

RESEARCH PROPOSAL PREPARATION, SUBMISSION, AND EVALUATION

The Office of Research of the South Dakota Department of Transportation (SDDOT) 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.

Proposal Submission

Proposers must submit proposals to SDDOT's Office of Research on or before the date and time specified in the Request for Proposal. Proposals arriving after the specified deadline will not be considered.

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 and all 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.

Proposal Organization

The research proposal should be a well-organized document that describes the research problem and objectives, provides a detailed work plan for achieving the objectives, and explains how anticipated research findings might be used. Proposals should concisely demonstrate the researchers' ability to satisfy the requirements of the RFP.

The following instructions are intended to help researchers prepare a proposal that can be clearly understood, fairly evaluated, and ultimately accepted with a minimum of changes. Proposals must include all listed sections in the order specified in the instructions. Proposals that do not comply with these instructions jeopardize selection and risk disqualification.

Title Page

Include the following information on the proposal cover, as illustrated in Figure 1.

- "Research Proposal", proposal title (from RFP), and project number (from RFP)
- "Submitted by" name, institution, address, phone number, and e-mail address of proposer

Research Proposal (project title) SD20xx-xx
Submitted by (proposer name) (affiliation) (address) (city, state, postal code) (phone number) (e-mail address)
Submitted to South Dakota Department of Transportation Office of Research Room 157 700 East Broadway Avenue Pierre, SD 57501-2586 (date)

Figure 1 Sample Proposal Title Page

- “Submitted to South Dakota Department of Transportation, Office of Research Room 157, 700 East Broadway Avenue, Pierre, SD 57501- 2586”
- proposal date

Table of Contents

On a separate page, list the proposal’s sections and page numbers.

Problem Statement

Clearly express the researchers’ understanding of the problem presented in the RFP. Do not simply repeat the wording of the RFP, but rather communicate the researchers’ own insights regarding the nature and significance of the problem.

Background Summary

Summarize the findings of a preliminary literature survey and explain the relationship of prior research to the proposed study. Clearly express the researchers’ understanding of underlying principles and demonstrate that important aspects of the research topic have been adequately considered, so the proposed research can build upon prior work rather than neglect or duplicate it.

Objectives

Cite, in order, each of the study’s technical objectives as stated in the Request for Proposal. Describe how each objective will be accomplished during the research. Any deviations from the objectives listed in the RFP must be explained and justified.

Research Plan

Describe how the technical objectives will be achieved through a logical and innovative research plan. Cite, in order, each task as stated in the Request for Proposal. Describe in appropriate detail how each task will be performed, and how it will contribute to accomplishing the study’s stated objectives. Any deviations from the tasks listed in the RFP must be explained and justified.

Also, describe the technical basis of the research. Describe, as appropriate:

- | | |
|---|-------------------------------------|
| • principles or theories to be used | • evaluation criteria |
| • significant variables to be tested | • inspection and survey methods |
| • data collection protocols | • experimental controls to be used |
| • analytical and statistical procedures | • material or procedure development |
| • experimental and testing procedures | |

The plan should be complete, providing the greatest level of detail that the researchers’ understanding of the problem permits.

Products

List the products that will be delivered during the research project. Deliverables may include, for example:

- reports
- technical memoranda
- technical summaries
- manuals
- physical or mathematical models
- video or other audio-visual materials
- equipment or instrumentation
- training materials or courses
- procedures
- specifications
- instrumentation
- photographs
- software
- databases
- web pages or other online products

Unless directed otherwise in the RFP, always include the following products:

- quarterly or monthly progress reports
- draft final report
- final report
- executive summary

Specify the medium by which each product will be delivered. Reports, technical memoranda and summaries, and manuals must be provided in Microsoft® Word and Adobe Portable Document Format.

Implementation

Describe how SDDOT can apply the research results to improve its practice. Although the actual research may produce unanticipated findings that prompt implementation changes, the practicality of the implementation plan presented in the proposal will strongly influence proposal selection.

In terms familiar to the practicing engineer or administrator, describe the form in which research results may be delivered, such as a mathematical model, laboratory test procedure, design technique, specification, etc. Describe how the research results might be used, and by whom, to improve transportation practice. Identify specific standards or practices that might be affected by the research findings, such as AASHTO or SDDOT specifications, policies and procedures, legislation, and funding or staffing plans.

