MONTANA
Department of Transportation
Research

Research Program

Guidance for Preparing Research Reports and Other Communication Products

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1 Introduction

Researchers participating in the Montana Department of Transportation (MDT) Research Program will produce a collection of publications over the course of a research project. The most significant of these publications is likely a project's final report, but there are other publications that describe project progress and document interim findings that must also be developed with care to meet MDT and other requirements.

***For More Information**: Learn more about the MDT research process and how researchers engage with MDT in Transportation Research Glossary, Research Process and Guidance for Researchers.*

2 Preparing Reports as the Research Continues

During research, the research team communicates with the Technical Panel through development of the following reports:

- Progress reports
- Task and interim reports

These reports are described below.

Progress Reports

Progress reports are submitted either monthly or quarterly as specified in the project contract. Use the Research Project Progress Report template and select the appropriate period (monthly or quarterly).

Monthly progress reports are required of private sector and nonprofit consultants. Quarterly progress reports are prepared by public entities, though MDT may request monthly reports when working with a new public entity research team. New researchers are provided a sample progress report and Excel template that can be used to complete the project expenses portion of the report.

Completed progress reports are provided to the Research Project Manager according to this schedule:

Monthly Progress Reports are due the 15th of the following month.

Quarterly Progress Reports

- Quarter 1 (January – March): Due April 30
- Quarter 2 (April – June): Due July 31
- Quarter 3 (July – September): Due October 31
- Quarter 4: (October – December): Due January 31

Typically, these due dates apply regardless of a project's start date. Progress reports are required even if work during the reporting period has not progressed. Exceptions to this will only be approved by the Technical Panel in writing via email. Progress reports are no longer required when the research team is working on final products.

The Research Project Manager requests revisions from the research team, if needed, and distributes final progress reports to the Technical Panels, Research Program Manager and other interested parties.

Task and Interim Reports

These reports, prepared to summarize findings for a project task or at another time specified in the contract, are completed using the same guidance provided for preparing final reports (see Section 3, page 5), with one exception—a Technical Report Documentation Page is not required.

MDT requires three weeks to review most task and interim reports. This time frame is reflected in the project schedule appearing in the contract.

3 Preparing Final Products as the Research Concludes

Most researchers are required to prepare a collection of reports and other publications as a research project concludes. The research team's final products are evaluated with regard to:

- Fulfillment of project objectives as set forth in the contract
- Adequacy of documentation
- Clarity of presentation

All final products are expected to be complete and concise in all their parts, organized appropriately to serve their purposes, correct in matters of fact and documentation, and edited for basic uniformities of style and usage. A poorly organized or poorly written report or other final product will be returned for editing by the research team prior to MDT's review. MDT strongly encourages research teams to engage professional editors and proofreaders to review the documents they produce for compliance with standards and general readability before they are submitted to MDT for review.

The most typical final products include the following:

- Project Summary Report
- Implementation Report
- Performance Measures Report
- Poster
- Final presentation
- Final report

These final products are briefly described below. All final products except the project poster are prepared and delivered in both Word and PDF formats.

Project Summary Report

A Project Summary Report provides an opportunity for MDT staff and others to learn about a research project in a brief, accessible format. These reports includes these sections:

- Introduction
- What we did
- What we found
- What the researchers recommend

Researchers prepare text for each of these sections and provide one or more images in a Word document for MDT Research Program staff's use in populating the Project Summary Report template. Descriptive alternative text should also be provided for each image to meet Section 508 accessibility requirements.

***For More Information**: Review a [sample Project Summary Report] and learn more about Section 508 accessibility requirements in [Section 5].*

Implementation Report

Researchers prepare an Implementation Report after holding an implementation meeting with the Technical Panel, Research Program Manager, other MDT staff and interested parties. This meeting is held after approval of the final report and is typically combined with the final presentation. The Implementation Report summarizes the results of the implementation meeting, highlighting the research team's recommendations and MDT's responses. These reports include the following sections:

- Introduction and purpose
- Implementation summary
- Implementation recommendations

Researchers provide text for each of these sections in a Word document for MDT Research Program staff's use in populating the Implementation Report template.

***For More Information**: Review a sample Implementation Report.*

Performance Measures Report

A Performance Measures Report documents the value of a research project by describing its results in terms of cost or time savings, safety improvements, improved customer service, improved effectiveness or efficiency, process improvements or other measurable metric. Submitted reports are posted to the project web page.

