF-5(508)	Texas Department of Transportation	2023-2026	$250,000.00
8-8532	National Partnership to Improve the Quality of Preventive Maintenance Treatment Construction & Data Collection Practices (PG Phase III)	TPF-5(522)	Minnesota Department of Transportation	2023-2027	$50,000.00
8-8533	National Hydraulic Engineering Conference	TPF-5(507)	FHWA	2022-2027	$1,000.00
8-8534	Building Information Modeling (BIM) for Bridges and Structures - Phase II	TPF-5(523)	Iowa Department of Transportation	2023-2027	$20,000.00
8-8535	New Performance Approach to Evaluate ASR in Concrete	TPF-5(521)	FHWA	2023-2027	$5,000.00
8-8538	Resilience Approaches for Pavements and Geotechnical Assets	TPF-5(512)	Virginia Department of Transportation	2023-2027	$20,000.00
8-8541	Evaluation of Low-Cost Safety Improvements (ELCSI-PFS)	TPF-5(515)	FHWA	2023-2027	$10,000.00
8-8542	Implementation of Structural Data from Traffic Speed Deflection Devices	TPF-5(518)	Virginia Department of Transportation	2024-2028	$149,000.00

Project	Title	Study No.	Lead Agency	Start-End Date	FY26 Commitment
8-8543	Human-Centered Steel Bridge Inspection Enabled by Augmented Reality and Artificial Intelligence	TPF-5(535)	Kansas Department of Transportation	2024-2026	$40,000.00
8-8545	Western Transportation Research Consortium	TPF-5(526)	Utah Department of Transportation	2024-2026	$15,000.00
8-8547	Improving the Quality of Highway Profile Measurement	TPF-5(537)	Illinois Department of Transportation	2024-2028	$30,000.00
8-8549	Accelerated Performance Testing on the 2024 NCAT Pavement Test Track with MnROAD Research Partnership	TPF-5(531)	Alabama Department of Transportation	2024-2026	$266,666.00
8-8550	Designing Transportation Infrastructure for Electric Vehicles	TPF-5(553)	Texas	2025-2027	$50,000.00
8-8551	Vehicle to Everything (V2X) Pooled Fund Study	TPF-5(555)	Georgia	2025-2029	$50,000.00
8-8552	Establishment of a Public-Private Transportation Data Exchange Center	TPF-5(539)	Missouri	2025-2028	$50,000.00
8-8553	Recycled Materials Resource Center - 5th Generation	TPF-5(546)	Iowa	2025-2029	$40,000.00
8-8554	Technology Transfer Concrete Consortium (FY25-FY29)	TPF-5(544)	Iowa	2025-2029	$20,000.00
8-8555	Smart Work Zone Deployment Initiative (FY25-FY29)	TPF-5(545)	Iowa	2025-2029	$25,000.00
8-8556	Autonomous Maintenance Technologies - Phase 2	Sol. 1622	Indiana	2025-2028	$25,000.00
8-8557	No Boundaries Transp. Maintenance Innovations: Phase IV	TPF-5(548)	Colorado	2025-2027	$13,000.00

Project	Title	Study No.	Lead Agency	Start-End Date	FY26 Commitment
8-8558	Traffic Safety Culture Phase 3	TPF-5(547)	Montana	2025-2029	$15,000.00
8-8559	Uncrewed Aircraft Systems (UAS) Standardization	Sol. 1620	Alaska	2025-2029	$25,000.00
8-8560	High Performance Computational Fluid Dynamics (CFD) Modeling Services for Highway Hydraulics	Sol. 1629	FHWA	2025-2028	$15,000.00
8-8561	Performance Based Specifications of Fiber Reinforced Concrete	TPF-5(550)	Oklahoma	2026-2028	$30,000.00
8-8562	Accelerating IFC Adoption by Advancing IFC Validation Service and Software Certification Program	Sol. 1635	Iowa	2026-2028	$30,000.00
8-8563	Connected Corridors Advancement Initiative	N/A	Iowa	2026-2030	$50,000.00
8-8564	Traffic Control Device (TCD) Consortium (4)	TPF-5(554)	FHWA	2025-2028	$15,000.00

6.1 Pooled Funds Where Texas is Not the Lead State

Project Number: 8-8516

Study Number: TPF-5(479)

Title: Clear Roads Winter Highway Operations Phase III Pooled Fund

Lead Agency: Minnesota Department of Transportation

Status: Cleared by FHWA

Project Objectives: Objectives of the new phase of the Clear Roads pooled fund project will include: • Conduct structured field testing and evaluation across a range of winter conditions and different highway maintenance organizational structures to assess the practical effectiveness, ease of use, optimum application rates, barriers to use, durability, safety, environmental impact, and cost-effectiveness of innovative materials, equipment, and methods for improved winter highway maintenance. • Conduct research that explores the use of innovative materials, equipment, and processes that will promote environmentally sustainable winter maintenance operations. • Conduct cost-benefit analyses to ensure that new technologies, materials, or methods contribute to operational efficiency. • Investigate state agency uses of performance measures for winter operations and develop management tools that support effective analysis and reporting of the measures. • Establish industry standards and develop performance measures for evaluating and utilizing new materials and technologies. • Support technology transfer by developing and disseminating practical field guides and training curriculum and reference materials to promote the results of research projects. • Support the exchange of information and ideas among state agencies via peer exchanges, ad hoc internal surveys, and collaborative research efforts that provide opportunities for winter maintenance specialists to share experiences related to winter maintenance. • Conduct national surveys to compile and document agency practices on the latest operational issues (for example salt shortages, level of service requirements, or other "hot button" issues). • Conduct quick turnaround, low-cost synthesis projects to investigate the latest research and practices on pressing winter maintenance topics. • Coordinate with the Aurora Pooled Fund (http://www.aurora-program.org/) to enhance the impact, and avoid duplication, of winter road weather research. • Promote public education and outreach related to winter maintenance and winter driving safety.

