Iowa DOT Research
800 Lincoln Way l Ames, IA 50010
contact.research@iowadot.us

Required Format for Iowa DOT Research Proposals

The following instructions are intended to help researchers prepare a research proposal that will be acceptable for review by the research staff. Where differences occur between information stated in this document and what is posted on https://iowadot.gov/research/Requests-for- Proposal, the information posted on the website will govern.

The research proposal should be prepared in a manner that defines the research problem and objectives, provides a detailed work plan for achieving the objectives, and indicates how the research findings are expected to be used. Proposals should provide a straightforward description of the researcher's ability to meet the stated objectives.

i. Cover Page

a. Include the following information:
   i. Proposal title (Maximum 7 words or from RFP)
   ii. Research proposal number (from RFP)
   iii. "Submitted to:
   [PROJECT MANAGER NAME],
   Iowa Department of Transportation
   Research & Analytics Bureau
   800 Lincoln Way, Ames, Iowa 50010"

ii. Summary Page

a. Include the following information:
   i. "Submitted by" name, institution, address, e-mail address, phone, and ORCID (https://orcid.org/) of proposer
   ii. Abstract (Maximum 300 words)
   iii. Project Cost
   iv. Proposal date
   v. Project length in months (**do not use dates**)
   vi. Keywords (from Transportation Research Thesaurus - https://trt.trb.org/trt_alphabet.asp)
      1. TRT Help Video - https://vimeo.com/496881977

iii. Table of Contents

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

iv. Problem Statement

a. Concisely express your understanding of the problem presented in the RFP. Do not simply repeat the wording of the RFP, but rather demonstrate your own insight into the problem.

v. Background Summary

a. Include background information on the research topic. An online literature search of both of Transportation Research Board's *Research in Progress* (https://rip.trb.org/) and *Transport Research International Documentation (TRID)* (https://trid.trb.org/) records is also encouraged.

b. Summarize these findings and state the relationship of the proposed study to prior research. The summary should reveal your understanding of underlying principles and should clearly express your appreciation of the problem.

c. The importance of the background summary should not be underestimated. A comprehensive summary ensures that all aspects of the research topic have been adequately considered so new research can build upon prior work rather than duplicate it.

vi. Objectives

a. State each of the study's technical objectives as cited in the RFP and indicate any additional objectives the proposing team will define for the project.

b. Describe how each objective will be accomplished during the research. Any deviations from or additions to the objectives listed in the RFP must be explained and justified.

vii. Research Plan

a. Describe how the objectives will be achieved through a logical and innovative plan. State each task proposed, and if listed in the RFP, also include tasks as cited in the RFP.

b. Describe in appropriate detail how each task will be performed and how each task contributes to accomplishing the study's stated objectives. Any deviations from or additions tasks listed in the RFP must be explained and justified.

c. If noted in the RFP, include a task for developing a data management plan, in collaboration with the Iowa DOT Research Project Manager, that focuses on:

- Digital research data, including software and code products, that are of sufficient quality to validate and replicate research findings, regardless of whether they are used to support scholarly publications.
- Data that is difficult to replicate or of long-term interest to research communities.

d. The research plan should also describe the technical basis of the research. Describe the following, as appropriate:

i. Principles or theories to be used
ii. Significant variables to be tested
iii. Analytical and statistical procedures
iv. Experimental and testing procedures
v. Evaluation criteria
vi. Inspection and survey methods
vii. Controls to be used
viii. Material or procedure development

e. The research plan should be complete, providing the greatest level of detail that the researcher's understanding of the problem permits.

f. Describe the facilities available to accomplish the research. Indicate equipment necessary to completion of the research and specify any restrictions on its use. Specify any equipment that is necessary but not currently on hand. If additional equipment is to be purchased with project funds, identify it and provide details in the budget estimate.

viii. Products

a. List the products that are proposed to be delivered during the research project, which may include:
   i. Reports
   ii. Computer programs
   iii. Manuals
   iv. Physical models
   v. Photographs
   vi. Databases
   vii. Video or other audio/visual materials

b. Unless directed otherwise in the RFP, always include the following items as products:
   i. Quarterly progress reports to the TAC
   ii. Data management plan; see Iowa DOT's guidance for details
   iii. Draft final report
   iv. Final report
   v. Technology transfer technical brief
   vi. Implementation Plan – See Appendix A - Implementing Research Form