Not all research projects require a Performance Measures Report. Consult the project contract to determine if one is required.

***For More Information**: Review a sample Performance Measures Report.*

Poster

Most research project contracts include a poster as a final deliverable. The research team uses the MDT poster template to deliver PowerPoint and PDF files of the completed poster. MDT may display these posters in its Headquarters building. If the research project is selected as an AASHTO RAC "High Value Research" project, the poster size may be altered.

MDT recommends following the guidelines below when preparing a poster as research projects conclude.

Goal of a poster:

- Attract attention.
- Offer a clear overview of research project.
- Provide enough material to explain the research without an oral explanation.
- Initiate discussion and questions without overwhelming the audience.

Poster size and orientation:

- 36” by 48” for MDT use.
- Landscape orientation is preferred.
- Sizes may change based on venue (AASHTO RAC or TRB) and whether a project has been selected by AASHTO RAC as “High Value Research.”
- **Keep content SIMPLE**. A poster is a visual communication tool, not a manuscript. The viewer should be able to easily identify the primary concepts of the project without wading through a lot of text or complex formulas. **Identify three or four main points or concepts to communicate.**
- **Present text in bullets or small chunks broken up by subheadings**.

  Font: Arial
  Headers: 44–54 point
  Text: 24 point

***For More Information**: Review the poster template, as well as detailed instructions and checklist for preparing one, to learn more about this communication product.*

- **Present information in columns**. Arrange material in a logical sequence, from top left to bottom right. Three columns are a good target to shoot for.
- **Offer a balanced mix of text and graphics**. Too many words will result in people glossing over or simply bypassing your poster. A good rule of thumb is 50% text and 50% graphics and photos.
- **Use simple language**. Avoid jargon and acronyms.
- **Use a white background with black text**. Graphics should similarly provide a stark contrast to be readable.
- **Use simple graphics**. Charts, drawings and illustrations should be limited to two to three colors at a resolution of at least 300 dpi. Visuals should be large enough to be comfortably read from 3 feet away.
- **Provide author name(s), organization logos and/or other acknowledgements** to give credit to those who have conducted and sponsored the research.

- **Provide alternative acceptable format information**. This information is presented on the template and should not be changed.

For More Information*: Preparation of posters, presentations and other communication products should be informed by [MDT's branding guidelines](). This publication addresses visual standards (use of the MDT logo and MDT's brand colors) and the text required for certain public-facing documents.*

Final Presentation

As part of project closeout, after most of the final deliverables have been approved, researchers prepare and deliver a final presentation to their Technical Panels and other interested parties that describes project findings and recommendations for implementation. There is no required format for these presentations, though most research teams prepare a PowerPoint presentation that can be used as a final presentation for their research project and adapted for future use.

For More Information*: Review a sample final presentation prepared by the research team for the* Alkali-Silica Reactivity in the State of Montana *research project.*

Final Report

The final report, produced at the culmination of a research effort, provides an opportunity to explain the research process and critical findings to a range of audiences. The guidance below describes how to prepare the various elements of a final report, which is produced initially as a draft and subject to Technical Panel review. See **Submitting and Reviewing the Final Report** on page 7 for more information.

For More Information*: Researchers are required to have an ORCID iD, a persistent digital identifier for researchers and scholars, which will be included in all final reports and other communication products after each author name. The ORCID iD will be used to link the authors to their publications, grants and patents.*

Front Matter

MDT provides the cover, copyright and cost statement pages when preparing a final PDF file for the final report. The remaining elements of the front matter are the responsibility of the research team and are described below. Number all pages in this section using Roman numerals as specified below (I, ii, iii, iv, etc.).

Cover images. Provide one or more pictures in .jpg format for the cover page by the deadline indicated in the project contract.

Title page. Page iii (after the cover and copyright page, which MDT adds to the final PDF) is the title page. It holds this page number but is not physically numbered. The title page should include:

- Title
- *Prepared by* statement
- *Prepared for* statement as detailed below:

Prepared for the
MONTANA DEPARTMENT OF TRANSPORTATION
in cooperation with the
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

- Date (month, year); this date will be updated with each revision of the draft report.

