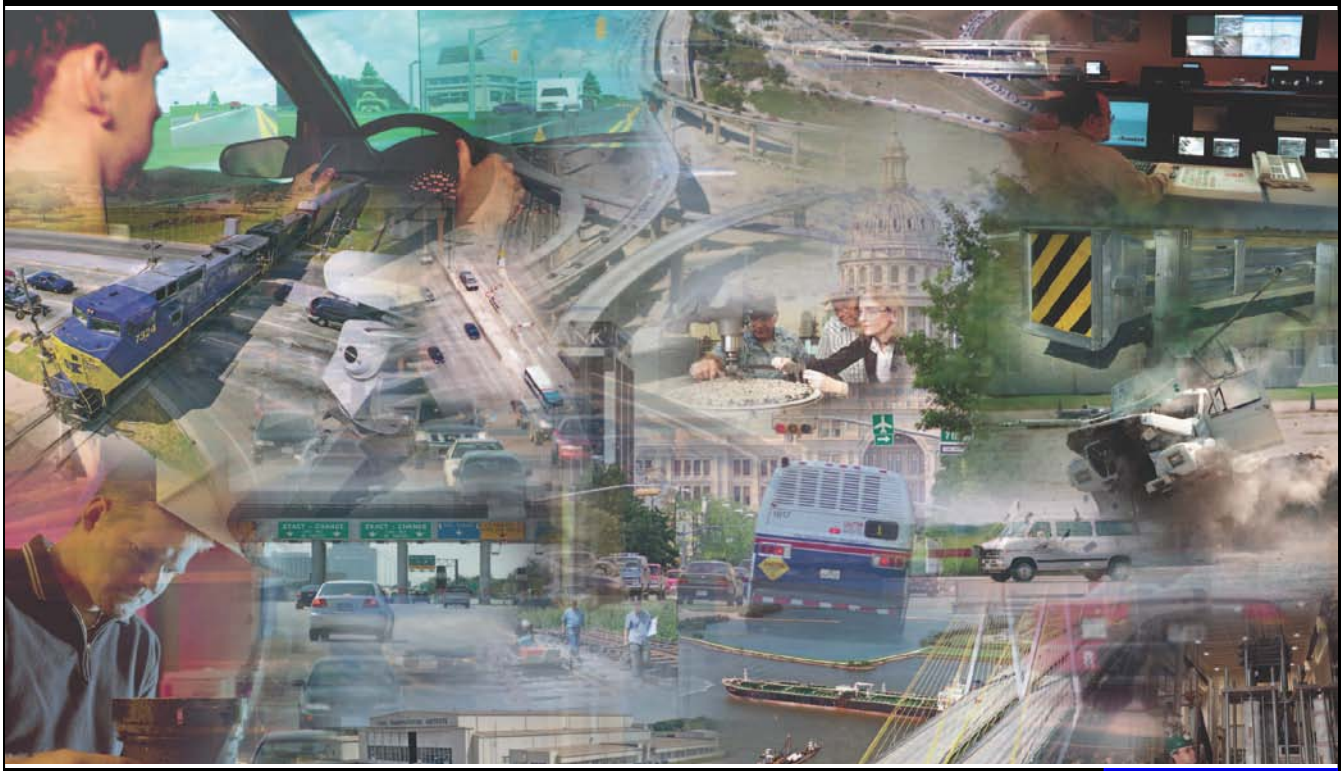
Guidelines for Preparing, Editing, and Submitting TxDOT RMC Reports



TTI Communications
December 2010

Texas Transportation Institute
A Member of the Texas A&M University System
Saving Lives, Time and Resources

About this cover:
The cover of these guidelines was produced from a template created for TTI documents. If you are interested in using this cover for your document, please e-mail TTI_Reports to request the template.

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November 1, 2010

Dear TTI Colleagues:

These editorial guidelines assist you in understanding the deliverables process for Research Management Committee (RMC) projects sponsored by the Texas Department of Transportation (TxDOT). The guidelines provide robust guidance that researchers need to complete all deliverables by their sponsor due dates. I urge everyone responsible for development of RMC deliverables to send them to TTI Communications in ample time to get them through the required editing process and forwarded to TxDOT on time.

The editorial information in these guidelines clarifies and standardizes the stylistic, mechanical, and publication components of TTI technical reports and other project deliverables. In a broader sense, it provides helpful tips regarding editorial aspects of report development for all projects. The guidelines reflect sponsor requirements as specified in the December 2009 Research and Technology Implementation Office (RTI) *University Handbook* (online at ftp://ftp.dot.state), as well as through frequent interactions between TTI and RTI.

This latest 2010 edition incorporates additional features for both online and offline use. The index is a new addition, and the content has been reorganized to reflect the report development process. Following these guidelines will help maintain consistency of style, grammatical correctness, readability, understandability, and visual appeal in TTI's reports; speed the report approval process; and promote the professional presentation of TTI's research to the world. If you have access to TTINet, you can view the guidelines online at http://ttinet.tamu.edu/communications/editing.

The structure of these guidelines is based on a technical writing format called Information Mapping® (registered product of Information Mapping, Inc., Waltham, Massachusetts). If you have suggestions for improving these guidelines, please contact Rhonda Brinkmann, research editor, at 979-458-8833.

Very truly yours,

Dennis L. Christiansen
Agency Director

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Contacts

TTI Communications (COM)

The TTI Reports inbox (TTI_Reports@ttimail.tamu.edu) is the central mailbox for receiving and processing all TxDOT RMC deliverables. This inbox is monitored and maintained by several COM staff members. E-mail TTI Reports with any questions regarding your RMC deliverable or for other editing and processing requests. For easy reference, this table lists COM staff involved in the processing of RMC deliverables and their associated duties. You are welcome to contact a COM employee individually, but be sure to copy TTI Reports in case the person you need is temporarily unavailable and another COM employee can help.

Contact:	Phone/e-mail:	Contact for:
Rhonda Brinkmann, editing	979-458-8833 r-brinkmann@tamu.edu	Edits and supervision of editing process; editorial policy questions; information mapping; electronic accessibility prep (writing text descriptions, etc.)
Joanna Dickens, editing	979-862-7179 j-dickens@tamu.edu	Editing of documents; editorial policy questions; MS-Word format and desktop publishing assistance; PowerPoint assistance
Dolores Hott, deliverables processing	979-845-4853 d-hott@tamu.edu	Report submittal and transmittal process; RMC deliverables status; supervision of deliverables processing, publication, and distribution; publication requests and inquiries
Michelle Jones, deliverables processing	979-458-8832 m-jones@ttimail.tamu.edu	Primary contact for report submittal and transmittal process; RMC deliverables status; processing, deliverables communications with RTI
Nancy Pippin, reproduction and distribution	979-458-8834 n-pippin@ttimail.tamu.edu	Publication and distribution; optical scanning, printing, archiving, and electronic transfer of reports; proof approval
Kelly West, research services	979-845-8867 k-west@	Deliverables development and support; research and documentation support services; information mapping
Mark Coppock, visual and interactive media	979-862-3737 m-coppock1@tamu.edu	Graphics files and specifications; development of graphics, photography, videos, CD-ROMs, DVDs, and web-based applications
Tobey Lindsey, web administrator	979-862-3232 t-nutt@tamu.edu	Assistance with electronic accessibility compliance (Section 508); HTML coding; web posting

Research Development Office (RDO)

RDO assigns its personnel to handle contracts for individual groups around the Texas Transportation Institute (TTI). If you have questions about your research contract, please use this table to determine your contact in RDO.

Contact:	Phone/e-mail:	Areas of responsibility:
Susan Adams	979-845-9862 susan-adams@tamu.edu	Senior contracts negotiator; Intl Center for Aggregates Research; Southwest Region University Transportation Center; University Transportation Center for Mobility; TxDOT RMC liaison; initiatives, office manager Backup: Erlinda Olivarez
Mary Levien	979-458-1679 m-levien@tamu.edu	Materials and Pavements; Center for Transportation Safety; Multimodal Freight Transportation; Arlington Office; TxDOT Traffic Safety program administrator; contracts negotiator; request for proposal (RFP) acquisition, distribution, and listing; pooled-fund studies; TTINet contact Backup: Kristen Maldonado
Erlinda Olivarez	979-862-2256 erlinda@tamu.edu	Communications; Materials and Pavements; Dallas Area Rapid Transit; Events Management; Network and Information Systems; System Planning, Policy, and Environmental Research (SPPE) Environmental Program; deliverables coordinator; contracts negotiator Backup: Susan Adams
Justin Malnar	979-862-7172 j-malnar@ttimail.tamu.edu	SPPE; Houston Office; Austin Office; contracts negotiator; TxDOT Interagency Cooperation Contract (IAC) program admin.; human subjects compliance resource person Backup: Jesús Palomo
Kristen Maldonado	979-458-3956 k-maldonado@ttimail.tamu.edu	Research Implementation; Operations and Design; San Antonio Office; Dallas Office; El Paso Office Backup: Mary Levien
Jesús Palomo	979-458-3546 j-palomo@ttimail.tamu.edu	Safety and Structural Systems; Major Highway Structures Program; System Management; prequalifications Backup: Justin Malnar
Fannie Davila	979-845-0449 e-davila@ttimail.tamu.edu	Lead office assistant Backup: Kristen Maldonado
Denise Pineda	979-862-4178 d-pineda1@tamu.edu	Association of American Railroads Lab; Pecos Test Center; Sponsor Research Project Administration Database resource person; intellectual property resource person Backup: Susan Adams

Acronyms, Abbreviations, and Terms

ATP.....Author's title page; follows the technical report documentation page (Form DOT 1700.7) in a report and provides information about the report

Chicago.....*The Chicago Manual of Style*; a manual providing rules on language style and usage; required by TxDOT

DOT.....Department of transportation; TxDOT's counterpart in another state

FHWA.....Federal Highway Administration; joint sponsor with TxDOT on many TTI projects

LOF.....List of figures

LOT.....List of tables

NCHRP.....National Cooperative Highway Research Program

NTIS.....National Technical Information Service; federal depository for U.S. research findings

PA.....Project advisor; a member of the review committee (Project Monitoring Committee) assigned to oversee a TxDOT research project

PD.....Project director; the TxDOT contact who oversees a research project

PI.....Principal investigator; the university researcher in charge of the project; also known as research supervisor (RS)

PMC.....Project Monitoring Committee; a TxDOT committee that reviews research project activities, products, and reports

PSR.....Project summary report

RDO.....Research Development Office; TTI unit responsible for research contract preparation, negotiation, and modification and for monitoring of deliverable due dates and other contractual requirements

Recto.....A right-hand, front, or odd-numbered page in a report; opposite of verso

RMC.....TxDOT's Research Management Committee; oversees the TxDOT research program

RS.....Research supervisor; the university researcher in charge of the project; same as principal investigator (PI)

RTI .....The Research and Technology Implementation Office of TxDOT; the TxDOT office that administers the research program

TOC.....Table of Contents

TRB .....Transportation Research Board

TRDP.....Technical report documentation page; the first page in a TxDOT technical report; provides information about the report to NTIS; required by TxDOT for technical reports; also called Form DOT F 1700.7

TTI.....Texas Transportation Institute

COM.....TTI unit responsible for information services, public relations, media relations, electronic and print publishing, video production, and technical writing

TxDOT .....Texas Department of Transportation

Verso.....A left-hand, back, or even-numbered page in a report; opposite of recto

About This Edition

Updates and Changes

COM frequently revises the TTI editorial guidelines to enhance their helpfulness in preparing deliverables as well as to reflect changes in the deliverables process, updates to the *Chicago Manual of Style*, and changes in the RTI Handbook. New features of this edition include:

Index—When using a printed version of the TTI Guidelines, the added index in this edition will help you quickly find topics of interest. When using the online version, you can click links in the index or search the file using a term in the search feature.

Internet and Technology Terminology Guide—This new section addresses computer, web, and tech-specific terms that have become common to the English language and to project documentation. It outlines how to properly use these terms in your technical document according to the 16th Edition of the *Chicago Manual of Style*.

Updates to Bulleted Lists—By popular demand, we have simplified the capitalization and punctuation rules for bulleted and numbered lists. The new guidelines reflect the federal standard for bulleted lists, including guidelines used by the Federal Highway Administration (FHWA). Every item begins with a capital letter and ends with terminating punctuation (usually a period). No conjunctions are used with the second to last item, as they were under previous editorial guidelines. Lists using complete sentences and lists using phrases use the same capitalization and punctuation scheme.

Sources Used for Guidelines

COM edits reports according to TxDOT and TTI guidelines using these *TTI Guidelines for Preparing, Editing, and Submitting TxDOT RMC Reports* as its standard. The guidelines are available via TTINet at http://ttinet.tamu.edu/communications/editing. The guidelines are also available in hardcopy by request; see Contacts.

The primary published sources for editing standards and decisions include:

- RTI *University Handbook* (ftp://ftp.dot.state).
- *The Chicago Manual of Style* (14th ed. or later) (available online at http://www.chicagomanualofstyle.org).
- *Merriam-Webster's Collegiate® Dictionary* (10th ed. or later) (available online at http://www.m-w.com).

® Collegiate is a registered trademark of Merriam-Webster, Incorporated, Springfield, Massachusetts.

For in-text references and bibliographical style, authors can use any standard style. Many authors use the Transportation Research Board (TRB) style sheet in lieu of *The Chicago Manual of Style* (see TRB's *Information for Authors,* http://www.trb.org/Guidelines/Authors.pdf).

Project Deliverables and Processing

Overview

The deliverables described in this section are for Research Management Committee (RMC) projects only. Not all Texas Department of Transportation (TxDOT) projects are RMC projects. Each RMC area provides program oversight for identified fields of research:

- RMC 1—Construction and Maintenance.
- RMC 2—Planning and Environment.
- RMC 3 (not currently active).
- RMC 4—Safety and Operations.
- RMC 5—Structures and Hydraulics.

Deliverables Information

Deliverable Defined

Deliverable—any item listed on the project deliverables table in the project contract or a subsequent modification.

Deliverables include:

- Technical reports.
- Project summary reports (PSRs).
- Products.

Deliverables do not include:

- Semiannual reports.
- Progress reports.
- Technical memoranda.
- Papers, articles, or bulletins.

