

**TRANSPORTATION POOLED FUND PROGRAM  
QUARTERLY PROGRESS REPORT**

for

**National Partnership to Determine the Life Extending Benefit Curves of Pavement  
Preservation Techniques (MnROAD/NCAT Joint Study – Phase II)**

**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.*

<b>Transportation Pooled Fund Program Project #</b> TPF-5(375) <a href="http://www.pooledfund.org/Details/Study/627">http://www.pooledfund.org/Details/Study/627</a>		<b>Report Period:</b> Year 2021 Quarter 3 (July 1 – September 30, 2021)
<b>Project Title:</b> National Partnership to Determine the Life Extending Benefit Curves of Pavement Preservation Techniques (MnROAD/NCAT Joint Study – Phase II) <a href="http://www.dot.state.mn.us/mnroad/ncatpartnership/index.html">http://www.dot.state.mn.us/mnroad/ncatpartnership/index.html</a>		
<b>Project Manager(s):</b> Ben Worel (MnDOT) Jack Jernigan (FHWA)	<b>Phone Number:</b> (651) 366-5522 (202) 493-3363	<b>E-Mail</b> <a href="mailto:ben.worel@state.mn.us">ben.worel@state.mn.us</a> <a href="mailto:Jack.Jernigan@dot.gov">Jack.Jernigan@dot.gov</a>
<b>Lead Agency Project ID:</b> None	<b>Other Project ID (i.e., contract #):</b> None	<b>Project Start Date:</b> January 1, 2019
<b>Original Project End Date:</b> December 30, 2023 (60 months)	<b>Current Project End Date:</b> December 30, 2023 (60 months) NCAT Contract – June 30, 2022	<b>Number of Extensions:</b> NA (Working on a 18 month contract extension for NCAT till December 30, 2023)

**Project schedule status** → On schedule

Overall Project Statistics:

Total Project Budget	Total Costs obligated to Date for Project	Percentage of Time and Funding Completed to Date
<p><b>Commitments (State SPR + FHWA + FP2 Partnership with MnDOT)</b> \$4,500,000</p> <p>Note agencies have provided between 3 and 5 year commitments (see last page for member summary breakdown)</p> <p>MnDOT is working with the pooledfund members for 5 total years of funding to allow to extend NCAT’s contract for the analysis required. Contract extension will be needed from 7/1/2022 to 12/30/2023</p>	<p><b>NCAT Initial Contract</b> Billed \$1,590,909 of the \$1,750,000 (91%)</p> <p><b>70<sup>th</sup> Street Construction Recycling</b> \$589,600 (100%)</p> <p><b>MnDOT Labor/Expenses</b> Billed \$586,239 of the \$1,250,000 (53%)</p>	<p>Time = 55% (33/60 months)</p>

## **Project Description:**

### **Background:**

Our nation has one of the best roadway transportation system in the world but overtime as with any investment, preservation is required to maximize the benefits and provide out citizens with long term pavement performance with little traffic disruptions. Currently the American Society of Civil Engineers report that one in every five miles of roads are in poor condition and the system is chronically underfunded. Minnesota Department of Transportation has also documented it cannot keep up with the costs of expansion, rehabilitation, and maintenance of its network because the remaining service life of our roads have gone from 13.7 years in 2000 to 9.4 years in 2013. This is one example why additional information is needed by agencies/pavement owners to develop a better understanding how different asphalt pavement preservation techniques can be used on a national scale.

The Minnesota DOT Road Research Project (MnROAD) and National Center for Asphalt Technology (NCAT) formed a partnership in 2015 to evaluate Pavement Preservation treatments on a national scale. Following the success of the Lee Road 159 preservation treatments, in 2015, NCAT constructed a high-volume test sections on US 280. MnDOT in conjunction with the northern DOT's (in the pooled fund) have constructed similar test sections in 2016 on US-169 (high volume) and CSAH-8 (low volume) in Mille Lacs County Minnesota. This provided the study with four test decks consisting of low and higher volume roadways in both Minnesota (cold / hard freeze) and Alabama (hot / non-freeze). These test decks were built and supported by pooled fund studies lead by the Alabama DOT for NCAT. MnROAD was a partner in the last pooled fund study TPF-5(269) and was supported by 14 states around the country including the Foundation for Pavement Preservation, National Center for Pavement Preservation, and a number of other vendors. This initial study documented the construction of 25 test sections on Lee Road 159, 35 test section on US-280 in Alabama and 30 test sections on county state aid highway (CSAH-8) and 29 test sections on US-169 in Minnesota. Each test deck was constructed by one contractor using local materials and monitoring is completed in consistent manners by both NCAT and MnROAD staffing. Preservation treatments were also consistent for all four locations which included crack seals, fog seals, chip seals, cape seals, microsurfacing, thinlays and different combinations of each of them. Initial monitoring has started but additional time is required to determine the benefits of each treatment over time. That is the main purpose of the second phase of this research. The initial pooled fund was for 3 years from 2015-2018 and was led by NCAT and phase-2 will be over the next five years lead by MnROAD with MnDOT being the lead state.

