

**TRANSPORTATION POOLED FUND PROGRAM  
QUARTERLY PROGRESS REPORT**  
for  
**National Road Research Alliance (NRRRA)**  
**Phase – 1 (2016-2021)**  
**Phase – 2 (2021-2025)**

**Lead Agency:** Minnesota Department of Transportation

<b>Transportation Pooled Fund Program Project #</b> TPF-5(341) <a href="http://www.pooledfund.org/Details/Study/590">http://www.pooledfund.org/Details/Study/590</a> TPF-5(466) <a href="https://pooledfund.org/Details/Study/693">https://pooledfund.org/Details/Study/693</a>		<b>Report Period:</b> 2023 - Quarter 4 (October 1 – December 30, 2023)
<b>Project Title:</b> National Road Research Alliance – NRRRA <a href="http://www.dot.state.mn.us/mnroad/nrra/index.html">http://www.dot.state.mn.us/mnroad/nrra/index.html</a>  NRRRA quarterly reports for Phase-I and Phase-II are being combined because of existing projects in phase-I that are still ongoing and still pertain to the NRRRA efforts that are being done in phase-II. Both websites will be updated with the same quarterly report. Individual budgets are attached to this quarterly report for both efforts.		
<b>Project Manager(s):</b> TBD (MnDOT) Steve Cooper (FHWA)	<b>Phone Number:</b>	<b>E-Mail</b>  <a href="mailto:stephen.j.cooper@dot.gov">stephen.j.cooper@dot.gov</a>
<b>Lead Agency Project ID:</b> None	<b>Other Project ID (i.e., contract #):</b> None	<b>Project Start Date:</b> Phase 1 - February 22, 2016 Phase 2 – February 22, 2021
<b>Original Project End Date:</b> Phase 1 - September 30, 2018 Phase 2 – February 22, 2025	<b>Current Project End Date:</b> Phase 1 – February 22, 2021 Phase 2 – February 22, 2025	<b>Number of Extensions:</b> Phase 1 - NRRRA Executive Committee extended till 2021) Phase 2 - NA

**Project schedule status** → On schedule

**Phase – 1 TPF-5(341) Overall Project Statistics:**

Total Project Budget	Total Costs obligated to Date for Project	Percentage of Time and Funding Completed to Date
\$5,000,000	SPR Funds Budgeted = \$4,969,224 (99%) Invoices Paid = \$4,622,836 (93%) Funds Remaining = 30,776	Complete as of Feb 22, 2021 SPR 341 left open till all contracts are complete for Phase-I and audit can be done

**Phase – 2 TPF-5(466) Overall Project Statistics:**

Total Project Budget	Total Costs obligated to Date for Project	Percentage of Time and Funding Completed to Date
\$7,559,163 (SPR) \$8,355,326 (SPR+MnDOT Projects Funding)	Total Funds Budgeted = \$8,364,684 (100%) Invoices Paid = \$1,645,930 (22%) Funds Remaining = (-)\$9,368	Time = 36/60 months (60%)

**Project Description:**

This pooled fund phase-II is open for new states and they can join at any time. This pooled fund will help direct and compliment the use of the MnROAD test track for local, regional and national research, tech transfer and implementation. Road owner agencies will provide input and participate in the decision making needed for future MnROAD construction and research scheduled in 2017 (Phase-I) and in 2022 (Phase-2). In Phase-I MnDOT and Missouri have funded construction in both states while Phase-2 MnDOT, Missouri, Wisconsin will fund 2022-2023 construction of test sections. MnROAD will continue to support common goals. Industry and academia will also play an important role to provide critical input on long-term future trends in research and barriers to implementation, including working with their customers and members who play a direct role in implementation.

**Progress this Quarter (includes meetings, work plan status, contract status, significant progress, etc.):**

To date ten (14) government agencies and over fifty-five (85+) industry, associations, consultants, and academic institutions have become NRRRA members to share their expertise and are learning about new tools and methods to improve and expand upon transportation systems nationally.