Processing of Deliverables

TxDOT requires that all RMC project deliverables be officially submitted and transmitted through the Research and Technology Implementation Office (RTI) of TxDOT. TxDOT contracts with Texas Transportation Institute (TTI) Communications (COM) to provide these services to our researchers for RMC projects. See Contacts for RDO and COM staff contact information. RTI must receive deliverables no later than the delivery deadline listed in the deliverables table in the project contract to not be considered overdue.

Timing

"My Stuff" on TTINet (http://mystuff.tamu.edu) provides you with deadlines that apply to your contract deliverables. Researchers should monitor due dates to ensure that all deliverables are edited, processed, and sent to TxDOT no later than the current deadline. The date shown in My Stuff reflects the date due to TxDOT, taken from the project contract.

Each written deliverable must be edited prior to submittal. Processing and editing submittal documents can take up to two weeks for COM to complete and return, so researchers should send documents for edit in sufficient time to handle any editorial revisions and still make the sponsor due date. COM recommends edit prior to sending any written deliverable to TxDOT, and subsequent edits (past the submittal stage) usually take up to one week.

TxDOT policy requires that COM print, bind, and distribute the report no later than 45 days after TxDOT approves the final draft. The author is responsible for allowing COM enough time to process the report (generally, a minimum of two weeks for editing the draft document and two days for processing after edit revisions). COM will make all reasonable efforts to get deliverables to the sponsor on time, but COM is not responsible for ensuring that last-minute deliveries to COM make it to the sponsor on time.

Follow-Up

In most cases, COM staff will confirm that files have been received and are being processed. If you do not receive a message from COM, please follow up by checking your project status on TTINet (the "My Stuff" section) or sending an e-mail to TTI_Reports.

Modifications to the Deliverables Table

Changes to the deliverables table should be requested and documented in an official modification to the project contract through RDO and TxDOT RTI. Changes to the deliverables table noted in semiannual or other progress reports are not sufficient and are not considered modifications to the project contract.

Modifications include:

- Adding or deleting a deliverable.
- Changing the required delivery date of a deliverable.
- Extending the project termination date.

Project updates of types other than the items identified above as modifications may not require a formal contract change. The RS should check with the deliverables or RDO regarding updates to see how they should be handled.

Numbering

Each project has its own defined and numbered set of deliverables. Deliverables for each project are identified in the project contract. Deliverables should be numbered according to the deliverables table rather than the order they are submitted. The exception is that the deliverables table with show an "R" with report deliverables that is not included on the actual deliverable number (e.g., 0-1471-R1 on the deliverables table becomes 0-1471-1 on the report).

Each deliverable has a distinct letter or number:

- The project summary report will have an "S" following the project number (e.g., 0-1400-S).
- All technical reports will have a number following the project number (e.g., 0-1400-1 or 5-1400-01-1).
- Products will have a "P" and a number following the project number (e.g., 0-1400-P1).
- The format for numbering deliverables on implementation projects (project type designation 5) differs from other deliverable numbering. The number will usually include a task number in addition to the other digits (e.g., 5-1400-01-1). For implementation project deliverables, check your project contract, search My Stuff, or contact the RDO or COM staff regarding the correct format for deliverable numbers.

Color Reproduction

COM has the capability to produce high-quality color copies and collate them into your reports for you. TxDOT has approved most deliverables to be submitted in full color. If this is not the case for your specific report or product, the deliverables processing team will notify you.

When color is required, avoid the use of light colors, such as yellow or light blue, because they often disappear for any black-and-white printouts and are often not clearly visible even when printed in color.

Electronic accessibility:
Special requirements for the use of color exist in relation to electronic accessibility. See Accessibility for more information.

Deliverable Types

Technical Reports

Technical report—a report intended to be technical in nature and to thoroughly document all data gathered, analyses performed, methods used, results achieved, and inventions developed under the project.

Distribution: following approval, defined by TxDOT.

Project Summary Reports

Project Summary Report—a report written for a broad audience and intended to provide a concise summary of a project and the researcher's recommendations for implementing the project's findings. For more information, see the section on Project Summary Report Development.

Document processing for PSRs follows a different route than that for other written deliverables.

Distribution: PDF file formatted and provided by TxDOT to TTI.

Products

Product—a deliverable other than a technical report or project summary report that is specified in the project contract. A product may be delivered as a stand-alone or within a report, as defined on the deliverables table, but not both ways. Products might be equipment, workshops, software, manuals, guidebooks, or other items. If products are delivered within a report, the product material must be clearly identified and cannot be also produced as a stand-alone document.

Documentation Not Considered Deliverables

Quarterly/Monthly Progress Reports

Progress report—a short report that may be required to provide a frequent update to the project director or other project staff.

Semiannual Reports

Semiannual progress report—a short-form report for which TxDOT supplies the format. TxDOT requires semiannual reports from researchers for every project. RDO works with researchers to prepare and submit semiannual progress reports.

Technical Memoranda

Technical memorandum (tech memo)—a short-form report required for many TxDOT RMC projects after completion of certain tasks. COM has developed a tech memo template that provides a suggested, not required, format to serve as a basis for tech memos. You can find the template on the TxDOT RMC Report Development Resources page on TTINet. Consult RDO concerning requirements for tech memos.

Papers and Presentations

Although papers and presentations do not have to appear in the work plan, they need to have TxDOT approval before they are presented if they contain significant technical findings that have not appeared in a previously approved deliverable. See page 6-6 (December 2009 edition) of the RTI for information about the approval requirement.

Report Development Resources

Specialized resources are available to help researchers, editors, and publications staff prepare documents for TxDOT approval. In addition to these standing resources, COM is developing other templates and is accepting requests. Table 1 lists resources that deal specifically with TxDOT reports.

Table 1. TxDOT Report Resources.

Resource	Where to Find the Resource
(This document) *Guidelines for Preparing, Editing, and Submitting TxDOT RMC Reports*	TTINet: http://ttinet.tamu.edu/communications/editing For hardcopy: Contact TTI Reports.
RTI's *Research Manual* (presents program policies and an overview of TxDOT's technical research program; provides the framework and policies under which related procedures are developed)	http://onlinemanuals.txdot.gov/txdotmanuals/rtt/index.htm
RTI *University Handbook* (establishes the procedures that implement the policies expressed in the *Research Manual*)	ftp://ftp.dot.state.
Project summary report guidelines	Chapter 9 of these guidelines
TxDOT RMC report development resources, including explanations and template files in Microsoft Word 2003 and 2007: • Project summary report template file • Technical report template files • Product technical report documentation page (TRDP) template file • Tech memo template file • Software user's manual template file	TTINet: http://ttinet.tamu.edu/communications/editing/
Samples of published TxDOT reports	TTINet: http://ttinet.tamu.edu/library For hardcopy: Contact TTI Library Services

COM personnel can arrange training for TTI staff on preparation of TxDOT reports, report development, writing techniques, and other report-related topics. COM can also assist in compiling and formatting written deliverables and writing project summary reports. Please feel free to contact any COM staff member with your questions (see Contacts).

Where and How to Send Reports

Sending the Report for Electronic Edit

To send your report electronically, e-mail a message to TTI Reports in the TTI Outlook address book or TTI_Reports@ttimail.tamu.edu. Send completed Microsoft Word® file(s) for electronic edit. By "electronic edit," COM staff mean the use of comments and tracked changes in Microsoft Word documents.

If you need detailed instructions on how to submit the manuscript electronically, see Appendix B. In general, to send a file to COM, you can:

- Use shared drive space and indicate the link in your e-mail message (preferred).
- For very small files (less than 1 MB), attach it to your e-mail message (do not attach files larger than 10 MB).
- For files that cannot be transferred using shared drives, upload it to a SharePoint file transfer site (contact TTI Reports for instructions).
- Deliver the file on a CD, DVD, flash drive, or other portable media.

Hardcopy Editing

For a hardcopy edit, e-mail either a Word file or an Adobe PDF file, or send a printout to COM, with a note that you would prefer hardcopy markup. COM will need an electronic file (preferably in Word format) following the edit revisions for printing and delivery to TxDOT.

Publishing Process

Process Explanation

The sections below provide detailed descriptions for each stage of the RMC technical report publishing process. Figure 1 provides a graphical representation of the process.

At all stages in the deliverables process, COM updates the deliverable record in the project database (maintained in Oracle® software). At any time you can go to My Stuff and check the status of your deliverable. If you have any questions regarding your deliverable's status, contact TTI Reports.

COM personnel do not maintain electronic versions of the deliverables files for use in later stages of processing. Authors are responsible for maintaining current and working files throughout the publication process.

® Microsoft Word is a product of Microsoft Corporation, Redmond, Washington.

Submittal

Submittal is TxDOT's first look at a deliverable. The deliverable should be a completed draft. This is the stage at which the project director (PD) and project advisors (PAs) examine the report for technical accuracy to ensure that it meets the requirements for the project as defined in the project contract. TxDOT reviews reports for technical and editorial accuracy as appropriate.

The submittal stage includes the following steps for reports and other written deliverables:

1. The author submits a copy of the document (either in hardcopy or electronically) to COM for editing.
2. COM conducts a submittal edit. The author will receive the edited manuscript, along with an editorial memo highlighting necessary and suggested changes, for revision.
3. The author makes appropriate editorial changes and returns the revised manuscript file to COM for processing and submittal to TxDOT.
4. COM formally submits the deliverable to TxDOT on behalf of the author. The file is submitted either in paper format and shipped by overnight courier or submitted electronically through TxDOT's DropBox. COM generates the accompanying correspondence, reproduces the document for submittal to TxDOT in accordance with instructions from TxDOT, and updates the project database. Copies of the formal submittal letter prepared by COM will be sent to all TTI research and administrative personnel connected with the project via e-mail attachment.

TxDOT Response to Submittal

Following TxDOT review of submitted deliverables, COM receives TxDOT's response from RTI. RTI may not accept incomplete deliverables for submittal. Incomplete deliverables can include deliverables that are missing sections or other material, or that have not been edited.

TxDOT's letter accompanying any reviewer comments will specify one of the following:

- Deliverable is incomplete or not accepted.
- Deliverable needs revisions and resubmission (see section on Resubmittal).
- Deliverable needs PD approval. Deliverable is approved for publication with changes and final review by TxDOT (go to section Response to PD Approval).
- Transmittal. Deliverable is approved, with or without changes, for publication and distribution.
- Deliverable accepted. Deliverable is declined for publication but will stand as documentation at this time (go to section Report Not Published).

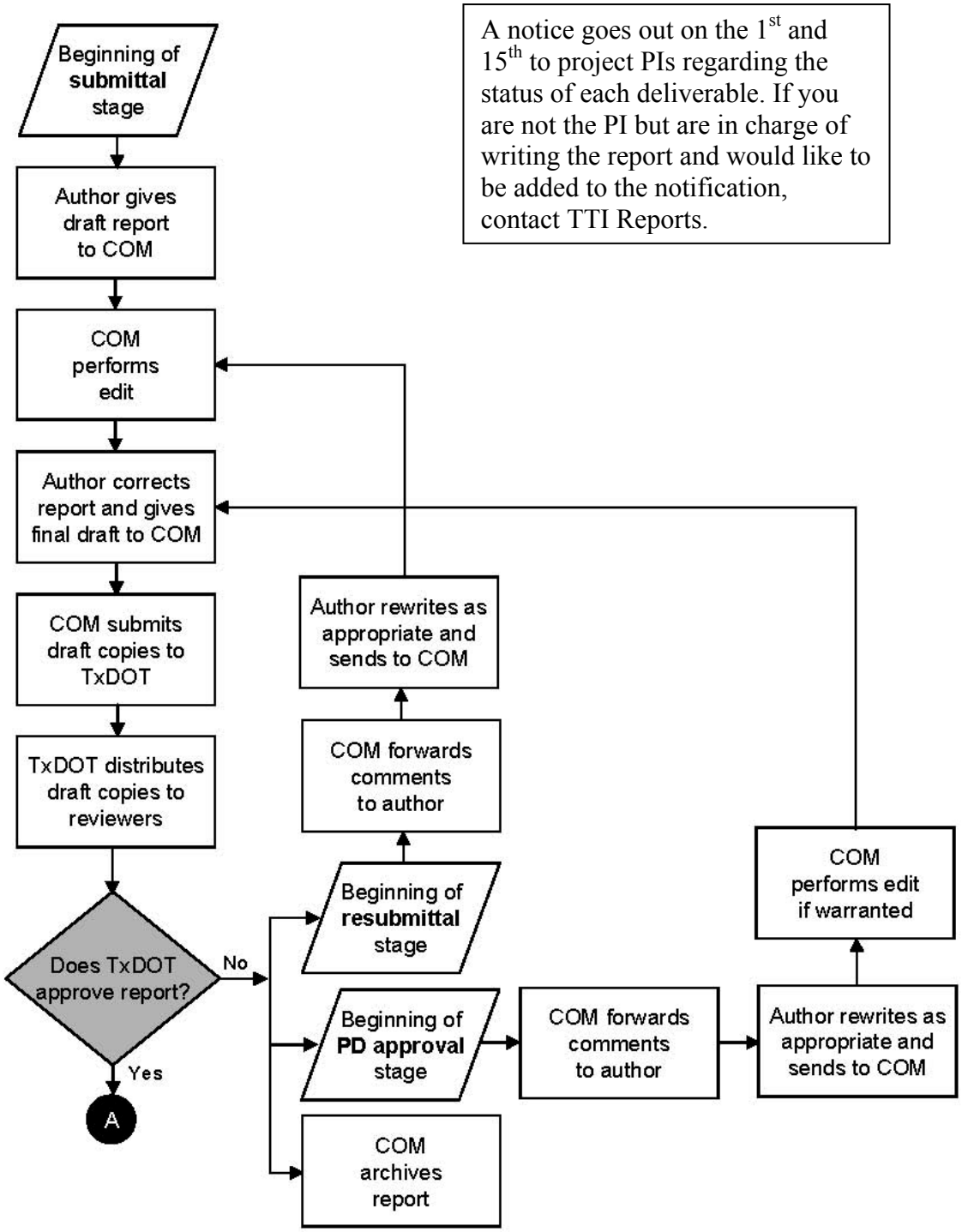

Figure 1. TxDOT Technical Report Publishing Process.