Technical Report Documentation Page. Page iv is the Technical Report Documentation Page (PDF) (Word). This is the first page that is physically numbered. The research team completes sections 1, 4-5, 7, 9 and 11-21. All sections, with the exception of 1 and 11, are completed for draft final reports. Follow NISO standards for preparing the abstract. A good abstract will help readers find a report and decide to read it. Briefly tell the reader why the research was important, describe project results and highlight the research impacts.

MDT assigns a DOI (digital object identifier) to all final reports. The DOI, which appears on the Technical Report Documentation Page, is activated by the MDT librarian before the report is submitted to National Transportation Library's (NTL's) online database, Repository & Open Science Access Portal (ROSA P).

Disclaimer/Alternative Format Statement. Page v is the Research Disclaimer/Alternative Format Statements page. These statements are required. List the panel members and the MDT Research Program Manager in an Acknowledgements section of this page.

Table of contents. Page vi begins the table of contents (TOC). The research team chooses the level of detail included in the TOC and ensures consistency from report section to report section. Lists of figures and tables follow the TOC, if appropriate, and can appear on the same page. Include page numbers in the TOC and lists of figures and tables with a dotted line connecting the contents and the page numbers. Generate the TOC so each entry is hyperlinked to the appropriate report section, figure or table.

English/metric conversion chart. Express all data either in metric with the English values following in parentheses or include an English/Metric conversion chart in the report. Continue the Roman numeral numbering from the previous section.

Acronyms. If warranted, include an acronyms page. Continue the Roman numeral numbering from the previous section.

Report Body

Organize content in the body of the report logically into discrete chapters and select headings that are appropriate for the content. Use language that is easily understood by the intended audience, clearly identifying recommendations and ensuring that the information needed to adequately support conclusions and recommendations is presented. Number all pages in this section using Arabic numerals (1, 2, 3, 4, etc.).

Appendices

Appendices with supplementary material can follow the body of the report. Include appendices in the TOC and reference them in the body of the report in the order they appear within the text. Apply Arabic numerals to appendix pages; appendix letters can also be included in page numbering.

Submitting and Reviewing the Final Report

The research team provides Word and PDF versions of the draft and final report to the MDT Research Project Manager via email. Hard copies are not required for draft or final reports. Particularly large files may be rejected by MDT's email system. In these instances, large files can be transferred via the State of Montana File Transfer Service. New users must create an account; current users can simply log in.

MDT's Research Project Manager conducts a preliminary review to determine if the report is complete and meets MDT's basic criteria for a final report. If needed, the research team will be asked to address specific deficiencies before the draft final report proceeds with further review.

A draft final report that meets MDT's basic criteria will be shared with:

- The Technical Panel and Research Program Manager to review its content, legibility, organization and presentation.
- The MDT Librarian to identify Transportation Research Thesaurus (TRT) terms for possible inclusion on the Technical Report Documentation Page.

Comments from the Technical Panel, Research Program Manager and Research Project Manager are compiled by the Research Project Manager and shared with the research team. In response, the research team revises and resubmits the report accompanied by a line item response to all comments. This submit-review-revise process is repeated, if necessary, until MDT accepts the draft report as final.

Allow at least two months for the first review and revision cycle of a draft final report: one month for review and one month for revisions. Subsequent revisions of the draft final report are due within one to two weeks of receiving report comments. Refer to the project contract for more specific deadlines.

Posting Final Products to the MDT Website

Task reports, presentations and meeting notes are posted to the project page while the research is ongoing and may be removed when final products are posted.

Final products are published on MDT's project web page and distributed via the Research Project Report listserv, the Transportation Librarian's listserv, and the AASHTO Research Advisory Committee (RAC) listserv. This distribution initiates the process of including final products on TRB websites, Transport Research International Documentation (TRID), the ROSA P online database, Federal Highway Administration Research Library and National Technical Information Service (NTIS). Final products are cataloged in the MDT Library and OCLC and are also included in the Montana State Library Internet Archive collection.

Project pages are removed from the MDT website five years after the research concludes. Final reports will continue to be discoverable and accessible through the MDT Library catalog and other sources.

4 Formatting and Style Guidance

MDT Research Program staff use standard reference works for guidance to achieve uniformity and consistency in the communication products produced by MDT researchers. The latest edition of *Merriam-Webster Dictionary* is the preferred authority for spelling and capitalization; the *Chicago Manual of Style* is also generally followed. The following style guidance that excerpts or supplements these reference works is designed to ensure reasonable uniformity and consistency of MDT's communication products.