### **Objectives:**

MnROAD and NCAT are seeking organizations to join the partnership for the second phase of research efforts. Main objectives include:

1. Determining the life cycle cost of various pavement preservation alternatives in a highly controlled experiment that will provide state Departments of Transportation (DOTs) with the financial foundation to begin to build a decision tree for their own maintenance program
2. Develop quality assurance QA field testing protocols to correlate construction practices with long term performance of pavement preservation techniques.
3. Technology transfer - Answering practical questions posed by research sponsors through formal (i.e., reports & technical papers) & informal (e.g., one-on-one responses to sponsor inquiries) technology transfer on how these life extending benefits can be best utilized in each state.

### **Scope of Work:**

This second phase (2019-2024) will be used to continue to monitor and analyze data from the low and high volume pavement preservation sections built both in Alabama and Minnesota since many of the test sections were built in 2016 and not had enough time to show what rate of deterioration they will have. MnDOT will lead this portion of the pooled fund study and will again partner with NCAT but now they will be the subcontractor doing the data collection in Alabama and the majority of the data analysis.

We have established the following overall tasks that we are still working to define with our members. These include:

- Task 1 - Field Performance data collection and initial data validation
- Task 2 - Website updates - online systems (Fall 2019 Start)
- Task 3 - Yearly performance summaries (Dec 31st)
- Task 4 - 2020 "Peer" Exchange
- Task 5 - 2020 Mid-Project Report
- Task 6 - Sponsor Meetings (held every 6 months)
- Task 7 - Pooled Fund Implementation - Assist industry/agencies implement findings / better communication of efforts already underway by NCHRP, UNR, and ISSA)
- Task 8 - 2021 End-Project Report

**Key Staffing Includes:**

**NCAT (Contracted by MnDOT)**

- Adriana Vargas (Project Investigator)
- Buzz Powell (Project Support)
- Jason Nelson (Data Collection)

**MnROAD (Lead State)**

- Jerry Geib (Northern Lead Investigator)
- Ben Worel (MnROAD Operations Engineer)
- Michael Vrtis (Data Collection)

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

To date 23 agencies have become members to share their expertise and are learning about pavement preservation. Building off PG1 (Phase-I) here is the activities that were completed this quarter.

**Joint Activities**

- Article submitted for PP Journal Fall issue
- Two papers submitted to TRB
- Presented findings at ALDOT Construction Engineers and Materials Engineers Conference in Mobile, AL
- Conducted an education session on Pavement Preservation at Public Works Expo in St. Louis, MO
- Received invitation to present findings at Indiana Local Transportation Asset Management Conference (October 2021) and Idaho Asphalt Conference (October 2021)
- Met with National Center for Pavement Preservation to discuss future implementation activities

**NCAT Activities (South)**

- Data collection continues on US-280 and Lee Road 159
- Continued development of the process to analyze the data
- Southern section performance data updated on NCAT's website

**MnDOT Activities (North)**

- Field data collection on US-169 and CSAH-8
- Working to develop a process for the Pathways Autocrack to help in the research

**Anticipated work next quarter:**

The following is expected to be completed for next quarter.

**Joint Activities**

- Fall sponsor meeting in October 2021 (virtual)
- Article submission for PP Journal Winter issue
- Presentations at Virtual Public Works Expo, Indiana Local Transportation Asset Management Conference, and Idaho Asphalt Conference
- Continue planning for Peer Exchange/Implementation activities
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**NCAT Activities (South)**

- Data collection continues on US-280 and Lee Road 159
- Continued development of the process to analyze the data

**MnDOT Activities (North)**

- Continue data collection on US-169 and CSAH 8

**Significant Results:**

Currently this pooled fund is working well for all the members and discussion is going to be reported at the Fall Sponsor Meeting in October.

**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)**

States/participating members are supporting the three year contract with NCAT be extended for an additional two years for the full length of this pooled fund. Many of the states have committed for the full 5 years and MnDOT will start discussions with NCAT on extending their contract for the final 2 years of this effort or calendar year 2022 and 2023,

