

**South Dakota Department of Transportation
Request for Proposal
Project SD2023-05**

Title: Performance and Use of Non-Vinsol Resin Air Entraining Concrete Admixtures in South Dakota

Problem Description: Current specifications only allow Vinsol Resin-based Air Entraining Admixtures (AEA) in concrete mixes used on SDDOT projects, and the use of synthetic AEAs is not allowed. This restriction reduces the number of AEA products available for use on SDDOT projects, which could potentially delay projects if supply issues develop related to the production of Vinsol Resin-based AEAs.

The South Dakota Department of Transportation (SDDOT) previously completed research project SD98-03 which determined that synthetic AEA products were the source of the concrete strength issues experienced by the Department at that time. As a result of this research, SDDOT discontinued the use of synthetic AEAs and removed all synthetic AEAs from the Department's approved products list, thus effectively prohibiting them from use on SDDOT projects.

In the last 20+ years, the technology of synthetic AEAs has improved and AASHTO has developed a recommendation for evaluating AEAs (NCHRP Report 578). Research demonstrating the acceptable performance of synthetic AEAs would expand the supply of products allowable for use on SDDOT projects. This research would give SDDOT guidance on which synthetic AEAs produce acceptable results and could be added to the department's approved products list and provide changes to the current specifications to include non-Vinsol resin AEAs.

On April 15, 2023, the sole manufacturing facility for Vinsol Resin experienced an industrial fire which put the facility out of production. In June 2023, the owner of the facility, Pinova Inc., announced plans to decommission the facility and permanently end operations. As a result of this fire and subsequent closure, it is expected that Vinsol Resin-based AEAs will become increasingly difficult to acquire until all existing Vinsol Resin-based AEAs currently in the market have been exhausted. Ultimately, having additional AEA products available for use by SDDOT will be necessary to ensure that the AEA products used on SDDOT projects are compatible with the other materials used in SDDOT concretes.

Importance: This research is very important to the Department. High-quality and durable concrete is vital to South Dakota's infrastructure. Modifying the current specifications to allow non-Vinsol resin AEAs is paramount to providing a consistent and stable entrained air network within SDDOT concretes.

Research Objectives:

1. Identify the various types of AEA admixtures that are available and expected to produce a stable and uniform air matrix in SDDOT concretes.
2. Develop a comprehensive testing matrix to identify which AEA admixtures produce a stable and uniform air matrix in fresh and hardened concrete and determine the compatibility of the various admixtures tested with SDDOT mix designs while maintaining current strength and durability requirements.
3. Develop and recommend changes to section 751 of the current SDDOT Standard Specifications for Roads and Bridges.

Research Tasks:

1. Meet with the project's technical panel to review the project scope and work plan.
2. Perform a literature review on AEAs and summarize how the various categories of admixtures are expected to produce a stable and uniform air matrix with the materials commonly used in South Dakota.

3. Develop an interview or survey instrument for distribution to surrounding state DOTs, federal agencies, and admixture companies currently supplying admixtures to SDDOT projects to determine (a) which specifications and AEA products are currently in use and (b) which products are producing acceptable results.
4. Upon approval of the technical panel, conduct the survey or interviews developed in Task 3.
5. Prepare and present for approval of the project's technical panel a technical memorandum that summarizes the findings of Tasks 2 - 4.
6. Develop and present for approval by the project's technical panel a comprehensive testing matrix, including fresh and hardened air analysis, concrete strength, and durability testing to determine which categories of AEAs will produce a stable and uniform air matrix in SDDOT concrete mixes.
7. Obtain the admixtures needed and perform testing, as approved in Task 6, to determine the quality of the air voids created by the various categories of AEAs used.
8. Prepare and present for approval of the project's technical panel a technical memorandum summarizing the results from Tasks 6 and 7.
9. Develop and recommend changes to section 751 of the current SDDOT Standard Specifications for Roads and Bridges and a list of AEA admixtures for addition to the SDDOT approved products list.
10. Prepare and present for approval of the project's technical panel a technical memorandum summarizing the results from Task 9.
11. In conformance with *Guidelines for Performing Research for the South Dakota Department of Transportation*, prepare a final report summarizing the research methodology, findings, conclusions, and recommendations.
12. Make an executive presentation to the SDDOT Research Review Board at the conclusion of the project.

Potential Implementation: Successful research will be implemented through modifications to the current SDDOT Standard Specifications for Roads and Bridges and to the approved products list for air entrainment admixtures.

SDDOT Involvement: SDDOT staff will provide the mix designs, aggregates, and cementitious materials necessary to produce batches of concrete for testing by the researcher.

Available Funding: \$200,000

Anticipated Start Date: July 1, 2024

Duration: 18 months

Terms of Payment: Payment for study services will be made upon SDDOT's acceptance of key project deliverables. For this study, percentages of total project cost will be paid upon satisfactory completion of the following tasks:

Task	% of Total Cost
5	30%
8	20%
10	20%
All Tasks	30%
Total	100%

General Information: The South Dakota Department of Transportation solicits proposals from colleges, universities, research institutes, foundations, consultants, federal, state, and local agencies, and others with demonstrated capability and experience in the subject area.