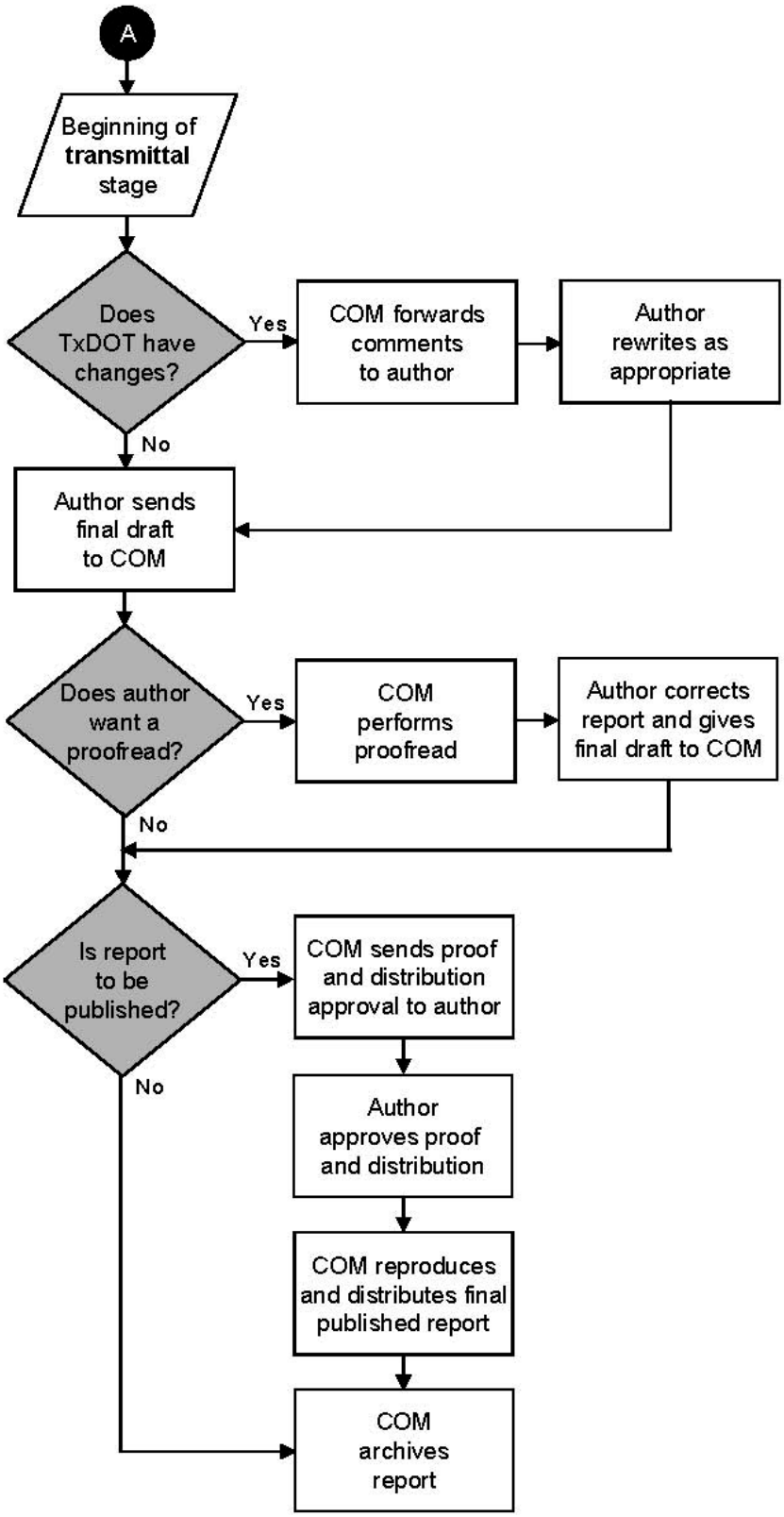

Figure 1. TxDOT Technical Report Publishing Process (Continued).

Resubmittal

If TxDOT requires substantial changes to a report before approval, it might have to be resubmitted. A report might be resubmitted several times prior to approval.

Resubmittal includes the following steps:

1. COM routes TxDOT's request and comments to the author along with TxDOT's deadline for resubmission. The process hereafter is similar to submittal.
2. The author revises the report and sends the file of the revised report to COM for editing. If the author disagrees with TxDOT comments, he or she must respond in writing, as specified by TxDOT either with the resubmitted deliverable or prior to its revision, to address concerns and explain why he or she does not plan to make the changes requested. The author should send rebuttal comments to COM, who will forward them to RTI.
3. COM conducts a resubmittal edit of the report and returns it to the author for revision.
4. The author makes the editorial changes and sends the revised manuscript to COM for forwarding to TxDOT.
5. COM formally resubmits the report to TxDOT on behalf of the author (with author comments if applicable).

TxDOT Response to Resubmittal

Following TxDOT review, COM receives TxDOT's response from RTI. Resubmittal is considered the same as an initial submittal and the responses can be any of those noted in the section above on TxDOT Response to Submittal.

PD Approval

The project director reviews draft reports following both the submittal and resubmittal stages to verify technical accuracy and, in the case of resubmittal, to see that authors address earlier concerns. Occasionally, RTI or the project director will request a press proof prior to final approval of a deliverable. This step is called the "PD Approval" stage or "Press Proof" stage. Deliverables in the PD Approval stage will usually have minor changes that RTI or the PD wants to review prior to giving the final go-ahead to publish and distribute the document.

The PD approval stage includes the following steps:

1. TxDOT notifies COM of requirements for revision. COM routes TxDOT comments to the author along with TxDOT's deadline for returning the deliverable.
2. The author makes any corrections, additions, or revisions required by TxDOT and sends the manuscript to COM.
3. The author chooses whether to edit the deliverable or not at this stage. If yes, which COM editors recommend, then COM edits the revised manuscript and returns it to the author for revisions.

4. The author makes corrections and revisions based on the COM edit and returns the press proof to TTI Reports for forwarding to TxDOT. If the author disagrees with TxDOT comments, he or she must respond in writing (in the same manner as at resubmittal) to address concerns and explain why he or she does not plan to make the changes requested.
5. COM forwards the press proof to TxDOT for approval to publish.

Response to PD Approval

Following TxDOT review, COM receives TxDOT's response from RTI. While TxDOT's response could be any of the responses noted in the section above on TxDOT Response to Submittal, usually the response is a straightforward approval to move forward with transmittal and publication.

Transmittal

At any stage, TxDOT may approve reports with or without corrections for transmittal, publication, and distribution. The transmittal stage includes the following steps:

1. Once TxDOT notifies COM of approval, COM will route approval information and sponsor comments to the author. The author should make all final corrections required by TxDOT.
2. The author confirms the title of the report with COM.
3. The author may choose to have COM perform a final proofread of the document prior to publication. A proofread is recommended, particularly if changes are significant or if the report has been edited only once during the publication process.
4. If COM proofreads the manuscript, the author will receive the proofed manuscript with an editorial memo highlighting necessary changes. The author makes appropriate editorial changes and sends the revised manuscript to COM electronically.
5. COM prepares an author's proof copy of the report from the manuscript file received from the author. COM sends the proof copy along with a proof approval form and distribution form to the author for final approval prior to publication.
6. The author reviews the proof and approves the report or notes revisions. When the author receives a proof copy and approves it—unless the author indicates that changes must be made—the next time he or she sees the report, it will have been published. The author must check press proofs carefully and, if changes are necessary, make it clear on the reproduction approval where changes should be made. The author will receive a revised proof upon request.
7. Once the author approves the proof, he or she returns the proof approval form to COM.
8. TxDOT policy requires that COM print, bind, and distribute the report no later than 45 days after TxDOT approves the final draft.

Note on Responsibility
Authors are responsible for checking proof copies thoroughly. If errors are found after publication and it can be determined that COM is at fault, the report will be reprinted at the author's request and COM's expense. If, however, the fault for the errors cannot be determined as COM's, the report can still be reprinted at the author's request, but the author will have to provide a project number to cover printing costs.

Report Not Published

On occasion, TxDOT or FHWA will decline to publish a report. The report will then serve as documentation that required deliverables were completed. This includes circumstances where TxDOT:

- Approves a deliverable but elects not to publish it.
- Disapproves a deliverable.
- Approves a deliverable containing classified or sensitive information.

Not Classified

If the report does not contain classified information:

- TTI will keep the original manuscript on file to stand as documentation of the research.
- The author will receive a letter of notification asking permission to list the report in TTI's library catalog.
- In some instances, TTI will choose to publish the report at its own expense (if TxDOT has released the manuscript for publication).

Classified

If the report contains classified information and TxDOT classifies the report, contact TTI Reports.

Editing Process

Overview

Submittal/Resubmittal Edit versus Proofread

Submittal and resubmittal edits involve reviewing a document for grammatical and mechanical errors, clarity, and the need for stylistic improvement prior to sponsor approval. TxDOT's contract with TTI specifies that submittal and resubmittal deliverables be edited prior to sending to TxDOT.

Transmittal and PD approval proofreads ensure that the document, as it stands, is free of typos and spelling errors. Requests for these proofreads are left to the author's discretion.

To facilitate sponsor approval, edits are much more intensive than proofreads. Thus, the amount of changes required or suggested following an edit will usually be much more substantial than those following a proofread.

Requesting an Edit

The deliverable turned in for editing should be complete and final (or final draft), with all sections correctly formatted and any previous reviewer comments/changes accepted or rejected. The file(s) should include any applicable sections such as the TRDP, all other front matter, the report body, figures and tables, a references section, and appendices. A single file with the entire report is easiest to edit but, if necessary, the report may be broken into several files.

If you need assistance in assembling, formatting, or finalizing your file prior to edit, contact a member of TTI's editing for assistance.

COM can edit PowerPoint® slides and other types of files using a hardcopy markup or making changes directly in the file.

Editors

Edits are made by professional editors trained by COM in the editing process. Since editing can be subjective in nature, these guidelines will help both researchers and editors to be consistent in handling TxDOT reports.

The editing coordinator recruits, trains, and coordinates the activities of COM on-staff and on-call editors. Editors following editing standards developed in consultation with COM and TxDOT. Please direct questions regarding editorial policy or procedure to a member of the editing team or to TTI Reports.

® Microsoft PowerPoint is a product of Microsoft Corporation, Redmond, Washington.

For RMC Deliverables

At the direction of TxDOT, COM edits all printed deliverables before submittal and resubmittal. COM may edit deliverables at other stages and proofread them prior to transmittal. To request an edit, simply let COM staff know by sending an e-mail message to TTI_Reports.

TxDOT requires that all RMC project deliverables be edited. Editing of TxDOT RMC materials incurs no cost to the author's project. Researchers may choose to have nondeliverables (e.g., tech memos and progress reports) edited, but it is not required.

COM can assist in compiling and formatting written deliverables and writing project summary reports or other RMC project materials as requested.

Non-RMC Requests for Edit

Deliverables for sponsors outside the RMC program do not need to go through COM and should be handled by the author in cooperation with TTI's Research and Development Office (RDO). However, COM will be glad to edit, reproduce, and distribute these reports to the author's specifications and/or those of the sponsor.

Non-RMC documents that you would like edited should be emailed to TTI_Reports with a message that indicates the attached is not an RMC deliverable and identifying the type of editorial support needed. Most of the time, the cost of this service will be charged to the author's account, but some support funds are available for COM services.

Guidelines for non-TxDOT reports vary from the style shown in this document. Contact TTI Reports if you need guidelines for other types of reports.

Editorial Markup

Markup Basics

COM uses standard editorial marks to communicate necessary and suggested changes to authors. Edits can be made using hardcopy markup or electronically.

In electronic edits, changes are made using comments and tracked changes in Microsoft Word for author review. Editors use the electronic comment feature to insert items for author attention or suggest rewording for clarity or active voice. Editors mark passive voice using highlighting or comment boxes. Editors save the revised file with a clearly identifiable name (e.g., "0-4000-1 edited") for version control.

After the edit, you will receive the edited file(s), usually sent to you using the same method by which it was received. Hardcopy markups will be returned to you through mail, courier, or e-mail with a scanned attachment.

Editorial notation in electronic edits is easy to understand. If you need assistance reviewing editorial edits, see the section on Reviewing an Electronic Edit or contact a member of the editing team. For hardcopy edits, Appendix A shows common editorial marks and their meanings.

Editorial Memo

In most cases you will receive an editorial comment memo that explains any overall comments regarding the edit, points out necessary global changes, and cites any specific areas that need author attention. The memo highlights changes made by the editor based on editorial guidelines. The comments are often divided into two sections:

- Necessary changes—something that must be addressed to conform to the applicable editorial guidelines, the RTI *University Handbook*, *The Chicago Manual of Style*, and/or *Merriam-Webster's Collegiate Dictionary*. These changes can include corrections of format (e.g., requirements of content in the front matter of reports), grammar (e.g., subject-verb agreement), mechanics (e.g., punctuation usage and consistency of spelling), or style (e.g., verbose or unclear sentence structure).
- Suggested changes—something that the editor feels could improve the document for the reader's benefit, usually stylistic in nature.

The editor may suggest that the author make changes outside the scope of the edit. These can include changing the styles of headings, moving sections, correcting figures and tables, or any other major change that is better done by the author or his or her support staff than by editorial staff.

Reviewing an Electronic Edit

When you receive an edited file, review and address each change individually. Because editors do not have the technical level of knowledge that authors have, editorial changes made to the file may inadvertently introduce inaccuracies if not reviewed and rejected. While reviewing a hardcopy editorial markup is rather intuitive, reviewing an electronic edit requires knowledge of using Microsoft Word. The following sections offer you suggestions for using Word features to review your edit.

View Changes

The track changes feature of Microsoft Word enables authors to quickly and easily check the changes an editor has made in the electronic file. You will usually receive a file that already has the changes displayed. If markup is not already displayed in your document:

1. On the **Review** tab in the **Tracking** group, select **Final Showing Markup** in the top pull-down menu.

2. In the second pull-down menu, under **Show Markup**, make sure that everything is checked to display.

3. If you'd later like to hide changes for easier reading, you can adjust the two pull-down menus to your preference. For example, hide all changes and comments by selecting **Final** in the top menu or hide changes but show comments by unchecking all but the comments in the second menu.