Financials	Commitment Years	FY26 Commitment
TxDOT	2022-2026	$25,000.00

Project Number: 8-8517

Study Number: TPF-5(486)

Title: Center for the Aging Infrastructure: Steel Bridge Research, Inspection, Training and Education Engineering Center - SBRITE (Continuation)

Lead Agency: Indiana

Status: Cleared by FHWA

Project Objectives: Objectives and Impact: The objective of the proposal is to request a continuation of SPR-5(281) the Steel Bridge Research, Inspection, Training, and Education Engineering Center (S-BRITE Engineering Center) focused on existing steel highway bridges. This National Center when initially proposed in 2013, has become a national Center leading education, training, research, and engineering benefitting the existing aging steel bridge and structure inventory. Over the life of the project, ten (10) states, the US Army Corps, and FHWA have provided support through TPF-5(281) and continue to do so. Current funding is very strong and partner states continue to be added. Although the Center has been focused on highway bridges, it will also support stakeholders of steel railroad bridges as well as steel ancillary structures, such as lighting towers and sign supports. As a result, in-kind support from the railway industry has been strong as well. The Center has contributed to improved asset management decisions for DOTs, FHWA, and other partners relative to existing steel bridge inventory. However, since the existing TPF-5(281) needs to sunset per FHWA guidelines, the Research Team, and the current active partners are requesting a continuation of this pooled fund study, albeit under a different TPF number. The original project objectives and deliverables remain unchanged. Nevertheless, a summary of the Center is presented below.

Financials	Commitment Years	FY26 Commitment
TxDOT	2022-2027	$50,000.00

Project Number: 8-8519

Study Number: TPF-5(490)

Title: ENTERPRISE- PHASE III (Phase II Continuation)

Lead Agency: Michigan Department of Transportation

Status: Cleared by FHWA

Project Objectives: This proposed TPF study is a continuation of TPF-5(359) to enhance innovation in highway operations and intelligent transportation systems through research and technology transfer, as well as to continue assessing transformational technologies and their impact on the transportation industry.

Financials	Commitment Years	FY26 Commitment
TxDOT	2022-2026	$30,000.00

Project Number: 8-8520

Study Number: TPF-5(489)

Title: Safety Service Patrol Standardization and Management Practices

Lead Agency: FHWA

Status: Cleared by FHWA

Project Objectives: The primary objective of this PFS study will be to gain technical information related to SSP program management, standards associated with SSP response protocol and the implementation of traffic control, and references and guidance related to staffing, training, and resource allocations within SSP programs. The goals include: 1. Assemble best practices and lessons learned from existing programs 2. Develop guidance documents based on lessons learned from existing programs 3. Reference or create tools that will help agencies make informed program decisions such as route selection, staffing levels, and resource allocation

Financials	Commitment Years	FY26 Commitment
TxDOT	2021-2025	$25,000.00

Project Number: 8-8522

Study Number: TPF-5(487)

Title: Transportation Management Centers Pooled Fund Study Phase II

Lead Agency: FHWA

Status: Cleared by FHWA

Project Objectives: The objectives of the Traffic Management Centers (TMC) Pooled Fund Study (PFS) is to assemble regional, state, and local transportation management agencies and FHWA to: (1) identify key issues and challenges agencies are facing with their traffic management systems (TMSs) or centers (TMCs); (2) suggest approaches to addressing identified issues; (3) initiate and monitor projects intended to address identified issues; (4) develop technical resources and disseminate results; (5) provide leadership and coordinate with others on TMC interests; and (6) promote and facilitate sharing information on TMC issues nationally.

The TMC Pooled PFS involves a group of public agencies and organizations who voluntarily pool funds each year to address the key challenges and issues they are facing in support of improving performance, capabilities, and how they manage and operate their TMSs. TMC PFS members collaborate by using funds they contribute for the pursuit of projects they agree to pursue and develop technical resources and advance activities to address the key challenges and issues they are collectively facing. This project is being created to establish a new number (Phase II of TPF- 5(319)) and allow for 5 additional years (April 17, 2022 to April 16, 2027) beyond the existing study (TPF-5(319)). Agencies can join and add their commitments to the TMC PFS at any time during each year the TMC PFS, which is approved through April 16, 2027.

