RESEARCH OFFICE
PROPOSAL PREPARATION GUIDE

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Research Office
Washington State Department of Transportation

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RESEARCH PROPOSAL PREPARATION GUIDE

This guide is intended to help researchers prepare a proposal that will meet our information needs for a research proposal. **Proposals prepared as requested will avoid delays.**

PROPOSAL PURPOSE

The research proposal is a document that clearly defines the research objective, provides a detailed work plan for achieving the objective, and indicates how the research findings are expected to be used. The proposal should also serve the following purposes:

- Provide sufficient information for research managers to evaluate the need and justification for the research and to assess the probable value of the proposed work plan to the department;
- Clarify the study's overall objectives as well as a plan for meeting those objectives;
- Allocate staffing and funds for research;
- Provide a measurement of the potential uses and benefits of the research;
- Identify potential areas in which to apply the products of the research; and
- Provide a basis for measuring progress and results of the research project.

PROPOSAL SUBMITTAL

University of Washington

Proposals from UW researchers must be submitted *through* the UW TRAC office, not directly to WSDOT.

Other proposals

Submit your proposal electronically to:*

Rhonda Brooks, Director of Transportation Research
Research Office
BrookRH@wsdot.wa.gov

*Please cc: Jennifer Capps, Office Coordinator (e-mail CappsJ@wsdot.wa.gov).

ORGANIZATION

Proposals should be arranged as follows:

a. Title Page
b. Table of Contents
c. Problem Statement
d. Background
e. Objectives
f. Benefits
g. Products
h. Implementation
i. Work Plan
j. Staffing Plan
k. Level of Effort
l. Facilities Available
m. Supporting Data
n. Work Time Schedule
o. References
p. Budget Estimate

The remaining sections of this document, following the table of contents, provide a shell to help structure your proposal. Read the explanations of what each section should contain, then replace the descriptions with information that is appropriate for your project.

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PROPOSAL TITLE

by

Single Author
Title and Affiliation

Multiple Author
Title and Affiliation

Multiple Author
Title and Affiliation

Multiple Author
Title and Affiliation

Multiple Author:
Title and Affiliation

Multiple Author
Title and Affiliation

Washington State Transportation Center (TRAC)
University of Washington, Box 354802
University District Building, Suite 535
1107 NE 45th Street
Seattle, Washington 98105-4631

A proposal prepared for

Research Office
Washington State Department of Transportation
Transportation Building, MS: 47372
Olympia, Washington 98504-7372

Month and Year

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PROBLEM STATEMENT

This section should be a clear and concise statement covering the problem to be solved by the proposed research.

BACKGROUND

This section should contain the following essentials:

- the findings of a literature search and an indication of the existing technology
- an indication of the researcher's understanding of the underlying principles involved
- the relationship between the proposed study and previous research
- a statement supporting the researcher's proposed approach and the reasons why.

OBJECTIVES

This section should state the technical objectives upon which the researcher's efforts will be focused. The objectives should clearly and concisely identify what products the researcher seeks from the research.

BENEFITS

This section should clearly and concisely describe the benefits that the researcher anticipates from the research. Examples include the following:

- a saving of time and money
- an increase in safety
- an improvement in service
- an improvement in aesthetics or environmental quality
- a reduction in product or operational costs
- an improved procedure or longer lasting product.

PRODUCTS

Provide a list of products that will be delivered to WSDOT during the contract. These might include draft reports, final reports, computer programs, photos, slides, slide/tapes, video tapes, equipment, visual aids, physical models, and databases. At a minimum, the following documents will describe the research and its results (content and format requirements are detailed in *WSDOT Research Report Requirements*):

- draft technical report and/or draft final report
- camera-ready final technical report and/or final report
- a Research Notes page
- semi-annual progress reports.

IMPLEMENTATION

This section should assess areas in which the anticipated research findings could potentially be applied, including the following:

- the means by which WSDOT might best utilize the research findings, such as the circulation of a written report, a report summary, personal contact between WSDOT research and operating engineers, or workshop or seminar
- the major discovery or finding resulting from this research that WSDOT will make use of
- how WSDOT will make use of it and what the value added from the research is
- the specific standard of practice that would be changed by the findings (if successful), such as AASHTO standard specifications, WSDOT standard specifications, policy directives, implementation manuals, or operating procedures
- additional steps the researcher expects will be required before the research findings can be applied if they will not be suitable for immediate practical use at the end of the stated project.