**Membership**

- Montana and Nebraska joined NRRRA in 2022.
- Many additional NRRRA associates also joined.

**Phase-I Projects**

- Tech Transfer - 100% of the 13/13 projects complete.
- 2017 Long Term Research – 100% of the 8/8 projects complete.
- 2019 Long Term Research – 64% of the 7/11 projects complete.
- 2019 Call for Innovation Research – 33% of the 2/6 projects complete.
- 2020 Call for Innovation Research – 43% of the 3/7 projects complete.

**Phase-2 Projects**

- 2021 Long Term Research – 0% of the 0/11 projects complete.
- 2021 Long Term Research – three projects to be contracted in 2023.
- 2023 Call for Innovation – up to \$1,714,652 new research selected in July 2023 which is now in the process of being finalized and contracted. Expect contracting to be done early 2024.
- Two projects are being developed for RFP's in early 2024 including Perpetual Pavements in Wet Freeze Climates and Recycled Binder Availability. Details on the newly funded projects can be found on the NRRRA webpage under projects.
- December 2023 – Executive Committee funded two technical teams contracting for supporting 2024 PCC test sections with cement alternatives along with second phase of asphalt balanced mix design. Support also given to the 13<sup>th</sup> International Concrete Conference to the Rigid team to support a 4-hour workshop to support NRRRA research and implementation efforts. Note funding for the rigid team included a RFP for research 175K and the costs for laboratory testing 275K and consultant mix support 50K is going to be covered with MnDOT construction funds. The executive committee then approved a redistribution of the 325K funding for PCC sensors and data collection systems along with 105K SPR funds being applied to E-ticketing and Veta software. MnDOT added 200K also to the e-ticketing effort so it could be contracted.

**General**

- NRRRA Technical Teams have met every month again this quarter which also acts as TAP meetings for each team's short and long-term research efforts.
- See the NRRRA website for details on all the teams' updated activities.
- Monthly Research pays off webinars have been completed and a plan for 2024 topics are developed.
- NRRRA budget for Phase-I and Phase-II are attached at the end of this report.
- 2022 Construction Report is complete now published.

**Anticipated work next quarter:**

The following is expected to be completed for next quarter.

- Final contracts for 3 of the RFP will be finalized in 2024.
- Final contract being worked on for the Missouri reflective cracking/NCAT additive study that Missouri is funding with SPR dollars.
- Continued work on Phase-I pooled fund efforts and reporting progress in the team meetings.
- Continued work on Phase-2 pooled fund efforts and reporting progress in the team meetings.
- Planning for the April 30-May 1 NRRRA Pavement Conference is ongoing. Web site developed and agencies can attend in person (2 per agency) and the conference will also be online for NRRRA members. Focus on the conference will be implementation of NRRRA findings.

**Significant Results:**

Currently this pooled fund is working well for all the members. We have shared resources and technology with each other related to intelligent construction and sustainability and have discuss a number of topics in the technical teams. More formal documentation will start to be developed as the contracts are awarded and this work begins.

- NRRRA includes 14 government members and at 85+ associate members. New agencies/associates are always welcome to join at any time during this phase.
- Many technologies transfer and long-term research needs are completed or under contract. The progress/final products are shown on the NRRRA website.
- NRRRA members are asked to continue to brainstorm how as a group we can push implementation noting that NRRRA has funding to help with this as needed in the form of contracts or travel.

**Attachment A (Income Summary)**

- Contains the NRRRA income summary.

**Attachment B (Financial Summary)**

- Contains the funding summary along with the research progress by invoices. More detail is listed under the NRRRA [team member's webpages](#).

**Potential Implementation:**

See the NRRRA team pages for implementation topics that are being developed – TAP members of each of the contracts and teams will be asked to help the development of implementation for the technology transfer team to push with its members. This is a focus area that is probably the hardest part of successful research. The technology transfer team will be focused on this topic in the upcoming months.