By default, the changes will probably appear in the text of the file, unless set differently for your machine. As with most Microsoft features, there are other options:

- If you would also like to see the changes in the reviewing pane: On the **Review** tab in the **Tracking** group, select **Reviewing Pane Vertical** or **Reviewing Pane Horizontal** in the third pull-down menu.
- If you would like to see changes and comments in balloons: On the **Review** tab in the **Tracking** group, Click the **Balloons** button and select **Show Revisions in Balloons**. You can also select **Show Only Comments and Formatting in Balloons.**

Review Changes

Because editors do not have the technical level of knowledge that authors have, technical review of the edit is vital—editorial changes made to the file may inadvertently introduce inaccuracies if not evaluated and approved or rejected. Using the track changes feature effectively enables authors to maintain quality control while saving inputting time.

In order to accept or reject changes once the markup is displayed:

1. On the **Review** tab in the **Tracking** group, make sure the tracked changes feature is off so that you do not incorporate more changes as you review. If the **Track Changes** button shows in the same color blue as the background of the ribbon, it is off. If it shows in orange (or other color depending on your color scheme), then simply click it to turn off tracked changes.

2. On the **Review** tab in the **Changes** group, click the **Next** button to go to the next marked change. (The **Previous** button takes you to the previous marked change.)

3. Click on the appropriate button in the Changes group to **Accept** or **Reject** the change**.** Options under these icons can affect how changes are displayed and what changes you accept or reject.

4. Continue reviewing changes and accepting, rejecting, or deleting until you receive a dialog box telling you there are no more changes in the document.

To save time, you may want to visually review each change the editor made, reject those you do not agree with, and then click **Accept All Changes in Document** to accept the rest of the changes. Please do not accept all changes without a careful review of the markup first.

Author Queries

Occasionally editors will come across items that need author input. The editor will insert the question as comment. The author should make sure to use a view that shows the full markup including comments. After completing your revisions, be sure to delete all comments.

Author queries might include asking the author to clarify statements or check consistency. The editor might use comments to give the author options for edits, explain edit notations, or suggest passive-to-active grammatical conversions.

Pagination Corrections

Because edits and author queries may change the pagination of the report, final pagination will depend on the changes the author accepts and rejects. While the editor makes changes necessary in the current appearance of the file, the editor is unable to check final pagination. The author must verify that the final file shows correct pagination concerning:

- Correct page numbering in front matter and throughout the report.
- Correct right-hand/left-hand page placement.
- Appropriate page breaks (no single lines, separated captions, etc.).
- Updated page count shown on the TRDP if applicable.
- Updated page number references in front matter lists and any other cross references.

See section on Pagination for more info.

Accessibility

Overview

Accessibility—making electronic information usable to all users, whether hearing impaired, vision impaired, or mobility impaired. Many aspects of making electronic information compatible with assistive devices and accessible to disabled users benefit all users.

TTI maintains working knowledge of accessibility requirements set forth by Texas Administrative Code Sections 206 and 213, the Americans with Disabilities Act, and Section 508 of the federal Rehabilitation Act. Electronic information generated through state and federal funds must be accessible to all users.

More Information

The following page on TTINet has general information about how to make your document ready for conversion to an accessible format: http://ttinet.tamu.edu/communications/editing.

Information about Section 508 Standards Training is on TTINet at http://ttinet.tamu.edu/training/web_development/508_standards/.

TTI employees who would like guidance or assistance in making deliverable documents accessible or for assistance with accessibility for media deliverables such as videos and interactive files, see Contacts for more information.

Technical Report Front Matter

Overview

Front matter includes all sections numbered with lowercase roman numerals, such as the table of contents, list of figures, etc. Paginate the front matter carefully and include all sections required by the sponsoring agency.

Cover

Requirement for RMC Reports

TxDOT requires a formal cover on each published deliverable. For standard technical reports, COM will provide the correct completed cover, with applicable information, once TxDOT approves the deliverable for publication.

RMCProducts or Non-RMC Reports

For products that require specialized covers, or non-RMC reports, the author may provide the cover in electronic form as part of the document, or authors might want to work with COM to develop an appropriate cover.

Technical Report Documentation Page

Requirement

The author must complete the technical report documentation page (also denoted as Form DOT F 1700.7) for the National Technical Information Service (NTIS). It is a requirement for technical reports.

PSRs and products do not require technical report documentation pages (TRDPs). They should, however, include the pertinent information needed for processing and tracking the deliverable, including title, author names and affiliations, project number, date, and appropriate sponsor information.

Where to Find the TRDP File

Partially completed TRDPs are included in TTI's report template files. If you choose to complete a TRDP for products, a separate TRDP file is available. All RMC template files, including TRDP files and report templates, are available on TTINet: http://ttinet.tamu.edu/communications/editing.

If TRDPs are required on reports for sponsors other than TxDOT, they will need to be filled out differently.

Font Size

The headings identifying the information in each box should be 8-point type. The information you enter in each box should be 12- to 10-point type and should maintain the same point size consistently for all entries on the entire TRDP.

Margins

Margins are preset in the template files so there is no need to change them. Margins on the TRDP should be 0.5 inch all around.

Alignment

The text in the boxes should align with the number of the box. Indents may be used in the abstract to indicate the beginning of new paragraphs.

Fill Entire Page

The TRDP must be lengthened to fill the page vertically. Adjust accordingly to fit:

- If the TRDP is too short, add blank lines following the abstract (Box 16).
- If the form goes off the page, cut some of the text from the abstract or reduce the font size of all text entries. Do not use less than 10-point text for the entries you input in the boxes.

TRDP Box Information

See Figure 2 for a sample TRDP. Use the following instructions for filling out your TRDP. If you complete a TRDP for a product, required completion will vary from the following instructions given for report TRDPs.

Box 1, Report No. — enter as FHWA/TX-09/0-1234-1, where:

- FHWA = Federal Highway Administration, TX = Texas.
- 09 = fiscal year the report is approved.
- 0-1234 = entire project number, including suffix if used on contract.
- 1 = usually the deliverables table item number, without the preceding “R” for reports.

Box 2, Government Accession No. — leave blank.

Box 3, Recipient’s Catalog No. — leave blank.

Box 4, Title and Subtitle — entire report title, in all caps; precede subtitles with a colon (preferred) or an em dash.

Box 5, Report Date — month and year report was written or last revised, whichever is later; if at resubmittal stage, leave original month and year and add “Resubmitted: month year” on new line; if at publication stage, leave original (or resubmitted) date and add “Published: month year” on second line.

Box 6, Performing Organization Code — leave blank.

Box 7, Author(s) — list all authors, primary author first, including first name, middle initial if available, and last name; maintain formality across all author names (e.g., all middle initials or none) unless following author preference in name style.
Box 8, Performing Organization Report No. — report number, slightly different from Box 1, consisting of only project number and deliverable number from project deliverables table (e.g., 0-1234-1).

Box 9, Performing Organization Name and Address — enter (followed by other organization if applicable:
Texas Transportation Institute
The Texas A&M University System
College Station, Texas 77843-3135

Box 10, Work Unit No. — leave blank.

Box 11, Contract or Grant No. — entire TxDOT project number, as on the contract.

Box 12, Sponsoring Agency Name and Address — enter:
Texas Department of Transportation
Research and Technology Implementation Office
P.O. Box 5080
Austin, TX 78763-5080

Box 13, Type of Report and Period Covered — "Technical Report:" and dates showing period of time covered by the report (Month Year–Month Year).

Box 14, Sponsoring Agency Code — leave blank.

Box 15, Supplementary Notes — enter "Project performed in cooperation with the Texas Department of Transportation and the Federal Highway Administration." On a new line, enter "Project title: [insert project title]" showing the title from your project contract. On a new line, enter "URL: http://tti.tamu.edu/documents/[del number].pdf" to show the anticipated online link.

Box 16, Abstract — Include a brief (200–250 words) summary of the most significant information contained in the report. When applicable, the abstract should include advice on how the results of the research can be used.

Box 17, Key Words — terms or short phrases that identify the important topics in the report; use initial caps.

Box 18, Distribution Statement — "No restrictions. This document is available to the public through the National Technical Information Service, Springfield, Virginia 22161, http://www.ntis.gov."

Boxes 19 and 20, Security Classif. — unless advised otherwise in writing by RTI, enter "Unclassified."

Box 21, No. of Pages — total number of pages in the report (should be an even number), excluding any bound covers.

Box 22, Price — leave blank.

Author's Title Page

Example

Figure 3 shows an example of the author's title page. Much of the information on the title page is the same as that on the TRDP, so authors should cross-check the title page with the TRDP to ensure that it contains exactly the same information where repeated.

The title page should be centered on the page vertically and horizontally, as shown in the example.

Pagination

The author's title page:

- Follows the TRDP on page iii (although the page number is unprinted).
- Has a blank even-numbered left-hand (verso) page following it as page iv.

Title

The title is one of the items on the title page that is repeated from the TRDP. Check to ensure the title is exactly the same as the one that appears in Box 4 of the TRDP. If there is a subtitle, follow the main title divided by a colon (preferred) or em dash.

When reviewing your title page prior to sending the deliverable to COM, check that the title is:

- In all caps.
- In bold.
- In 14-point type.

Technical Report Documentation Page

1. Report No. FHWA/TX-11/0-1728-1	2. Government Accession No.	3. Recipient's Catalog No.
4. Title and Subtitle ALTERNATIVE TRANSIT FUNDING ASSESSMENT		5. Report Date September 2010 6. Performing Organization Code
7. Author(s) Katherine Turnbull, Stephen Farnsworth, and Cynthia Weatherby		8. Performing Organization Report No. Report 0-1728-1
9. Performing Organization Name and Address Texas Transportation Institute The Texas A&M University System College Station, Texas 77843-3135		10. Work Unit No. (TRAIS) 11. Contract or Grant No. Project 0-1728
12. Sponsoring Agency Name and Address Texas Department of Transportation Research and Technology Implementation Office P.O. Box 5080 Austin, Texas 78763-5080		13. Type of Report and Period Covered Technical Report: December 2009–April 2010 14. Sponsoring Agency Code
15. Supplementary Notes Project performed in cooperation with the Texas Department of Transportation and the Federal Highway Administration. Project Title: New Transportation Revenue Sources URL: http://tti.tamu.edu/documents/0-1728-1.pdf		
16. Abstract This project examines state funding for public transit services and explores the approaches used in states throughout the United States. The project presents information on the sources of revenues, dedicated funding programs, local match requirements, and other issues related to state support for transit capital and operating expenses. The research team determined the techniques used throughout the country through a survey of representatives at state departments of transportation and available literature. In addition, the team conducted a review of transportation-related taxes collected within Texas. Project results presented in this report should benefit the Texas Department of Transportation, transit agencies, and other groups interested in exploring new funding sources for public transportation.		
17. Key Words Public Transit Financing, Public Transit Funding, Public Transportation Funding, Public Transportation Financing	18. Distribution Statement No restrictions. This document is available to the public through NTIS: National Technical Information Service Alexandria, Virginia 22312 http://www.ntis.gov	

19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 58	22. Price

Form DOT F 1700.7 (8-72) **Reproduction of completed page authorized**

Figure 2. Sample TRDP for a Technical Report.

Authors

Are all authors listed in the same way on the title page as they are listed in Box 7 of the TRDP (initials, spelling, order, etc.)? Author preference determines the way an author's name is listed on the TRDP and title page. If authors have no preference, use a consistent style for author names. For example, if one author uses a middle initial, put a middle initial for all authors unless authors have a preference in name style; if one author uses only initials, put only initials for all authors.

Are titles and university affiliations listed below author names? If an author has left the organization he or she was originally with, list the affiliation that was in place for the contract and add "former" before the position title, e.g., Tom T. Hall III, Former Associate Research Engineer, Texas Transportation Institute.

Does "by" appear before the names and "and" appear on a line before the last name of the list?

Report Number

Are the wording ("Report") and the report number the same as in Box 8 of the TRDP?

Project Number

Do the wording ("Project") and number match the wording and number in Box 11 of the TRDP?

Project Title

Is this wording of the project title the same as in the second part of Box 15 of the TRDP? Does it use initial caps? The title not show a period at the end.

Sponsors

Is the sponsor (or sponsors) the same as the one(s) listed in Box 15 of the TRDP? Is the wording the same as that shown in the example?

Date

Is the date written in exactly the same manner as that in Box 5 of the TRDP?

If the report is at transmittal, the second line of the date should read "Published:" with the date of publication, in addition to the date of last revision on the first line.

TTI Name and Address

Is the address the same as in the example?

Is "TEXAS TRANSPORTATION INSTITUTE" in all caps?

PUT THE TITLE IN ALL CAPITAL LETTERS:
SUBTITLE FOLLOWS THE COLON

by

John F. Kennedy
Assistant Research Engineer
Texas Transportation Institute

Tom T. Hall III, P.E.
Former Associate Research Engineer
Texas Transportation Institute

and

Jerry L. Lewis, Jr., P.E.
Associate Research Engineer
Texas Transportation Institute

Report 0-1213-1
Project 0-1213
Project Title: Uppercase and Lowercase Letters Should Be Used

Performed in cooperation with the
Texas Department of Transportation
and the
Federal Highway Administration

June 2008
Published: October 2009

TEXAS TRANSPORTATION INSTITUTE
The Texas A&M University System
College Station, Texas 77843-3135

Figure 3. Sample Author's Title Page.

Disclaimer

Content

The author should combine disclaimers (such as author's and trade names disclaimers) under one disclaimer heading. Include the author's disclaimer as standard, adding others as needed.

Author's Disclaimer

The author's disclaimer is required in all technical reports:

> The contents of this report reflect the views of the author(s), who is (are) responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official view or policies of the Federal Highway Administration (FHWA) or the Texas Department of Transportation (TxDOT). This report does not constitute a standard, specification, or regulation.

Engineering Disclaimer

If the report contains engineering recommendations (such as in construction-related documents), include the following and include the engineer's name and professional engineer (P.E.) number:

> This report is not intended for construction, bidding, or permit purposes. The engineer in charge of the project was Joe Smith, P.E. #12345.

Trade Names Disclaimer

According to the RTI *University Handbook*, reports should avoid the appearance of endorsing or favoring a specific commercial product, commodity, or service. Trade names or manufacturers' names should be given only if their exclusion results in the loss of meaningful information.

When trade names or manufacturers' names are used in a report, include the following statement in your disclaimer:

> The United States Government and the State of Texas do not endorse products or manufacturers. Trade or manufacturers' names appear herein solely because they are considered essential to the object of this report.

