

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

Lead Agency: Minnesota Department of Transportation

Transportation Pooled Fund Program Project # TPF-5(341) http://www.pooledfund.org/Details/Study/590 TPF-5(466) https://pooledfund.org/Details/Study/693		Report Period: 2023 - Quarter 2 (January 1 – June 30, 2023)
Project Title: National Road Research Alliance – NRRA http://www.dot.state.mn.us/mnroad/nrra/index.html NRRA 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 NRRA 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.		
Project Manager(s): TBD (MnDOT) Steve Cooper (FHWA)	Phone Number:	E-Mail stephen.i.cooper@dot.gov
Lead Agency Project ID: None	Other Project ID (i.e., contract #): None	Project Start Date: Phase 1 - February 22, 2016 Phase 2 – February 22, 2021
Original Project End Date: Phase 1 - September 30, 2018 Phase 2 – February 22, 2025	Current Project End Date: Phase 1 – February 22, 2021 Phase 2 – February 22, 2025	Number of Extensions: Phase 1 - NRRA 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 = \$4,969,303 (99%) Invoices Paid = \$4,441,276 (89%) Funds Remaining = 30,697	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
\$7,209,163	SPR Funds Budgeted = \$5,600,318 (72%) Invoices Paid = \$1,230,152 (17%) Funds Remaining = \$2,205,008	Time = 30/60 months (50%)

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 NRRA 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 NRRA in 2022.
- Many additional NRRA 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 1.8 million open for new research to be selected in July 2023.

General

- NRRA 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 NRRA website for details on all the teams' updated activities.
- Monthly Research pays off webinars have been completed and a plan for 2023 topics are developed.
- NRRA budget for Phase-I and Phase-II are attached at the end of this report.
- MnROAD/NRRA construction completed on the mainline for the 2022 construction season. 45 test sections developed to support NRRA research efforts.
- NRRA had a technical track at the Minnesota Transportation Conference and Expo on May 15-17, 2023 which 2 people from each agency was invited to travel to. Successful conference and well attended. NRRA will review the feedback from its members and discuss future meetings at the next executive committee meeting in July 2023.
- 2023 Call for Innovation proposals received (55 of them) which will be prioritized by the agency technical committee teams and then review/approved in the executive committee in July.

Anticipated work next quarter:

The following is expected to be completed for next quarter.

- Final contracts for 2 of the RFP will be finalized this fall 2023.
- Final contract for the Missouri reflective cracking/NCAT additive study that Missouri is funding with SPR dollars.
- Contact member states and their pooled fund dollar commitments
- Continued work on Phase-1 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.
- Finalize the 2022 NRRA construction report and initial data requests.
- 2023 Call for Innovation will be decided by the executive committee in July 2023.
- Determine the next (spring meeting for NRRA).

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.

- NRRA is now up to 14 government members and at 85+ associate members.
- Many technology transfer and long-term research needs are completed or under contract. The progress/final products are shown on the NRRA website.
- NRRA members are asked to continue to brainstorm how as a group we can push implementation noting that NRRA has funding to help with this as needed in the form of contracts or travel.

Attachment A (Income Summary)

- Contains the NRRA income summary

Attachment B (Financial Summary)

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

Commented [VR(1)]: Website states 14

Potential Implementation:

See the NRRA 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) – 6/27/2023 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	5,000,000
	Payment	750,000	900,000	800,000	825,000	1,125,000	600,000	5,000,000

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

Attachment – A (NRRRA Phase-2 Income) – 6/27/2023 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	150,000	150,000		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
IA	Obligation			75,000	150,000	150,000		375,000
	Payment			75,000				75,000
IL	Obligation		150,000	150,000	150,000	150,000	150,000	750,000
	Payment		150,000					150,000
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				450,000
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				850,000
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
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
	Payment							-
NY (Veta)	Obligation							-
	Payment							-
WI	Obligation	150,000	150,000	150,000				450,000
	Payment	150,000	150,000					300,000
Totals	Obligation	1,638,000	1,075,000	1,971,163	1,225,000	1,150,000	150,000	7,209,163
	Payment	1,638,000	1,075,000	1,496,163	150,000	38,816	-	4,397,979

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

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

MnDOT*** - MnDOT added 400K for Veta efforts in December 2022 of non-SPR dollars + 196,163 past Veta Funds

Attachment – B (NRRRA Phase-1 Financial Summary and Project Invoicing) – 6/27/2023 financial Report

NRRRA Phase-1				
TPF-5(341) National Road Research Alliance - NRRRA Pooled fund				
For 2023 - quarter 2 report - updated 6/27/2023				
Funding Group	Description	Funding Totals	Percent	SPR Remaining
States (SPR)	Pooled Funds (9 agencies) - Pooled Fund + Wisconsin 150K + 150K Toll	\$ 5,000,000		
	Total SPR Encumbered =	\$ 4,969,303	99%	\$ 30,697
	Paid Invoices =	\$ 4,441,276	89%	\$ 558,724
Additional State Funding (Not NRRRA 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		