Attachment – A (NRRRA Phase-1 Income) – 1/26/2024 financial Report

NRRRA Phase-1								
TPF-5(341) National Road Research Alliance - NRRRA Pooled fund								
Funding income complete								
Current		2016	2017	2018	2019	2020	2021	Total
CA	Obligation	-	150,000	50,000	150,000	150,000	150,000	650,000
	Payment	-	150,000	50,000	150,000	150,000	150,000	650,000
IA	Obligation					150,000		150,000
	Payment					150,000		150,000
IL	Obligation	150,000	150,000	150,000	150,000	150,000	150,000	900,000
	Payment	150,000	150,000	150,000	150,000	150,000	150,000	900,000
MI	Obligation	150,000	150,000	150,000			300,000	750,000
	Payment	150,000	150,000	150,000			300,000	750,000
MN	Obligation	150,000	150,000	150,000	150,000	150,000		750,000
	Payment	150,000	150,000	150,000	150,000	150,000		750,000
MO	Obligation	150,000	150,000	150,000	150,000	150,000		750,000
	Payment	150,000	150,000	150,000	150,000	150,000		750,000
ND	Obligation	-	-	-	75,000	75,000		150,000
	Payment	-	-	-	75,000	75,000		150,000
WI	Obligation	150,000	150,000	150,000	150,000	150,000		750,000
	Payment	150,000	150,000	150,000	150,000	150,000		750,000
Illinois Tollway	Obligation					150,000		150,000
	Payment					150,000		150,000
Totals	Obligation	750,000	900,000	800,000	825,000	1,125,000	600,000	<b>5,000,000</b>
	Payment	750,000	900,000	800,000	825,000	1,125,000	600,000	<b>5,000,000</b>

Pooledfund.org does not show 150K Illinois Tollway contribution - \$4,850,000 shown on website

Attachment – A (NRRRA Phase-2 Income) – 1/26/2024 financial Report

**NRRRA Phase-2**

**TPF-5(466) National Road Research Alliance - NRRRA Pooled fund**

		2021	2022	2023	2024	2025	2026	Total
CA	Obligation		150,000	150,000	300,000			600,000
	Payment		150,000	150,000				300,000
FHWA**	Obligation	488,000						488,000
	Payment	488,000						488,000
GA (Veda)	Obligation		25,000	25,000	25,000	25,000		100,000
	Payment		25,000	25,000				50,000
IA	Obligation			75,000	150,000	150,000		375,000
	Payment			75,000	150,000			225,000
IL	Obligation		150,000	150,000	150,000	150,000	150,000	750,000
	Payment		150,000	150,000				300,000
Illinois Tollway	Obligation			75,000	75,000			150,000
	Payment							-
MI	Obligation	150,000	150,000	150,000	150,000	150,000		750,000
	Payment	150,000	150,000	150,000	150,000			600,000
MN***	Obligation	150,000	150,000	746,163	150,000	150,000		1,346,163
	Payment	150,000	150,000	746,163	150,000	38,816		1,234,979
MO*	Obligation	550,000	150,000	150,000	150,000	150,000		1,150,000
	Payment	550,000	150,000	150,000	150,000			1,000,000
MS	Obligation	75,000	75,000	75,000	75,000	75,000		375,000
	Payment	75,000	75,000	75,000				225,000
MT	Obligation			75,000	75,000	75,000		225,000
	Payment			75,000	75,000			150,000
ND	Obligation	75,000	75,000	75,000	75,000	75,000		375,000
	Payment	75,000	75,000	75,000				225,000
NE	Obligation			75,000	75,000			150,000
	Payment			75,000				75,000
NY (Veta)	Obligation	25,000	25,000	25,000	25,000	25,000		125,000
	Payment				100,000			100,000
WI	Obligation	150,000	150,000	300,000				600,000
	Payment	150,000	150,000	150,000				450,000
Totals	Obligation	1,663,000	1,100,000	2,146,163	1,475,000	1,025,000	150,000	7,559,163
	Payment	1,638,000	1,075,000	1,896,163	775,000	38,816	-	5,422,979

MO\* - Missouri added 400K to support the Missouri Reflective Cracking/Additive efforts

