

**TRANSPORTATION POOLED FUND PROGRAM
QUARTERLY PROGRESS REPORT
for
National Road Research Alliance (NRR)**

Lead Agency: Minnesota Department of Transportation

INSTRUCTIONS:

Project Managers and/or research project investigators should complete a quarterly progress report for each calendar quarter during which the projects are active. Please provide a project schedule status of the research activities tied to each task that is defined in the proposal; a percentage completion of each task; a concise discussion (2 or 3 sentences) of the current status, including accomplishments and problems encountered, if any. List all tasks, even if no work was done during this period.

Transportation Pooled Fund Program Project # TPF-5(341) http://www.pooledfund.org/Details/Study/590		Report Period: Quarter 2 (July 1 – September 30, 2019)
Project Title: National Road Research Alliance – NRR http://www.dot.state.mn.us/mnroad/nrra/index.html		
Project Manager(s): Glenn Engstrom (MnDOT) Robert Orthmeyer (FHWA)	Phone Number: (651) 366-5531 (708) 283-3533	E-Mail glenn.engstrom@state.mn.us Robert.orthmeyer@dot.gov
Lead Agency Project ID: None	Other Project ID (i.e., contract #): None	Project Start Date: February 22, 2016
Original Project End Date: September 30, 2018 (29 months)	Current Project End Date: February 22, 2021 (60 months)	Number of Extensions: 1 (Approved - Dec 2017 by NRR Executive Committee)

Project schedule status → On schedule

Overall Project Statistics:

Total Project Budget	Total Costs obligated to Date for Project	Percentage of Tim and Funding Completed to Date
\$4,400,000 (State SPR Funds) Includes 150K - WI partnership funding	SPR Funding Budgeted \$4,405,757 (100%)	Time = 72% (43/60 months)
\$4,550,000 After Iowa and Illinois Toll Road Joins	Funds Used/Paid Out \$1,335,934 (30.0%)	
MnDOT also has a separate state partnership fund for groups joining in as associate members – not covered in this pooled fund reporting.		

Project Description:

This pooled fund 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 needs. Road owner agencies will provide input and participate in the decision making needed for future MnROAD construction and research scheduled in 2017. MnDOT and Missouri have funded construction in both states. MnDOT funded 2017 construction of test sections at MnROAD 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 eight (8) state agencies and Illinois Tollway is going as a small state and over fifty-five (55+) 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.

- NRRRA short and long term research projects are all under contract and work is progressing from 2017 and 2019
- 2017 and 2019 Long and Short term research projects all have separate online project pages under the teams that are supporting these efforts.
- NRRRA members/Teams have met every monthly again this quarter which also acts as TAP meetings for each teams short and long term research efforts.
- Executive Committee meeting October (See team page)
 - Iowa joined (8 states total – will get funding in I)
 - Budget approved for years 4 and 5
 - Teams Updates / new project ideas
 - Call for Innovation sent out and projects selected. Working on TAP comments and MnDOT contracting.
- 3 Research pays off webinars have been completed
- 2019 New Projects Ideas developed by the teams using 4-5 dollars
 - 12 new long term research efforts
 - 4 new tech transfer topics
 - Contracting is done/well into the process on these projects
- Budget sheet is attached at the end of this report.
- See the NRRRA website for details on all the teams' activities.

Anticipated work next quarter:

The following is expected to be completed for next quarter.

- Completing fall data collection ending in December.
- Continue to update MnROAD database with data from 2019 including performance & material testing data.
- 2017 - 8 Long Term Research Contracts efforts will continue with the technical advisory panels (TAP) leading the technical direction – team pages will be updated to show the progress.
- 2017 - 6 Technical teams will meet once every month that will also include TAP meetings for each short and long term project expected. New team added and being developed.
- 2019 New Projects Ideas to be developed into contracts and are being worked on
 - 12 new long term research efforts (12 contracts)
 - 4 new tech transfer topics (one contract)
- NRRRA Research Pays-Off and Newsletters will be done each month.
- May 19-21 NRRRA Workshop is being worked on by the pooled fund team and will be ready by TRB.
- NRRRA Executive committee met on Sept 24, 2019 – notes on the NRRRA website.

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 have discuss a number to topics in the technical teams. More formal documentation will start to be developed at the contracts are awarded and this work begins.

NRRA is up to 8 state members and at 55+ associate members. NRRA Agencies and Associates members make up the now 6 teams that play an important technical role in setting both the technology transfer and long term research needs. Each team has been active this summer meeting every two weeks to develop and prioritize ideas that fall into each of these categories above to meet both local, state, regional and national research needs. The teams report directly to the NRRA executive committee.

