



Kay Ivey
Governor

ALABAMA DEPARTMENT OF TRANSPORTATION

Bureau of Research and Development
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John R. Cooper
Transportation Director

July 22, 2024

Dr. Steven Taylor
Senior Vice President for Research and Economic Development
Office of the Senior Vice President for Research and Development
Auburn University
202 Samford Hall
Auburn University, AL 36849-5122

Subject: Transportation Pooled Fund Project TPF-5(531)/ALDOT Research Project
931-943P,
"Accelerated Performance Testing on the 2024 NCAT Pavement Test Track with
MnROAD Research Partnership"
Letter of Direction - REVISED

Dear Dr. Taylor:

This is your "Letter of Direction" to continue work on the above referenced pooled fund research project. This authorization to continue work is based upon the proposal that was approved by the Alabama Department of Transportation under the General Agreement (#24-01042) with the National Center for Asphalt Technology (NCAT). The agreement was approved by the Governor of Alabama on July 11, 2024.

The researcher, also referred to as the "Principal Investigator (PI)", should adhere to the proposal and approved budget as his/her guide for conduct to execute the expected project deliverables. This office, with the recommendation of the Technical Advisory Committee (TAC), must approve any deviation(s) to the work plan/scope of work. Any deviations from the proposal/work plan/scope of work must be requested in writing to the ALDOT, Bureau of Research and Development (ATTN.: Ms. Kidada C. Dixon, P.E., State Research and Development Engineer). The TAC, comprised of representatives from FHWA and participating states, was created to monitor the researcher's progress and to provide technical guidance when required or requested. The PI should occasionally meet with the TAC to update them on project progress and accomplishments. The TAC for this pooled fund study is as follows:

Ms. Kidada Dixon (dixonk@dot.state.al.us; (334) 353-6940) - Alabama DOT (Lead State)
Mr. Derek Nener-Plante (derek.nenerplante@dot.gov; (202) 763-4017) – FHWA
Technical Liaison
Ms. Kristy Harris (kristy.harris@dot.gov; (334) 274-6361) – ALDOT FHWA Liaison
Mr. Peter Wu (peter.wu@dot.ga.gov; (404) 608-4810) – Georgia DOT
Ms. Cynthia (Cindy) Smith (cjsmith@mdot.ms.gov; (601) 359-7647) – Mississippi DOT
Mr. Thomas Kane (thomas.kane@dot.ny.gov; (518) 457-4445) – New York State DOT
Mr. David Vivanco (dvivanco@odot.org; (405) 522-4986) – Oklahoma DOT

Mr. Merrill Zwanka (zwankaME@scdot.org; (803) 737-6681) – South Carolina DOT
Mr. Perry McCutcheon (perry.j.mccutcheon@wv.gov; (304) 558-9286) – West Virginia DOT

This project is a transportation pooled fund project and is funded with State Planning and Research (SP&R) funds. It has been assigned ALDOT Research Project 931-943P in our research series, and TPF-5(531) on the Transportation Pooled Fund (TPF) website (www.pooledfund.org). **The performance period of this project will begin on July 11, 2024 and will end on November 16, 2027.**

As of June 24, 2024, the amount of funds received from the participating states total \$3,850,000.00. These funds are from the committed pledges (total \$11,149,999.00) made by the participating states on the TPF Website. These commitments were made to this project under TPF project number TPF-5(531) and are detailed in the attached document that was extracted from the TPF website. Updates on additional funds received by participating states and FHWA will be documented and updated in a report that will be provided to the PI assigned to this project. The funding report, detailing actual dollar amounts received, as of June 24, 2024, is attached to this letter. Please note very carefully that no work should ever be performed for any partner on this project if their available funding balance is not enough to cover their costs. The Department's Bureau of Research and Development will at any time, at your request, work with you in determining available funding. Your failure to adhere to this requirement could result in disapproval of invoices.

To ensure compliance with the Department and federal guidelines please adhere to the following requirements:

1. Quarterly Progress Reports: These reports summarize the work activities completed during the quarter and outlines the work activities planned for the upcoming quarter. Quarterly progress reports are to be submitted to the Department's Bureau of Research and Development via email to Mrs. Kidada Dixon (dixonk@dot.state.al.us) and Mr. Andre' Jenkins (jenkinsa@dot.state.al.us) by the 30th of December, March, June and September until the work is completed and regardless of when the project began.
2. Draft Final Report: A draft final report is required to be submitted to Department's Bureau of Research and Development via email to Mrs. Kidada Dixon (dixonk@dot.state.al.us) and Mr. Andre' Jenkins (jenkinsa@dot.state.al.us) at least 30 days before the completion of the project and must include implementation recommendations.