Acknowledgments

Content

The author must credit:

- The project director.

- Members of the Project Monitoring Committee (PMC) or other review panel (if applicable) and their organizations.
- The state and federal sponsors as applicable.

For acknowledgments to TxDOT employees, the organization identification may be "Texas Department of Transportation" or individual affiliations within TxDOT. Most acknowledgments begin as follows:

> This project was conducted in cooperation with [sponsors]. The authors thank the members of TxDOT's Project Monitoring Committee [list individual names if feasible]. Special thanks go to [list project director and others by name and comment on specific assistance provided if appropriate].

Style

Avoid phrases such as "the authors want to thank" since authors are actually thanking individuals and groups through the acknowledgments section. Use consistent formality for any names in the acknowledgments (e.g., all middle intitials or none, all courtesy titles or none) unless individuals have a name preference.

Table of Contents

Content

In the table of contents (TOC), list all chapter titles and main headings (references, appendices, etc.) with their corresponding page numbers. Include at least first-level headings within the chapters.

Subsequent heading levels may be listed if desired, but list the same level of headings for all chapters. List full chapter titles. For appendices, list appendix letter (if any) and title (e.g., Appendix A: Imaging Figures).

Long Titles

When the chapter or section title is more than one line long, break it where logical and do not let it get within three leader dots of the page number. Indented second and subsequent lines are preferred.

To break long lines automatically within the TOC (or other front matter lists), use the right-indent feature of your word processor. To prevent long titles from breaking based on the body of the report, use a soft return (SHFT+ENTR) to break the title in the body of the report—it will be read by the table of contents as a space instead of a line break.

First Element Listed in TOC

The TOC should begin with the first section that follows it, usually the list of figures or list of tables. Do not list the TOC itself or any front matter preceding it.

Consistency and Page Numbers

The author should check to make sure that:

- All headings in the TOC read exactly like those in the text.
- The page numbers listed in the TOC correspond to their in-text referents.

Remember that new chapters or sections should begin on odd right-hand (recto) page numbers.

Indention

Use indention consistently to show section subordination and coordination.

Capitalization

Use of all capital letters places emphasis on short items, but hinders readability when used on extended items—such as within the TOC. Because chapter titles and first-level headings in the report use all capital letters, they will appear in all caps in the TOC if typed into the body of the report using all capital letters.

The recommended practice to avoid all capital letters appearing in an autogenerated TOC is to type the chapter titles and headings in the body of the report as you want them to appear in the TOC (usually with initial capital letters for every word except articles, conjunctions, prepositions, and the word "to"). Use style characteristics to display the item in the report body in all capital letters, but it will appear in the TOC correctly.

Dot Leaders

All leaders (e.g., dots separating section titles from their page references) should align. Leader dots should be generated automatically by the TOC function or tab function, not typed manually. This is also true for the LOF and LOT.

Using autogenerated tables is usually the best method (see Table of Contents, List of Figures, and List of Tables and Dot Leaders/Tabs, plus Appendix C for word-processing tips.

List of Figures and/or List of Tables

Requirement

The List of Figures (LOF) and List of Tables (LOT) are required for reports containing five or more figures or tables, respectively, and may be included at the author's discretion if there are fewer figures/tables.

Separate Pages

In RMC technical reports, the LOF and LOT are separate sections and should be placed on separate pages. They are grouped here for explanation because they are so similar.

Pagination

For proper pagination:

- The LOF follows the TOC (recto or verso page).
- The LOT follows the LOF (recto or verso page).
- The lists do not require right-hand placement or odd page numbers.
- The lists show printed page numbers.

Content

The LOF/LOT should contain the figure/table numbers, captions, and page numbers of figures/tables. It is preferred but not mandatory to list figures and tables from appendices (or other back matter) as well.

Examples:

Figure		**Page**
1	Survey Results Gathered by Students in the College Station, Texas, Area	8

		Page
Figure 1.	Survey Results Gathered by Students in the College Station, Texas, Area	8

Consistency and Page Numbers

The author should check to make sure that:

- All captions in the LOF/LOT read exactly the same as those in the text.
- The correct corresponding page numbers are listed in the LOF/LOT.

List of Abbreviations and Symbols (Optional)

Content

If the report contains numerous or unusual acronyms, abbreviations, and/or symbols, you should provide a list in the front matter. This does not negate the need to define the acronym, abbreviation, and/or symbol upon first reference in the text. The list provides a helpful reference for readers, but you still need to define each acronym on first use in the document.

If included, the list should contain all acronyms, abbreviations, and/or symbols used in the document. For easy use in electronic files, consider linking acronyms used in the body of the report to the bookmarked items in the list.

Pagination

If included, the list of abbreviations and symbols should start on its own page. The list of abbreviations and symbols:

- Follows the LOT directly (recto or verso page).
- Has a printed page number.

For more information on placement of the List of Abbreviations and Symbols, see the section in this document identifying major sections of a technical report.

List of Equations (Optional)

Content

If the report contains numerous equations, you might want to provide a list in the front matter. Arrange equations in the method best suited to the document's content, usually including the page number of the equation's first appearance.

If included, the list should contain all equations used in the document.

Pagination

If included, the list of equations should start on its own page. It:

- Follows or replaces the optional List of Abbreviations and Symbols.
- Has a printed page number.

Technical Report Pagination

Overview

Introduction

Each section of the document, including the front matter, should be arranged and paginated correctly. Every page of the report should be assigned a page number, whether that page number is printed or not.

Multiple Volumes

If a report is very long, it can be separated into volumes according to content. Most of the time, a single report should not be more than 500 total pages (250 published double-sided sheets). The volume number should be listed on the TRDP and author's title page.

Double Sided

Reports are ultimately published double sided and should be paginated accordingly. Please check to make sure that when the report is printed double sided, pages will fall where they are supposed to.

Even and Odd Page Placement

Because technical reports files are set up so they will print correctly when published double sided, right-hand and left-hand page placement (odd and even page numbers, respectively) matters. See the following sections for detailed explanation regarding page numbering, page placement, and specialized pagination.

Two terms related to pagination that are used throughout these guidelines might be unfamiliar to you. A recto page refers to a right-hand, front, or odd-numbered page in a report and is the opposite of verso. A verso page refers to a left-hand, back, or even-numbered page in a report and is the opposite of recto.

Page Numbering

Format

The preferred location of page numbers is centered at the bottom of pages. Alternating page numbers on odd/even pages or headers and footers that incorporate mirrored page numbers are allowed but may be more difficult to format. When using alternating mirrored numbers, be sure page numbers appear at outside margins when the report is printed on two sides (odd at right margin, even at left).

Some pages—such as the TRDP, author's title page, and all blank pages—have unprinted page numbers but are counted in pagination. Use the following format:

- Number front matter in lowercase roman numerals (i, ii, iii, etc.).
- Number the body of the text with arabic numerals (1, 2, 3, etc.) beginning with page 1. In the preferred style, page numbers run consecutively throughout the entire report, including appendices (i.e., 1, 2, 3, etc.). If you prefer, you may number reports internally to each chapter and appendix (e.g., 1-1, 1-2, 1-3, etc.; A-1, A-2, etc.).

Major Sections

Front matter and report sections should be arranged and numbered according to Table 2. The sections marked with an asterisk fall on odd-numbered pages.

New chapters (or major sections) must begin on recto (odd) pages. Insert a blank page, if necessary, to force the new chapter onto a recto page. Blank pages are completely blank, with no printed number, but are assigned a number within pagination.

For specific instructions regarding appendix pagination, see Appendices.

Example:
If a chapter ends on page 5, leave a blank page for page 6 and start the new chapter on page 7.

Table 2. Pagination Example.

Section	Page Number Shown	Page Number Not Shown
Technical Report Documentation Page*		i
Blank page		ii
Author's Title Page*		iii
Blank page		iv
Disclaimer*	v	
Acknowledgments	vi	
Table of Contents*	vii	
List of Figures	viii	
List of Tables	ix	
List of Abbreviations and Symbols (optional)	x	
Chapter 1*	1	
References*	odd page	
Appendix Title Page* (optional)	odd page	
Blank page (if using an appendix title page)		even page
Appendix Content Pages*	odd page	

* Signifies a page that must be a recto page

Landscaped Pages

Place page numbers in portrait orientation, even on landscaped pages, so that page numbers appear consistently in the same location throughout the report. See Appendix C, Page Orientation for word-processing tips.

In these cases, make sure that when you turn the printed book clockwise 90 degrees, the illustration is right-side up (see Figure 4).

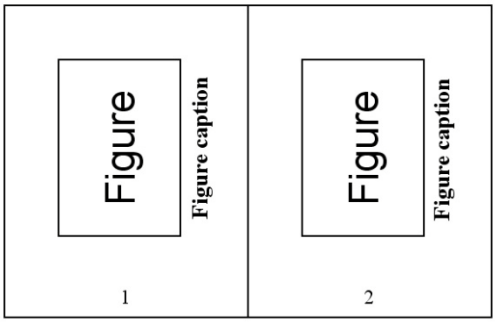

Figure 4. Placement of Landscaped Pages.

Oversize Pages

You may place large charts that would not be easily readable otherwise on oversize pages, usually 11 × 17 inches . When inserting pages larger than 8.5 × 11 inches, remember that the backs of these pages might need to be assigned unprinted page numbers. When inserting a page larger than 8.5 × 11 inches:

- It is placed on an odd-numbered page.
- The back of the oversize page contains another oversize page (if it has content, the page has a page number shown; if it is blank, it has an unprinted, even-numbered page number).

If you are inserting more than one oversize page in a row, begin the series on an odd-numbered page. If the series ends with an odd-numbered page, insert a blank page after it (even numbered). If the series ends with an even-numbered page, begin your next regular-size page directly after it. Reports are printed double sided, so it helps to visualize how they will be printed.

Example:
If the front of an oversized insert is page 11 and the next page will be regular size, then the back of the oversize page will be a blank page 12. The next regular page will be page 13.

Appendices

If there is only one appendix, name it “Appendix,” not “Appendix A.” If there are more than one, designate each appendix with a letter (e.g., Appendix A, Appendix B).

There are two ways to format appendices:

- Heading—The appendix may simply have an appendix heading at the top of the page (e.g., Appendix A: Survey Results) followed by the beginning of the appendix proper on the same page. This page should be an odd-numbered page.
- Cover page—The appendix may begin with a cover page. If you choose to use a cover page, center the appendix designation and title in the middle of the page and use a printed page number. This cover page should appear as a recto page. Skip the next page (blank verso), and begin the appendix information on the next page. There is no need to repeat the heading at the top of this page.

Because appendices should follow the reference section in TxDOT reports, they will need to be stored in a separate file if you use automatic citations (which Word places at the end of the file).

Technical Report Format

Overview

Since formatting errors can be difficult to change during the editorial process, please adhere to the following specifications. They will help you properly format your file before submittal, reduce the amount of time spent on revisions, and promote consistency among TTI reports. If you need assistance formatting your deliverable, contact TTI Reports.

Using the predefined styles in the report template file may facilitate correct formatting. (See Report Development Resources for information regarding the template file and other report development resources.)

See Appendix C for specific instructions, helpful hints, and word-processing tips.

Page and Paragraph Specifications

Columns

Use a single-column, full-page format for technical reports. Reserve double columns or other formatting for special documents such as proceedings and field manuals.

Type

Use 12-point type with Times New Roman font for text including table captions, figure captions, and explanatory text for equations. Print figure and table captions in bold. This formatting will promote consistency of presentation in the report and help avoid printing problems during publication.

Font choice for equations and text within figures and tables may vary, but similar items should use a consistent font style and size if possible. Text in figures and tables can be smaller than 12-point type but not be less than 7 points.

Margins

Check for a minimum 1-inch margin on all pages (except the TRDP), including pages with figures and tables. TRDPs should have margins set to 0.5 inch.

Spacing

Use single spacing or space-and-a-half vertical spacing. Double spacing is prohibited except when separating single-spaced paragraphs or headings and subheadings from text.

Paragraphs

Separate paragraphs with a blank line or indent paragraphs. Authors may choose to use both a blank line and indention for appearance or clarity.

Justification

Text with ragged right margins (left-justified text) is easier to read than full-justified text. Full justification often causes uneven gaps to appear in a line of text. Either is acceptable, but left justification is preferred for the reader's sake.

Headers and Footers

Headers and footers are permitted but not necessary. When using headers or footers, be sure that page numbers and changeable information (chapter heading, etc.) appear at outside margins when the report is printed double sided.

Widows and Orphans

Avoid leaving a single line of text alone at the top (widow) or bottom (orphan) of a page. Most word-processing programs have an automatic feature to prevent such occurrences.

Avoid leaving a heading at the bottom of a page without at least two lines of text to accompany it. If feasible, avoid splitting bulleted lists from their introductory sentences or leaving a single bullet alone at the top or bottom of a page.

Headings

Authors may number chapters or omit numbering. Table 3 shows preferred sizes and styles for headings and subheadings. Heading schemes may vary from the preferred styles on products and if appropriate for content.

Table 3. Heading and Subheading Format Styles.

CHAPTER 1. TITLE OF FIRST CHAPTER
(14 pt. bold, all caps, centered)

FIRST-LEVEL HEADING
(12 pt. bold, all caps, flush left, separate line, skip a line before and after)

Second-Level Heading
(12 pt. bold, initial caps, flush left, separate line, skip a line before and after)

Third-Level Heading
(12 pt. italic, initial caps, flush left, separate line, skip a line before and after)

Fourth-Level Heading. (12 pt. bold, initial caps, paragraph indent followed by period, two spaces, and subsequent text; skip a line before only)

Grammar and Style

Overview

Introduction

The following guidelines serve to answer many specific questions related to style, punctuation, and English language usage. They provide helpful hints for how to cut down on editing marks (and thus your correction time).

Writing style encompasses a number of elements, including a writer's voice, word choice, spelling, and tone. Consistency of style is important. Equally important is choosing the right style for the right purpose. The current RTI *University Handbook* stresses the need to write clearly and concisely in TxDOT documents.

Style can also refer to mechanical questions, like "Do I use a comma before 'and' in a series?" This question is also known as the serial comma question. (For example, is it "red, white, and blue" or "red, white and blue"?)

