



## Research Proposal Preparation, Submission, and Evaluation for the South Dakota Department of Transportation

**April 27, 2026**

Prepared by:

South Dakota Department of Transportation  
Office of Research Room 157  
700 East Broadway Avenue  
Pierre, South Dakota 57501-2586

Published by:

South Dakota Department of Transportation  
Office of Research Room 157  
700 East Broadway Avenue  
Pierre, South Dakota 57501-2586

# Table of Contents

<b>Chapter 1: Artificial Intelligence (AI) Use Statement.....</b>	<b>8</b>
1.1 AI Use in Proposal Preparation .....	8
1.2 Planned AI Use During Research Project .....	8
1.3 AI Ethics, Compliance, and Transparency .....	9
<b>Chapter 2: Research Proposal Preparation, Submission, and Evaluation .....</b>	<b>10</b>
2.1 Proposal Submission .....	10
2.2 Proposal Organization.....	10
2.3 Elements of the Proposal.....	11
2.3.1 Cover Page .....	11
2.3.2 Table of Contents.....	12
2.3.3 Artificial Intelligence Use Statement .....	12
2.3.4 Problem Statement.....	12
2.3.5 Background Summary .....	13
2.3.6 Objectives.....	13
2.3.7 Research Plan.....	13
2.3.8 Products .....	13
2.3.9 Implementation .....	15
2.3.10 Benefits .....	15
2.3.11 Time Schedule.....	15
2.3.12 Staffing.....	16
2.3.13 Contingency Plan .....	17
2.3.14 Facilities .....	17

2.3.15 SDDOT Involvement.....	18
2.3.16 Quality Management Plan .....	18
2.3.17 Data Management Plan .....	18
2.3.18 Budget.....	19
2.3.19 Payment for Deliverables.....	20
2.3.20 References .....	21
2.3.21 Appendix .....	21
2.4 System of Units .....	21
2.5 Proposal Evaluation .....	22
<b>Chapter 3: ADA Section 508 and WCAG 2.1 AA Compliance Guidance.....</b>	<b>24</b>
<b>Chapter 4: Questions .....</b>	<b>28</b>
<b>Chapter 5: References .....</b>	<b>29</b>
<b>Resources.....</b>	<b>30</b>
<b>Appendix A Research Proposal Cover Page .....</b>	<b>32</b>

## List of Figures

No table of figures entries found.

# List of Tables

Table 1: Sample task time schedule..... 16

Table 2: Sample breakdown of persons and hours dedicated to each task..... 17

Table 3: Sample budget by fiscal year ..... 19

Table 4: Sample of payments for deliverables schedule ..... 21

## List of Equations

Equation 1: Annualized cost of pavement treatment .....	27
---	----

## List of Abbreviations, Acronyms, and Symbols

2 CFR 200.313	Code of Federal Regulations, Title 2, Part 200.313
AASHTO	American Association of State Highway and Transportation Officials
ACR	Accessibility Conformance Report
ADA	Americans with Disabilities Act
AI	Artificial Intelligence
Alt Text	Alternative Text
FY	Fiscal Year
GPT	Generative Pre-trained Transformer
MLA	Modern Language Association
PDF	Portable Document Format
PI	Principal Investigator
QPR	Quarterly Progress Report
RFP	Request for Proposal
RRB	Research Review Board
SDDOT	South Dakota Department of Transportation
SI	International System of Units
VPAT	Voluntary Product Accessibility Template
WCAG 2.1 AA	Web Content Accessibility Guidelines Version 2.1, Level AA

# Chapter 1: Artificial Intelligence (AI) Use Statement

The proposal must include a clear and transparent description of how Artificial Intelligence (AI) tools or methods were used in the preparation of the proposal, as well as how AI is expected to be used during the execution of the research project. This requirement ensures responsible, ethical, and well-documented use of emerging technologies throughout the research lifecycle.