The initial push by each of the NRRA technical teams is to develop long term research needs and the MnROAD test sections that will be used to support these initiatives. MnDOT is providing \$3.1 million of construction funding to support NRRA long term research needs to be built at MnROAD in the summer of 2017. Each team is working to get the final designs and special provisions to MnDOT so the plans can be developed and a formal construction project can be let in March 2017. Long term research includes researching HMA overlays of PCC, enhancing HMA compaction, fiber reinforced concrete, effects of diamond grinding on questionable aggregates, PCC early opening to strength, optimizing PCC cement content, compacted concrete pavements for city streets, cold central plant recycling, recycled aggregate bases, large stone subbases, maintaining HMA and PCC roadways, and PCC partial depth repair. Each topic/test section will provide a resource for future research contracts that are under development by teach team.

Other important team activities include the formation of technology transfer topics. The NRRA technology transfer team has been approved by the executive committee to fund 2 technology transfer topics from each of the four technical teams. Each topics goal is to pull together the existing state and national state of practice so that a common practice or specification can be developed by the members. Prioritized topics include longitudinal joint construction performance, tack coats, design and performance of concrete unbonded overlays, repair of concrete joint related distress, large unbound subbase materials, subgrade design, surface characteristics of diamond ground PCC, and pavement preservation approaches to lightly surfaced roadways. Currently the teams are updating the problem statements so that a MnDOT hired contractor can be hired to complete the work.

More information on these efforts including the long term research and technology transfer topics can be found under each of the [team member's webpage](#).

Circumstance affecting project or budget. (Please describe any challenges encountered or anticipated that might affect the completion of the project within the time, scope and fiscal constraints set forth in the agreement, along with recommended solutions to those problems)

None

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.

NRRA Budget Summary (July 22, 2019)

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

Associate portion see 2017-010 - TPF-5(341)

Current		2016	2017	2018	2019	2020	Total
CA	Obligation	-	150,000	50,000	150,000	-	350,000
	Payment	-	150,000	50,000	150,000	-	350,000
IL	Obligation	150,000	150,000	150,000	150,000	-	600,000
	Payment	150,000	150,000	150,000	150,000	-	600,000
MI	Obligation	150,000	150,000	150,000	-	-	450,000
	Payment	150,000	150,000	150,000	-	-	450,000
MN	Obligation	150,000	150,000	150,000	150,000	150,000	750,000
	Payment	150,000	150,000	150,000	150,000	-	600,000
MO	Obligation	150,000	150,000	150,000	150,000	150,000	750,000
	Payment	150,000	150,000	150,000	150,000	-	600,000
ND	Obligation	-	-	-	75,000	-	75,000
	Payment	-	-	-	75,000	-	75,000
WI	Obligation	150,000	150,000	150,000	150,000	-	600,000
	Payment	150,000	150,000	150,000	150,000	-	600,000
Totals	Obligation	750,000	900,000	800,000	825,000	300,000	3,575,000
	Payment	750,000	900,000	800,000	825,000	-	3,275,000

Expected		2016	2017	2018	2019	2020	Total
CA	Obligation	-	150,000	50,000	150,000	150,000	500,000
	Payment	-	150,000	50,000	150,000	150,000	500,000
IA	Obligation					75,000	75,000
	Payment					75,000	75,000
IL	Obligation	150,000	150,000	150,000	150,000	150,000	750,000
	Payment	150,000	150,000	150,000	150,000	150,000	750,000
MI	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
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				TBD	75,000	75,000
	Payment				TBD	75,000	75,000
Totals	Obligation	750,000	900,000	800,000	975,000	1,125,000	4,550,000
	Payment	750,000	900,000	800,000	975,000	1,125,000	4,550,000

Funding Summary - Oct 23, 2019

Current Obligation	3,575,000	2019 Missing MI (first block of income)
Current Payment	3,275,000	
Expected	4,550,000	Second block of income (Budget removes the Iowa and Illinois Tollway funds until we get them finalized)
Budgeting	4,400,000	

NRRA Budget Summary (Oct 23, 2019)