WORK PLAN

This section should ***completely describe*** the plan or approach the researcher intends to use and specify how the researcher will structure and perform the research to meet each research objective. The format of this section should be divided into major tasks. The researcher must address how each task will be carried out. Give each task a number and a title, followed by a brief description of what each task will entail. The work plan should contain the following information for each of the four types of research activities as appropriate:

Theoretical Research (concept oriented)

The basic approach to the development of the theory
Specific hypotheses derived from the theory
A theoretical framework (experimental design) for research
Significant variables to be tested
Data analysis and statistical procedure(s)

Applied Research (problem oriented)

Principles or theories to be used in the solution
Possible problem solutions
Critical experiments to test the applicability of the theory
The kind and range of variables to be tested
Experimental facilities available
Data analysis and statistical procedure(s)

Development

The device, process, material, or system to be developed
The applied research upon which the development is to be based
The plan of work to complete the development
The kind and range of variables considered in the development
Facilities available for the development
Data analysis procedures, including adequate statistical methods

Measurement, Test, and Evaluation

Item to be evaluated or measured
The extent of the development of the item
Criteria for evaluation
Testing procedures
The conditions under which evaluation will be made
Controls to be used
Data analysis procedures, including adequate statistical methods

Task 1 — Task 1 Title
Description of Task 1.

Task 2 — Task 2 Title
Description of Task 2.

STAFFING PLAN

This section should discuss

- the people involved in the research and their capabilities
- staff organization and functions
- personnel availability
- the augmentation necessary to properly conduct the research.

It should relate personnel to specific aims and procedures. An organization chart of the project and a short description of researchers and their roles are appropriate.

All proposals should include the following paragraph:

Editing, word processing, and graphics support for this project's reports and presentations will be provided by the TRAC interdisciplinary center at the University of Washington.

LEVEL OF EFFORT

This section identifies the percentage of effort by each person on the project, as it relates to the work plan. A table showing the allocation of staff time by task is required. The table should reflect staff ***time*** and not percentages. Copy and use one of the examples below to show allocation of staff time by task, or create a similar table with a spreadsheet:

Personnel	Task (hours, weeks, months, etc.)			
	1	2	3	Total
Principal Investigator				
Graduate Assistant				
Total				

Personnel	Task (hours, weeks, months, etc.)				
	1	2	3	4	Total
Principal Investigator					
Graduate Assistant					
Total					

Personnel	Task (hours, weeks, months, etc.)					
	1	2	3	4	5	Total
Principal Investigator						
Graduate Assistant						
Total						

Personnel	Task (hours, weeks, months, etc.)						
	1	2	3	4	5	6	Total
Principal Investigator							
Graduate Assistant							
Total							

Personnel	Task (hours, weeks, months, etc.)							
	1	2	3	4	5	6	7	Total
Principal Investigator								
Graduate Assistant								
Total								

Personnel	Task (hours, weeks, months, etc.)								
	1	2	3	4	5	6	7	8	Total
Principal Investigator									
Graduate Assistant									
Total									

Personnel	Task (hours, weeks, months, etc.)									
	1	2	3	4	5	6	7	8	9	Total
Principal Investigator										
Graduate Assistant										
Total										

Personnel	Task (hours, weeks, months, etc.)										
	1	2	3	4	5	6	7	8	9	10	Total
Principal Investigator											
Graduate Assistant											
Total											

FACILITIES AVAILABLE

This section should describe the facilities at the disposal of the researcher that are important to the conduct of the work. The following paragraphs describe the facilities available to TRAC at the University of Washington:

This research effort will be conducted through the Washington State Transportation Center, located in the College of Engineering at the University of Washington. TRAC resources available for this project include a professional staff to aid in the writing, editing, and graphics involved in report production; microcomputer facilities; and conference and drafting facilities.

The University libraries, with more than 5 million volumes, provide an outstanding collection of books, periodicals, research reports, publications, and other materials. In addition, the facilities of the Washington State Department of Transportation's library in Olympia will be available for the project.