Describe the level of implementation readiness anticipated at the end of the project. If findings will not be suitable for immediate application at the conclusion of the research, indicate what further work might be necessary. Identify institutional issues, including resource requirements, that may need to be addressed for successful implementation.

Benefits

Identify potential benefits expected from the research, such as:

- direct cost savings
- increased revenue
- increased safety
- extended facility life
- improved service or effectiveness
- improved work efficiency
- intellectual property

To the extent possible, describe how these benefits can be formally defined, credibly estimated, and practically tracked when study results are put into practice.

Time Schedule

Provide a Gantt chart or other graphical presentation illustrating the scheduling of the major research tasks (Table 1). Clearly show the period allocated to each task. Always allow at least twenty (20) work days for SDDOT to review technical memoranda and draft reports.

Table 1 Sample Task Time Schedule

	Task	2022								2023							
		May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
1	Meet with panel																
2	Review literature																
3	Present findings & test plan																
4	Test concrete mixes																
5	Recommend specifications																
6	Present findings to panel																
7	Prepare final report																
8	Make executive presentation																
	Quarterly progress reports																

Staffing

Include pertinent background information for principal investigators and other key team members. Describe the role of each member of the proposed research team and explain how academic and professional qualifications and experience relate to the project. Summarize past accomplishments in the same or closely related problem areas, but defer lengthy *curricula vitae* (if included at all) to an appendix to the proposal.

Provide a table showing the number of person-hours (not percentages of time) that will be devoted to each task by research team members, as illustrated in Table 2. List the names of principal investigators and other key professionals who will be involved. Support personnel may be identified by classification.

If subcontractors are proposed, clearly identify their roles. For each subcontractor, provide a separate, similar table showing the personnel and person-hours that will be devoted to the project.

Table 2 Sample Task Time Schedule

Name of Principal Professional or Support Classification	Primary Role in Study	Task								Total
		1	2	3	4	5	6	7	8	
Professor A	Principal Investigator	8	4	8	30	40	8	30	8	136
Professor B	Co-principal investigator	4	4	4	40	30	4	30	4	120
Technical Writer	Report Writing & Review	2	4	2	8	24	2	24	2	68
Graduate Student 1	Field Testing	8	40	8	120	16	8	32	8	240
Graduate Student 2	Analysis	2	20	2	80	12	2	32	2	152
Administrative Staff	Administrative Support	2	2	2	8	5	2	8	0	29
TOTAL		26	74	26	286	127	26	156	24	745

Describe the proposed researchers' current commitments to other work in sufficient detail to permit assessment of their availability to meet the proposal's commitments. Include a statement that the level of effort proposed for principal members of the research team will not be changed without the written consent of SDDOT.

Describe a contingency plan if the principal investigator cannot complete the project. The need for the plan could be due to the principal investigator leaving the organization or an uncontrollable circumstance that prevents them from continuing the work. Describe the process to ensure the successful completion of the project.

Facilities

Describe the facilities available to accomplish the research. Identify equipment necessary for completion of the research and specify any restrictions on its use. Specify any equipment that is necessary but not currently on hand.

Identify any equipment to be purchased with project funds. Individually identify items costing \$5,000 or more; such items become the property of SDDOT at the conclusion of the project unless specific arrangements are made to transfer it to the organization performing the research.

SDDOT Involvement

Describe any assistance required from the South Dakota Department of Transportation and partner agencies, such as:

- access to transportation facilities
- traffic control
- special equipment
- construction or maintenance activity
- drilling and sampling
- material testing
- access to records or data
- interviews

Quantify the required level of effort as fully as possible.

Quality Management Plan

Describe how the research activity will be managed to ensure the quality of work and deliverables. Identify management responsibilities of research team members and processes that will be used to prevent, recognize, and resolve quality problems. Identify applicable standards for testing and analysis and describe how compliance will be established and maintained throughout the project.

In addition, describe how the quality of technical writing will be ensured. In the staffing plan, identify specific staff or external resources that will be employed to ensure clarity, technical accuracy, and proper grammar of all deliverables.

Data Management Plan

To ensure the integrity and accessibility of data that will be generated during the research, the Office of Research requires that proposals include a data management plan that is to be maintained and followed throughout the project. The data management plan may also be necessary to meet requirements attached to certain federal funding sources, in compliance with a 2013 Executive Order¹ regarding open data.