   Note: All products, final reports and technology transfer technical briefs shall comply with accessibility and Section 508 requirements, regardless of funding source. Section 508 is an amendment to the federal Rehabilitation Act of 1973 mandating that all electronic and information technology developed, procured, maintained, or used by the federal government be accessible to people with disabilities. Refer to 29 U.S.C 794 (d) for additional information.

   vii. Photographs and other image files
      1. Provide a .jpg or .png file of at least two photos or images that appeared in the final report or can be used in the Technical Brief and other communication products. Consider the following when selecting images:
         - Select a horizontal photo with a moderately high resolution, at least 500 pixels wide and preferably higher.
         - Photos should have enough background-type space to accommodate a caption box.

c. Electronic copies (in PDF format) of the Final Report and Technology Transfer Technical Briefs are required unless permission is specifically granted otherwise.

ix. Implementation/Technology Transfer

a. Describe how (in general) Iowa cities, counties, or the Iowa DOT can apply the anticipated research results to improve their practice. If responding to a pooled fund RFP, frame in terms of pooled fund partner states instead.
    i. Describe the form in which the research findings may be reported, such as a mathematical model, a laboratory test procedure, or a design technique. Describe these results in terms of the practicing engineer or administrator.
    ii. State who would logically be responsible for applying the research results, such as the American Association of State Highway and Transportation Officials (AASHTO), the Federal Highway Administration (FHWA), Iowa cities and counties, the Iowa DOT, or specific bureaus within Iowa DOT.
    iii. Identify specific standards or practices that might be affected by the research findings, such as AASHTO or Iowa DOT specifications, policies and procedures, legislation, and funding or staffing requirements.
    iv. Identify institutional issues, including resource requirements, administrative rules, or laws, that might need to be addressed for successful implementation.

b. If findings will not be suitable for immediate implementation, indicate what further work might be necessary.

x. Benefits

a. 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:
    i. Cost savings
    ii. Increased safety
    iii. Improved service
    iv. Improved procedures

b. To the extent possible, describe how these benefits can be measured and how their value can be determined after the study results are put into practice.

xi. Time Schedule

a. Provide a bar chart or other graphical presentation illustrating the scheduling of the major research tasks (Table 1). Indicate the number of months allocated to each task. The following should be considered in the project schedule:
    i. Determine project TAC members with Iowa DOT-designated representatives within 15 calendar days of contract signature.
    ii. Schedule the project kick-off TAC meeting within 60 calendar days of contract signature.
    iii. Schedule TAC meetings at anticipated project milestones but not less than once every six months.
    iv. Submit quarterly progress reports.
    v. Allow 45 calendar days to obtain a Memorandum of Understanding (MOU) for access to certain datasets (if noted in the RFP).
    vi. Allow 60 to 90 calendar days for TAC review of draft final deliverables and completion of *Implementing Research* form.
    vii. Schedule project closure presentation with the TAC to occur approximately 30 calendar days before the project end date.
    viii. Obtain acceptance from Iowa DOT-designated authorized representatives for all final

deliverables no later than 10 working days before the project end date.

ix. Schedule required Final Project Presentations. Final Project Presentations should be performed prior to the project end date.

Table 1 – Example of Major Tasks Schedule

Task **Month**	1	2	3	4	5	6	7	8	9	10	11	12
Literature Review												
Kick-off Meeting												
Field Surveys												
Field Tests												
TAC Meetings												
Observe Construction												
Cost Analysis												
Develop Recommendations												
Complete *Implementing Research* Form												
Prepare Final Report												
Present Findings to TAC												
Final Report Presentation												

xii. Staffing

a. Include pertinent background information for principal investigators and other team members significantly participating in the project. Provide specific information relating to their project responsibilities and to the value added to the project due to their participation. Support personnel may be identified by classification. Describe how academic, professional and research experiences relate to the project. Include a summary of past accomplishments in the same or closely related problem areas.

b. If subcontracting is necessary, include subcontractors' key personnel and support staff in the proposal. Clearly identify subcontractors' involvement. Describe current commitments to other work in sufficient detail to permit assessment of the researchers' ability to meet the proposal's commitments.