## 1.1 AI Use in Proposal Preparation

Provide a concise statement describing any AI systems, tools, or models used during the development of this proposal. This statement may include, but is not limited to:

- Drafting or editing narrative content
- Formatting assistance
- Data organization or summarization
- Literature search or synthesis
- Generating tables, figures, or visualizations

For each use, briefly describe:

- The specific AI tool(s) used (for example Microsoft Copilot, Generative Pre-Trained Transformer (GPT)-5 model)
- The purpose of use
- The extent of reliance on AI-generated content
- Any human review, revisions, or verification conducted
- How the research team ensured accuracy and mitigated potential AI-related errors or biases

If no AI tools were used in the proposal preparation, state:

**“No artificial intelligence tools or methods were used in the preparation of this proposal.”**

## 1.2 Planned AI Use During Research Project

If AI tools or methods will be used during the research project, describe the anticipated applications, such as:

- Data processing, cleaning, or classification
- Predictive modeling, simulation, or statistical analysis

- Natural language processing for analyzing text-based data
- Image recognition or other computer vision tasks
- Drafting or reviewing research output (such as memoranda, reports, or summaries)

For each anticipated use, clearly explain:

- The purpose and expected benefit of the AI tool
- The type of data the AI tool will process
- Oversight and validation procedures ensuring accuracy and reliability
- Any potential limitations, risks, or biases associated with AI use
- Strategies to manage and document AI-generated or AI-assisted work

AI-generated results are considered intermediate inputs. All findings, interpretations, and recommendations must be reviewed, validated, and approved by qualified personnel on the research team.

### **1.3 AI Ethics, Compliance, and Transparency**

Describe how the research team will:

- Ensure responsible and ethical use of AI
- Protect data privacy, security, and confidentiality
- Maintain transparency in documenting AI use throughout the project

All AI-supported work must comply with SDDOT's standards for quality, technical accuracy, accessibility, and data integrity, including requirements listed in the [ADA Section 508 and WCAG 2.1 AA Compliance Guidance](#) chapter.

If the use of AI evolves or changes during the project, the project manager must be promptly notified and provided with all relevant details regarding the modifications.

## Chapter 2: 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.

### 2.1 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 (RFP). Proposals arriving after the specified deadline will not be considered. Proposals and all products that will be delivered during the research project must meet [Section 508 of the Rehabilitation Act of 1973](#) and [Web Content Accessibility Guidelines \(WCAG\) Version 2.1, Level AA](#), following the [Department of Justice guidelines](#).

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 on [South Dakota's Transparency Website](#).

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.

### 2.2 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 request for proposal.

The following instructions are intended to help researchers prepare a proposal that is clearly understood, fairly evaluated, and ultimately accepted with minimal revisions. Proposals must

include all required elements listed in the order specified in the [Elements of the Proposal](#) section. Proposals that do not comply with these instructions may jeopardize their chances of selection and risk disqualification.

## 2.3 Elements of the Proposal

The following elements of the proposal include in the following order:

- Cover Page
- Table of Contents
  - List of Tables (if tables are used)
  - List of Figures (if figures are used)
  - List of Equations (if equations are used)
  - List of Abbreviations, Acronyms, and Symbols
- Artificial Intelligence Use Statement
- Body of Proposal
  - Problem Statement
  - Background summary
  - Objectives
  - Research Plan
  - Products
  - Implementation
  - Benefits
  - Time Schedule
  - Staffing
  - Facilities
  - SDDOT Involvement
  - Quality Management Plan
  - Data Management Plan
  - Budget
  - Payment for Deliverables
  - References
  - Appendix (optional)

### 2.3.1 Cover Page

An example of a proposal cover can be found in [Appendix A](#). The proposal cover should include the following information listed:

- Project title which can be found on the RFP.

- Project number which can be found on the RFP.
- Cover page photo is optional.
- Proposer’s information including proposer name, affiliation, address, city, state, zip code, phone number, and proposer’s e-mail address.
- Submitted to South Dakota Department of Transportation, Office of Research Room 157, 700 East Broadway Avenue, Pierre, SD 57501- 2586.
- Proposal date which can be found on the RFP.

## **2.3.2 Table of Contents**

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

### **2.3.2.1 List of Tables**

On a separate page, list the tables and page numbers if tables were used.

### **2.3.2.2 List of Figures**

On a separate page, list the figures and page numbers if figures were used.

### **2.3.2.3 List of Equations**

On a separate page, list the equations and page numbers if equations were used.

### **2.3.2.4 List of Abbreviations, Acronyms, and Symbols**

On a separate page, list all the abbreviations, acronyms, and symbols used within the proposal.