Formatting

1. Use line spacing of 1 or 1.5, including quotes, references and other report elements.
2. Use a single column format to facilitate online reading.
3. Generally, apply 1-inch margins throughout the document. Some deviation is acceptable to account for aesthetic considerations.
4. Begin each chapter or appendix on a new page.
5. Do not add blank pages.
6. Number all pages.
7. Paginate the front matter with lowercase roman numerals at the bottom of the page. The title page holds page iii but is not physically numbered.
8. Paginate the body of the report consecutively with Arabic numerals at the bottom of the page.
9. Number the appendices, if any, either sequentially from the main body of the report or as A-1, A-2, B-1, etc.
10. Use the same font and format for headings at the same level.

Abbreviations, Acronyms and Symbols

Define abbreviations, acronyms and symbols the first time they are used in the report. Present the term followed by its abbreviation in parentheses, as in *American Association of State Highway and Transportation Officials (AASHTO)*.

Figures

1. Each figure should convey information clearly and completely.
2. Place each figure in the text not more than one page away from the first reference to it. Avoid splitting paragraphs with figures.
3. Ensure that each figure is of sufficient visual quality for both web and print publication.
4. Distinguish titles and legends from the body of the report using text placement and different fonts.
5. Apply the same font that is used in the body of the report.
6. Include a caption below each figure to identify its contents.
7. Cite the source of the figure, if applicable, below the caption; include photo credits.
8. Use figures of comparable size and scale when they are intended to be compared.
9. Use the same formatting for similar figures.

10. Large figures that may not be easily readable on the typical letter-sized page may be presented in landscape orientation or produced on oversize pages. Consult with the MDT Research Project Manager if electing to use oversize pages.
11. Though color is preferred, ensure that all visual elements are clearly identifiable in a black-and-white copy of the image (that is, easily distinguishable when printed in black and white).

Tables

1. Each table should convey information clearly and completely.
2. Use tables to present short descriptions or numerical listings that are most clearly and effectively presented in tabular form. Prepare these tables to be self-explanatory and supplement, not duplicate, information given in the text and illustrations.
3. Place each table in the text no more than one page away from the first reference to it. Avoid splitting paragraphs with tables.
4. Distinguish titles and legends from the body of the report using text placement and different fonts.
5. Apply the same font that is used in the body of the report.
6. Include a caption above each table to identify its contents.
7. Cite the source of the table, if applicable, below the table.
8. Arrange tabular matter carefully so that the intended comparisons are clear. Choose appropriate vertical columns to provide reasonable balance to horizontal and vertical dimensions.
9. When a dash (-) or other symbol is used in a table, indicate its meaning in a footnote (for example, missing data, data not available, or not applicable).
10. Check the accuracy of all values and totals appearing in a table.
11. Large tables that may not be easily readable on the typical letter-sized page may be presented in landscape orientation or produced on oversize pages. Consult with the MDT Research Project Manager if electing to use oversize pages.

References

Reference sections list only sources cited in the text, typically presenting the references in alphabetical order. While format and citation style for a References or Literature Cited section is at the discretion of the research team, authors may wish to consider the following:

- Check the spelling of names and apply them consistently.
- Verify that initials and dates are correctly noted.
- Use the article title as it was published.
- Avoid unpublished references, if possible.
- In both the draft and final reports, verify that reference entries agree with the sources cited within the body of the report.

Bibliography

Bibliographies, unlike reference sections, may list related sources that are not cited in the text. A Bibliography section may be included as an addition to the References or Literature Cited section. Possible arrangement of these entries include:

- **Alphabetical arrangement by author.** Arrangement by author will include names of persons (authors, editors, compilers) and corporate bodies (governmental agencies, societies, institutions). In listing federal governmental agencies, "U.S." should precede the name of the agency so that these entities may be properly grouped in the bibliography.
- **Chronological arrangement.** A bibliography may be arranged chronologically by publication date to show the development of a subject. Entries are then arranged alphabetically by the author under the year.
- **Classified subject arrangement.** This arrangement is made based on a systematic division of the subject of the bibliography. Alphabetical author arrangements are used in such lists under each subject.