Financials	Commitment Years	FY26 Commitment
TxDOT	2022-2027	$50,000.00

Project Number: 8-8523

Study Number: TPF-5(501)

Title: Roadside Safety Pooled Fund - Phase 3

Lead Agency: Washington Department of Transportation

Status: Cleared by FHWA

Project Objectives: The objective of this Pooled Fund is to assist transportation agencies in achieving their Roadway Departure (RwD) related all state Strategic Highway Safety Plans (SHSPs) goals through development, evaluation and deployment of life-saving roadside safety devices and countermeasures in accordance with AASHTO and Federal Highway Administration (FHWA) adopted standards such as the Manual for Assessing Safety Hardware (MASH). It will also support continuation of MASH implementation in roadside hardware categories that have lagged in achieving MASH compliance (special barrier applications, sign supports, work zone traffic control devices, luminaire poles, etc.) due to various design and performance challenges and other related factors. These activities will directly support and impact state efforts to achieve Target Zero by helping reduce the frequency and severity of roadway departure crashes.

Given their common interest in SHSP implementation, all states would benefit from participation in this Pooled Fund program. However, the FHWA Roadway Departure Focus States may particularly benefit from the roadside safety research, collaboration, and information sharing that will constitute the framework of the program.

Financials	Commitment Years	FY26 Commitment
TxDOT	2023-2027	$65,000.00

Project Number: 8-8527

Study Number: TPF-5(513)

Title: Emerging Data Streams for Pavement (Asset) Health Monitoring and Management

Lead Agency: Virginia Department of Transportation

Status: Cleared by FHWA

Project Objectives: The main objective of the pooled-fund program of research is to identify, test and evaluate emerging big data stream that may enhance the process we use to evaluate the performance and manage our pavement assets. The technologies considered will include at a minimum, vehicle response data collected by connected and automated vehicles, smart infrastructure sensors (e.g., internet of things), mobile devices and e-construction and BIM technologies (e.g., digital twins).

Financials	Commitment Years	FY26 Commitment
TxDOT	2023-2028	$30,000.00

Project Number: 8-8530

Study Number: TPF-5(516)

Title: Highway Safety Manual 2nd Edition (HSM2) Implementation

Lead Agency: FHWA

Status: Cleared by FHWA

Project Objectives: Accelerate implementation of HSM2 and related analytical tools to assess current and future safety performance of existing roadways and alternative designs, and help practitioners make more informed decisions, better target investments, and reduce fatalities and serious injuries on the nations roadways. This includes activities before and after publication of HSM2 (anticipated 2025).

Financials	Commitment Years	FY26 Commitment
TxDOT	2023-2028	$16,000.00

Project Number: 8-8532

Study Number: TPF-5(522)

Title: National Partnership to Improve the Quality of Preventive Maintenance Treatment Construction & Data Collection Practices (PG Phase III)

Lead Agency: Minnesota Department of Transportation

Status: Cleared by FHWA

Project Objectives: This pooled-fund study is being developed to assist SHAs and LPAs in reviewing and developing pavement PM treatments which can advance their pavement preservation programs. This study is also supplementing ongoing data analysis of existing pavement test sections in Minnesota (NRRA-MnROAD) and Alabama (NCAT) and support continued implementation activities established. Combining these efforts will establish a national construction and data collection effort of pavement PM treatments applied to roadways at the direction of the study's Technical Advisory Committee (TAC). Participation in the study is being encouraged by SHAs, LPAs, FHWA, Federal Lands Highway Division, academia and industry representatives. Collaboration with experts from these groups will help set criteria for identifying PM construction practices and data collection requirements, discuss optimal timing for placing of PM treatments and establishing the minimum number of pavement sections required for each type of PM treatment used for statistical analysis. Non-financial participants can provide technical knowledge and input; however, financial contributors will make final decision on treatments to be constructed.

Using the outcome from the above collaborative activities, the study partners will initiate and monitor State, local, and Federal PM treatments and projects to develop preventive maintenance solutions (i.e. decision trees, toolboxes, etc.). Implementation of practical research results from other PM cooperative projects (i.e. NCAT, MnROAD, NCPP) will be used to access the impact of preventive maintenance treatments on extending service life of pavements. Lessons learned will be documented and shared along with information to assist in the updating of the national pavement preservation research roadmap.

Financials	Commitment Years	FY26 Commitment
TxDOT	2023-2027	$50,000.00

Project Number: 8-8533

Study Number: TPF-5(507)

Title: National Hydraulic Engineering Conference

Lead Agency: FHWA

Status: Cleared by FHWA

Project Objectives: The next National Hydraulic Engineering Conference is proposed for Summer 2024, with subsequent conferences tentatively planned for 2026 and 2028.
The objectives of this study a:

1) Provide opportunities for communication and information sharing among state hydraulic engineers, federal agencies, and national technical organizations (AASHTO TCHH and TRB AFB60) through the National Hydraulic Engineering Conference.

2) Provide a technology and knowledge exchange forum to enhance the practical knowledge of member states concerning transportation hydraulic engineering, including advanced modeling technologies, FHWA initiatives, and best practices.

Financials	Commitment Years	FY26 Commitment
TxDOT	2022-2027	$1,000.00

Project Number: 8-8534

Study Number: TPF-5(523)

Title: Building Information Modeling (BIM) for Bridges and Structures - Phase II

Lead Agency: Iowa Department of Transportation

Status: Contract signed

Project Objectives: This pooled fund project will provide the primary mechanism for AASHTO COBS T-19 to expand and refine the outcomes of TPF-5(372) and developing additional guide specifications for open BIM national data standards to support model-based exchanges of workhorse bridges.