## **2.3.3 Artificial Intelligence Use Statement**

The proposal must include a clear and transparent description of how Artificial Intelligence (AI) tools or methods were used in the preparation of the proposal, as well as how AI is expected to be used during the execution of the research project. This requirement ensures responsible, ethical, and well-documented use of emerging technologies throughout the research lifecycle. More information about AI usage can be found in [Chapter 1](#).

## **2.3.4 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.

### 2.3.5 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.

### 2.3.6 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.

### 2.3.7 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
- significant variables to be tested
- data collection protocols
- analytical and statistical procedures
- experimental and testing procedures
- evaluation criteria
- inspection and survey methods
- experimental controls to be used
- material or procedure development

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

### 2.3.8 Products

List the products that will be delivered during the research project. All products that will be delivered during the research project must meet [Section 508 of the Rehabilitation Act of 1973](#)

and [Web Content Accessibility Guidelines \(WCAG\) Version 2.1, Level AA](#), following the [Department of Justice guidelines](#). Submit an [Accessibility Conformance Report \(ACR\)](#), preferably using the [Voluntary Product Accessibility Template \(VPAT\)](#), for all digital products or services. For any deliverables that are in PDF format, please provide the Accessibility Report from Adobe Acrobat. Deliverables may include, for example:

- Reports
- Technical memoranda with presentation
- Technical summaries
- Executive Team presentation
- Manuals
- Physical or mathematical models
- Video or other audio-visual materials
- Equipment or instrumentation
- Peer exchange, seminars, or workshops
- Surveys
- Training materials or courses
- Procedures, policies, rules, or other like items
- Specifications
- Photographs
- Software
- Databases
- Web pages, dashboards, or other online products

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

- Quarterly Progress Reports (QPR)
- Monthly project status meeting minutes
- Draft final report
- Final report
- Executive presentation for the Research Review Board (RRB)
- 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. Electronic copies of the final report and executive summary are required unless permission is specifically granted otherwise. Payments for products and deliverables not meeting ADA [Section 508 of the Rehabilitation Act of 1973](#) and [Web Content Accessibility Guidelines \(WCAG\) Version 2.1, Level AA](#) will not receive payment until compliance passes.

SDDOT primarily uses the built-in Accessibility Checkers within Microsoft and Adobe Acrobat to verify compliance. A manual check of color contrast, tagging, reading, and content order will be done.

### **2.3.9 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, and so forth. 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 American Association of State Highway and Transportation Officials (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.

### **2.3.10 Benefits**

Identify potential benefits expected from the research. Describe how the research results can be used, and by whom, to improve transportation practice. Possible benefits include:

- 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.

### **2.3.11 Time Schedule**

Provide a table or other graphical presentation illustrating the scheduling of the major research tasks. Indicate the number of months allocated to each task. Please allow a minimum of 2 weeks to review any deliverables or items requiring approval. Technical Memoranda are due

one week prior to the Technical Memorandum Presentation, allowing the technical panel to review in advance. Once the Technical Memoranda Presentation has been presented, allow two additional weeks for review and comments. When preparing for the executive presentation for the Research Review Board, the board meets quarterly, approximately the first of February, May, August, and November. An example of a Task-Time Schedule is provided in Table 1. Quarterly Progress Reports and tasks dependencies are included in Table 1. Reports are due on the 15th of January, April, July, and October. Monthly Project Status Meetings are held with the selected proposed research team with SDDOT’s Project Manager, Co-Project Manager, and Research Engineering Manager.

**Table 1: Sample task time schedule**

Task Number	Task Description	Duration (Days)	Start Date	End Date	Dependencies
1	Meeting with the panel.	1	5/1/2022	5/1/2022	None
2	Review literature.	90	5/1/2022	7/30/2022	Task 1
-	Quarterly Progress Report	75	5/1/2022	7/15/2022	Independent
3	Present findings and testing plan.	1	8/10/2022	8/10/2022	Task 2
4	Test concrete mixes.	277	8/11/2022	5/15/2023	Task 3
-	Quarterly Progress Report	91	7/16/2022	10/15/2022	Independent
-	Quarterly Progress Report	92	10/16/2022	1/15/2023	Independent
5	Recommend specifications.	90	4/1/2023	6/30/2023	Task 4
-	Quarterly Progress Report	89	1/16/2023	4/15/2023	Independent
6	Present findings to the panel.	1	6/15/2023	6/15/2023	Task 5
7	Prepare final report.	163	2/17/2023	7/30/2023	Task 6
-	Quarterly Progress Report	91	4/16/2023	7/15/2023	Independent
8	Make an executive presentation.	1	8/28/2023	8/28/2023	Task 7

### 2.3.12 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 curriculum 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 breakdown of persons and hours dedicated to each task**

Principal Professional or Support Classification	Primary Role in Study	Task 1 Hours	Task 2 Hours	Task 3 Hours	Task 4 Hours	Task 5 Hours	Task 6 Hours	Task 7 Hours	Task 8 Hours	Total Hours
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 and 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.