Note: For pooled fund projects led by ALDOT – Reports can be made available on the Transportation Pooled Fund Program's website (<https://www.pooledfund.org/>) to ensure and uphold the terms of the Transportation Pooled Fund Program. The terms for product distribution, and report and summary distribution are outlined in the TPF Procedures Manual which can be found on the TPF website or on the following link: <https://pooledfund.org/StaticDocuments/Reports/TPF%20Financial%20Procedures%20Manual%20March%202023%20-%20New.pdf>.

All publications by NCAT which are derived from the study will contain the following statement applicable in the credit sheet:

"The contents of this report reflect the views of the author(s) who is (are) responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the State of

Alabama Department of Transportation or the Federal Highway Administration. This report does not constitute a standard, specification, or regulation. Comments contained in this paper related to specific testing equipment and materials are not considered an endorsement of any commercial product(s) and/or service(s): no such endorsement is intended or implied.”

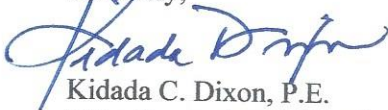
3. Final Report: A final report will be requested by the Department’s Bureau of Research and Development after the Draft Final Report is thoroughly reviewed by the TAC and any concerns identified are properly addressed. Distribution of all research project reports and request for publication or documentation is handled through the Department’s Bureau of Research and Development.

Note: The statement included above applies to the Final Report distribution.

4. Other Project Requests: All requests should be formally submitted by the PI directly to the Department’s Bureau of Research and Development via email to Mrs. Kidada Dixon (dixonk@dot.state.al.us) and Mr. Andre’ Jenkins (jenkinsa@dot.state.al.us). All requests must be submitted in a timely manner to allow sufficient time for review, approval and processing. Requests made less than 30 days before the completion date of the project may be denied.
5. Federal Reporting: A research project template is required for each approved project in ALDOT’s Research Work Program. The template is to be completed by the PI. The template is located on the ALDOT website under the ‘Research Program’ tab or can be accessed at <https://www.dot.state.al.us/programs/ResearchProgram.html>. Note: There are 2 parts to the research template that must be completed and submitted in a timely manner. Part I is due when the proposal is received by ALDOT for approval consideration (ALDOT will send a confirmation email for the proposal), and Part II is due by October 15th for the R&D’s End of the Year Work Report. Instructions for completing both parts are provided on the website listed above.
6. Invoicing Requirements: Invoicing for all on-going ALDOT research projects is required to have at least one charge/invoice for a maximum cycle length of 5-months during the specified performance period of the project. ALDOT is not responsible for delayed invoice payments if the project is not invoiced at least once during a maximum cycle length of 5-months. This requirement is necessary for continuous project funding on participating projects. Please note very carefully that no work should ever be performed for any partner on this project if their available funding balance is not enough to cover their costs. The Department’s Bureau of Research and Development will at any time, at your request, work with you in determining available funding. Your failure to adhere to this requirement could result in disapproval of invoices.

If you have any questions concerning this Letter of Direction, please contact me or Mr. Andre’ Jenkins by phone at (334) 353-6940 or via email at dixonk@dot.state.al.us or jenkinsa@dot.state.al.us.

Sincerely,



Kidada C. Dixon, P.E.

State Research and Development Engineer & ALDOT Research Advisory Committee Chair

KCD/ALJ

Attachments:

- Contributions Spreadsheet as of June 24, 2024
 - TPF Website - Participating Partner(s) (Extracted) Commitment Summary
- c:
- Dr. Randy West - National Center for Asphalt Technology (NCAT)
 - Dr. Nathan Moore - National Center for Asphalt Technology (NCAT)
 - Ms. Anita Robinson - National Center for Asphalt Technology (NCAT)
 - Technical Advisory Committee (via TPF website)
 - Ms. Kristy Harris - FHWA Liaison
 - Mr. Aaron Dawson – FHWA, Planning and Program Manager
 - Ms. Kadian Hollenquest – FHWA, Financial Manager
 - Mr. Andre' Jenkins, Sr. - ALDOT Funding Contact
 - Mr. Jimmy Carroll - ALDOT, Bureau of Office Engineer
 - File (#931-943P)