Financials	Commitment Years	FY26 Commitment
TxDOT	2023-2027	$20,000.00

Project Number: 8-8535

Study Number: TPF-5(521)

Title: New Performance Approach to Evaluate ASR in Concrete

Lead Agency: FHWA

Status: Cleared by FHWA

Project Objectives: To evaluate a wide selection of concrete mix designs to validate the use of the new AASHTO TP-144-21 (T-FAST) and alkali threshold test (ATT) methods in conjunction with mix design data, cement mill reports and SCM properties to determine the likelihood of ASR gel formation in concrete.

Financials	Commitment Years	FY26 Commitment
TxDOT	2023-2027	$5,000.00

Project Number: 8-8538

Study Number: TPF-5(512)

Title: Resiliance Approaches for Pavements and Geotechnical Assets

Lead Agency: Virginia Department of Transportation

Status: Cleared by FHWA

Project Objectives: This pooled fund study seeks to support and showcase the research, development, and implementation of resilience approaches in the areas of pavement and geotechnical design, maintenance, preservation, and rehabilitations by various state DOTs. This would also provide platform for the agencies to share ideas and plans related to resiliency that would eventually help agencies to implement their resilience plans without duplicate and wasteful efforts.

Financials	Commitment Years	FY26 Commitment
TxDOT	2023-2027	$20,000.00

Project Number: 8-8541

Study Number: TPF-5(515)

Title: Evaluation of Low-Cost Safety Improvements (ELCSI-PFS)

Lead Agency: FHWA

Status: Cleared by FHWA

Project Objectives: The goal of this research is to develop reliable estimates of the effectiveness of the safety improvements identified as strategies, including but not limited to, those in the National Cooperative Highway Research Program (NCHRP) Report 500 Guidebooks. These estimates will be determined by conducting scientifically rigorous before-and-after evaluations at sites in the United States where these strategies are being implemented. This work will support efforts towards Vision Zero and the Safe Systems Approach.

Financials	Commitment Years	FY26 Commitment
TxDOT	2023-2027	$10,000.00

Project Number: 8-8542

Study Number: TPF-5(518)

Title: Implementation of Structural Data from Traffic Speed Deflection Devices

Lead Agency: Virginia Department of Transportation

Status: Cleared by FHWA

Project Objectives: The objectives of this follow-on pooled fund study include continuation of an existing research consortium that focuses on providing participating agencies guidance on how to specify and implement TSDD data within their respective pavement management systems and processes. Specific tasks within this multi-year program will be developed in cooperation with the partner agencies.

Financials	Commitment Years	FY26 Commitment
TxDOT	2024-2028	$149,000.00

Project Number: 8-8543

Study Number: TPF-5(535)

Title: Human-Centered Steel Bridge Inspection Enabled by Augmented Reality and Artificial Intelligence

Lead Agency: Kansas Department of Transportation

Status: (Solicitation 1597)

Project Objectives: The main objective of this proposed research is to provide state DOTs practical tools for supporting human-centered steel bridge inspection with real-time defect (e.g., fatigue cracks and corrosion) detection, documentation, tracking, and decision making. The proposed research will not only bridge the gaps identified in the IDEA project, but also expand the existing capability by developing AI algorithms for crack and corrosion detection. In addition to AR headsets, the project will also develop AR-based inspection capability using tablet devices. The tablet device can be used to perform AR-based inspection directly in a similar way to the AR headset. It can also leverage Unmanned Aerial Vehicles (UAV) for remote image and video acquisition during inspections, enabling bridge inspections from a distance in a human-centered manner, as illustrated in Figure 2.

Financials	Commitment Years	FY26 Commitment
TxDOT	2024-2026	$40,000.00

Project Number: 8-8545

Study Number: TPF-5(526)

Title: Western Transportation Research Consortium

Lead Agency: Utah Department of Transportation

Status: Cleared by FHWA

Project Objectives: Address high priority transportation research topics of common interest and for which expertise exists in these states.

Financials	Commitment Years	FY26 Commitment
TxDOT	2024-2026	$15,000.00

Project Number: 8-8547

Study Number: TPF-5(537)

Title: Improving the Quality of Highway Profile Measurement

Lead Agency: Illinois Department of Transportation

Status: (Solicitation 1605)

Project Objectives: 1) Deliver sample procurement specifications and maintenance guidelines

2) Direct and support development and maintenance of pavement profile analysis software

3) Implement criteria for profile verification that include emerging technologies (e.g., low-speed profilers, start and stop profilers, and non-inertial profilers)

4) Verify pavement profile reference devices

5) Develop and deliver profiler operation and profile analysis training

6) Implement methods for maximizing the use of pavement profiles for network, project, and forensic analysis, with a focus on cutting-edge methodologies.

7) Provide technical support for the Road Profile Users' Group and conduct annual face-to-face meetings in conjunction with the group.

