

**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.

Transportation Pooled Fund Program Project # TPF-5(375) http://www.pooledfund.org/Details/Study/627		Report Period: Year 2020 Quarter 3 (July 1 – September 30)
Project Title: National Partnership to Determine the Life Extending Benefit Curves of Pavement Preservation Techniques (MnROAD/NCAT Joint Study – Phase II) http://www.dot.state.mn.us/mnroad/ncatpartnership/index.html		
Project Manager(s): Ben Worel (MnDOT) Jack Jernigan (FHWA)	Phone Number: (651) 366-5522 (202) 493-3363	E-Mail ben.worel@state.mn.us Jack.Jernigan@dot.gov
Lead Agency Project ID: None	Other Project ID (i.e., contract #): None	Project Start Date: January 1, 2019
Original Project End Date: December 30, 2023 (60 months)	Current Project End Date: December 30, 2023 (60 months)	Number of Extensions: NA

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>Commitments (State SPR + FHWA + FP2 Partnership with MnDOT) Commitments = \$3,800,000 Paid into pooled fund = \$2,850,000</p> <p>Note - SPR Funding in future if states join for 5 years (50% states join) then total = \$4,675,000 (100% states join) then total = \$5,550,000 (Individual states commitments and calculations are shown on last page of this report)</p>	<p>NCAT Contract \$1,750,000 (Invoiced \$795,455 ~ 55%)</p> <p>MnDOT Labor \$1,250,000 (charged \$253,696 ~ 20%)</p>	<p>Time = 30% (18/60 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

- MnROAD fall sponsor meeting was held online on September 22-23 due to COVID-19 pandemic
- Individual online meetings have been held with the following sponsors: New York, Kentucky
- Article submitted for PP Journal fall issue
- Four papers submitted to TRB annual meeting
 - All accepted for presentation
 - Two accepted for publication review
- One paper published in *Accelerated Pavement Testing to Transport Infrastructure Innovation. Lecture Notes in Civil Engineering, Vol 96*
- Received invitation to present at ISSA Slurry Systems Workshop (online) in January 2021

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 resumed
- Repair/maintenance work on cells 169015 and 169016 (control) performed on September 10th
- 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

- Planning underway for the Spring sponsor meeting / meetings with individual sponsors
- Article submission for PP Journal winter issue
- Presentation at Indiana Local Transportation Asset Management Conference (online) on October 22nd
- Continue planning for Peer Exchange

NCAT Activities (South)

- Data collection continues on US-280 and Lee Road 159
- Continued development of the process to analyze the data
- Laboratory testing of field samples collected during construction on 70th Street

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 next sponsor meeting in the spring.

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: Being developed under task-8

Funding Summary Using Pooledfund.org and MnDOT Reports

Income Summary

Agencies	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				100,000	
CO	Commitments		50,000	50,000	50,000	50,000	50,000	250,000	
	Payments		50,000	50,000				100,000	
FHWA	Commitments		50,000	100,000	50,000			200,000	
	Payments		50,000	100,000				150,000	
FP2 Agreement MnDOT Partnership with 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				150,000	
	Payments	50,000	50,000	0				100,000	
IL	Commitments	50,000	50,000	50,000				150,000	
	Payments	50,000	50,000	50,000				150,000	
KS	Commitments	50,000	50,000	50,000				150,000	
	Payments	50,000	50,000	50,000				150,000	
KY	Commitments	50,000	50,000	50,000	50,000	50,000	50,000	300,000	
	Payments	50,000	50,000	50,000				150,000	
MD	Commitments		50,000	50,000	50,000			150,000	
	Payments		50,000	50,000				100,000	
MI	Commitments		50,000	50,000	50,000	50,000	50,000	250,000	
	Payments		50,000	50,000				100,000	
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			150,000	
	Payments		50,000	50,000	50,000			150,000	
NY	Commitments		50,000	50,000				100,000	
	Payments		50,000	50,000				100,000	
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				100,000	
SC	Commitments	50,000	50,000	50,000				150,000	
	Payments	50,000	50,000	50,000				150,000	
TN	Commitments	50,000	50,000	50,000				150,000	
	Payments	50,000	50,000	0				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				150,000	
	Payments	50,000	50,000	50,000				150,000	
Summary from Above		Commitments	550,000	1,200,000	1,100,000	500,000	250,000	200,000	3,800,000
Current Funds in Pooled Fund		Payments	500,000	1,200,000	1,000,000	100,000	50,000	0	2,850,000

Yellow shows commitments/funding not received
Funding Expected for 2020

Additional Funds (all states 5 yrs)	NCAT is under contract for 3 years - additional funds to continue monitoring and analysis both in Minnesota and Alabama (Funds have been requested from the states) please contact MnDOT if you have any questions of funding or funding needs	1,750,000
Additional Funds (50% states 5 yrs)		875,000

Expenditure Summary

Total Funds Expected is:		Current Commitments	3,800,000	
(if all states fund 5 years)		1,750,000	5,550,000	
(if half states fund at 5 years)		875,000	4,675,000	
Expense	Total Contract	Total Payments	Contract Remaining	Percent Spent
NCAT Original Contract - 1032194	\$ 1,750,000	\$954,545	\$ 795,455	55%
NCAT 70th Street Contract - 103417	\$ 589,600		\$ 589,600	0%
MnDOT Salaries and expenses	\$ 1,250,000	\$253,696	\$ 996,304	20%
Totals	\$ 3,589,600	\$ 1,208,241	\$2,381,359	34%
Remaining funds (no extra yrs)	\$ 210,400	updated		
Remaining (if all states fund @5yrs)	\$ 1,960,400	10/14/2020		
Remaining (if half states fund @5yrs)	\$ 1,085,400			