xiii. Iowa DOT or Local Jurisdiction Involvement

a. Describe any assistance required from Iowa cities, counties, or the Iowa Department of Transportation. Include such items as:
   i. Traffic control
   ii. Construction
   iii. Highway maintenance
   iv. Drilling and sampling
   v. Access to transportation facilities
   vi. Access to records or databases
   vii. Interviews
   viii. Material tests

b. Quantify the required level of effort as fully as possible. Any expected participation from Iowa cities, counties or Iowa DOT staff or resources must be approved by the responsible bureau or party in writing and submitted as part of the proposal document unless participation or resource is pre-approved as stated in the RFP.

xiv. Budget

a. Show the estimated cost for the entire research project. If the proposal includes effort by subcontractors, a similar budget table should be included for each.

b. Include description and estimated cost of any proposed equipment and non-consumable property to be purchased and used as part of the project.

    i. Equipment means tangible property having a useful life of more than one year and a per-unit acquisition cost of $10,000 or more.
    ii. Non-consumable property means tangible property having a per-unit acquisition cost between $2,000 and $9,999.

c. A breakdown of all travel costs must be identified separately. A detailed explanation of all travel costs shall be provided. Out-of-State travel will require Iowa DOT approval in writing. Travel expenses to conferences are not allowed unless requested as part of the project by Iowa DOT Research or outlined in the RFP.

d. It is the policy of the Iowa DOT that payment of tuition for students involved in research is not allowed. Students may only be reimbursed based on hours worked on the project, being documented as such on invoices.

e. Indirect administration costs, which include both facilities and administration:
    i. May only be applied to the first $25,000 of sub-contract and support costs.
    ii. Shall not be applied to equipment costs.
    iii. Shall not be applied to computers, software or computer peripheral hardware usage fees.
    iv. Shall not exceed 26% of total direct costs for contracts with educational institutions.

f. Computers and software:
    i. Purchase of computers, software or computer peripheral hardware is not an allowable cost.
    ii. Usage fees for computers, software or computer peripheral hardware in order to provide computers and software used in the performance of a project is an allowable cost.
        1. A breakdown of all usage fees by type and amount shall be provided.
        2. Indirect administration shall not be applied to computers, software or computer peripheral hardware usage fees.

g. Equipment, services or systems produced by the following are not allowed:
    i. Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).
    ii. Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).

h. The amount indicated as “Funding limitation” on the RFP, if provided, represents the funding level the research topic merits and the level of funding provided to complete the proposed work. Proposers should set the scope and depth of study accordingly.

i. Proposals responding to the RFP should respond to the identified budget and project goals. Additional project tasks, beyond those outlined in the solicitation, may be identified by the principal investigator if deemed useful in improving the general objective of the project. All additional tasks and budget items associated with them will be clearly identified in the proposal as extra work and will be shown separate from the project tasks and budget items associated with the solicitation's objectives. Because of budget constraints, additional funding may not be available. No budget extensions should be anticipated.

xv. Submission

a. Submit completed proposals to Proposal.Research@iowadot.us.

b. Use the following naming convention for the PDF submission:
   i. ResearchProposalNumber_Agency_PrincipalInvestigatorLastName.pdf Ex. *SPR229_ACME_Jones.pdf* or *IHRB-1872_DHConsultants_Hill.pdf*

Appendix A – Implementation Plan

Research funding is eligible for follow-up projects that implements the research results derived from a previous project. The stand-alone *Implementing Research form* will present recommendations for implementing project findings. Summarized below are key tasks and the parties responsible for addressing the implementation of research results and documenting a plan for implementation.

Planning for implementation begins with the project proposal. When preparing its research proposal, the research team is required to allocate time and budget to an Implementation Plan task that is completed during the same period as preparation of the final report (typically, the final three months of the research project).

Addressing implementation during the research process. The research team will consider implementation as research progresses and include implementation on the agenda for periodic meetings with the Technical Advisory Committee (TAC).

As the research project nears completion, after the development of recommendations and three months before delivery of the final report and expiration of the contract, the Project Champion will schedule an implementation plan development meeting to address the potential for implementation of research findings. This meeting will be attended by members of the TAC and the research team.