Summary										For 2019 - quarter 3 report				updated 10/23/2019	
Funding Group	Description				Total Funding (A)	Approved Contract Funding (B)	Percent Contracted (B/A)	Available for new projects (A-B)	Paid Invoices (D)	Percent Invoiced (D/B)	Comment				
States (SPR)	SPR - Pooled Funds (9 agencies) - Pooled Fund + Future				\$ 4,250,000	\$ 4,255,757	100%	\$ (5,757)	\$ 1,335,934	31.4%					
Partnership (Wisconsin)	Wisconsin Partnership (State Funding used instead of SPR)				\$ 150,000	\$ 150,000	100%	\$ -	\$ 0	0%	PCC Early Opening - Pitt				
SPR Totals=				\$ 4,400,000	\$ 4,405,757	100%	\$ (5,757)	\$ 1,335,934	30%						
Partnerships	Research Partnership Donations				\$ 125,000						MoDOT CCP				
	Construction Partnership Donations				\$ 3,298,621						MnDOT and MODOT				
				\$ 7,823,621	No associate funding shown here										
Spending Details															
NRRA Focus Areas	Effort Type	Item (Letter.#)	Project Charge	General Outcome / Deliverable	Vendors	Funding Budget	Percent	SPR Budget	Spent	Partnerships Budget	Spent	Agency Self Funds Spent	Who		
Marketing	Labor	M1.1	TPF15341A	MNDOT Labor - (Website, Monthly Newsletter, Written Documents/Marketing) Costs will be accounted in TPF15341D - not in summary at the bottom of sheet	MnDOT	125,000	100%	125,000	125,000						
	Purchase	T1.1	TPF15341	Agency travel / meals / meeting room costs	MNDOT PO	115,000	26%	115,000	30,463						
Tech Transfer (T)	Contract	T1.2	TPF15341	Communication (Written, Newsletter, video, Website)	TBD	40,000	0%	40,000	0						
	Contract	T1.3.1	TPF15341	Tack Coats	2016 State of Practice (SRF)	95,626	80%	95,626	76,793	These are the top two topics from each team established in 2016					
				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														
	Contract	T1.3.2	TPF15341B	Pavement preservation approaches for lightly surfaced roadways											
	Labor	T1.3.2	TPF15341B	Partial Depth Repairs of Concrete											
Labor	T1.3.2	TPF15341B	E-Ticketing												
Contract	T1.5.1	TPF15341	TPF15341	Tech transfer write-ups (MnDOT Labor) - Topics Below	MnDOT	20,000	54%	20,000	10,801						
				HMA - Asphalt Mixture Rejuvenator Synthesis											
Contract	T1.5.1	TPF15341	TPF15341	PM - NRRA Spray on Rejuvenator Synthesis	2019 State of Practice (WSB)	92,302	25%	92,302	22,631	These are the top two topics from each team established in 2019					
				PM - Concrete Pavement Restoration (CPR) for Bonded Concrete Overlays of Asphalt (BCOA)											
Purchase	R1.1	TPF15341	TPF15341	PM - Service Life Enhancement of Substrates Overlaid with Thin Overlays (UTWBC, Chip Seals & Microsurfacing) for each state											
				2017 MnROAD Construction Sensor Purchases	MnDOT PO	184,672	100%	159,130	184,672						
Labor	R1.3	TPF15341C	TPF15341C	2018 CCP Missouri Sensor Purchases - broken off the 60K available											
				Inspection (MnDOT) - MnDOT approved operating funds for any additional costs over the initial budget - MnDOT fund from Dec 17 budget report	MnDOT	50,400	100%	50,400	50,400						
MnROAD Labor	R1.4	TPF15341D	TPF15341D	Costs will be accounted in TPF15341D - not in summary at the bottom of sheet											
				MnROAD Staff - Construction, Sensors and Performance Monitoring											
				MnDOT approved operating funds for any additional costs - 120K approved by EC - MnDOT fund from Dec 17 budget report											
				Approved \$120K extra funding for monitoring 2018	MnDOT	825,318	62%	120,000	460,193						
				Approved \$200K extra funding for monitoring 2019											
	Approved \$200K extra funding for monitoring 2020														
	Missouri Sensor Labor Costs for 2018 installs - CCP - broken off the 60K available														
	Accounting line item - cover overcharges to A and C (shows as double because of neg balances above) - MnDOT funding for operations of NRRA														
	Contract	R1.5	TPF15341	PCC Sampling/Testing	AET Consultant	61,514	100%	20,000	61,514						
	Contract	R2.5	TPF15341	Additional Funding Approved (low initial estimate)											