Stylistic changes marked in an edit are usually left to the author's discretion. At a minimum, authors should make stylistic changes:

- When failing to change the style will impede readability or comprehension.
- When the style is inconsistent throughout the report.

Consistency and Correctness

Editors mark consistency and correctness issues as necessary changes. Beyond the detailed requirements of these guidelines, consistency of style and correctness of grammar will drive the editor's work in reviewing your reports.

An example of stylistic consistency:
If you use "multi-modal," don't switch to "multimodal" halfway through the report.

Word Use

Acronyms, First Reference

When using an acronym, spell out what it stands for in the first reference and put the acronym in parentheses after it. In subsequent occurrences, use either the full phrase or the acronym. Do not redefine acronyms.

Acronyms defined on the TRDP need to be defined again on the first use in the report, but acronyms defined in other parts of the front matter (such as the disclaimer) do not need to be redefined in the body of the report. There is no need to show an acronym if it is not used subsequently (except in special cases, such as when the acronym is more widely known than the phrase it represents).

Example:
High-occupancy vehicles (HOVs) are very important. HOVs can carry many people and save fuel.

Acronyms, Plural

To make a plural of an acronym, simply add an "s." An apostrophe should not be used unless the acronym is possessive.

Examples:
- High-occupancy vehicles would be HOVs.
- The HOV's rate of speed.

Active versus Passive Voice

Active voice attributes an action to a person or thing. Passive voice focuses on what was done rather than who or what did it.

Example:
- Active: "The researchers analyzed the data."
  This example says exactly who performed the action.
- Passive: "The data were analyzed by the researcher."
  This example is less direct and has a weak structure. Sometimes "by the researcher" is left off completely, and the reader is left to wonder who performed the analysis.

Example:
- Active: "The test uses collected data to determine . . ."
  "Analysis results from the collected data showed . . ."
  These examples provide two alternatives for avoiding overly frequent use of "The researchers . . . " when converting passive voice to active.
- Passive: "Collected data are used to determine . . ."
  This sentence does not tell the reader how the collected data determine the result.

Why Voice Is Important
- TxDOT wishes reports to be readily understandable, and research in the field of technical communications shows that the use of active rather than passive voice is much more effective in documents written for the practitioner.
- Readers quickly process and understand information written in active voice, and active voice helps preserve objectivity and accuracy by clarifying who or what is performing the action.
- Editors will look for at least 50 percent of the report to be written in active voice in a first edit; they will not mark passive voice in a proofread.

Use of the Word "Data"

TxDOT reports use the word "data" as plural. The singular word "datum" is rarely used.

Examples:
- The data show a significant trend.
- Researchers analyzed these data using several methods.
- This data set shows values that can be compared to the earlier data set.

Prefixes

Most prefixes do not require a hyphen in current usage. Simply add the prefix unless there is a chance that the new word will be misunderstood. If you have a question about the particular word and whether or not it should be hyphenated, Webster's has an excellent and exhaustive list of words under each prefix.

Always use hyphens with "quasi-," "ex-," and "self-."

Examples:
- semiopaque, transoceanic, semipermeable.
- ex-marine, quasi-intellectual, self-discovery.
- recover/re-cover, recreate/re-create, resent/re-sent (depending on the meaning).

Pronoun Use

Pronouns must agree in number and gender with the nouns they reference. Readers need to be able to identify clearly which noun the pronoun references (the antecedent). Usually that necessity means that the antecedent should be the last subject used before the pronoun.

Remember that pronouns must agree with the singular or plural nature of their antecedents. Singular groups (TxDOT, division, team) require singular pronouns and modifiers (it, this—not they, their, or these). If you want to emphasize the collective nature of a noun, specify the population you mean: TxDOT officials (plural) rather than TxDOT (singular), the committee members (plural) rather than the committee (singular).

Gender-Neutral Pronoun Use

Partly because of the need for gender-neutral language these days, pronoun use is particularly troublesome for some authors.

When gender is not specified and usage calls for a singular pronoun, try to reword the sentence to avoid using a gender-specific pronoun. To reword a sentence, you might change a singular subject to a plural subject or omit the need for a pronoun at all. (See the examples below.) Use "he or she" and "his or her" constructions in instances where a singular gender-specific pronoun cannot be avoided.

Examples:

- Problem: If a researcher discovers a need to retest, he . . .
  Possible rewording: If researchers discover a need to retest, they . . .
- Problem: The research supervisor found the test difficult to analyze. He referred results to a team of specialists.
  Possible rewording: The research supervisor found the test difficult to analyze and referred results to a team of specialists.
- Gender-specific pronoun: Each researcher examined the results. He or she reported findings to…

Use of "This," "These," "Those," and "That"

Place a noun immediately following the words "this," "these," "those," and "that" to identify the subject indicated. Consider these words adjectives that describe nouns rather than pronouns that replace a noun. If you have difficulty adding a word to identify the subject specified, see if the sentence is unclear and needs to be reworded.

Example:
Test results were positive. This [outcome] indicated . . .

States

In most cases, spell out names of states used in report text. If you wish to abbreviate state names in references, tables, and figures, you may use the standard abbreviation or the postal code.

Examples:

- In text: Bryan, Texas, is in the Brazos Valley.
- Optional in references, tables, and figures: New Orleans, La., or New Orleans, LA.

Trademarks

Try to avoid using names of trademarked products when referencing generic concepts (e.g., don't use "Excel" when you mean "spreadsheet"). When you do use trademarked or registered names, place the registered trademark (®) or trademark (™) symbol either:

- After the name on first reference and thereafter do not use the trademark symbol.
- After the name on every reference consistently.

Indicate the trademark owner somewhere in the report, in fine print if necessary.

Years

When describing decades, simply add an s. If the "19" or "20" is not used, place an apostrophe before the year to take its place. As with contractions, the apostrophe indicates that information has been left out.

Example:
during the 1980s and '90s

Internet and Technology Terminology Guide

Handling Technology Terms

Some tech terms have become commonplace and no longer need to be capitalized (e.g., web, website). Tech terms that are brand names are capitalized and use trademark symbols when applicable (e.g., Excel, Macintosh). Brand names that begin with a lowercase letter (e.g., iPod, iPad) always use the lowercase first letter, even at the beginning of a sentence.

Some terms appear frequently in technical documents. COM recommends the following usage:

- Note spelling for these terms:
  - Screenshot as one word.
  - Drop-down menu should use the hyphen consistently.
  - Email or e-mail, as long as it used consistently.
- Note capitalization with these terms:
  - Macintosh; PC; personal computer.
  - hypertext transfer protocol (HTTP); a transfer protocol; hypertext.
  - Internet protocol (IP); the Internet; the net; an intranet.
  - Open Source Initiative (the corporation); open-source platforms.
  - World Wide Web Consortium; the World Wide Web; the web; a website; a web page.

The basic alphabet keys as well as all named keys are capitalized even if they are lowercased on a particular keyboard. Menu items and icon names are usually spelled and capitalized as in a particular application. Acronyms for file formats are rendered in full capitals. Notice that quotation marks are not necessary to designate menu items as long as they are capitalized.

- The function key F2 has no connection with the keys F and 2.
- The Option key on a Mac is similar to the Alt key on a typical PC.
- Choosing Cut from the Edit menu is an alternative to pressing Ctrl+X.
- Save the file as a PNG or a GIF, not as a JPEG.

URLs

Web addresses should be functional if feasible. If you know that a particular web address is not longer valide, indicate that in parentheses following the link name.

In a printed work, if a uniform resource locator (URL) has to be broken at the end of a line, the break should be made:

- *After* a colon or a double slash (//).
- *Before* a single slash (/), a tilde (~), a period, a comma, a hyphen, an underline (_), a question mark, a number sign, or a percent symbol.
- *Before or after* an equals sign or an ampersand.

A hyphen should never be added to a URL to denote a line break, nor should a hyphen that is part of a URL appear at the end of a line. Keep in mind that a manually broken link (by a space or soft return, for example) will no longer be functional.

For example:
http://ttinet.tamu.edu/communications
/editing/txdot_report_development.stm

Capitalization

Captions and Titles

In titles, headings, figure and table captions, and the like, capitalize every word except articles, conjunctions, prepositions, and the word "to."

Example:
Travel Predictions and Models beyond the Year 2000

References to Chapters, Figures, or Tables in Text

When referring in the text to a chapter, figure, or table, capitalized citations are preferred. Either lowercase or uppercase used consistently is acceptable.

Preferred: Chapter 1, Figure 6, Table 9
Also acceptable: chapter 1, figure 6, table 9

East, West, North, and South

Capitalize directions with a state, city, or any other geographical region only if it is part of a proper name. Regions familiarly accepted as proper names may be capitalized. Simple directional modifiers should not be capitalized when they precede a proper name.

Examples:
North Carolina, West Texas or west Texas, Gulf Coast or gulf coast, Gulf of Mexico, Texas Panhandle, Midwest, western United States, southern Louisiana

Position Titles

As a rule, do not capitalize a person's position title, such as project manager, director, etc. Capitalize position titles only if they come before the name and are official titles, such as President Tyler, Congressman Smith, Director Jones, etc.

Example:
John Smith, research assistant; Tom Smith, director of the center

Programs or Research Items

Capitalize a program or research item (database, software, etc.) only if it is an official proper name or title. If it is a generic product type, do not capitalize it.

Examples:
- intelligent transportation systems (ITS), ground-penetrating radar (GPR), TxDOT districts.
- Materials Division, the Dallas District, TTI's Instrumented Vehicle.

"State," "City," and "Federal"

In general, do not capitalize "state" or "federal" unless you are quoting laws or bills that do so. Do capitalize "state," "city," and other words if they refer to a specific, official governmental entity.

Example:
The State of Texas employs many workers, and the City of Houston purchases supplies. The geographic area covered by the state of Texas contains several cities, and the city of Houston is not far from the city of Bryan, Texas.

"District"

Do not capitalize the word "district" unless it refers to a specific agency region.

Example:
Three TxDOT districts use the technique. The Dallas District expects to implement it during fiscal year 2012.

Punctuation

Bulleted Lists

When a document lists complex material, it is helpful to pull the list out of the paragraph and separate it with bullets (•) for readability. COM recommends bulleted items for any listing of three or more items and for listings of two items if they are longer than a line of text.

Use bulleted lists instead of numbered lists unless the items have order, ranking, or correlation to numbered data. If using a numbered list, capitalize and punctuate it the same way as a bulleted list.

Though editorial style guides for bulleted lists vary greatly, COM has simplified and standardized the style recommended for use in TxDOT RMC reports. Follow these guidelines when creating bulleted and numbered lists:

- Use a phrase or sentence to introduce the list and end it with a colon (:). You may end the introduction with a period (.) if it and all items in the list are complete sentences.
- Ensure that the lead-in sentence clearly identifies whether all items apply (and) or whether they stand independent (or). Generally, items in the list will not contain any conjunction linking one item to another.
- For all bulleted lists, whether they are full sentences or phrases, capitalize the first word of each item—even for sub-bullet items.
- For all bulleted lists, whether they are full sentences or phrases, end the item with a period (or, in unusual cases, a question mark)—even for sub-bullet items.
- Use parallel grammatical construction within bulleted lists. For example, begin each item with a verb or a noun (depending on what is appropriate given your lead-in phrase) or make each item a complete sentence.
- For consistency throughout your document:
    - Use or omit blank lines consistently before or after a complete list.
    - Use or omit blank lines between items consistently in every list.
    - Use consistent formatting, such as indention and bullet appearance, throughout the report.

Commas in a Series

When listing a series within text, you may either use a serial comma (i.e., the comma before the “and”) or not, as long as you are consistent. Especially in technical writing, using the serial comma can make the difference between a clear and an unclear sentence, so its use is recommended.

When elements within a series contain internal commas, you should use a semicolon when separating elements; otherwise the series can be confusing.

Examples:

- The authors were Smith, Johnson, and Walker. (serial comma)
- The authors were Smith, Johnson and Walker. (no serial comma)
- The authors were Smith, chairman; Johnson, treasurer; and Walker, secretary.

Commas in Compound Sentences

A true compound sentence contains two full sentences joined by a conjunction. A sentence with compound elements generally contains one subject and two verb phrases. Use a comma to separate the parts of a compound sentence but no comma in a sentence with compound elements.

Examples:

- This report identifies some of the key policy questions, but local officials must determine answers at the grassroots level. (compound sentence)
- This report identifies some of the key policy questions regarding the project and sheds light on some of the possible answers. (compound elements)

Commas with a State and Year

Use a comma before and after the name of a state that follows a city. A comma should also come before and after a year that follows a month and day (but there is no comma between a month and year only).

Examples:

- College Station, Texas, is the site of Texas A&M University.
- January 10, 2009, is the date of the meeting.
- February 2010 will be dedicated to a literature search.

Hyphens in Modifying Phrases

Place a hyphen between words that serve as a modifying phrase. The purpose of the hyphen is to help clarify for the reader that both words modify the word that follows. In certain constructions, leaving the hyphen out can prove confusing. Industry usage overrides guideline style (e.g., portland cement concrete). Check for consistency in the use of phrases used in multiple places within a report.

Note: In TxDOT reports, do not place a hyphen between a number and a metric measurement unit when they are used as a single adjectival phrase. Hyphens may be used or omitted between a number and an English unit as long as use is consistent.

Examples:

- Figure 1 shows a cross section. The cross-section diameter is 1 inch.
- high-resolution photograph, 12-year period, 5 m span, 5 ft wall or 5-ft wall.
- crumb-rubber mixture (but no hyphen in “crumb rubber” used as noun).

Hyphens in Modifying Phrases that End in "-ly"

If the modifying phrase contains -ly, do not use a hyphen.

Example:
a thermally induced reaction

Em Dashes

Em dashes (also denoted by 1/m) are used to separate thoughts—and insert information—within sentences. Though often represented by two hyphens (--), the proper symbol is the em dash. You can create this symbol in Microsoft Word by typing CTRL+ALT+Num-. If your program is set for autocorrect, you can create an em dash by typing two hyphens between words, with no spaces.

Em dashes may also be used to denote a subtitle, though COM prefers using a colon for that purpose (e.g., Pest Management: The Whole Story, rather than Pest Management—The Whole Story).

En Dashes

En dashes (also denoted by 1/n) are slightly shorther than em dashes. You can create this symbol in Microsoft Word by typing CTRL+Num-. If your program is set for autocorrect, you can create an en dash by typing a hyphen between words with one space on each side.