FWHA\*\* - FHWA added 300K for Carbon Cure PCC and 188K for ICT related efforts

MnDOT\*\*\* - MnDOT added 400K for Veta in Dec 2022 + 200K for e-ticketing Dec 2023 non-SPR dollars + 196,163 past Veta Funds



**NRRA Phase-1**

**TPF-5(341) National Road Research Alliance - NRRA Pooled fund**

For 2023 - quarter 2 report - updated 6/27/2023

Funding Group	Description	Funding Totals	Percent	SPR (Money budgeted to be spent)	SPR (Not Budgeted)
States (SPR)	- Pooled Funds (9 agencies) - Pooled Fund + Wisconsin 150K + 150K Toll	\$ 5,000,000			
	Total SPR Encumbered =	\$ 4,969,224	99%		\$ 30,776
	Paid Invoices =	\$ 4,622,836	92%	\$ 377,164	
Additional State Funding (Not NRRA SPR Dollars)	MnDOT Construction Funding for 2017 MnROAD Construction	\$ 3,132,681			
	Missouri DOT funding - roller compacted PCC constr and research	\$ 275,000			
Total Spending (SPR and Other)		\$ 8,407,681			

**Spending Details SPR Dollars Budget/Spending**

NRRA Focus Areas	Effort Type	Item	Project Charge #	General Outcome / Deliverable	Vendors	Encumbered	Payments Invoiced	Payment Percent	
Marketing (M)	Labor	M1.1	TPF15341A	MNDOT Labor - (Website, Monthly Newsletter, Written Documents/Marketing)	MnDOT	189,800	189,800	100%	
	Purchase	T1.1	TPF15341	Agency travel / meals / meeting room costs	MNDOT PO	57,419	57,419	100%	
Contract	T1.2	Communication (Written, Newsletter, video, Website) - MnDOT will not charge		Not Done					
Tech Transfer (T)	Contract	T1.3.1	TPF15341	Tack Coats	2016 State of Practice (SRF) top two topics from each team established in 2016	95,565	95,565	100%	
				Longitudinal Joint Construction Performance					
				Design and Performance of Concrete Unbonded Overlays					
				Repair of Joint Associated Distress Pavements					
				Larger Subbase Materials - Done by Iowa State					
				Subgrade Design for New and Reconstructed					
				Surface Characteristics of Diamond Ground PCC Surfaces					
				Pavement preservation approaches for lightly surfaced roadways					
				Partial Depth Repairs of Concrete					
				E-Ticketing					
Labor	T1.3.2	TPF15341B	Tech transfer write-ups (MnDOT Labor) - Topics Below	MnDOT	21,965	21,965	100%		
Contract	T1.5.1	TPF15341	HMA – Asphalt Mixture Rejuvenator Synthesis	2019 State of Practice (WSB)	92,102	92,102	100%		
			PM - NRRA Spray on Rejuvenator Synthesis						
			PM - Concrete Pavement Restoration (CPR) for BCOA						
			PM - Service Life Enhancement of Substrates Overlaid with Thin Overlays						
Research (R)	Purchase	R1.1	TPF15341	2017 MnROAD Construction Sensor Purchases	MnDOT PO	160,679	186,221	100%	
				2018 CCP Missouri Sensor Purchases - broken off the 60K available					25,542
	Labor	R1.3	TPF15341C	Inspection (MnDOT) - costs over the initial budget	MnDOT	97,773	97,773	100%	
	MnROAD Labor	R1.4	R2.4	TPF15341D	MnROAD Site Staff Labor - additional 120K approved by EC Dec 2017	MnDOT	279,318	808,593	100%
					Approved \$120K extra funding for monitoring 2018				
					Approved \$200K extra funding for monitoring 2019 - 2022 adjustment 182K				
					Approved \$200K extra funding for monitoring 2020				
					Missouri Sensor Labor Costs for 2018 installs				
	Contract	R1.5	R2.5	TPF15341	PCC Sampling/Testing	AET Consultant	20,000	61,514	100%
					Additional Funding Approved (low initial estimate)				
	Contract	R1.6			HMA Performance Testing (75K original Estimate - will not use in Phase-I)	Not Done			
	Contract	R1.7	R2.7	TPF15341	Partial Depth Repairs Construction (not in construction contract)	Diamond Surfacing	40,000	78,662	100%
					Additional Funding Approved				
	MnDOT Agreement	R1.8			Compacted Concrete Pavement Construction	Missouri DOT Hired University			
	Contract	R1.9			Diamond Grinding Construction (not in const	Not Done			