Financials	Commitment Years	FY26 Commitment
TxDOT	2024-2028	$30,000.00

Project Number: 8-8549

Study Number: TPF-5(531)

Title: Accelerated Performance Testing on the 2024 NCAT Pavement Test Track with MnROAD Research Partnership

Lead Agency: Alabama Department of Transportation

Status: (Solicitation 1601)

Project Objectives: The primary objectives of the pooled fund project described herein will be:

1. Constructing, maintaining, and/or rebuilding experimental pavements on the existing 1.7-mile NCAT test oval and the MnROAD mainline bypass that are representative of in-service roadways on the open transportation infrastructure;

2. Applying accelerated performance truck traffic after construction for the duration of the 3-year research cycle;

3. Assessing/comparing the functional and structural field performance of trafficked sections on a regular basis via surface and subsurface measures;

4. Validating/calibrating new and existing methodologies for analysis and design using pavement surface condition, pavement load response, precise traffic and environmental logging, and cumulative damage;

5. Correlating field results with laboratory data for both mix and structural performance; and

6. Answering practical questions posed by research sponsors through formal (i.e., reports and technical papers) and informal (e.g., one-on-one responses to sponsor inquiries) technology transfer. For example, can pavement thickness be reduced as a result of the addition of mix additives, and if so does the thickness reduction offset any additional cost of construction?

Financials	Commitment Years	FY26 Commitment
TxDOT	2024-2026	$266,666.00

Project Number: 8-8551

Study Number: TPF-5(555)

Title: Vehicle to Everything (V2X) Pooled Fund Study

Lead Agency: Georgia

Status: Cleared by FHWA

Project Objectives: • To provide technology transfer to state, local, and international transportation agencies as well as vehicle Original Equipment Manufacturers (OEMs) in preparing for the deployment of connected vehicle infrastructure and to provide input to the AASHTO, SAE, ITE, and ITS America, various working groups and cohorts organized around V2X, USDOT V2X Program, and other national initiatives.

• To establish a multi-phase program to facilitate research, field demonstration, evaluation, and technology transfer of connected vehicle infrastructure, vehicles, and applications.

• To aid transportation agencies and OEMs in justifying and promoting the large-scale use of connected vehicle environment and applications through modeling, development, engineering, and planning activities.

Financials	Commitment Years	FY26 Commitment
TxDOT	2025-2029	$50,000.00

Project Number: 8-8552

Study Number: TPF-5(539)

Title: Establishment of a Public-Private Transportation Data Exchange Center

Lead Agency: Missouri

Status: Cleared by FHWA

Project Objectives: The goal of the project is to develop a secure computing, data analytics, and storage infrastructure with a data repository (data warehouse or data lake) that will collect all relevant vehicle data as well as other types of data (including environment data, weather data, among other sources) and share the data with DOTs for data analyses without any identifying information attached to improve transportation decision-making.

Financials	Commitment Years	FY26 Commitment
TxDOT	2025-2028	$50,000.00

Project Number: 8-8553

Study Number: TPF-5(546)

Title: Recycled Materials Resource Center - 5th Generation

Lead Agency: Iowa

Status: Contract Signed

Project Objectives: The primary objective of the TMRC is to champion the identification and evaluation of innovative materials for use in transportation infrastructure. To achieve this overarching goal, TMRC has outlined the following study objectives:

- Life Cycle Assessment: Develop methodologies and tools to assess the long-term impacts of using innovative materials in transportation. Methods and tools will be developed to include these considerations in Life Cycle Assessments (LCA) to transparently communicate the impacts associated with the use of evaluated materials.
- Regional Materials Assessment: Define a comprehensive system for assessing regionally significant materials and establish performance expectations for these materials in various applications.
- Innovative Solutions: Deploy innovative solutions that position TMRC as a go-to resource for the highway materials and construction community, offering cutting-edge insights on using innovative materials to bolster transportation infrastructure.
- Identify Barriers: Identify and address challenges and bottlenecks that hinder the widespread utilization of these materials.
- Technological Innovation: Evaluate and recommend innovative technologies from a materials perspective, focusing on their potential to enhance the reliability, efficiency and safety construction materials.
- Local Implementation Support: Provide guidance and resources for local agencies to effectively implement innovative materials in transportation projects.
- Innovative Outreach: Organize webinars and workshops to disseminate best practices.
- Collaborative Information Exchange: Promote knowledge sharing and collaboration between state agencies, industry stakeholders, and researchers to foster a deeper understanding of innovative materials and their suitability for various applications.
- Private Sector Engagement: Engage with private sector producers of materials to encourage and support the availability, quality control, and efficient delivery of materials.
- Standards Development: Actively contribute to developing specifications and guidelines through collaboration with organizations like AASHTO and ASTM.
- Resource Enhancement: Maintain and continually enhance the RMRC website as a dynamic, up-to-date resource that provides the latest information, research findings, and best practices.
- Material Certification: Work with industry stakeholders to establish a certification program for evaluated materials, ensuring their quality, availability and suitability for transportation infrastructure.

Financials	Commitment Years	FY26 Commitment
TxDOT	2025-2029	$40,000.00

Project Number: 8-8554

Study Number: TPF-5(544)

Title: Technology Transfer Concrete Consortium (FY25-FY29)

Lead Agency: Iowa

Status: Contract Signed

Project Objectives: Main objectives include:

- Identify needed research priorities by region
- Provide a forum for technology exchange between participants
- Develop and fund technology transfer materials
- Provide on-going communication of research needs faced by state agencies to the FHWA, industry, and CP Tech Center
- Provide technical leadership for concrete related national initiatives to advance state-of-the-art construction and material practices.

It is anticipated that this consortium would become the national forum for state involvement in the technical exchange needed for collaboration and new initiatives and provide tactical strategies and solutions to issues identified by the member states.