In no more than two pages and using tables as appropriate, describe:

- expected data types and how they will be generated
- standards to be used for collection
- data format and metadata standards
- data storage and preservation during and after the project
- tools, including software, that may be needed to access and interpret the data
- data sharing policies, mechanisms, and restrictions

¹ Executive Order Making Open and Machine Readable the New Default for Government Information, May 9, 2013. <https://www.whitehouse.gov/the-press-office/2013/05/09/executive-order-making-open-and-machine-readable-new-default-government->

- strategies, tools, and contingency plans to avoid data loss or degradation
- provisions for the protection of privacy, confidentiality, security, and intellectual property
- data management roles and responsibilities
- monitoring and reporting procedures

Propose whether the data is to be solely owned by SDDOT or jointly owned by SDDOT and the performing organization. As a condition for acceptance of the final report, all data must be either delivered to SDDOT or deposited in a secure and permanently accessible repository acceptable to SDDOT.

Budget

Show the estimated cost for the entire research project by fiscal year, as illustrated in Table 3. SDDOT's fiscal years run from July 1 through June 30; for example, FY2018 runs from July 1, 2017, through June 30, 2018. Include line items for major cost categories in the table and explain them in the accompanying narrative.

Clearly list in the table and describe in the narrative any cost-sharing proposed by the research organization.

If the proposal involves subcontractors, include a similar budget table for each subcontractor.

Identify and separately describe any out-of-state travel, which is defined as any travel except between the researchers' base and destinations within South Dakota.

Indirect costs listed in the budget must be substantiated if the proposal is selected. Prior to contract execution, the successful proposer will be required to submit documentation substantiating the basis and rate used to calculate indirect costs by the prime contractor and each of the subcontractors.

Examples of indirect cost schedule formats can be found in the *AASHTO Uniform Audit & Accounting Guide*².

Table 3 Sample Budget by Fiscal Year

Item	FY2022	FY2023	Total
Salaries	18,240	19,000	37,240
Fringe Benefits ¹	2,400	2,800	5,200
Overhead/Indirect Costs (40.0%) ¹	8,256	8,720	16,976
Fixed Fee (8.0%)	1,651.2	1,744	3,395
In-State Travel	750	1,550	2,300
Out-of-State Travel ²	0	1,150	1,150
Equipment Purchase ³	6,000	2,000	8,000
Expendable Supplies ⁴	930	800	1,730
Subcontracts	0	9,000	9,000
Computer Time ⁴	0	0	0
Report Publication ⁴	0	0	0
Total	\$38,227	\$46,764	\$84,991
Cost-Sharing by Proposer	\$15,291	\$18,706	\$33,997
Funded by SDDOT	\$22,936	\$28,058	\$50,994
Notes: 1. May be included with Overhead/Indirect Costs 2. Each trip must be described 3. Must be described and in accordance with 23CFR200 4. Only if normally treated as a direct cost			

² American Association of State Highway and Transportation Officials (AASHTO) (2016). Uniform Audit & Accounting Guide, 2016 Edition. URL <http://audit.transportation.org>

The budgeted total may not exceed the amount indicated as "Maximum Budget" on the RFP. This amount represents what SDDOT feels the research topic merits and believes is necessary to complete the work. Proposers should set the scope and depth of study accordingly. Because of budget constraints, additional funding or cost extensions should not be anticipated.

Payment for Deliverables

The RFP for each project will state whether the Office of Research will use a traditional cost- reimbursement agreement to pay for the research services, or whether payment-for-deliverables will be used instead.

If payment-for-deliverables is specified, include a table listing the payable deliverables and their respective percentages of project cost specified in the RFP. Also show the calculated amount to be paid by SDDOT for each deliverable, as shown in Table 4. Indicate the fiscal year during which the payment is expected to be made.