En dashes note a span of numbers (e.g., October 11–12, 1992–1995). En dashes can also clarify adjectival phrases where a simple hyphen might cause confusion. This is true of open compounds (e.g., "New York" in the first example below) and compounds where two or more of the elements are hyphenated (the second example below). See also *Chicago*, 14th ed., Rule 5.117.

Examples:
- New York–London flight.
- quasi-public–quasi-judicial body, but non-English-speaking.

Parentheses and Periods

When parentheses or brackets are used to enclose a stand-alone sentence, the period falls inside the parentheses. (This sentence is an example.) If the material in the parentheses is part of a sentence, the period falls outside the parentheses (like this).

When parentheses occur inside parentheses (as here [i.e., the text you're reading now]), the interior parentheses become brackets.

Punctuation and Quotation Marks

Commas and periods always go inside quotation marks. Semicolons and colons normally go outside quotation marks. Question marks and exclamation points depend on use.

Examples:

- The article, “How to Grow Red Tomatoes,” was replaced by “How to Grow Yellow Onions”; we finally settled on “How to Encourage Gardening.”
- Did you read “The Tell-Tale Heart”?
  He asked, “Where are you going?”

Smart Quotes versus Straight Quotes

Replace straight quotes with smart quotes and apostrophes. See Appendix C, Word-Processing Tips, Smart Quotes

Examples:

- “smart quotes” rather than "straight quotes."
- Frank’s study is late.

Titles in Italics versus Quotation Marks

Generally, when referring to documents in text, the titles of long works are in italics, and the titles of short works are in quotation marks. Works that are not published (e.g., course titles) are usually in quotation marks.

Examples:

- Place the following types of works in italics: reports, books, manuals, journals, proceedings, newspapers, and dissertations.
- Place the following types of works in quotation marks: articles, book chapters or sections, papers, pamphlets, courses, seminars, classes, and projects.

Spelling

American versus British Spellings

Many words have two spellings listed in the dictionary, the American spelling (preferred for TxDOT deliverables) and the British spelling. Editors may mark American spellings in a first edit and will mark spelling inconsistency in all edits.

Examples of American/British spellings:

- traveled/travelled
- acknowledgment/acknowledgement
- judgment/judgement
- focused/focussed

- color/colour
- toward/towards
- backward/backwards
- defense/defence
- naturalization/naturalisation
- a historical/an historical

Names of Roadways

Titles of roadways should be written consistently throughout the document. The following are the preferred ways to write titles of interstate highways:

- I-35 or I35 or IH 35 or IH35 (but no hyphen with IH).
- I-35W and I-35E (no spaces).

Other roadways to check for consistency include the following:

- SH 114 or SH114.
- US 281 or US281.
- FM 2818 or FM2818.

Spell Check

Please run spell check after you complete a document or make corrections to the document.

The spell check feature will bypass text that is not marked to check. To verify that all text in a document is set to U.S. English and marked for spell check, select all the text and go to the **Review** tab and the **Proofing** group. Click the **Set Language** button and select **English (U.S.)** and clear the box that instructs Word not to check spelling. This will ensure that spell check does not fail to check any sections because they were accidentally set to another language or exempted.

Spelling errors can creep in during any revision process, no matter how careful the person making the corrections. Spell check also serves as a final review of the document, and though sometimes time consuming, it is one of the easiest things you can do to improve the quality of your document. A reader may miss some of the finer points of grammar, but a misspelled word is distracting to all who read the report.

Spell check can also help you with acronyms if you click off the default **Ignore words in UPPERCASE** in **Office Button/Word Options/Proofing**. For any acronym that does not spell a common word, spell check will find the initial use, where you can check to see if you defined the term. If you give the **Ignore All** command to your program at that point, spell check will find typos in later use of that acronym.

Numbers

When to Spell Out Numbers

The rules prescribed here differ from those in *Chicago* and better meet the needs of technical reports. Within a sentence, use of words versus numerals may vary from these rules in order to remain consistent with each other.

Spell out:
- Numbers between one and nine (e.g., eight cars).
- Rankings of first through ninth (e.g., the ninth car).
- A number that begins a sentence (but try to avoid this construction) (e.g., Eighty-seven percent of the people surveyed liked the idea. Preferred Construction: Of the people surveyed, 87 percent liked the idea.).

Use a numeral for:
- Numbers 10 and greater (e.g., 10 trucks).
- Rankings of 10 and greater (e.g., the 10th truck).
- Percent (e.g., 5 percent).
- Notations with measurements (e.g., 5 m, 2 ft).
- Time when used as data (e.g., 5 seconds).

You may deviate from the standard rules to keep a sentence from having both numerals and words, except for measurements and percentages, as long as this is done consistently throughout the report. For example, all the following examples are correct:

- Researchers counted five cars and 10 trucks.
- Researchers counted 5 cars and 10 trucks.
- Researchers counted five cars and ten trucks.

Commas with Numerals

Use commas to separate digits into groups of three when the number is greater than four digits. When a number in text is four digits, it should not have a comma when used in text (commas might be needed in tables and figures for alignment). Dollar amounts of four digits or more may use or omit a comma.

In tabular columns that show both four-digit and five-digit or greater numbers, use commas as needed for clarity, alignment, and appearance.

Examples:
- 100,000 and 1000.
- $1000 or $1,000.

Decimals, Not Fractions

Where reasonable, use decimals instead of fractions. Place a zero before the decimal point for quantities less than one. Industry usage in some instances (e.g., references to equipment or tools) may require use of fractions. If you do use fractions, use a consistent form throughout (1/4 or ¼).

Example:
0.25 (not 1/4 or ¼ or .25)

Measurements, Symbols, and Equations

English versus Metric Units

TxDOT's current policy states that all printed and film reports must use English units. If the report uses metric units, English units must be included immediately following the metric units. However, if the research is tied to a metric construction project, the English units may be withheld.

How best to show dual notations in figures is left up to the author. However, it is recommended that English units be used in the figure itself and that metric equivalents be given as part of a legend or footnote to the figure.

Editing standards are taken from the *TxDOT Metrication Guide*.

Common Unit Symbols and Abbreviations

The following are some metric units and their symbols:

- liter L
- meter m
- millimeter mm
- hectare ha
- kilogram kg
- newton N
- kilopascal kPa

Units not to use:
Do not use the prefixes deci-, centi-, or deca-.

The following are some English units and their abbreviations:

- inch inch or inches (do not abbreviate)
- foot ft
- yard yd
- mile mi

- ounce oz
- pound lb
- ton ton
- quart qt
- gallon gal
- barrel bbl

Units not to use:
Do not use plural forms such as lbs.

Numerals with Unit Symbols and Abbreviations

Use numerals with English abbreviations or metric symbols in text, tables, and figures.

Example:
a width of 12 mm (not 12 millimeters)

Space:
Place a space between the numeral and the unit. (Because industry standards usually do not include a space between the numeral and an accompanying degree symbol, either use or omit the space with a degree symbol.)

Examples:
- 5 kg (not 5kg).
- 5 ft.
- 5 °F or 5°F.

Period:
Do not place a period after the metric symbol unless it is at the end of a sentence. English unit abbreviations may have a period or no period as long as use is consistent.

Examples:
- 5 kg (not 5 kg.); but a punctuating period may appear following a metric symbol at the end of a sentence, "The weight is 5 kg."
- 5 ft or 5 ft.

Plurals:
Do not add an "s" to symbols or abbreviations. If measurement units are spelled out rather than abbreviated, the plural form may be used.

Examples:
- 10 kg not 10 kgs.
- 5 ft or 5 feet.

Adjectival phrase:
Never put a hyphen between the numeral and the symbol for metric notations. With English units, use or omit hyphens consistently in modifying phrases (e.g., a 5-ft wall). Do not put hyphens in English unit noun phrases (e.g., a height of 5 ft).

Examples:
- a 5 m wall not a 5-m wall.
- a 5 ft wall or a 5-ft wall.

When to Spell Out Units

Spell out metric or English units when not used with a numeral. Otherwise, use metric symbols rather than spelling out metric units. You may either abbreviate or spell out English units, though you must do so consistently.

Examples:
- The amount is given in meters.
- The project studied a 5 mi pavement section.

Percent

Write out "percent" in text and use a numeral with it. In a figure or table, use the percent sign with no space between (or include percent designation in the column heading).

Write out any number that begins a sentence, but avoid starting a sentence with a number if possible. When "percent" follows a number that is written out, always use the word.

Examples:
- The increase was 5 percent.
- 10% (in a table or figure).

Slope

Express slope in nondimensional ratios with the vertical component shown first and then the horizontal (V:H). Compare the same units (meters to meters, etc.). Base tapers previously shown as 8:1 will now be shown as 1:8.

Time

Units of time (seconds, hours, etc.) may be considered measurements or not as long as you handle them consistently. If you treat measurements of time as data, you should use a numeral.

If you use a numeral, you can use abbreviations (with no periods) for units of time:

- sec (not s)
- min (do not then abbreviate minimum [min.])

- hr
- yr

Examples:
- The project ran for two years.
- Researchers examined data at 2-second intervals.
- Researchers examined data at 2-sec intervals.

Temperature

Because industry standards usually do not include a space between the numeral and an accompanying degree symbol, measurements of temperature may either use or omit the space with a degree symbol. When expressing temperature using a degree symbol, use consistent unit notation that either:

- Places a space between the numeral and the degree symbol (10 °C).
- Places the numeral, degree symbol, and unit indicator together (10°C).

Symbols

Use the proper symbols to denote functions in equations, text, and illustrations. This includes the multiplication sign (×) and the minus sign (–).

If your document uses mathematical symbols, the most reliable way to ensure their accurate reproduction is to use the equation editor. Using the equation editor creates a unit that appears during PDF conversion as a graphic but still allows you to make changes in the source file as needed.

If you embed mathematical symbols in text as font characters, the best choice is to use the normal text or symbol character set in Word. Do not use WordPerfect character sets because they do not convert reliably to PDF.

Remember to verify the accuracy of any symbols you use in your report when you review your manuscript at the various publication stages.

Example:
- $5x \times 10r = 35yz$

Equation Numbering

TxDOT guidelines prefer that deliverables number equations within chapters (e.g., Eq. 1-1, Eq. 1-2), but you may number them consecutively throughout the document instead (e.g., Eq. 1, Eq. 2). For deliverables with numerous equations, you may include a list of equations in the front matter of the report (in place of or following the List of Abbreviations and Symbols).

Equation Placement

Place the equation on a separate line, using line space to separate it from the paragraph. Indent or center each equation.

Place the equation number in parentheses flush with the right margin on the last line of the equation elements.

Example:
Eq. 1 explains my hypothesis:

$$a + b = c \qquad \text{(Eq. 1-1)}$$

Creation of Equations

If your document uses mathematical symbols, the most reliable way to ensure their accurate reproduction is to use the equation editor. Using the equation editor creates a unit that appears during PDF conversion as a graphic but still allows you to make changes in the source file as needed.

If you embed mathematical symbols in text as font characters, the best choice is to use the normal text or symbol character set in Word. Do not use WordPerfect character sets because they do not convert reliably to PDF.

Remember to verify the accuracy of any symbols you use in your report when you review your manuscript at the various publication stages.

Equation Symbol Identification

Identify symbols after their first use to aid the reader. This usually appears in a “where” list. Be consistent throughout the document whether you use a list to identify symbols or using paragraph form and how you introduce the list (colon or not, etc). If in paragraph form, COM recommends using the semicolon (;) to separate each item.

Figures and Tables

Overview

Requirements

Figures—any graphic representation not in text form.

Tables—any graphic representation in columnar text form.

Figures and tables should be clear and legible. Labels within illustrations should appear in a consistent font throughout the report. Hand-drawn or hand-written illustrations (or scanned images of hand-drawn illustrations) are usually not acceptable.

COM Assistance

COM staff can assist authors with graphic development, enhancement, and conversion to electronic media. For more information on COM graphic services available to authors, contact TTI Reports.

Quality

Clear, dark original line art and photographs of sufficient resolution are acceptable. Shaded areas should not obscure text, parts of figures, or table content.

Provide photographs with clear resolution in electronic form (300–600 dpi). Sometimes color photographs do not display well when reproduced as black and white, so it is most desirable to convert color photos to black-and-white images in a graphics program such as Adobe Photoshop®.

As much as practical, labels within figures should appear in a consistent font throughout a document. Labels and legends should use a font that is easily readable and distinct from surrounding text.

Use consistent formatting for similar tables. Label rows and columns descriptively. If you use color, see the section of these guidelines describing best use. If you need to cut and paste figures onto pages, be sure they are straight on the page.

Margins

Maintain 1-inch margins on pages with illustrations. Anything less may cause information to be cut off when the report is bound.

® Adobe Photoshop is a product of Adobe Systems Incorporated, San Jose, California.

Appearance and Usage

Font Size

Illustrations should have no type smaller than 7 points. Use a consistent font style and size for similar illustrations throughout the report.

Placement

All figures and tables must be referenced in text. Figures should appear close to the first reference in the text, but not before. Place figures so that they do not break text that belongs together (e.g., do not break a paragraph).

Tables should appear close to the first reference in the text, but not before. Place tables so that they do not break text that belongs together (e.g., do not break a paragraph).

Cite sources

Document any figures, tables, or appendices taken from another source. See the References chapter for information on how to cite sources and the use of copyrighted materials.

Copyrighted material:
The RTI *University Handbook* provides detailed instructions on the use of copyrighted material. See Use of Copyrighted Materials for more information.

Numbering Figures and Tables

Number figures and tables either consecutively or within chapters (e.g., Figure 1-1, Figure 1-2, Table 1-1, Table 1-2), (e.g., Figure 1, Figure 2, Table 1, Table 2). Figure and table numbering should use the same style.

Remember that Microsoft Word has an automatic feature to help with numbering figures and tables. See Appendix C, Automatic Figure/Table Numbering for word-processing tips.

Captions and Titles

Figure captions should be placed BELOW the figure.

Table titles should be placed ABOVE the table.

- Bolded.
- Centered.
- Ended with a period.

Wrap captions to the same width as the graphics. When posting PDF files online, reproduction staff enlarge specific destinations such as figures and tables for easy viewing. If the caption is wider than the graphic, it limits enlargement possibilities or cuts off part of the caption. Use a soft return (SHIFT+ENTER) to wrap the caption text to fit.