The South Dakota Department of Transportation gives public notice of its policy to uphold and assure full compliance with the non-discrimination requirements of Title VI of the Civil Rights Act of 1964 and related Nondiscrimination authorities. Title VI and related Nondiscrimination authorities stipulate that no person in the United States of America shall on the grounds of race, color, national origin, religion, sex, age, disability, income level or Limited English Proficiency be excluded from the participation in, be denied the

benefits of, or be otherwise subjected to discrimination under any program or activity receiving Federal financial assistance. Any person who has questions concerning this policy or wishes to file a discrimination complaint should contact the Department's Civil Rights Office at 605-773-3540.

Proposals must remain valid for at least 120 days after the submission deadline. All submitted proposals become the property of the South Dakota Department of Transportation. SDDOT has the right to use all information presented in any proposal unless it is specifically annotated as being proprietary. SDDOT considers all information contained in proposals to be privileged and reserves the right to maintain its confidentiality.

South Dakota state statute requires the winning proposal, with proprietary information redacted, to be posted online along with the corresponding contractual agreement.

SDDOT reserves the right to reject any proposals submitted. SDDOT may negotiate with a selected proposer to address specific weaknesses in the selected proposal prior to contract award.

SDDOT is not responsible for any costs, including proposal preparation, incurred by researchers prior to the execution of a contract.

Certification Relating to Prohibited Entity: For contractors, vendors, suppliers, or subcontractors who enter into a contract with the State of South Dakota by submitting a response to this solicitation or agreeing to contract with the State, the bidder or offeror certifies and agrees that the following information is correct:

The bidder or offeror, in preparing its response or offer or in considering proposals submitted from qualified, potential vendors, suppliers, and subcontractors, or in the solicitation, selection, or commercial treatment of any vendor, supplier, or subcontractor, is not an entity, regardless of its principal place of business, that is ultimately owned or controlled, directly or indirectly, by a foreign national, a foreign parent entity, or foreign government from China, Iran, North Korea, Russia, Cuba, or Venezuela, as defined by South Dakota Executive Order 2023-02. It is understood and agreed that, if this certification is false, such false certification will constitute grounds for the State to reject the bid or response submitted by the bidder or offeror on this project and terminate any contract awarded based on the bid or response. The successful bidder or offeror further agrees to provide immediate written notice to the contracting executive branch agency if during the term of the contract it no longer complies with this certification and agrees such noncompliance may be grounds for contract termination.

Restriction of Boycott of Israel: For contractors, vendors, suppliers, or subcontractors with five (5) or more employees who enter into a contract with the State of South Dakota that involves the expenditure of one hundred thousand dollars (\$100,000) or more, by submitting a response to this solicitation or agreeing to contract with the State, the bidder or offeror certifies and agrees that the following information is correct:

The bidder or offeror, in preparing its response or offer or in considering proposals submitted from qualified, potential vendors, suppliers, and subcontractors, or in the solicitation, selection, or commercial treatment of any vendor, supplier, or subcontractor, has not refused to transact business activities, has not terminated business activities, and has not taken other similar actions intended to limit its commercial relations, related to the subject matter of the bid or offer, with a person or entity on the basis of Israeli national origin, or residence or incorporation in Israel or its territories, with the specific intent to accomplish a boycott or divestment of Israel in a discriminatory manner. It is understood and agreed that, if this certification is false, such false certification will constitute grounds for the State to reject the bid or response submitted by the bidder or offeror on this project and terminate any contract awarded based on the bid or response. The successful bidder or offeror further agrees to provide immediate written notice to the contracting executive branch agency if during the term of the contract it no longer complies with this certification and agrees such noncompliance may be grounds for contract termination.

Certification of No State Legislator Interest: Offeror (i) understands neither a state legislator nor a business in which a state legislator has an ownership interest may be directly or indirectly interested in any contract with the State that was authorized by any law passed during the term for which that legislator was elected, or within one year thereafter, and (ii) has read South Dakota Constitution Article 3, Section 12 and has had the opportunity to seek independent legal advice on the applicability of that provision to any Agreement entered into as a result of this RFP. By signing an Agreement pursuant to this RFP, Offeror hereby certifies that the Agreement is not made in violation of the South Dakota Constitution Article 3, Section 12.

Proposal Deadline: Proposals are due to the SDDOT by 5:00 pm CDT on Wednesday, March 20, 2024. This deadline is firm. Extensions will not be granted.

Proposals must be submitted as an e-mail attachment in Portable Document Format (PDF) not exceeding 14MB. The email must be addressed to andy.vandel@state.sd.us and michael.border@state.sd.us. Proposers should send the e-mail using “Delivery Receipt” and “Read Receipt” options to verify successful delivery.

Proposal Guidelines: Proposals must fulfill the requirements listed in the document entitled *RESEARCH PROPOSAL PREPARATION, SUBMISSION, AND EVALUATION* and dated October 28, 2022.

Proposal Evaluation: Proposals will be evaluated by a technical panel knowledgeable in the problem area. Selection will be made in consideration of criteria listed in *RESEARCH PROPOSAL PREPARATION, SUBMISSION, AND EVALUATION*.

Project Management: Michael Border is responsible for the management of this project and can be reached at michael.border@state.sd.us to answer inquiries.