Financials	Commitment Years	FY26 Commitment
TxDOT	2025-2029	$20,000.00

Project Number: 8-8555

Study Number: TPF-5(545)

Title: Smart Work Zone Deployment Initiative (FY25-FY29)

Lead Agency: Iowa

Status: Contract Signed

Project Objectives: This program represents an on-going effort among cooperating states' DOTs, the FHWA, universities, and industry to evaluate new products and conduct related research focused on the enhancement of safety and mobility in highway work zones. Over 100 studies and evaluations have been completed since the inception of the SWZDI.

Financials	Commitment Years	FY26 Commitment
TxDOT	2025-2029	$25,000.00

Project Number: 8-8556

Study Number: Sol. 1622

Title: Autonomous Maintenance Technologies - Phase 2

Lead Agency: Indiana

Status: Solicitation Posted

Project Objectives: The overall objective of this study is to support and promote collaborative research efforts in the field of AMTs for road maintenance activities. Specific objectives include 1) Identify needed research priorities from participating state DOTs; 2) Provide a platform for technology, experience, and lessons learned exchange among participants; 3) Fund research related to AMT development, testing, evaluation, and deployment in various DOT maintenance activities; 4) Foster collaboration among state agencies, industry, and academia; and 5) Provide technical leadership in AMT to advance the state-of-the-art road maintenance practices. It is expected that this consortium will become a national leader in AMT-related research and applications.

Financials	Commitment Years	FY26 Commitment
TxDOT	2025-2028	$25,000.00

Project Number: 8-8557

Study Number: TPF-5(548)

Title: No Boundaries Transportation Maintenance Innovations: Phase IV

Lead Agency: Colorado

Status: Cleared by FHWA

Project Objectives: The fourth phase of No Boundaries build upon its work to facilitate and support successful tech transfer of maintenance-related innovations among member states. These efforts will include hosting a twice-yearly in-person peer exchange for state representatives to meet and address their challenges and innovative maintenance solutions, supporting a variety of additional opportunities for learning and exchanging knowledge and developing marketing plans and case studies to document and highlight stories of successful tech transfer. In addition, No Boundaries will continue to build and maintain a searchable online database where maintenance innovations can be found and showcased by all state transportation agencies.

Financials	Commitment Years	FY26 Commitment
TxDOT	2025-2027	$13,000.00

Project Number: 8-8558

Study Number: TPF-5(547)

Title: Traffic Safety Culture Phase 3

Lead Agency: Montana

Status: Cleared by FHWA

Project Objectives: This project is a cooperative effort of participating state DOTs and other (traditional and non-traditional) organizations with a vested interest in positively affecting the traffic safety culture. As its third phase, this long-term partnership supports continual evolution and integration through research projects, developed tools, and implementation efforts. Collectively with its last two phases, the efforts completed by this pooled fund continue to develop and deliver tools and services to transform the national, state, and community-level traffic safety culture. The goals of this transformation are to:

1. Show a measurable shift in values, attitudes, and behaviors related to road safety. To maintain positive changes in culture shifts that must be sustained in traffic safety behavior for all motorized and non-motorized road users.
2. Recognize and define many different levels of cultural influence in traffic safety and create and implement tools that positively influence a sustainable shift in those cultural beliefs.
3. Create tools for practitioners that impact culture in their organization and communities.
4. Provide the framework to influence the driver risk-takers to comply with making safe choices behind the wheel, whether automatically, due to culture shifts, or because of those influencers that one might identify with, such as peers, family, etc.

Financials	Commitment Years	FY26 Commitment
TxDOT	2025-2029	$15,000.00

Project Number: 8-8559

Study Number: Sol. 1620

Title: Uncrewed Aircraft Systems (UAS) Standardization

Lead Agency: Alaska

Status: Solicitation Posted

Project Objectives: This project will create a comprehensive UAS Standards and Specifications guidebook that provides State DOTs with the needed UAS data collection standards and best practices. A standalone standards guidebook will be developed and validated for the following use cases:

- Survey
- Construction
- Bridge Inspections
- As-builts
- Incident Management
- Earth Movement
- Asset Lifecycle and Maintenance

Financials	Commitment Years	FY26 Commitment
TxDOT	2025-2029	$25,000.00

Project Number: 8-8560

Study Number: Sol. 1629

Title: High Performance Computational Fluid Dynamics (CFD) Modeling Services for Highway Hydraulics

Lead Agency: FHWA

Status: Cleared by FHWA

Project Objectives: The objective of this Transportation Pooled Fund study is to provide research and analysis for a variety of highway hydraulics projects managed or coordinated by State DOTs; to provide and maintain a high-performance computational fluid dynamics computing environment for application to highway hydraulics infrastructure and related projects; and to support and seek to broaden the use of CFD among State Department of Transportation employees.

Financials	Commitment Years	FY26 Commitment
TxDOT	2025-2028	$15,000.00

Project Number: 8-8561

Study Number: TPF-5(550)

Title: Performance Based Specifications of Fiber Reinforced Concrete

Lead Agency: Oklahoma

Status: Cleared by FHWA

Project Objectives: This work aims to develop a prescriptive and performance-based specification that states could adopt to ensure the required performance in both crack resistance and contractibility of the fiber reinforced concrete. This specification would use the Split Beam Test, ASTM C 1609, creep, and the Float Test to set performance limits for the different fibers. This performance could then be specified based on the required performance or safe dosages of fibers could be prescribed based on the member. For example, a sidewalk, overlay, and bridge deck may have different performance criteria.