TPF-(531)/ALDOT Research Project 931-943P
"Accelerated Performance Testing on the 2024 NCAT Pavement Test
Track with MnRoad Research Partnership"

State	Obligate/Paid Contributions					Total
	FY204	FY2025	FY2026	FY2027		
Alabama DOT	\$ 1,700,000.00	\$ -	\$ -	\$ -	\$ -	\$ 1,700,000.00
Florida DOT	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Georgia DOT	\$ 333,333.00	\$ -	\$ -	\$ -	\$ -	\$ 333,333.00
Kentucky Transportation Cabinet	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Mississippi DOT	\$ 416,667.00	\$ -	\$ -	\$ -	\$ -	\$ 416,667.00
Missouri DOT	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
New York State DOT	\$ 100,000.00	\$ -	\$ -	\$ -	\$ -	\$ 100,000.00
North Carolina DOT	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Oklahoma DOT	\$ 450,000.00	\$ -	\$ -	\$ -	\$ -	\$ 450,000.00
South Carolina DOT	\$ 350,000.00	\$ -	\$ -	\$ -	\$ -	\$ 350,000.00
Texas DOT	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Virginia DOT	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
West Virginia DOT	\$ 500,000.00	\$ -	\$ -	\$ -	\$ -	\$ 500,000.00
Grand Total*	\$ 3,850,000.00	\$ -	\$ -	\$ -	\$ -	\$ 3,850,000.00

Notes: The Grand Total noted above reflects the amount of funds received for the study as of 6/24/2024. Expenses charged against each state and FHWA for work performed is not reflected in this table.

7/22/2024

Accelerated Performance Testing on the 2024 NCAT Pavement Test Track with MnROAD Research Partnership

General Information

Study Number:	TPF-5(531)
Lead Organization:	Alabama Department of Transportation
Contract Start Date:	May 16, 2024
Solicitation Number:	1601
Partners:	AL, FL, GADOT, KY, MO, MS, NC, NY, OK, SC, TX, VA, WV
Status:	Cleared by FHWA
Est. Completion Date:	Nov 16, 2027
Contract/Other Number:	
Last Updated:	May 16, 2024
Contract End Date:	

Financial Summary

Contract Amount:	
Total Commitments Received:	\$11,149,999.00
100% SP&R Approval:	

Contact Information

Lead Study Contact(s):	Kidada Dixon dixonk@dot.state.al.us Phone: 334.353.6940
FHWA Technical Liaison(s):	Derek Nener-Plante derek.nenerplante@dot.gov Phone: 202-763-4017

Commitments by Organizations

Organization	Year	Commitments	Technical Contact Name	Funding Contact Name	Contact Number	Email Address
Alabama Department of Transportation	2024	\$1,700,000.00	Kidada Dixon	Andre Jenkins	(334)353-6944	jenkinsa@dot.state.al.us
Florida Department of Transportation	2024	\$216,666.00	Howard Moseley	Jennifer Clark	850-414-4614	jennifer.clark@dot.state.fl.us
Florida Department of Transportation	2025	\$216,666.00	Howard Moseley	Jennifer Clark	850-414-4614	jennifer.clark@dot.state.fl.us
Florida Department of Transportation	2026	\$216,666.00	Howard Moseley	Jennifer Clark	850-414-4614	jennifer.clark@dot.state.fl.us
Georgia Department of Transportation	2024	\$333,333.00	Peter Wu	Brennan Roney	404-347-0595	broney@dot.ga.gov
Georgia Department of Transportation	2025	\$333,333.00	Peter Wu	Brennan Roney	404-347-0595	broney@dot.ga.gov
Georgia Department of Transportation	2026	\$333,334.00	Peter Wu	Brennan Roney	404-347-0595	broney@dot.ga.gov
Kentucky Transportation Cabinet	2024	\$83,333.00	Greg Garner	Jarrold Stanley	(502) 782-4090	jarrod.stanley@ky.gov