### 2.3.13 Contingency Plan

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.

### 2.3.14 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 \$10,000 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.

### 2.3.15 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
- presenting to Executive Team
- drilling and sampling
- material testing
- access to records or databases
- preliminary engineering
- interviews

Quantify the required level of effort as fully as possible for SDDOT and partner agencies.

### 2.3.16 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.

### 2.3.17 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 [Executive Order 13642 - Making Open and Machine Readable the New Default for Government Information](#).

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
- 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.

### 2.3.18 Budget

Show the estimated cost for the entire research project by fiscal year (FY), as illustrated in Table 3. SDDOT's fiscal years run from July 1 through June 30; for example, FY2023 runs from July 1, 2022, through June 30, 2023. Include line items for major cost categories in the table and explain them in the accompanying narrative. Fringe benefits may be included with overhead and indirect costs. For out-of-state travel, each trip must be described. If equipment is purchased for the project, it must be described and in accordance with the [Code of Federal Regulations, Title 2, Part 200.313 \(2 CFR 200.313\)](#). Expendable Supplies, Computer Time, and Report Publications are normally treated as a direct cost. Clearly list in the table and describe in the narrative any cost-sharing proposed by the research organization.

**Table 3: Sample budget by fiscal year**

Item	FY2022	FY2023	Total
Salaries	\$18,240	\$19,000	\$37,240
Fringe Benefits	\$2,400	\$2,800	\$5,200
Overhead Indirect Costs (40%)	\$8,256	\$8,720	\$16,976
Fixed Fee (8%)	\$1,651	\$1,744	\$3,395
In-State Travel	\$750	\$1,150	\$2,300
Out-of-State Travel	\$0	\$1,150	\$1,150
Equipment Purchase	\$6,000	\$2,000	\$8,000
Expendable Supplies	\$930	\$800	\$1,730
Subcontracts	\$0	\$9,000	\$9,000
Computer Time	\$0	\$0	\$0
Report Publication	\$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

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. Traveling to the Pierre, SD for the Research Review Board executive presentation is not required. The meeting is conducted in a hybrid format, with both in-person attendance and online participation through Microsoft Teams.

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 and Accounting Guide for Audits of Architectural and Engineering Consulting Firms \(2024 Edition\)](#).

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.

### **2.3.19 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 of payments for deliverables schedule**

Payment	Task	Description of Group of Billable Tasks	Percentage of Total	Payment Amount	Fiscal Year
1	1	Meet with the project’s technical panel to review project scope and work plan.	10%	\$8,500.00	2022
1	2	Conduct a literature review on Portland-limestone cement specifications.	10%	\$8,500.00	2022
1	3	Present findings and proposed testing plan to the panel.	10%	\$8,500.00	2022
2	4	Test Portland-limestone cement mixes with various aggregates and compare to standard mixes for sulfate resistance, set time, strength, workability, and durability.	30%	\$25,500.00	2022
3	5	Develop specification recommendations based on literature and test results.	25%	\$21,250.00	2023
4	6	Review findings with the technical panel.	15%	\$12,775.00	2023
4	7	Prepare an ADA Section 508 compliant final report per SDDOT research guidelines.	15%	\$12,775.00	2023
5	8	Make an executive presentation to the SDDOT Research Review Board.	5%	\$4,250.00	2023
—	—	<b>Total</b>	<b>100%</b>	<b>\$85,000.00</b>	—

### 2.3.20 References

On a separate page, list the references that were used.

### 2.3.21 Appendix

On a separate page, place lengthy curriculum vitae of the staff. This section is optional.

## 2.4 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. This requirement is consistent with the South Dakota Department of Transportation’s decision to return to imperial units as its preferred system of units.

