GUIDELINES FOR PREPARING UDOT RESEARCH REPORTS

Prepared For:

Utah Department of Transportation
Research Division

Submitted By:

Utah Department of Transportation
Research Division

Authored By:

Utah Department of Transportation
Research Division

Revised April 2012

TABLE OF CONTENTS

1.0 INTRODUCTION

Reports communicate and store information. Reports should include all pertinent information and data used in the research, including all the background information, data and communications. Reports are designed to explain the research process and findings to interested audiences. A poorly written report reflects on the research itself, whether the research was valuable or not.

This document includes guidelines for preparing reports for the Utah Department of Transportation (UDOT) Research Division. A separate research report template in MS Word format, demonstrating these guidelines, is available from the Research Division and may be used for preparing UDOT research reports.

Submitted reports will be reviewed for content, legibility, organization, and presentation. Poorly written reports will be sent back to the author for corrections.

This document is divided into the following chapters:

- Introduction
- Research Report Overview
- Typographical and Visual Features
- Copyrighted Material
- Printing and Publishing
- Final Distribution
- Additional Resources

The report writer should contact the Research Division for any clarification about these guidelines.

2.0 RESEARCH REPORT OVERVIEW

Reports should be clear and concise, providing sufficient explanation for the reader to understand the findings. Following are the report's required and optional elements, in placement order:

- Report Cover
- Disclaimer Notice (required)
- Acknowledgments (optional, as appropriate)
- Technical Report Abstract
- Table of Contents
- Unit Conversion Factors (optional, as needed)

- Acronyms (optional, as needed)
- Executive Summary
- Body of Report
- References (in a single list here or individually throughout the report)
- Bibliography (optional, as appropriate)
- Appendices (optional, as needed)

The following sections provide more detail on the report's elements.

2.1 Report Cover

Draft and final reports should have a cover page conforming to the format in Appendix A and as shown in the cover page of this document (Arial font, only on the cover page). UDOT can provide the report number when the report is final. The report phase (draft, interim, or final) should be listed with the date.

2.2 Disclaimer Notice

Every research report should have a copy of the Disclaimer Notice inside the front cover of the report as provided here:

"The authors alone are responsible for the preparation and accuracy of the information, data, analysis, discussions, recommendations, and conclusions presented herein. The contents do not necessarily reflect the views, opinions, endorsements, or policies of the Utah Department of Transportation or the U.S. Department of Transportation. The Utah Department of Transportation makes no representation or warranty of any kind, and assumes no liability therefore."

For research reports involving highway crash data, the author should consult with the UDOT Traffic & Safety Division and include the following additional disclaimer:

"This report is protected under 23 USC 409."

2.3 Acknowledgments

The authors may wish to acknowledge others for their involvement in the execution of the research study. The acknowledgments should be placed on the same page as the Disclaimer Notice.

2.4 Technical Report Abstract

The author completes on a single sheet the Technical Report Abstract, according to the

format shown in Appendix B. The Technical Report Abstract includes cataloging information for use by the Federal Highway Administration (FHWA) and other libraries.

2.5 Table of Contents

The Table of Contents should be placed right after the Technical Report Abstract. The List of Tables and List of Figures should be part of and immediately follow the main Table of Contents. The Table of Contents, List of Figures, and List of Tables should be linked to the document and hyperlinked in web format. In the Table of Contents, chapter, section, and subsection titles should include the heading numbers. Chapter titles should be formatted with all letters capitalized, and section and subsection headings should be formatted with first letters capitalized. Additional indent should be added for each new section or subsection level falling under a chapter or section heading.

2.6 Unit Conversion Factors

Measurements in UDOT reports are in the inch-pound (U.S. Customary) system. If needed, the report should include a Unit Conversion Factors page for any units used and not conforming to UDOT standard unit of measurement. Alternatively, the authors may give data conversion units in parentheses, for any data reported in other systems, throughout the report.

2.7 Acronyms

The authors should provide a list of acronyms for any abbreviations used in the report. Acronyms usually, but not always, consist of a letter or group of letters taken from the word, name, or phrase.

2.8 Executive Summary

The executive summary emphasizes the results and conclusions. The executive summary should briefly summarize or refer to key information described in the report and should not be more than two pages long.

2.9 Body of Report

The body of the report should include at least the following chapters or their equivalents:

- Introduction
- Research Methods
- Data Collection
- Data Evaluation (or Analysis)
- Conclusions

- Recommendations and Implementation

In the body of the report, the headings of chapters, sections, and subsections should be numbered using Arabic numerals at the left of the heading, as shown in this document. Each chapter, section, and subsection number should be divided by a period (for example, Chapter 1 Section 1 would be: 1.1 Heading of the Section). Chapter headings (1.0) should be in all capital letters, bold type, underlined, and centered. Section headings (1.1) have the first letters capitalized and are in bold. Subsection headings (1.1.1) are underlined and have first letters capitalized.