NRRA Focus Areas	Effort Type	Item	Project Charge #	General Outcome / Deliverable	Vendors	Encumbered	Payments Invoiced	Payment Percent	
Research (R)	2019 Long Term Research	R1.21	TPF15341	HMA – Asphalt Mix Rejuvenator Test Sections (added 50K in April 2020)	UNH	148,981	117,379	79%	
		R1.22		PM - Spray on Rejuvenator Test Sections	NCAT - 100k	133,912	25,719	19%	
		R1.23		ICT - Levels 3-4 Intelligent Compaction Measurement Values (ICMV) for Soils Subgrade/Aggregate Subbase Compaction	Transtec Group	162,024	161,982	100%	
		R1.24		ICT - Support Importing, Viewing and Analysis of Dielectric Constant Data in Veta (paid by Veta pooled fund)	Transtec Group	-	-		
		R1.25		ICT - HD and VHD Seismic Approaches for Roadway Evaluation	Park Consulting	299,686	299,686	100%	
		R1.26		Geo - Mechanistic Load Restriction Decision Platform for Pavement Systems Prone to Moisture Variations	UNH	90,231	90,231	100%	
		R1.27		Geo - Environmental Impacts on the Performance of Pavement Foundation	Michigan State	35,000	35,000	100%	
		R1.28		Geo - Permeability of Base Aggregate and Sand		30,000	30,000	100%	
		R1.29		Geo - Improve material inputs into mechanistic design properties for reclaimed HMA Roadways		30,000	30,000	100%	
		R1.30		PCC - Construction Report for Jointless FRC Roundabout in Minnesota	Iowa State	49,999	49,999	100%	
		R1.31		PCC - Incorporate Joint Faulting Model Into BCOA-ME	Contracting Uof Pittsburg	24,999	24,999	100%	
		R1.32		PCC - Engineered Dowel and Tie Bars combined with LTPP SPS-2 Determination of Causes for Cracking Over Dowel Bars	ERES Consulting	101,083	90,315	89%	
	2019 Call for Innovation	R1.33			Performance of Concrete Overlays over Full Depth Reclamation (FDR)	ARM	15,313	15,313	100%
		R1.34			Blending of Higher Strength Aggregates with Recycled Concrete and Marginal Aggregates to Improve Concrete Properties	U of St Thomas	32,332		0%
		R1.35			Bio-material Maintenance Treatments	Iowa State	50,000	48,000	96%
		R1.36			Innovative Practical Approach To Assessing Bitumen Compatibility As A Means Of Material Specification	Cargill	204,119	121,686	60%
		R1.37			Cold Asphalt Recycling Technologies using Rejuvenating Asphalt Emulsion: Impact; Implementation; Specification	UNH	141,440	141,400	100%
		R1.38			Support Contract for T1.3.1 (SRF) Repair of Joint Associated Distress Pavements	Iowa State	4,972	4,972	100%
	2020 Call for Innovation	R1.39			Pavement-Specific Structural Synthetic Fibers	UMD	99,792	40,000	40%
		R1.40			Understanding and Improving Pavement Milling Operations	University of New Hampshire	100,000	80,957	81%
		R1.41			Novel Methods for Adding Rejuvenators in Asphalt Mixtures with High Recycled Binder Ratios	NCAT	80,000	80,000	100%
		R1.42			Impact of Polymer Modification on IDEAL-CT and I-FIT for Balanced Mix Design	NCAT	100,000	100,000	100%
		R1.43			Asphalt Real Time Smoothness (ARTS) for Asphalt Paving	Transtec Group	104,021	103,877	100%
		R1.44			Enhanced Entrained Air Void System Characterization for Durable Highway Concrete	TSU	100,000	100,000	100%
		R1.45			Continuous Moisture Measurement during Pavement Foundation Construction	UTEP	100,000	100,000	100%
<b>Totals =</b>						<b>\$ 4,969,224</b>	<b>\$ 4,622,836</b>	<b>93.0%</b>	