Guidance on use of the metric system can be found in the [Institute of Electrical and Electronics Engineers/American Society for Testing and Materials \(IEEE/ASTM\)-SI-2016 American National Standard for Metric Practice](#).

## 2.5 Proposal Evaluation

Proposals will be evaluated by SDDOT Research staff and a technical panel knowledgeable in the problem area. Each of the categories below will be evaluated based on how well it is addressed. The categories evaluated include:

- General
  - The proposal properly interprets the RFP.
  - The proposal contains no technical errors, omissions, or discrepancies.
  - The proposal complies with Americans with Disabilities Act (ADA) Section 508 and WCAG 2.1 AA or higher.
- Problem Statement & Background
  - The proposal demonstrates a sound objective understanding of the problem.
  - The proposal cites relevant literature and explains its significance.
- Research Plan (Objectives & Tasks)
  - The proposal addresses specified objectives clearly and completely.
  - Deviations from the RFP's objectives and tasks are explained and justified.
  - The proposal addresses specified tasks clearly and completely.
  - The proposal demonstrates the ability to meet special project challenges and constraints.
- Products & Implementation
  - The proposal clearly defines the products to be delivered in the project.
  - The proposal includes a practical implementation plan that fits in SDDOT's needs, policies, and procedures.
  - The proposal clearly states products to be delivered in the project will meet the compliance of ADA Section 508 and WCAG 2.1 AA or higher.
- Staffing & Facilities
  - The proposal demonstrates that key personnel have specialized expertise, capability, and technical competence needed for the project.
  - The proposal describes specific roles of key personnel.
  - Availability of key personnel is clearly defined.
  - The proposal demonstrates a contingency plan for the Principal Investigator (PI) leaving the project.
  - An appropriate balance of professional and support personnel is proposed.
  - The proposal demonstrates access to needed equipment, facilities, and specialized services within the project timeframe.
  - The proposal demonstrates adequate familiarity and availability to the project locale.

- Quality & Data Management
  - The proposal demonstrates the ability to manage a project of this size and complexity.
  - The proposal identifies procedures for managing data during and after the project.
- SDDOT Involvement
  - The proposed SDDOT involvement is clearly described and reasonable.
- Budget
  - The proposal includes a complete budget by expense category and fiscal year.
  - The total budget and payment schedule conforms to the RFP amounts.
- Past Performance
  - The proposer successfully managed and completed past projects on schedule and budget.
  - The proposer was cooperative and responsive to SDDOT direction.

## Chapter 3: ADA Section 508 and WCAG 2.1 AA Compliance Guidance

The Office of Research publishes research proposals, which are attached to the contract, and posts them electronically on [South Dakota's Transparency Website](#). All proposals must meet accessibility requirements from [Section 508 of the Rehabilitation Act of 1973](#) and are required to follow [Department of Justice guidelines](#). Specific guidance suggestions include:

- Use of accessible fonts such as Arial, Calibri, Aptos, or other sans-serif styles.
- Table of contents is required for all documents longer than 10 pages. Use built-in heading styles.
- Use left alignment for the main body of the text to make the document easier to read.
- Ensure figures, tables, and charts are placed in line with text.
- Ensure that the document is not restricted since screen readers cannot read restricted documents.
- Avoid using footnotes.
- Avoid using vertical text.
- Do not add blank pages as spacers.
- Do not underline any text unless it is a hyperlink.
- Use before and after spacing in the paragraph settings to avoid using blank lines.
- Ensure document properties are filled out to avoid an error message in Adobe Accessibility Checker.
  - Microsoft – Title, Subject, Author, Company, and list keywords separated by commas.
    - Note: Subject should not have the same name as the Title.
    - Note: Keywords are important with metadata, which helps users find documents more easily and improves the visibility and searchability of documents in search engines.
  - Adobe – Title, Author, Subject, and list of keywords separated by commas.
    - Note: If document properties are filled out in Microsoft before creating a PDF, the document properties should carry over.
- Document file naming convention must not include any spaces or special characters. Accessible examples are SD20XX\_XX\_Proposal.docx and ResearchProposal.docx.
- Ensure color contrast throughout the document is accessible.
  - Regular and normal text and images must have contrast ratio of at least 4.5:1.
  - Large text such as 16 pt bold need at least a contrast ratio of 3:1 between foreground and background colors.