2.9.1 Introduction

The Introduction should start on a new page, and subsequent chapters may begin mid-page or on a new page. In general the Introduction should include the following:

- Background information.
- Scope of the project, research, or study.
- Brief description of the publication's contents.

2.9.2 Research Methods

The Research Methods chapter includes the subject's detailed background, the methodologies used, and other pertinent information.

2.9.3 Data Collection

This chapter should include information explaining how and why the data was collected for the research and where the data is available. All data should be included in one or more appendices of the report.

2.9.4 Data Evaluation (or Analysis)

This chapter should include information on how and why the data was evaluated. Statistical methods employed should be listed and their use justified. Extrapolated and evaluated data should be included on tables or charts or graphs that simplify and help understand trends or other information gathered.

2.9.5 Conclusions

This chapter should include the researcher's opinion on the research findings. The researcher should summarize the findings and point out the relevant data supporting the conclusions. This chapter should include any research limitations or challenges.

2.9.6 Recommendations and Implementation

The Recommendations are suggestions for action. The recommendations should include an Implementation Plan when applicable. The Implementation Plan should contain sufficient information to: a) provide direction on steps needed to implement the technology or products developed under this contract; b) provide recommendation on staffing needs and resources; and c) list individuals and organizational roles and responsibilities recommended for implementation. This chapter should also include recommendations for further research when applicable.

2.10 References

The report should have a complete citation for all sources that are referred to in the text. If the author chooses to use a style that calls for a single list of references, these should be located at the end of the report unless justified for putting it elsewhere.

2.11 Bibliography

A bibliography is optional. It may be provided if there are additional useful sources that are not included in the References section. Entries should be in a uniform style, based on a standard source such as ASCE, TRB, AASHTO, or NCHRP.

2.12 Appendices

Appendices contain extensive supplementary material that is indirectly related to the report, such as raw data and technical memoranda prepared in connection with the study. Brief commentary goes in a footnote. The main text has all information that is directly related to the topic. Appendices included in the report should be referred to in the main text. The header of each of the appendices should be top centered and bolded with a clear description underneath. Tables and figures in the appendices should be numbered and include captions.

3.0 TYPOGRAPHICAL AND VISUAL FEATURES

The following sections provide information and requirements about research report typographical and visual features.

3.1 Font

With exception of the report cover, the required font for research reports is Times New Roman, 12-point font. The font size for the Technical Report Abstract may be less than 12-point to allow the information to be entered and still fit on one page.

3.2 Alignment and Margins

Paragraphs should be left aligned with a standard 1-inch margin all around the page. The first sentence of each paragraph should be indented 0.5 inch.

3.3 Line Spacing

Spacing should be uniform throughout the text of the research report. Line spacing in paragraphs should be 1.5, with double spacing between paragraphs.

3.4 Bulleted Lists

All bulleted items should align with the first sentence of the preceding paragraph (indent 0.5 inch). Each sub-bullet should be indented an additional 0.5 inch after the main bulleted item.

3.5 Graphics

Graphics include maps, tables, figures, and photographs. Graphics should be listed in the List of Figures or the List of Tables. When possible, graphics should be in color and should be designed so that they are clear and legible when reproduced in black and white. Cross-hatching, varied line forms, reverses, dots and other graphic devices can be used in addition to color to make the graphic clear. Text should be in appropriate fonts and font sizes so that graphics will be clear and easily read.

Tables, graphs, charts, and other graphics must be adequately labeled to provide clear information regarding the graphic as a stand-alone piece of information compatible with the word processing software it currently uses. Graphs and pictures should be outlined with a border.

Each graphic should be numbered and include a caption. Captions for tables go above the table. Captions for figures go below the figure. Numbering of tables should be separate from numbering of figures, and each numbering system should be sequential and may include the chapter number. The entire caption of each graphic should be hyperlinked to the List of Figures or the List of Tables.

3.6 Page Numbering and Order

Page numbers are horizontally centered and positioned 0.5 inch from the bottom of the page. All page numbers before the Executive Summary should be in small Roman numerals (i, ii, iii). Page numbering with Arabic numerals (1, 2, 3) begins at the Executive Summary and continues to the final page, including appendices and other background material. To change from Roman numerals to Arabic numerals, a section break must be inserted at the end of the last Roman numeral page.

3.7 Pagination

Reports should be printed on standard white paper measuring 8.5 inches wide by 11 inches tall. Foldout pages should be used only when necessary. Before opting for foldouts, authors should consider whether the information on a table, graph, or illustration can be formatted or designed to fit on a standard page. The project manager may choose to not accept a report that requires foldout pages.