Contract	R1.6	TPF15341	HMA Performance Testing (75k original Estimate)	TBD	75,000	0%	75,000	0							
MnDOT Agreement	R1.8	TPF15341	TPF15341	Partial Depth Repairs Construction (not in construction contract)	Diamond Surfacing	78,662	100%	40,000	78,662						
				Additional Funding Approved											
Research (R)	2017 Long Term Projects	R1.10 - R1.19	TPF15341	Compacted Concrete Pavement Construction (not in construction) - \$50K original	Missouri DOT	125,000	NA					125,000	MoDOT		
				Missouri CCP Construction, Testing, Monitoring Contract (Missouri Hired)	Hired University										
				Diamond Grinding Construction (not in construction contract) - \$50K	Not Done										
				HMA Overlay and Rehab of Concrete and Methods of Enhancing Compaction	UNH	169,970	23%	169,970	38,821						
				Cold Central Plant Recycling	AET Consultant	99,997	14%	99,997	14,442						
				Fiber Reinforced Concrete Pavements	UMD	149,999	23%	149,999	34,048						
				Long Term Effects of Diamond Grinding - \$75k	Not Done										
				Concrete Early Opening Strength to Traffic	UofPitt	149,999	NA					149,999	0		
				Optimizing the Concrete Mix Components for Contractors	Iowa State	147,627	16%	147,627	23,096						
				Compacted Concrete Pavements for Local Streets - \$80K - Did do in Missouri	Not Done										
	2019 Long Term Research	R1.21 - R1.32	TPF15341	TPF15341	Recycled Aggregates in Aggregate Base and Larger Subbase Materials	Iowa State	225,000	13%	225,000	30,370					
					Maintaining Poor Pavements	SRF	77,963	35%	77,963	27,001					
					Partial Depth Repair	Braun Inerte c	72,295	21%	72,295	15,167					
					HMA - Asphalt Mix Rejuvenator Test Sections	Contracting	120,000	0%	120,000						
					PM - Spray on Rejuvenator Test Sections	Contracting	100,000	0%	100,000						
					ICT - Levels 3-4 Intelligent Compaction Measurement Values (ICMV) for Soils	Contracting	162,024	0%	162,024						
					Subgrade/Aggregate Subbase Compaction										
					ICT - Support Importing, Viewing and Analysis of Dielectric Constant Data in Veta	Contracting	45,000	0%	45,000						
	2019 Call for Innovation	R1.33 - R1.38	TPF15341	TPF15341	ICT - HD and VHD Seismic Approaches for Roadway Evaluation	Contracting	300,000	0%	300,000						
Geo - Mechanistic Load Restriction Decision Platform for Pavement Systems Prone to Moisture Variations					Contracting	90,231	0%	90,231							
Geo - Environmental Impacts on the Performance of Pavement Foundation Layers					Contracting	35,000	0%	35,000							
Geo - Permeability of Base Aggregate and Sand					Contracting	30,000	0%	30,000							
Geo - Improve material inputs into mechanistic design properties for reclaimed HMA Roadways					Contracting	30,000	0%	30,000							
PCC - Construction Report for Jointless FRC Roundabout in Minnesota					Contracting	49,999	0%	49,999							
Construction	MnDOT	M1.2	MnDOT	PCC - Incorporate Joint Faulting Model Into BCOA-ME	Contracting	25,000	0%	25,000							
	MODOT	M1.3	MODOT	PCC - Engineered Dowel and Tie Bars combined with LTPP SPS-2 Determination of Causes for Cracking Over Dowel Bars	Contracting	100,000	0%	100,000							
Construction	MnDOT	M1.2	MnDOT	Blending of Higher Strength Aggregates with Recycled Concrete and Marginal Aggregates to Improve Concrete Properties	Contracting	32,332	0%	32,332							
	MODOT	M1.3	MODOT	Performance of Concrete Overlays over Full Depth Reclamation (FDR)	Contracting	34,265	0%	34,265							
Construction	MnDOT	M1.2	MnDOT	Bio-material Maintenance Treatments	Contracting	50,000	0%	50,000							
	MODOT	M1.3	MODOT	Innovative Practical Approach To Assessing Bitumen Compatibility As A Means Of Material Specification	Contracting	204,119	0%	204,119							
Construction	MnDOT	M1.2	MnDOT	Cold Asphalt Recycling Technologies using Rejuvenating Asphalt Emulsion: Impact, Implementation, Specification	Contracting	141,442	0%	141,442							
	MODOT	M1.3	MODOT	Continuous Moisture Measurement during Pavement Foundation Construction (on	Contracting	-		-							
				Totals =		7,813,437	31.4%	4,255,757	1,335,934	149,999	0	3,298,621			
								(B)	(D)	Research Partnerships		Agency Partnerships			