Financials	Commitment Years	FY26 Commitment
TxDOT	2026-2028	$30,000.00

Project Number: 8-8562

Study Number: Sol. 1635

Title: Accelerating IFC Adoption by Advancing IFC Validation Service and Software Certification Program

Lead Agency: Iowa

Status: Solicitation Posted

Project Objectives: This proposed Pooled Fund Study would look at the viability and best means to significantly enhance the scale and maturity of services (i.e., IFC Validation Service and Global IFC Software Certification), as well as recommend any additional technical and procedural efforts (such as Use Case-based Certification), needed to support software implementation and US industry adoption and deployment. The following two primary business objectives would be achieved:

1. Enabling State DOTs to specify certified (IFC and US industry standard exchange requirement compliant) software for road and bridge projects;
2. Enabling State DOTs to validate deliverables from consultants and contractors to enhance project delivery and management quality.

This work would be separate but complimentary to the ongoing work of TPF-5(523) BIM for Bridges & Structures Pooled Fund and TPF-5(480) BIM for Infrastructure Pooled Fund.

Financials	Commitment Years	FY26 Commitment
TxDOT	2026-2028	$30,000.00

Project Number: 8-8563

Study Number:

Title: Connected Corridors Advancement Initiative

Lead Agency: Iowa

Status: Solicitation Posted

Project Objectives: The CCAI aims to modernize corridor operations, enhance safety, and optimize economic efficiency by aligning efforts across state, federal, and private sectors. Objectives include developing and implementing open data standards for Work Zone Data Exchange (WZDx), Truck Parking Information Monitoring Systems (TPIMS), and national interoperability of communication data feeds to enable seamless communication across jurisdictions. Additionally, the initiative seeks to prepare the corridor for connected and automated vehicle (CAV) technologies by supporting data interoperability between states, agencies, emergency services, industry partners and the traveling public.

Financials	Commitment Years	FY26 Commitment
TxDOT	2026-2030	$50,000.00

Project Number: 8-8564

Study Number: TPF-5(554)

Title: Traffic Control Device (TCD) Consortium (4)

Lead Agency: FHWA

Status: Cleared by FHWA

Project Objectives: To assemble a consortium composed of State Departments of Transportation; additional interested entities or organizations; County, regional, and/or local transportation agencies; and FHWA program offices to meet national and state needs in support of the MUTCD. Activities of the consortium include:

a) Identify human factors, safety, and operational issues related to TCDs;
b) Select new and existing TCDs for evaluation;
c) Initiate and monitor research projects;
d) Disseminate results; and
e) Facilitate collaboration and information sharing among members.

Financials	Commitment Years	FY26 Commitment
TxDOT	2025-2028	$15,000.00

6.2 Pooled Funds Where Texas is the Lead State

Project Number: 8-8531 RTI Project No: 9-1532

Study Number: TPF-5(508)

Title: Concrete Bridge Engineering Institute (CBEI)

Lead Agency: Texas Department of Transportation

Status: Contract Signed

Project Objectives: The overall objective of this pooled fund is to implement specific programs within CBEI that address national workforce training needs through research, development, and technology transfer activities.

The specific objectives are to develop and implement the following programs with coordinated input of members of the pooled fund: Three initial specific training programs, a Concrete Solutions Center, and a Bridge Component Collection. The scope of each is further defined below.

The technology transfer through training programs will draw on the latest technologies and provide an innovative approach by utilizing a hands-on intensive curriculum. The training programs will draw from the best, and most current, state of the art methods. CBEI will serve to continually gather emerging or underutilized technologies such as those above, and provide research, development, and technology transfer activities in partnership with the originators of the technology. This will result in training curricula and technology transfer documents for the concrete bridge workforce. Non-destructive Evaluation (NDE) techniques will be an overarching component included in each of the programs.

Financials	Commitment Years	FY26 Commitment
TxDOT	2023-2026	$250,000.00

Project Number: 8-8550

Study Number: TPF-5(553)

Title: Designing Transportation Infrastructure for Electric Vehicles

Lead Agency: Texas

Status: Cleared by FHWA

Project Objectives: The objective of this Pooled Fund is to assist transportation agencies in designing safe, reliable, and cost-efficient transportation network for the ever-growing emerging and heavy vehicle fleet. One primary focus of this research program will be to improve roadside safety hardware to address identified performance limitations. Standard W-beam guardrail is the most common longitudinal barrier system used across the country, and crash testing has already demonstrated its inability to contain emerging vehicles. Other current roadside safety standards will be tested under NCHRP Project 22-61. This program will support the next important research step of improving the design of hardware found to be noncompliant with MASH criteria when tested with emerging vehicles.

The scope of this Pooled Fund will also include other needed emerging vehicle research areas, such as the effects of emerging vehicles on roadway geometric design and loading on transportation structures such as parking garages. Given the increasing percentage of emerging vehicles across the country, all states will benefit from participation in this Pooled Fund program.