Prepare entries that are sufficiently detailed and consistent in form with the style followed throughout the bibliography. An annotation in the form of a paragraph may be placed after the main body of the entry.

Courtesy

Acknowledge, by footnote, bibliographic reference or a statement in the text, the use of material contributed or assistance provided, even when a copyright notice is not applicable.

Caveat for Unpublished Work

Some material may be protected under common law or equity even though no copyright notice is displayed on the material.

Proprietary Information

To avoid restrictions on the availability of final reports, exclude proprietary information from a final report unless it is critical to the understanding of the report and MDT provides prior approval. Reports containing proprietary information will contain a statement on the Technical Report Documentation Page restricting availability of the report.

Use of Copyrighted Material

Comply with any copyright requirements that may apply if published material is used in a report (as in quotations of 50 words or more or use of tables and illustrations). Check with the author and/or publisher and, if needed, obtain permission in writing to use copyrighted material from both the author and the publisher. Provide MDT with copies of all correspondence regarding permission to use copyrighted material, particularly the final letters granting permission. MDT will retain these documents in the permanent file for the final report.

***For More Information**:* Review the National Transportation Library's LibGuide on Copyright for Research.

After permission to use copyrighted material has been obtained, provide both a bibliographical reference to the source and a specific tie to the referenced material, particularly for figures. For text material, the edition and page (preferably located by lines) should be cited; for tabular material, the page and table number should be given.

Errata Process

Errata are short and minor revisions to a printed or published document to correct mistakes such as factual, spelling or typographic corrections. After a research document is printed or published on a website and typographical or technical errors are found, an errata notification is created to make readers aware of the need for corrections in the document. Errata are posted on MDT project pages and shared via relevant listservs.

5 Section 508 Accessibility

Project final products must meet federal accessibility requirements described in Section 508 of the U.S. Rehabilitation Act of 1973 and as updated in 2017 and amended in 2018. Reports must comply with Section 508 to be included in NTL's ROSA P online database. NTL accepts documents for publication in ROSA P only if they comply with Section 508 accessibility requirements. An NTL LibGuide provides guidance on how to meet these requirements and offers an accessibility checklist.

For More Information: See **Section 508 Resources** below for guidance on using accessibility tools and ensuring the reports produced by the research team comply with Section 508 requirements.

MDT's Research Project Manager checks the accessibility of final reports and other publicly posted communication products using built-in accessibility checkers and manually, as appropriate. Documents that do not meet Section 508 requirements will be returned to the research team for revision.

Developing a final report and other communication products with accessibility requirements in mind saves time when submitting these documents for MDT's review. Remediating a noncompliant document after it is completed can be extremely costly and time-consuming. Gaining familiarity with the accessibility tools and checkers that reside in the software programs used to prepare communication products for MDT (Microsoft Word, Excel, PowerPoint and Adobe Acrobat) will help ensure these documents meet Section 508 requirements.

Section 508 Resources

General Accessibility Resources (Word and PDF)

- Section508.gov: Create Accessible Digital Products
- Section508.gov: Accessibility Training, Tools and Events
- Microsoft Support: Accessibility Video Training (Microsoft 365)
- Adobe Support: Create and Verify PDF Accessibility (Acrobat Pro)
- Michigan DOT Accessibility Formatting Guidelines for research reports

- Minnesota IT Services:
    - Accessible Word Document Training (e-Learning modules)
    - Microsoft Word Accessibility Quick Card
- Minnesota State Accessible Document Reference Guide (Microsoft 365)
- National Transportation Library: NTL Guide to Accessibility
- Social Security Administration:
    - Microsoft Word 365 Basic Authoring and Testing Guide
    - PDF 508 Accessibility Checklist

General Accessibility Resources (Excel)

- Section508.gov: Section 508 Basic Checklist—MS Excel 2016
- Microsoft Support: Make Your Excel Documents Accessible to People with Disabilities
- Minnesota IT Services: Microsoft Excel Accessibility Quick Card
- Social Security Administration: Microsoft Excel 2016 Basic Authoring and Testing Guide
- U.S. Department of Agriculture: How to Create, Test and Remediate Spreadsheets for Section 508 Conformance Using Microsoft Excel

Accessibility Checkers

- Microsoft 365 Accessibility Checker
- Adobe Acrobat Accessibility Checker