Organization	Year	Commitments	Technical Contact Name	Funding Contact Name	Contact Number	Email Address
Kentucky Transportation Cabinet	2025	\$83,333.00	Greg Garner	Jarrold Stanley	(502) 782-4090	jarrod.stanley@ky.gov
Kentucky Transportation Cabinet	2026	\$83,333.00	Greg Garner	Jarrold Stanley	(502) 782-4090	jarrod.stanley@ky.gov
Mississippi Department of Transportation	2024	\$416,667.00	Cindy Smith	Robert Vance		RVance@mdot.ms.gov
Mississippi Department of Transportation	2025	\$416,667.00	Cindy Smith	Robert Vance		RVance@mdot.ms.gov
Mississippi Department of Transportation	2026	\$416,667.00	Cindy Smith	Robert Vance		RVance@mdot.ms.gov
Missouri Department of Transportation	2024	\$100,000.00	Jacob Graessle	Jennifer Harper	573-526-3636	Jennifer.Harper@modot.mo.gov
Missouri Department of Transportation	2025	\$100,000.00	Jacob Graessle	Jennifer Harper	573-526-3636	Jennifer.Harper@modot.mo.gov
Missouri Department of Transportation	2026	\$100,000.00	Jacob Graessle	Jennifer Harper	573-526-3636	Jennifer.Harper@modot.mo.gov
New York State Department of Transportation	2024	\$100,000.00	Thomas Kane	Gail Carpenter	518-457-8083	Gail.Carpenter@dot.ny.gov
New York State Department of Transportation	2025	\$100,000.00	Thomas Kane	Gail Carpenter	518-457-8083	Gail.Carpenter@dot.ny.gov
New York State Department of Transportation	2026	\$100,000.00	Thomas Kane	Gail Carpenter	518-457-8083	Gail.Carpenter@dot.ny.gov
North Carolina Department of Transportation	2025	\$250,000.00	Andrew Wargo	Curtis Bradley	919-707-6661	cbradley8@ncdot.gov
North Carolina Department of Transportation	2026	\$250,000.00	Andrew Wargo	Curtis Bradley	919-707-6661	cbradley8@ncdot.gov
North Carolina Department of Transportation	2027	\$250,000.00	Andrew Wargo	Curtis Bradley	919-707-6661	cbradley8@ncdot.gov
Oklahoma Transportation	2024	\$450,000.00	David Vivanco	Ron Curb	(405)414-7740	rcurb@odot.org
Oklahoma Transportation	2025	\$450,000.00	David Vivanco	Ron Curb	(405)414-7740	rcurb@odot.org
Oklahoma Transportation	2026	\$450,000.00	David Vivanco	Ron Curb	(405)414-7740	rcurb@odot.org
South Carolina Department of Transportation	2024	\$350,000.00	Merrill Zwanka	Terry Swygert	803-737-6691	SwygertTL@scdot.org
South Carolina Department of Transportation	2025	\$350,000.00	Merrill Zwanka	Terry Swygert	803-737-6691	SwygertTL@scdot.org
South Carolina Department of Transportation	2026	\$350,000.00	Merrill Zwanka	Terry Swygert	803-737-6691	SwygertTL@scdot.org
Texas Department of Transportation	2024	\$266,667.00	Travis Patton	Ned Mattila	512-416-4727	ned.mattila@txdot.gov
Texas Department of Transportation	2025	\$266,667.00	Travis Patton	Ned Mattila	512-416-4727	ned.mattila@txdot.gov
Texas Department of Transportation	2026	\$266,666.00	Travis Patton	Ned Mattila	512-416-4727	ned.mattila@txdot.gov
Virginia Department of Transportation	2024	\$416,667.00	Brian Diefenderfer	Bill Kelsh	434-293-1934	Bill.Kelsh@VDOT.Virginia.gov
Virginia Department of Transportation	2025	\$416,667.00	Brian Diefenderfer	Bill Kelsh	434-293-1934	Bill.Kelsh@VDOT.Virginia.gov
Virginia Department of Transportation	2026	\$416,667.00	Brian Diefenderfer	Bill Kelsh	434-293-1934	Bill.Kelsh@VDOT.Virginia.gov
West Virginia Department of Transportation	2024	\$166,667.00	Perry McCutcheon	Perry McCutcheon		perry.j.mccutcheon@wv.gov

Organization	Year	Commitments	Technical Contact Name	Funding Contact Name	Contact Number	Email Address
West Virginia Department of Transportation	2025	\$166,667.00	Perry McCutcheon	Perry McCutcheon		perry.j.mccutcheon@wv.gov
West Virginia Department of Transportation	2026	\$166,666.00	Perry McCutcheon	Perry McCutcheon		perry.j.mccutcheon@wv.gov