**Attachment – B (NRRRA Phase-2 Financial Summary and Project Invoicing) – 1/26/2024 financial Report**

NRRRA Phase-2						
TPF-5(466) National Road Research Alliance - NRRRA Pooled fund						
For 2023 - quarter 3 report - updated 10/13/2023						
SPR Funding		SPR Dollars	Percent	Remaining	Comment	
SPR Funding	SPR - Pooled Funds (Expected from Agencies) =		\$ 7,559,163	72%		More funding expected (income) to come
	SPR - Pooled Funds (Received from Agencies) =		\$ 5,422,979			
	Non-SPR MnDOT money for Veta (includes 2024 money)=		\$ 600,000			
	Past SPR rollover funding from Veta TPF5(334) for Veta =		\$ 196,163			
	Total Funding (SPR and MnDOT) =		\$ 8,355,326			
	(MnDOT Encumbered/EC Approved) for Projects =		\$ 8,364,694	100%	\$ (9,368)	
SPR Invoiced (Spent) =		\$ 1,645,930	22%			
MnDOT State Funds	MnDOT Construction Funding for 2022 MnROAD Construction (budgeted) =		\$ 6,000,000			
	NRRRA Associate funding (not included in this budget but used for NRRRA needs)		Used for NRRRA efforts --> MnDOT documented dollars			
Partnerships	FHWA Carbon Cure (400K) and ICT Team (188K) Partnership =		\$ 588,000			
Grand Total	\$ 14,147,163	SPR + Construction + FHWA funding				
SPR Dollars Budget/Spending						
NRRRA Focus	Project# Contract#	General Outcome / Deliverable	Vendors	EC Team Approved	Payments Invoiced	Payment Percent
Travel	TPF15466A	Agency travel / meals / meeting room costs		50,000	2,382	5%
Travel	TPF15466A	Registration Fee for National Concrete Consortium	2024 Conf Session/Booth	6,500		
Sensors	TPF15466B	MnROAD Sensors, Equipment, Shipping for 2022 studies (350K) plus 220K funding for 2024 sensors and dynamic upgrades		570,000	287,298	50%
MnROAD Labor	TPF15466C	MnROAD Staff - Labor for sensors and monitoring (5 years)	MnDOT	800,000	143,168	18%
2021 ICT Funding	BUDGET NOTE	Total Funds for ICT = \$1,971,163 (2021 NRRRA Directed funding \$1,375,000 (includes FHWA 188K) then + 400K MnDOT + 196,163 TPF5(334) rollover) + in 2024 200K MnDOT and 105K NRRRA for ammendment				
	TPF15466D 1047755	Veta Web and Veta MDMS Standardized Platform	Transtec Group	2,076,163.00	822,461	40%
2021 General Team Funding	BUDGET NOTE	Total Funds for Non-ICT Teams = \$2,525,000 (2021 NRRRA Directed funding \$2,125,000 + Missouri 400K funding)				
	TPF15466E 1048189	MnROAD Reflective Cracking Challenge (NRRRA)	UNH Auburn	230,499	-	0%
	TPF15466EE	Reflective Cracking Challenge Coordination (Missouri - 400K) (400K from Missouri - not apart of the initial \$2,125,000 the EC approved)	University of Missouri-Columbia	400,000	-	Contract Development
	TPF15466F 1048190	Use of Alternative Pozzolan Materials Towards Reducing Cement Content in Concrete Pavements	Nichols Consulting APT	173,148	47,031	27%
	TPF15466G 1048191	Use of Carbon Dioxide for Sustainable and Resilient Concrete Pavements (400K FHWA along with construction, sensors, monitoring)	Iowa State	150,000	65,518	44%
	TPF15466H 1048192	The Use of Alternative Cementitious Materials in Concrete Pavements	Applied Pavement Technology - NCE	150,000	49,664	33%
	TPF15466J 1048193	Performance Evaluation of Wicking Geotextiles for Improving Drainage and Stiffness of Road Foundation	Michigan State Michigan Tech/ Ingios	200,000	11,662	6%
	TPF15466K 1048377	Reclamation and Recycling Techniques to Achieve Perpetual Pavements Characteristics	Braun Intertec	150,002	52,704	35%
	TPF15466L 1036343(3)	Flooded Pavements Assessment App-Phase 2	UNH	200,234	21,538	11%
	TPF15466M 1048485	Validation of Loose Mix Aging Procedures for Cracking Resistance Evaluation in Balanced Mix Design	Auburn University UNH - TTI	100,000	100,000	100%
	TPF15466N 1048486	Perpetual Pavements in Wet Freeze Climate	RFP later in Fall 2024	200,000	-	RFP Soon
	TPF15466P 1048487	Thinlays as a PM Treatment	Terracon	49,918	42,504	85%
	TPF15466R 1048488	Recycled Binder Availability	RFP later in 2024	200,000	-	RFP Soon
	TPF15466S MniT SWIFT #214249	InfoPAVE MnROAD Database Support and Development	i-Engineering	281,000	-	0%