- This contrast requirement applies to text over a gradient or background image.
    - Add text over color to duplicate the meaning of color.
    - Bar graphs and pie charts needs at least a contrast ratio of 3:1 between each element and background.
    - Color line graphs should have shapes to distinguish each line.
    - Charts must pass color contrast in original file before placing in the document as an image.
  - Do not use language that references color as an indicator. For example: Do not say “Please see the red text”.
- Use the built-in column when creating columns instead a manually creating columns by using spaces and tabs to separate content into columns.
- Use the built-in styles for headings in Microsoft.
- Avoid using complex tables that have merged and blank cells in Tables. Use simple tables (data tables with just one level of row/column headers).
  - Put the table’s title above the table.
  - Present all text horizontally. Vertical text used in a table is not 508 compliant such as in a column header.
  - Note: If no data is present in a cell in a table use one of the following for the cell: dash “–”, 0, or “N/A”. Only use 0 if applicable. “No Data” or “Blank” could be inserted in white font to be visible only to assistive technologies.
  - Use table headers.
  - Ensure repeat header rows is selected. ‘Reveal Formatting Pane’ by using the ‘Shift + F1’ keystroke. Under ‘Table’ and ‘Row’, “Repeat as header row” should be appear if selected.
  - Pictures of data tables are not accessible.
  - In Table Properties fill out Alternative Text (Alt Text) including Title and Description. Under the Table tab, the alignment should be marked left, and the text wrapping should be marked none.
- Captions of figures, tables, and equations should be formatted consistently throughout the document. It is recommended that captions are sentence case meaning only the first word and proper nouns are capitalized for example:
  - Table 5: Summary of crash data from 2020 through 2024
  - Figure 13: Annual traffic volume by county
- Use Alt Text for images, charts, tables, and objects in the document.
  - Explain the content and function of the image.
  - Name the specific chart type.

- Charts need short alternative text along with long descriptive text before or after chart.
- Decorative images, divider lines, borders, or graphics that do not convey any information should be marked as decorative to skip Alt Text.
- Use Microsoft Word built-in list feature to create a bullets structure. Do not use Wingdings or manually typed characters for this purpose.
- Avoid using Watermarks. Watermarks cannot be made accessible.
- Hyperlinks should have descriptive text. Avoid using text such as “click here” or “learn more”.
  - Fill out ScreenTip by providing all necessary information for the user.
- For surveys ensure the survey platform follows [Web Content Accessibility Guidelines \(WCAG\) Version 2.1, Level AA](#) and [Section 508 of the Rehabilitation Act of 1973](#).
- Use the Acrobat tab in the ribbon in Microsoft to “Create PDF”.
- Check reading, content, and tag order in Adobe. Reading, content, and tagging should mirror each other.
- Note: Reading order check is a manual effort to verify the reading order in Adobe Pro.
- Do not use Microsoft Word’s equation function. Computers cannot always recognize symbols and characters used in mathematical equations and formulas. Equations should be inserted as image with Alt Text, defined terms, and caption. When writing out the Alt Text use words and terms instead of symbols to describe equation such as “equals” instead of (=) sign or “plus” instead of (+). The last sentence in the Alt Text for the equation or formula should state that “Terms are defined in the report narrative.” Insert an equation as an image or figure in a PDF. Don’t use Word’s equation function. To insert an equation as an image:
  - Under the Insert tab, select Picture and This Device in the Illustrations group. Don’t use the equation function found under this tab.
  - Locate and select the image on your computer.
  - Select Insert and position the image of the equation within the document.
  - Define the terms after the equation.
- Add Alt Text for the equation:
  - Right-click on the image and select Edit Alt Text.
  - Begin with the title of the equation.
  - Next, insert “Equation reads: (Use words and terms instead of symbols to describe the equation’s operators and symbols. For example, use “equals” instead of the equal sign (=).)”
  - End the description with “Terms are defined in the report narrative.”
- Insert a numbered caption below each equation.
  - From the References tab, select Insert Caption.

- Type the equation name in the Caption field.
- Select Equation from the drop-down menu in the Label field.
- Click OK.
- Center the label below the equation.

Below is a sample use of an equation as an image with defined terms, caption and Alt Text. The Alt Text can also be viewed by right-clicking on the image, selecting Format Picture and selecting Alt Text.