Study Description

Study Description

The NCAT Pavement Test Track was originally constructed as a result of interest and support from state Departments of Transportation (DOTs) who shared a concern for building and preserving safe, sustainable, resilient, and cost-effective pavement infrastructure. Track research operations began in the summer of 2000. Forty-six 200-ft test sections were subjected to 10 million equivalent single axle loadings (ESALs) of heavy truck traffic through December of 2002. Test sections were rebuilt in 2003, 2006, 2009, 2012, 2015, 2018, and 2021 with 10 million ESALs applied within each 3-year research cycle. NCAT began formally partnering with the Minnesota Road Research Project (MnROAD) in 2015 to execute nationally relevant research in both mix performance testing and pavement preservation. Positive experiences with implementable findings that reduce the life cycle cost of flexible pavements and facilitate rapid deployment of sustainable technologies have made this research an outstanding investment for numerous state DOTs, who pool their resources to share the cost of construction, operations, and research in a cooperative manner. The summer 2024 rebuild is the starting point for the ninth research cycle, with many high reward research options available for potential sponsors. NCAT is again partnering with MnROAD in the 2024 research cycle to execute a pavement performance experiment with nationwide implementation impact.

Objectives

The primary objectives of the pooled fund project described herein will be:

1. Constructing, maintaining, and/or rebuilding experimental pavements on the existing 1.7-mile NCAT test oval and the MnROAD mainline bypass that are representative of in-service roadways on the open transportation infrastructure;
2. Applying accelerated performance truck traffic after construction for the duration of the 3-year research cycle;
3. Assessing/comparing the functional and structural field performance of trafficked sections on a regular basis via surface and subsurface measures;
4. Validating/calibrating new and existing methodologies for analysis and design using pavement surface condition, pavement load response, precise traffic and environmental logging, and cumulative damage;
5. Correlating field results with laboratory data for both mix and structural performance; and
6. Answering practical questions posed by research sponsors through formal (i.e., reports and technical papers) and informal (e.g., one-on-one responses to sponsor inquiries) technology transfer. For example, can pavement thickness be reduced as a result of the addition of mix additives, and if so does the thickness reduction offset any additional cost of construction?

Scope of Work

The scope of work for the pooled fund project will include:

1. Hauling materials to the project from offsite locations. Material donations are typically secured by state sponsors, while reasonable hauling expenses are handled by the pooled fund;
2. Rebuilding sections in accordance with sponsors' directives via competitively bid subcontracts administered by NCAT. It is anticipated that aggregate hauling, liquid asphalt supply and delivery, rental of select construction equipment, plant production, and mix placement may all be procured via competitively bid subcontracts;
3. Installing both environmental (i.e., multi-depth pavement temperature probes) and/or response instrumentation (i.e., high speed stress and strain gages) in experimental sections;
4. Operating a 5-truck heavy triple-trailer fleet in order to apply accelerated truck traffic on the NCAT test oval following the completion of construction. Human drivers operate NCAT vehicles in order to best induce representative vehicle wander, but it is expected that autonomous vehicles will be implemented in the future. Diverted interstate traffic is used to load test sections at MnROAD;
5. Safely measuring field performance (e.g., rutting, roughness, texture, cracking, deflection, friction, etc.) on a regular basis when traffic is suspended/bypassed to fully document changes in surface condition as a function of traffic and temperature. High-speed pavement response is also measured on a routine basis;
6. Conducting laboratory testing to quantify basic material and mix performance properties, which will serve as the basis of performance model development; and
7. Comparing predicted and measured pavement response as well as predicted and measured cumulative pavement damage in order to validate then calibrate prevailing analysis and design methodologies.

Comments

This project is expected to be eligible for 100% SP&R funding. Each sponsor participating in the study is asked to contribute funding as a function of the scope of their selected research.

Documents

Title	File/Link	Type	Private
Letter of Direction for ALDOT RP 931-943P/TPF-5(531)	Ltr of Direction_TPF-5(531)_ALDOT 931-943P.pdf	TPF Study Documentati on	Public
Solicitation No. 1601 ALDOT Waiver Request	Solicitation No. 1601_(NFM) ALDOT Waiver Request Ltr.pdf	Other	Public
TPF-5(531) ALDOT Acceptance Letter	TPF-5(531)_ALDOT Acceptance Letter.pdf	Other	Public

Solicitation Documents

Title	File/Link	Type	Private
Approved Matched Waiver Memorandum	Match Waiver Approval Memorandum #1601.pdf	Memorandu m	Public
Match Waiver Request #1601	Solicitation No. 1601_(NFM) ALDOT Waiver Request Ltr.pdf	Other	Public