NRRA Focus	Project# Contract#	General Outcome / Deliverable	Vendors	EC Team Approved	Payments Invoiced	Payment Percent
2023 Call for Innovation	TPF15466U TBD	Instrumentation and data management/analyses for Measurement While Drilling (MWD) technology	MTU	216,845	-	0%
	TPF15466V TBD	Field Validation of Using Warm Mix Asphalt at Reduced Production Temperatures for Balanced Mix Design	Auburn University	125,000	-	0%
	TPF15466W TBD	Use of Recycled Materials in Pavement Preservation	Auburn University	86,319	-	0%
	TPF15466X TBD	Standardization of SIP Calculation for Hamburg Wheel Tracking Test	Auburn University	47,500	-	0%
	TPF15466Y TBD	Improving Moisture Resistance/Control of Pavement Foundation Systems via Engineered Water Repellency	Michigan State University	160,000	-	0%
	TPF15466T TBD	Paragon - Low Volume Road Repairs (Water Repellancy Construction) (40K from MSU 200-40=160 with additional 40K NRRA to cover costs)	Paragon Construction	74,855	-	0%
	TPF15466Z TBD	Reducing Embodied Carbon with Mineral-Blended Polymeric Microspheres	CP Tech Center	137,486	-	0%
	TPF15466AA TBD	Effective Use of Traffic Speed Deflectometer for Network-based and Project-based Applications	UTEP	150,000	-	0%
	TPF15466AB TBD	Hot rubber seal coating to survive wet and frozen environments	MTU	181,912	-	0%
	TPF15466AC TBD	Automated 3DGPR Analysis for Concrete Pavement Evaluation	Infrasense	156,905	-	0%
	TPF15466AD TBD	Continued Monitoring of TH6 RA Field Sections	UNH	155,408	-	0%
	TPF15466AE TBD	Continued Monitoring of Original I-94 Westbound Asphalt Overlay Sections and Use of Cracking and Performance Data	UNH	150,000	-	0%
	TPF15466AF TBD	Establishing Applicability of NDT Methods for Project-Level Evaluation	UTEP	150,000	-	0%
	TPF15466AG TBD	Materials-Based Methods to Improve Rumble Strip Durability	Asphalt Materials	110,000	-	0%
	TPF15466AH TBD	Balance Mix Design Implementation	Auburn University	300,000	-	0%
TPF15466AGI TBD	2024 PCC Cemenet Alternatives	RFP	175,000	-	0%	
<b>Totals =</b>				<b>8,364,694</b>	<b>1,645,930</b>	<b>19.7%</b>