The annualized cost of the pavement treatment is first computed using the following equation:

$$\text{Annual Cost} = \frac{C \cdot R}{1 - (1 + R)^N}$$

#### Equation 1: Annualized cost of pavement treatment

Where:

C = treatment cost

R = discount rate (as a decimal)

N = expected service life (years)

Alt Text for the equation: “Equation defining the annualized cost of a pavement treatment. Equation reads: annual cost equals begin fraction C multiplied by R divided by 1 minus begin parenthesis 1 plus R end parenthesis multiplied by N squared end fraction. Terms are defined in the report narrative.”

Proposals will be checked for accessibility using the Adobe Acrobat Accessibility Checker. A [Color Contrast Checker](#) will be used to manually check the color contrast within the proposal. A manual check will be done to verify the reading, content, and tagging order in the PDF.

## Chapter 4: 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](tel:605-773-3199) or [andy.vandel@state.sd.us](mailto:andy.vandel@state.sd.us).

## Chapter 5: References

If references are included in the proposal, use the Modern Language Association (MLA) style and ensure the list is alphabetized. Provide complete references, including:

- Author or editor names; article title; chapter, book, journal, or report title; publisher or issuing agency; location of publisher; year of publication; volume and issue or report number; DOI or URL; and page numbers (if applicable).
- Attribute unpublished material, telephone conversations, and other personal communications in the reference section.
- For web sources, include the full URL and the date accessed.
- When using in-text citations use the format (Author, Date).

# Resources

## **Citation Resources:**

See the [MLA Quick Guides](#) for assistance on formatting common sources such as books, journal articles, and websites.

## **Color Contrast Resources:**

See the [Web Accessibility in Mind \(WebAIM\)](#) to check color contrast of text and non-text graphical elements.

See the [Web Content Accessibility Guidelines \(WCAG\) 2.1 - Non-text Contrast \(Level AA\)](#) for more details on color contrast on non-text contrast.

See the [WCAG 2.1 – Contrast \(Minimum\) \(Level AA\)](#) for more details on color contrast on text.

## **Map Accessibility Resources:**

See the [Accessibility Guide for Static Digital Maps](#) for recommendations and guidance on creating maps in documents.

See the [ArcGIS Maps SDK for JavaScript](#) for more information on Esri color ramps and to choose a color ramp that are color blind friendly.

See the [ArcGIS Pro Color Vision Deficiency Simulator](#) for more information about how the tool is used for testing accessibility on maps.

See the [ColorBrewer: Color Advice for Maps](#) tool to find palettes that are color blind friendly.

See the [Detailed Checklist](#) for additional guidance on authoring accessibly.

See the [Map Accessibility](#) for recommendations on Map Design, Static Digital Maps, and Interactive Web Maps.

## **Section 508/Accessibility Training and Resources:**

See the [Accessibility Training, Tools, and Events](#) to learn more about Section 508 and how to make your content accessible to everyone.

See the [Department of Justice guidelines](#) to learn more about the new ruling.

See free training resources on [Minnesota’s Explore Training Opportunities](#).

See the [Non-Visual Desktop Access \(NVDA\)](#) to download a free copy of the screen reader.

See [Section 508 of the Rehabilitation Act of 1973](#) to learn more about Section 508.

See the [TPF-5\(442\) Transportation Research and Connectivity Pooled Fund Study: Section 508/Accessibility](#) for trainings, guidance, templates, testing tools, and more about Section 508.

See [Web Content Accessibility Guidelines \(WCAG\) Version 2.1, Level AA](#) for more information on to make web content more accessible to people with disabilities.

# **Appendix A**

## **Research Proposal Cover Page**



## Research Proposal

**[Project Title – Insert project title from RFP.] (“Title” style)**

**[SD20XX-XX – Insert report number from RFP] (“Report Number/Date” style)**

Delete this box and insert a picture or graphic that best represents the research topic for this study with alternative text. Picture or graphic is optional.

Submitted by:

[Example: Proposer Name  
Department, Office, College or Affiliation  
Street Address  
City, State, Postal Code  
Phone Number  
Proposer’s E-mail address] (“Author Block” style)

Submitted to:

South Dakota Department of Transportation  
Office of Research Room 157  
700 East Broadway Avenue  
Pierre, South Dakota 57501-2586

**[Proposal Date] (“Report Number/Date” style)**