SPR Dollars Budget/Spending								
NRRRA 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	57,499	57,499	100%
Tech Transfer (T)	Contract	T1.2	TPF15341	Communication (Written, Newsletter, video, Website) - MnDOT will not charge	Not Done			
	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 - NRRRA 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	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		120,000		
				Approved \$200K extra funding for monitoring 2019 - 2022 adjustment 182K		200,000		
				Approved \$200K extra funding for monitoring 2020		183,275		
				Missouri Sensor Labor Costs for 2018 installs		26,000		
	Contract	R1.5	TPF15341	PCC Sampling/Testing	AET Consultant	20,000	61,514	100%
		R2.5		Additional Funding Approved (low initial estimate)		41,514		
	Contract	R1.6	TPF15341	HMA Performance Testing (75K original Estimate - will not use in Phase-I)	Not Done			
	Contract	R1.7		Partial Depth Repairs Construction (not in construction contract)	Diamond Surfacing	40,000	78,662	100%
		R2.7		Additional Funding Approved		38,662		
	MnDOT Agreement	R1.8	TPF15341	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 Call for Innovation	R1.33	TPF15341	Blending of Higher Strength Aggregates with Recycled Concrete and Marginal Aggregates to Improve Concrete Properties	U of St Thomas	32,332	12,000	37%	
		R1.34		Performance of Concrete Overlays over Full Depth Reclamation (FDR)	ARM	15,313	15,313	100%	
		R1.35		Bio-material Maintenance Treatments	Iowa State	50,000	4,000	8%	
		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		0%	
		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	75,249	75%	
	Totals =						\$ 4,969,303	\$ 4,441,276	89.4%

Attachment – B (NRRR Phase-2 Financial Summary and Project Invoicing) - 6/27/2023 financial Report

NRRR Phase-2							
TPF-5(466) National Road Research Alliance - NRRR Pooled fund							
For 2022 - quarter 2 report - updated 7/16/2022							
SPR Funding		SPR Dollars	Percent	Remaining	Comment		
SPR Funding	SPR - Pooled Funds (Expected from Agencies) =		\$ 7,209,163	61%		39% of the funds still waiting to be paid into MnDOT for this pooled fund effort	
	SPR - Pooled Funds (Received from Agencies) =		\$ 4,397,979				
	Non-SPR MnDOT money for Veta =		\$ 400,000				
	Past SPR rollover funding from Veta TPFs(334) for Veta =		\$ 196,163				
	(MnDOT Encumbered/EC Approved) for Projects =		\$ 5,600,318	72%	\$ 2,205,008	Money open for the EC to use	
SPR Invoiced (Spent) =		\$ 1,230,152	17%				
MnDOT State Funds	MnDOT Construction Funding for 2022 MnROAD Construction (budgeted) =		\$ 6,000,000				
Partnerships	NRRR Associate funding (not included in this budget but used for NRRR needs)		Used for NRRR efforts --> MnDOT documented dollars				
	FHWA Carbon Cure (400K) and ICT Team (188K) Partnership =		\$ 588,000				
Grand Total	\$ 13,797,163	SPR + Construction + FHWA funding					
SPR Dollars Budget/Spending							
NRRR Focus	Project# Contract#	General Outcome / Deliverable	Vendors	EC Team Approved	Payments Invoiced	Payment Percent	Money Remaining
Travel	TPF15466A	Agency travel / meals / meeting room costs		50,000	2,382	5%	47,618
Sensors	TPF15466B	MnROAD Sensors, Equipment, Shipping for 2022 studies		350,000	287,298	82%	62,702
MnROAD Labor	TPF15466C	MnROAD Staff - Labor for sensors and monitoring (5 years)	MnDOT	800,000	119,630	15%	680,370
2021 ICT Funding	BUDGET NOTE	Total Funds for ICT = \$1,971,163 (2021 NRRR Directed funding \$1,375,000 (includes FHWA 188K) then + 400K MnDOT + 196,163 TPFs(334) rollover)				Remaining for ICT	\$ 76,499
	TPF15466D 1047755	Veta Web and Veta MDMS Standardized Platform	Transtec Group	1,894,664.08	592,001	31%	1,302,663
2021 General Team Funding	BUDGET NOTE	Total Funds for Non-ICT Teams = \$2,525,000 (2021 NRRR Directed funding \$2,125,000 + Missouri 400K funding)				Remaining Other Teams	\$ 319,347
	TPF15466E 1048189	MnROAD Reflective Cracking Challenge (NRRR)	UNH Auburn	230,499	-	0%	230,499
	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	400,000
	TPF15466F 1048190	Use of Alternative Pozzolanic Materials Towards Reducing Cement Content in Concrete Pavements	Nichols Consulting APT	175,000	31,018	18%	143,982
	TPF15466G 1048191	Use of Carbon Dioxide for Sustainable and Resilient Concrete Pavements (400K FHWA along with construction, sensors, monitoring)	Iowa State	150,000	-	0%	150,000
	TPF15466H 1048192	The Use of Alternative Cementitious Materials in Concrete Pavements	Applied Pavement Technology - NCE	150,000	29,545	20%	120,455
	TPF15466J 1048193	Performance Evaluation of Wicking Geotextiles for Improving Drainage and Stiffness of Road Foundation	Michigan State Michigan Tech/ Ingios	200,000	-	0%	200,000
	TPF15466K 1048377	Reclamation and Recycling Techniques to Achieve Perpetual Pavements Characteristics	Braun Intertec	150,002	33,280	22%	116,722
	TPF15466L 1036343(3)	Flooded Pavements Assessment App-Phase 2	UNH	200,234	21,538	11%	178,696
	TPF15466M 1048485	Validation of Loose Mix Aging Procedures for Cracking Resistance Evaluation in Balanced Mix Design	Auburn University UNH - TTI	100,000	77,544	78%	22,456
	TPF15466N 1048486	Perpetual Pavements in Wet Freeze Climate	RFP later in Fall 2022	200,000	-	Hold	200,000
	TPF15466P 1048487	Thinlays as a PM Treatment	Terracon	49,918	35,915	72%	14,003
	TPF15466R 1048488	Recycled Binder Availability	RFP later in Fall 2022	200,000	-	Hold	200,000
	TPF15466S MnIT SWIFT #214249	InfoPAVE MnROAD Database Support and Development	i-Engineering	300,000	-	0%	300,000
	Totals =				5,600,318	1,230,152	22.0%