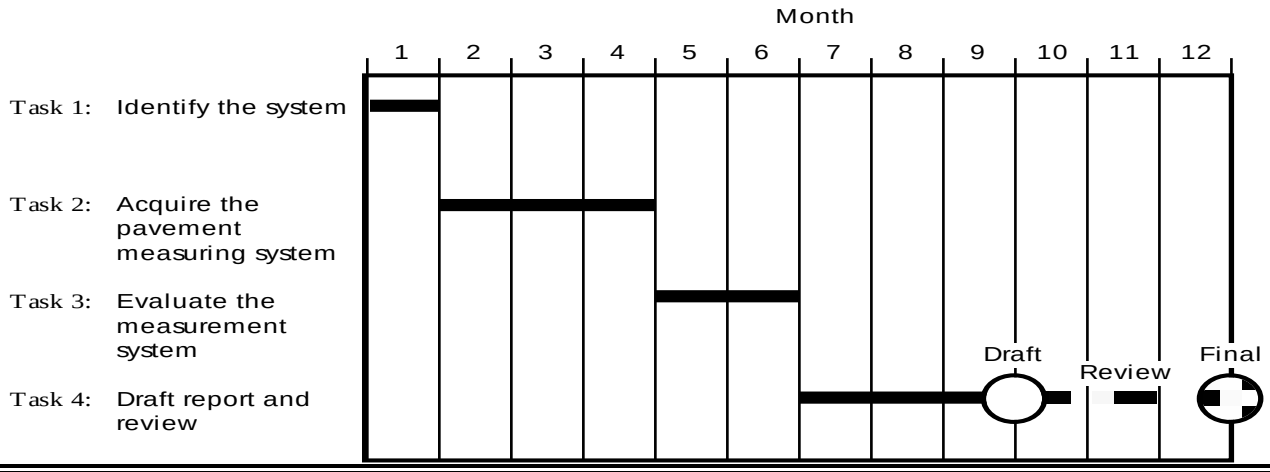
The UW Academic Computer Center provides extensive information processing facilities to the campus for research use. An IBM mainframe computer is supplemented with a campus computer network and support for all major programming languages; numerous software packages for statistical analysis, database management, graphics and document preparation; and a range of peripheral equipment, including graphics terminals and plotters. The UW Department of Civil Engineering also maintains its own computer-aided design laboratory, with a number of graphics terminals and associated peripherals hardwired to the campus computing network.

SUPPORTING DATA

This section should summarize the principal researcher's experience, capability, and past performance on **related research work** in a paragraph or two. Where an agency has prime responsibility for conducting research, such information should be related to the agency as well as to the individual. Please do not attach academic résumés to proposals.

WORK TIME SCHEDULE

Bar charts, critical path method diagrams, flow charts, or other types of pictorial presentation should be provided to illustrate the interrelationship and scheduling of the major operational tasks of the research. The overall schedule should allow for the review process, as shown in the following figure. Use scheduling or diagramming software such as Microsoft Visio or FastTrack Schedule.



REFERENCES

References should follow the form of author, title, and facts of publication (see the University of Chicago Press *A Manual of Style*) and be listed in alphabetical order.

BUDGET ESTIMATE

SAGE Budget enables you to create accurate, detailed budgets for your grant and contract proposals. An easy-to-use wizard expedites budget set-up; the comprehensive budget worksheet minimizes errors and improves data quality. SAGE Budget automatically populates your budget with real-time salary and benefits information,

calculates budget totals for each period, and identifies the correct facilities and administration (F&A) rate.

For more information, see SAGE Budget Basics and SAGE Budget Quick Start Guides.

TRAC will do the following:

- provide an Excel budget template upon request
- review and refine SAGE budgets before forwarding them to the research sponsor
- work with principal investigators, sponsors, and OSP to submit eGC1s and budgets.

The budget should show the estimated cost for the full term of the research project, the current fiscal year, and each subsequent year, and it should include the following:

Salaries for professional and support personnel
Subcontracts
Personal services
Overhead and indirect costs
Benefits
Travel
Computer time
Inventory of equipment (purchase and/or rental)
Expendable materials and supplies
Report printing
Special services (where applicable)
A supplementary tabulation showing the total cost by sources of funds where financing includes more than federal and state matching funds.

(Remember to figure each fiscal year separately, e.g., FY 2015, FY 2016, Total.)