For paper copies of final reports, printing is done on both sides of the paper. However, there is no need to add blank pages to the report.

4.0 COPYRIGHTED MATERIAL

Principal Investigators (authors) are responsible for securing copyright releases when using copyrighted material. The copyright releases should be provided to the Research Division project manager with the final report. Copyright permissions should be noted in the report. The author will be liable for any breach in copyright laws.

5.0 PRINTING AND PUBLISHING

The Principal Investigator should submit as many reports as required by contract (draft for review and final). The project manager may also request a two-page summary report in addition to the full research report; if so, the format for the two-page report will be provided by the project manager.

All versions of the report should be submitted digitally, in MS Word and Adobe PDF formats to the project manager.

The reports are reviewed for content and format. Draft reports should be resubmitted, after being revised using review comments, to the project manager. Any revisions should follow the format outlined in this document.

6.0 FINAL DISTRIBUTION

UDOT reports are published on the UDOT Research Division web site. Paper copies are made available to: Project manager, some Technical Advisory Committee (TAC) members, the Federal Highway Administration (FHWA) Utah Division Office, the State of Utah Library System, and the UDOT's Lester Wire Library.

An announcement of the publication with a link to the online version is made available to the AASHTO Research Advisory Council (RAC), the Transport Research International Documentation (TRID) of TRB, the State of Utah Library System, and other states' Departments

of Transportation libraries via email.

Electronic copies (CDs) and printed copies are available upon request. Additional distribution is subject to UDOT approval.

7.0 ADDITIONAL RESOURCES

Useful resources include the following:

1. TRB NCHRP 20-45, *"Scientific Approaches to Transportation Research,"* online manual, November 2001, http://onlinepubs.trb.org/onlinepubs/nchrp/cd-22/start.htm

2. FHWA RD-03-074, *"Communications Reference Guide,"* Chapter 5 – Preparing a Research Report, June 2011, http://www.fhwa.dot.gov/publications/research/general/03074/qrg05.cfm

3. FHWA H 1710.4, *"Publications and Printing Handbook,"* December 1987, http://www.fhwa.dot.gov/legsregs/directives/orders/h17104.htm

APPENDIX A: REPORT COVER FORMAT

(2.5 in. from left edge of paper)

REPORT TITLE

(22 to 28 pt Arial, All caps, Bold)

Prepared For: (18 pt Arial, Bold)

Utah Department of Transportation
Research Division (18 pt Arial)

Submitted By: (18 pt Arial, Bold)

University or Consultant Company
Department of Civil & Environmental
Engineering (18 pt Arial)

Authored By: (18 pt Arial, Bold)

Name (s) (18 pt Arial)

Report Phase (Draft, Interim, Final; 18 pt Arial, Bold)
Date (Month Year, 18 pt Arial, Bold)

APPENDIX B: TECHNICAL REPORT ABSTRACT FORMAT

1. Report No. UT- 1X.XX	2. Government Accession No. LEAVE BLANK	3. Recipient's Catalog No. LEAVE BLANK
4. Title and Subtitle TITLE IN ALL CAPITAL LETTERS Subtitle in initial capital letters		**5. Report Date** MONTH YEAR
		6. Performing Organization Code UTILIZE WHEN POSSIBLE
7. Author Names In Conventional Order (i.e. John A. Doe)		**8. Performing Organization Report No.** UTILIZE WHEN POSSIBLE
9. Performing Organization Name and Address Name Street Address City, State Zip Code		**10. Work Unit No.** PROJECT NUMBER
		11. Contract or Grant No. CONTRACT NUMBER
12. Sponsoring Agency Name and Address Utah Department of Transportation 4501 South 2700 West P.O. Box 148410 Salt Lake City, Utah 84114-8410		**13. Type of Report & Period Covered** DRAFT, FINAL, INTERIM & DATE RANGE
		14. Sponsoring Agency Code PROJECT ID CODE (PIC) NO.

15. Supplementary Notes

Prepared in cooperation with the Utah Department of Transportation and (if applicable) the U.S Department of Transportation, Federal Highway Administration

16. Abstract

200-250 words, A brief summary of the report

17. Key Words Select specific and precise terms or phrases that identify principal subjects covered in the report.	18. Distribution Statement Not restricted. Available through: UDOT Research Division 4501 South 2700 West P.O. Box 148410 Salt Lake City, Utah 84114-8410 www.udot.utah.gov/go/research	23. Registrant's Seal LEAVE BLANK
19. Security Classification (of this report) Unclassified	20. Security Classification (of this page) Unclassified	21. No. of Pages Report's Total Number of Pages	22. Price LEAVE BLANK	