The Project Champion will use the *Implementing Research* form to guide discussion about next steps for applying research results.

Completing the *Implementing Research* form. After the implementation plan development meeting, the research team will complete the *Implementing Research* form based on its discussion with the TAC. After briefly describing the implementation plan and how its results will benefit Iowa DOT and its stakeholders, the *Implementing Research* form requires the research team to:

- Identify the major tasks that will be required to implement findings.
- Present potential challenges or barriers to implementation along with possible mitigation measures.
- Describe expected benefits, including possible assessment metrics.
- Identify training needs, including the pool of potential trainees, and the nature and extent of the training.
- Highlight gaps in findings and recommend areas for future research.

Publishing the *Implementing Research* form. The research team will include the completed *Implementing Research* form in the final report as Appendix A: Implementation.

INSERT PROJECT NAME

Project Description

Project Number:	Click here to enter text.
Project Funding Program:	Click here to enter text.
Projected End Date:	Click here to enter text.
Project Champion:	Click here to enter text.
Project Manager:	Click here to enter text.
Principal Investigator:	Click here to enter text.

Project Objectives

[Summarize the project objectives.]

Implementation Plan

[Briefly describe the research team's plan for implementing project findings, including:

- Any end products included in the recommended outcomes. These might include a new specification, policy, laboratory test procedure, mathematical model, or design technique, staff training, or other revised procedure or practice.
- How Iowa DOT, Iowa communities, or pooled fund partner states can apply research results to improve practices.
- Specific standards or practices that might be affected by the research findings, such as American Association of State Highway and Transportation Officials (AASHTO) or Iowa DOT specifications, policies and procedures, state legislation, and funding or staffing requirements.
- Resource requirements, administrative rules or laws, or other institutional issues that must be considered when implementing research findings.]

Major Tasks

[Using the template table below, list the tasks that will be required to execute the research team's implementation plan. Copy the template to describe as many tasks the research team anticipates will be needed to carry out the implementation plan. Note that **Training Needs** are addressed separately later in this document.]

Task:	Click here to enter text.
Responsible Iowa DOT Department(s) and/or Staff Member(s):	Click here to enter text.
Iowa DOT Resources Required:	Click here to enter text.
Implementation Partner Agencies:	Click here to enter text.
Anticipated Start Date:	Click here to enter text.
Anticipated Completion Date:	Click here to enter text.

Potential Challenges or Barriers

[Identify potential challenges or barriers Iowa DOT may encounter when attempting to execute the implementation plan. Include possible ways to mitigate these challenges or overcome these barriers.]

Expected Benefits

[Identify the benefits that will accrue to Iowa DOT and its stakeholders when the implementation plan is fully executed. Select all that apply and provide a brief description of each benefit selected, including how the research results can be used, and by whom, to improve transportation practice. Include in the description whether and how the benefit can be quantified. If not quantifiable, identify how the potential benefit can be assessed.]

Expected Benefit	Description
☐ Decreased lifecycle costs	Click here to enter text.
☐ Developed new or revised specification	Click here to enter text.
☐ Expedited project delivery	Click here to enter text.
☐ Improved aspects of the environment	Click here to enter text.
☐ Improved operations	Click here to enter text.
☐ Improved system reliability	Click here to enter text.
☐ Increased customer satisfaction	Click here to enter text.
☐ Increased knowledge	Click here to enter text.
☐ Increased lifecycle costs	Click here to enter text.
☐ Increased productivity or efficiency	Click here to enter text.
☐ Increased safety	Click here to enter text.
☐ Increased service life	Click here to enter text.
☐ Reduced agency administrative costs	Click here to enter text.
☐ Reduced construction costs	Click here to enter text.
☐ Reduced engineering and design costs	Click here to enter text.
☐ Reduced maintenance costs	Click here to enter text.
☐ Reduced operations costs	Click here to enter text.
☐ Reduced user costs	Click here to enter text.
☐ Validated current practice	Click here to enter text.

Training Needs

[Describe any training needs associated with the implementation plan, including who will require training, and the nature and extent of the training.]

Future Research

[Identify gaps in findings and topic areas for future research that will further advance the findings from this project.