**Potential Implementation:** Being developed under Task-8

# Funding Summary Using Pooledfund.org and MnDOT Reports as of October 27, 2021

## National Partnership to Determine the Life Extending Benefit Curves of Pavement Preservation - TPF-5(375)

Agency	Type	2018	2019	2020	2021	2022	2023	Total
AL	Commitments	50,000	50,000	50,000				150,000
	Payments	50,000	50,000	50,000				150,000
AR	Commitments		50,000	50,000	50,000			150,000
	Payments		50,000	50,000	50,000			150,000
CO	Commitments		50,000	50,000	50,000	50,000	50,000	250,000
	Payments		50,000	50,000	50,000			150,000
FHWA	Commitments		50,000	100,000	50,000			200,000
	Payments		50,000	100,000				150,000
FP2*	Commitments		50,000	50,000	50,000	50,000	50,000	250,000
	Payments		50,000	50,000				100,000
GA	Commitments	50,000	50,000	50,000	50,000	50,000	50,000	300,000
	Payments	50,000	50,000	50,000	50,000			200,000
IL	Commitments	50,000	50,000	50,000	50,000			200,000
	Payments	50,000	50,000	50,000	50,000			200,000
KS	Commitments	50,000	50,000	50,000	50,000	50,000		250,000
	Payments	50,000	50,000	50,000	50,000			200,000
KY	Commitments	50,000	50,000	50,000	50,000	50,000	50,000	300,000
	Payments	50,000	50,000	50,000	50,000			200,000
MD	Commitments		50,000	50,000	50,000			150,000
	Payments		50,000	50,000	50,000			150,000
MI	Commitments		50,000	50,000	50,000	50,000	50,000	250,000
	Payments		50,000	50,000	50,000			150,000
MN	Commitments	50,000	50,000	50,000	50,000	50,000		250,000
	Payments	50,000	50,000	50,000	50,000	50,000		250,000
MO	Commitments		150,000					150,000
	Payments		150,000					150,000
MS	Commitments		50,000	50,000				100,000
	Payments		50,000	50,000				100,000
NC	Commitments		50,000	50,000	50,000	50,000	50,000	250,000
	Payments		50,000	50,000	50,000			150,000
NY	Commitments		50,000	50,000	50,000	50,000		200,000
	Payments		50,000	50,000	50,000			150,000
OK	Commitments	50,000	50,000	50,000				150,000
	Payments		50,000	50,000				100,000
PA	Commitments		50,000	50,000	50,000			150,000
	Payments		50,000	50,000	50,000			150,000
SC	Commitments	50,000	50,000	50,000	50,000	50,000		250,000
	Payments	50,000	50,000	50,000	50,000			200,000
TN	Commitments	50,000	50,000	50,000				150,000
	Payments	50,000	50,000					100,000
TX	Commitments	50,000	50,000	50,000				150,000
	Payments	50,000	50,000	50,000				150,000
WI	Commitments	50,000	50,000	50,000	50,000	50,000		250,000
	Payments	50,000	50,000	50,000	50,000			200,000
Summary	Commitments (PF Site)	550,000	1,200,000	1,100,000	800,000	550,000	300,000	4,500,000
	Payments (PF Site)	500,000	1,200,000	1,050,000	700,000	50,000	0	3,500,000
	Payments (waiting)	50,000	0	50,000	200,000	500,000	300,000	1,100,000
	Pavements and Commitments (email)	0	0	0	0	50,000	50,000	100,000

\* Agreement (MnDOT Partnership with FP2)

Agency Commitment waiting for payment  
 Agency Commitment/Funding but not on pooled fund website (email)  
 expected for 5 year commitment but not confirmed - waiting for respon

### Funding Summary (Spending)

Expenses (Years 1-3)	Total Contract	Total Payments	Contract Remaining	Percent Spent
NCAT Original Contract - 1032194	\$ 1,750,000	\$ 1,590,909	\$ 159,090.90	91%
NCAT 70th Street Contract - 103417 (Northern Recycling Construction Cost)	\$ 589,600	\$ 589,600	\$ -	100%
MnDOT Salaries and expenses	\$ 1,250,000	\$ 615,380	\$ 586,238.58	53%
Expenses - Traffic Control/Shipping		\$ 48,382		
<b>Totals</b>	<b>\$ 3,589,600</b>	<b>\$ 2,844,271</b>	<b>\$ 745,329.48</b>	<b>79%</b>

updated  
10/27/2021

### Estimate of remaining funds for Years 4 and 5

Total Funding on Pooled Fund Website	4,500,000
Total extra funding emails from states	100,000
Total Funding "in hand" to spend	4,600,000
<b>Remaining dollars after years 1-3</b>	<b>\$1,010,400</b>

Two year extension at same level of effort for NCAT and MnROAD

Expenses (Years 4-5)	Total Contract	Analysis of remaining funds and expected funds		
NCAT Extension (18 months @ \$53,030)	\$ 954,545	Remaining Funds	Funds Needed	Need ~9 more agency years commitments to fund completely (9 x \$50,000)
MnDOT Salaries (18 months @ \$25,000)	\$ 450,000			
Expenses - Traffic Control/Shipping	\$ 40,000			
<b>Totals (same level of effort)</b>	<b>\$ 1,444,545</b>	\$ 1,010,400 from above	\$ 434,145	8.7 @ \$50K contributions by agencies