Financials	Commitment Years	FY26 Commitment
TxDOT	2025-2027	$50,000.00

7. FHWA & USDOT Grant Support

7.1 AVA: Automated Vehicles for All

RTI provides management and FHWA support of the following pass-through grant.

Project Number: 0-7099 University: TEES

Project Title: AVA: Automated Vehicles for All

Project Start Date: 1/26/2021 Termination Date: 8/31/2025

Project Status: Active Total Project Budget: $7,063,787.00

RTI Project Manager: Tom Schwerdt Researcher: Reza Langari

Project Objectives: USDOT awarded federal funds to Texas A&M Engineering Experiment Station (TEES) to take the lead on and subcontract with George Washington University, University of California at Davis, University of Illinois at Urbana-Champaign to study and test the safe integration of automated driving systems on rural Texas roadways for the purpose of the Automated Driving System Demonstration Grants program. TxDOT through RTI will help foster these efforts in partnership with FHWA and govern reimbursement of this project, in a separate Grant Subrecipient Agreement with TEES. All necessary Grant documents that outline the details of this agreement have been completed and attached.

Financials:	FY26 Total Budget
Contract Total	$1,069,278.00

*100% Federally Funded Grant Project

7.2 2021 Accelerated Innovation Deployment Demonstration (AID)

Project Number: 0-9912-25 **University:** ARRBG

Project Title: 2021 Accelerated Innovation Deployment Demonstration (AID) - Traffic Speed Deflection Devices Project

Project Start Date: 12/27/2024 **Termination Date:** 12/27/2025

Project Status: Active **Project Budget:** $1,000,000.00

RTI Project Manager: Jenny Li **Researcher:** Yureshen Pillai

Project Objectives: Utilizing Traffic Speed Deflection Devices for Pavement Structural Condition Assessment. Deploy the Traffic Speed Deflection Device technology in the selected TxDOT Districts to Collect Data on the Pavement Structural conditions using non-contact doppler laser technology, without the need for traffic control. The data collected as part of the project is expected to enhance TxDOT's Annual Treatment Planning Program.

Financials	FY26 Budget	80% Federal	20% State
Contract Total	$1,000,000.00	$800,000.00	$200,000.00

8. Non-Project Activities

8.1 Research Management and Administration

RTI performs the following non-SPR activities.

Project Number: 0-0050

Project Title: Research Management and Administration

Project Objectives: RTI provides administrative oversight for support functions including budgeting, purchasing, contract administration, legislative analysis, mapping, and the SPR Subpart B Research, Development, and Technology Transfer Work Program.

Planned Activities: Develop, implement, and monitor the division's biennium budget.

1. Develop, implement, and monitor the SPR Subpart B Research, Development, and Technology Transfer Work Program, ensuring that all requirements of 2 CFR 200, 23 CFR 420 and other applicable federal and state statutes and regulations are followed.
    a. Prepare and submit the proposed 2026 SPR Subpart B Research, Development, and Technology Transfer Work Program to FHWA.
    b. Prepare and submit the 2025 Annual Performance and Expenditures Report (APER) to FHWA.
    c. Hold quarterly status meetings with FHWA to report on the 2026 SPR Subpart B, Research, Development and Technology Transfer Work Program.
    d. Prepare and submit amendments to the 2026 SPR Subpart B, Research, Development and Technology Transfer Work Program as needed.
2. Administer and ensure that all the division's agreements/contracts are approved, procured, monitored, and closed out in accordance with the provisions of 2 CFR 200.318-327. In addition, this function ensures that program monitoring and reporting requirements of FHWA planning and research funds are in compliance with 23 CFR 420.117.

Project Number: 0-9710

Project Title: Research Committee Support - FY2026

Project Objectives: RTI provides support to research committee members participating in research prioritization and subject matter experts' participating in the research program as advisors and technical leads.

Financials:	FY26 Budget	80% Federal	20% State
Contract Total	$20,000.00	$16,000.00	$4,000.00

Table 9. FY 2026 RTI Division Financials

Financials		Budget
Division Travel		$42,000.00
Program Committee Support		$35,000.00
Salary		$2,361,626.54
Request For Research Fund Authorization*		$45,000.00
Total RTI Office Program Management		$2,483,626.54

* Coordinate with the District(s) for TxDOT's assistance to provide Traffic Control or other support as needed for projects in the Program.

9. Summary Statement

The Texas State Planning and Research (SPR) Subpart B Research, Development, and Technology Transfer activities identified within the work program demonstrates the states commitment to addressing transportation challenges within the state and those common across the nation. The innovative ideas for meeting those challenges have been thoroughly vetted by the research committees within TxDOT to ensure only the best ideas are submitted with success in mind.

Our continued partnership and collaboration with FHWA Texas Division, university researchers, Metropolitan Planning Organizations, and other state DOTs, positions Texas to remain at the forefront for advancing new and innovative technologies and solutions. Many of the solutions will meet both near term and future surface transportation challenges and aid with meeting the aim of the Infrastructure Investment and Jobs Act.

TxDOT Research and Technology Implementation (RTI) Division will continue to manage and foster good stewardship of the federal State Planning and Research (SPR), Subpart B Research, Development and Technology Transfer Program, for the state of Texas. RTI will submit amendments to this work program by way of Round Templates throughout the fiscal year to address new project start dates, project modifications, and any cancelled projects as needed.

Appendix – FHWA Approved Modifications to Work Program