Table 4: Sample Payment-for-Deliverables Schedule

Payment	Group of Billable Tasks	% of Total	Amount
1	1. Meet with the project's technical panel to review project scope and work plan.	10%	\$8,500.00
	2. Conduct a thorough literature search and review other state transportation departments' specifications regarding the use of portland-limestone cement.		
	3. Meet with the project technical panel to present findings from Task 2 and to review the proposed testing plan for Task 4.		
2	4. Test mixes made with portland-limestone cements available in South Dakota, one coarse aggregate source, and three fine aggregates sources with and without fly ash and compare results to mixes made with standard portland cement for sulfate resistance, set time, compressive and flexural strength, workability and durability.	30%	\$25,500.00
3	5. Develop recommendations for specifications for portland-limestone cements based on the literature search and the test results.	25%	\$21,250.00
4	6. Meet with the project technical panel to review findings from Tasks 4 and 5.	30%	\$25,550.00
	7. In conformance with <i>Guidelines for Performing Research for the South Dakota Department of Transportation</i> , prepare a final report summarizing the research methodology, findings, conclusions, and recommendations.		
5	8. Make an executive presentation to the South Dakota Department of Transportation Research Review Board at the conclusion of the project.	5%	\$4,250.00
Total		100%	\$85,000.00

System of Units

All studies must be performed and reported using imperial (English) units as the primary system of units. Values in the International System of Units (SI), commonly referred to as "metric" units, may be included in parentheses following the imperial values. Guidance on use of the metric system is given in ASTM Standard E380 for Metric Practice, available from the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

Proposal Evaluation

Proposals will be evaluated by SDDOT Research staff and a technical panel knowledgeable in the problem area, in consideration of the criteria shown in the Proposal Evaluation Form (Table 5).

Questions

Please refer questions related to an individual study to the project manager listed in the RFP. Please refer general questions about the proposal submission and evaluation process to Andy Vandel, SDDOT Research Engineering Manager, at 605.773.3199 or andy.vandel@state.sd.us.

Table 5: Proposal Evaluation Form

South Dakota Department of Transportation Office of Research Proposal Evaluation Form	Proposal			Project: SD2022-01 Evaluator Name: _____
General	A	B	C	Notes
Proposal properly interprets the Request for Proposal				
Proposal contains no technical errors, omissions, discrepancies				
Problem Statement & Background Summary	A	B	C	Notes
Proposal demonstrates a sound, objective understanding of problem				
Proposal cites relevant literature & explains its significance				
Research Plan (Objectives & Tasks)	A	B	C	Notes
Proposal addresses specified objectives clearly & completely				
Proposal addresses specified tasks clearly & completely				
Deviations from RFP's objectives & tasks are explained & justified				
Proposed research plan is feasible				
Proposal demonstrates ability to meet special project challenges & constraints				
Products & Implementation	A	B	C	Notes
Proposal clearly defines products to be delivered in the project				
Proposal includes a practical implementation plan that fits SDDOT needs, policies, & procedures				
Staffing & Facilities	A	B	C	Notes
Proposal demonstrates that key personnel have specialized expertise, capability, & technical competence needed for the project				
Proposal describes specific roles of key personnel				
Availability of key personnel is clearly defined				
Proposal demonstrates a contingency plan for PI leaving the project				
An appropriate balance of professional & support personnel is proposed				
Proposal does not rely excessively on subcontractors or recruited personnel				
Proposal demonstrates access to needed equipment, facilities, & specialized services within the project timeframe				
Proposal demonstrates adequate familiarity & availability to the project locale				
Quality & Data Management	A	B	C	Notes
Proposal demonstrates ability to manage a project of this size & complexity				
Proposal identifies procedures for managing data during & after project				
SDDOT Involvement	A	B	C	Notes
Proposed SDDOT involvement is clearly described & reasonable				
Budget	A	B	C	Notes
Proposal includes complete budget by expense category & fiscal year				
Total budget & payment schedule conform to RFP amounts				
Past Performance for SDDOT	A	B	C	Notes
Proposer successfully managed & completed past projects on schedule & budget				
Proposer was cooperative & responsive to SDDOT direction				
Total				
Rank				
INSTRUCTIONS TO EVALUATORS: On a scale of 0 to 3, please rate each proposal for each item listed. Assign a rating of 3 if the proposal addresses the item completely 2 if it addresses it well, 1 if it addresses it partially, and 0 if it addresses it poorly or not at all. This form will be used as a tool for evaluating each proposal, but not as the sole criterion for awarding a research contract. Other important considerations may also influence the selection decision. After the best proposal is selected, use this form to identify any specific weaknesses that should be strengthened prior to final approval of a research contract. Your diligence at this stage of the project will be rewarded as the study progresses.				