Example:

Figure 1. Type the Caption Here Using Initial Caps,
with a Period at the End, and in Bold.

Continuation

When a figure or table continues for two or more pages, note the continuation—with "(Continued)" following the figure caption on each page. Try to avoid this construction by breaking into separate figures or tables.

Units

Clearly identify units used in tables. Give repeated units of measure or degree in the column headings. Do not repeat these units in the columns.

Be sure graphs have clearly labeled axes.

Compare to LOF/LOT

Make sure that the listings in the LOF and LOT exactly match the captions and titles and that page numbers are correct.

References

Overview

As a general rule, whenever you quote, paraphrase, or refer to information or ideas (that do not fall into the category of "common knowledge") from a publication or outside source, credit the source in a footnote, bibliographic reference, or statement in the text. Do not cite secondary sources such as encyclopedias.

Use of copyrighted material is covered in the section on Use of Copyrighted Materials.

How to Cite References

Preferred Citation Style

When referring to work by another author or discussing that author's ideas, you should credit the author, preferably with a reference citation in the form of an endnote.

Parenthetical notation (author's last name and year source published) and footnotes may be used but are not discussed in detail here. Generally, footnotes are used only for content clarification, additional information, or unpublished sources.

Formatting in Text

Endnotes are the most common way to credit sources. Microsoft Word can automatically generate endnote numbers and cross references for ease of revision. If you use Word's automatic citations and have appendices, you will need to maintain a separate file with appendices since Word places the citations at the end of the file.

The endnote number should be:

- In italics.
- In parentheses (parentheses are not italicized).
- In full-size font.
- Placed before the period.
- Placed at the end of the sentence or section where you cited/discussed the author or idea (unless needed elsewhere for clarity).

Examples:

- This technology was first studied in the 1960s (*1*).
- Positive results from Smith and Jones contrast with contraindications found by Anderson (*5, 6*).
- Both positive results (*5*) and negative results (*6*) appear in past studies.

Repeated Reference

If you are using endnotes, list sources in the references section numbered in the order of first appearance in the text, not in alphabetical order. You need not invert names to show last name first. If you refer to the same source again later in the text, use the original endnote number.

Example:
If you cite Wagner first, the number would be (*1*). If you then cite Barker, the number would be (*2*). If you cite Wagner and his same work again, the reference would still be (*1*), but if you cite a different work by Wagner, you would create a new source listing in the references section (*3*).

Bibliography Page

If you have not cited sources but have consulted them during your research or want to list them as additional resources, place these sources in a bibliography after the references. The bibliography should begin on the first recto page following the references.

Place these listings in alphabetical order with inverted author names (i.e., Johnson, Bill, and Charles Murkoff).

Unpublished Works

Do not include unpublished works and telephone conversations in the references or bibliography. You may cite them in the text with a description of the author (or interviewee) and a date of authorship (or when the interview occurred) in parentheses. You may also use footnotes for source information if you choose.

Example:
A telephone conversation with a representative from FHWA confirmed reasons for the choice (Joe Jones, March 12, 2002).

Cross Check

Make sure that each reference matches its correct in-text referent. Make sure that only works cited in the text are included in the references section.

Formatting References and Bibliography Pages

Content

The "References" page should contain only those sources cited in the text.

The "Bibliography" page is optional and may contain sources that you:

- Have not cited but have consulted during your research.
- Want to list as additional resources.

Placement

The References page should come after the main text of the report but prior to any appendices. The References begin on a recto page.

The Bibliography page, if there is one, should begin on the first recto page following the references.

See Appendix C, Appendices Following References (Endnotes) for word-processing tips on handling documents with appendices.

Source Order

Place works:

- In order of citation for references if you use endnotes.
- In alphabetical order for a bibliography or for parenthetical notation.

Sources Cited More than Once

List a source only once on the References or Bibliography page. Do not repeat the entry if the source is cited more than once in the text. Simply use the same reference number initially assigned to the source when you cite it subsequently in the text.

Format for Entries

You may use any accepted style of listing references, as long as entries are consistent and contain necessary information. Transportation Research Board (TRB) style is recommended, primarily because most TTI researchers are already familiar with this style.

For sources with three or more authors, the preferred style is to list all authors by name in the reference entry and use "et al." in text citations.

If you use endnotes, number the list of sources and place them in the order of citation. There is no need to invert the first and last names of authors for numbered source listings.

If you choose to use parenthetical notation (citing the author's last name and year published in the text), list the author's last name first (e.g., Newland, D. E.) in the list of sources and alphabetize this list. In a source with multiple authors, names that follow the first author's name are not inverted.

Reference Listing Examples

The following source listings show examples of recommended styles*. Note punctuation and use of initials and italics.

Book

1. D. E. Newland. *Random Vibrations: Spectral and Wavelet Analysis.* John Wiley and Sons, Inc., New York, 1998.

Chapter or section in a book

2. A. M. McGee. Graduated Driver Licensing. In *Injury Prevention,* J. R. Millman (ed.), University of North Carolina Press, Chapel Hill, North Carolina, 2003.

Article in a periodical

3. M. Sansalone, J. M. Lin, and W. B. Street. Determining the Depths of Surface-Opening Cracks Using Impact Generated Stress Waves and Time-of-Flight Techniques. *ACI Materials Journal*, Vol. 95, No. 2, 1998, pp. 168–177.

TRB publication

4. S. A. Dewan and R. E. Smith. Creating Asset Management Reports from a Local Agency Pavement Management System. In *Transportation Research Record: Journal of the Transportation Research Board, No. 1853,* Transportation Research Board of the National Academies, Washington, D.C., 2003, pp. 13–20.

Government report

5. H. L. Von Quintus and A. L. Simpson. *Documentation of the Backcalculation of Layer Parameters for LTPP Test Sections.* Publication FHWA-RD-01-113. FHWA, U.S. Department of Transportation, Washington, D.C., 2002.

CD-ROM

6. M. Solaimanian, J. Harvey, M. Tahmoressi, and V. Tandon. Test Methods to Predict Moisture Sensitivity of Hot-Mix Asphalt Pavements. In *Moisture Sensitivity of Asphalt Pavements*. CD-ROM. Transportation Research Board of the National Academies, Washington, D.C., 2004, pp. 77–110.

* Some examples come from TRB's *Information for Authors* (see http://www.trb.org/Guidelines/Authors.pdf for more examples) and from *The Chicago Manual of Style*.

Website

7. State and Local Policy Program. *Value Pricing.* Hubert H. Humphrey Institute of Public Affairs, University of Minnesota, Minneapolis. www.hhh.umn.edu/centers/slp/vp/vp_org/. Accessed July 15, 2002. (Note: Provide as much standard information as possible [see examples of other types of media]. Then add the URL and date accessed and note if the URL is known to be no longer valid.)

Legislation

8. Anti-terrorism Bill 2004, House of Representatives.

9. Atomic Energy Act of 1947, Public Law 585, 79th Congress, 2nd session (August 1, 1946).

Use of Copyrighted Materials

TxDOT Rules

Regarding the use of copyrighted material, the RTI *University Handbook* says:

> No copyrighted material, except that which falls under the "fair use" clause, may be incorporated into a report without permission from the copyright owner, if the copyright owner requires such. Prior use of the material in a TxDOT or governmental publication does not necessarily constitute permission to use it in a later publication.
>
> As applicable, copyrighted material used in a report shall be accompanied by a statement substantially as follows: "Reprinted from (title of publication) by (name of author), by permission of (name of copyright owner). Year of first publication _____."

Permission to Use Copyrighted Materials

Most material pulled from reference sources is copyrighted. This includes materials posted online.

The national Copyright Act allows for "fair use" of copyrighted material, which is the guideline most technical reports follow. The act lists the various purposes considered "fair," such as critique or commentary, news, education, and research. The distinction between fair use and copyright infringement is not clear cut. Whether you need to cite the source material or get permission to use it depends on the circumstances.

You are likely to need only a source listing if all the following items apply:

- Your purpose is for nonprofit research or educational reasons.
- The copyrighted work is intended for research and education.
- Your use borrows only a small portion of the copyrighted work in relation to the whole.
- Your use does not negatively affect the potential value of the copyrighted work.

- The source material is produced by the federal government (since federal materials are not eligible for copyright protection).

On the other hand, you are more likely to need permission if any of the following items apply:

- The copyrighted source is intended for profit.
- You borrow a considerable portion of the copyrighted work or reference it frequently.
- Your use might negatively impact the copyrighted work.
- You use a graphic or photograph from the work.

Some copyright holders request reprint or permission credit. Also, many websites have a link to a legal or media page that details how to quote or reference material found on that site.

For overall copyright explanations, see http://www.copyright.gov. For more information on TTI and copyrights, see http://ttinet.tamu.edu/mgmt_org/policy/intellect.stm.

Sponsored Research

Before releasing any information that results from sponsored research, be sure you have the approval of the sponsoring agency. "Release" includes publishing, presenting, posting on a website, or even informal sharing with colleagues outside TTI.

Sponsored research includes any technical findings resulting from research, not just published project reports. It covers documents that have not yet been reviewed and approved by the sponsor or ones that the sponsor has reviewed but not approved for publication.

Proprietary Information

Proprietary information should not be used since this may restrict availability of reports. If you furnish to TxDOT information or data that you consider proprietary, follow the procedures described in the *University Handbook*, Chapter 7, Section 5, "Restrictions on the Use of Data" (online at ftp://ftp.dot.state).

Permission Documentation

If you include a copy of copyright permissions with the edit copy of your manuscript, COM will maintain it with your deliverable file. Keep the original permissions with your project files.

Project Summary Report Development

Overview

A project summary report is a formally required deliverable on all TxDOT research projects and should be reflected as such in the deliverables table of the contract.

Figure 5 and Figure 6 show an example of a published PSR.

The ideal project summary report should be a clear, concise, readable statement of:

- What the research accomplished.
- Why the research is important.
- How the research can best be put to use.

The PSR is a vital link between TxDOT's ongoing research program (academic inquiry) and the implementation program (practical applications). It guides the user from one to the next. As a result of wide distribution of PSRs both within TxDOT and nationally, they are significant documents despite their brevity.

Audiences

PSRs are intended for less technical audiences than full technical reports. TxDOT personnel in the RTI office prepare the final layout of PSRs and distribute them. TTI COM receives finalized PSRs from RTI in PDF format and distributes them electronically to authors. PSRs are available to the general public online.

Electronic Publishing

PSRs are published electronically as PDFs and posted online at http://www.dot.state. Printed copies are available from COM on request; contact TTI Reports.

Template

A PSR template is available online at http://ttinet.tamu.edu/communications/editing.

Required file formats

Submit your PSR to TTI Reports in a full-page Word file to TTI Reports with minimal formatting and no layout (1-inch margins, 10–12 point font, and required headings included). TxDOT will later lay out the PSR for publication.

Project Summary

Texas Department of Transportation

0-4962: Development of Guidelines for Hurricane Evacuation Signing and Markings

Background

Over time, Texas has experienced numerous hurricanes that caused significant damage and loss of life. Even prior to the historic 2004 hurricane season, in which four hurricanes struck Florida, the State of Texas had developed hurricane evacuation routes and various tools necessary for enhancing evacuation efforts from its coastal communities.

In addition to the development of guidelines for hurricane evacuation signing and markings, the Texas Department of Transportation (TxDOT) directed this research project to include development of traffic operations recommendations for hurricane evacuation. At about the time that Hurricane Katrina struck Louisiana on August 29, 2005, the researchers produced *Recommended Practices for Hurricane Evacuation Traffic Operations*. The remarkable 2005 hurricane season prompted additional issues to be addressed within this research project.

What the Researchers Did

The researchers conducted focus groups in four Texas coastal communities among people who had attempted to evacuate from a hurricane. Researchers inquired about motorists' understanding of hurricane evacuation route signs and pavement markings, use of high-occupancy vehicle lanes and shoulders during evacuations, contraflow operations, and motorists' information needs during evacuation and re-entry. Subsequently, researchers used focus group findings to develop a human factors study to determine the most appropriate type and application of hurricane evacuation signs, pavement markings, and dynamic message sign (DMS) messages to use in Texas coastal areas.

Researchers also contacted transportation representatives in southeastern states including Texas to identify recommended practices for hurricane evacuation traffic operations, evacuation-related intelligent transportation systems (ITS) deployment, signal operations, and ideas for reducing evacuation field staffing. Researchers assessed evacuation traffic data needs for evacuation after-action review, analyzed the applicability of Houston's Beltway 8 East as a possible evacuation route, analyzed contraflow congestion points at various Texas locations, and developed contraflow brochures for the public.

Research Performed by:

Texas Transportation Institute (TTI), The Texas A&M University System

Research Supervisor:
Andrew J. Ballard, TTI

Researchers:
Darrell W. Borchardt, TTI
Kwaku Obeng-Boampong, TTI
Rajat Rajbhandari, TTI
Nada Trout, TTI
Brooke R. Ullman, TTI
Steven P. Venglar, TTI
Anthony P. Voigt, TTI

Project Completed:
8-31-07

Figure 5. Sample PSR, Page 1 (ftp://ftp.dot.state).

What They Found

Numerous findings emerged from the broad nature of this research. An example finding is that the public is largely unfamiliar with the term "contraflow" in the context of DMS messages. Additionally, hurricane evacuation route overhead signs with the text banner at the top and the hurricane evacuation symbol (as illustrated in sign 1) are comprehended by a larger portion of motorists than overhead signs with only the text banner (as illustrated in sign 2). Nevertheless, either of the two signs just mentioned is comprehended by a significantly greater portion of motorists than an overhead sign with only the hurricane evacuation symbol and no text banner.

Other findings include more than 100 recommendations in *Recommended Practices for Hurricane Evacuation Traffic Operations*. In addition to the recommended practices outlined in that document, the research produced *Guidelines for Hurricane Evacuation Signing and Markings* and a technical report. The technical report includes additional evacuation-related recommendations regarding the deployment of ITS devices, the use of DMS messages just prior to a hurricane evacuation, techniques for minimizing field staffing levels, and a proposed data collection program for hurricane evacuation routes.

Sign 1. Overhead Sign Showing Text Banner with Hurricane Evacuation Symbol.

Sign 2. Overhead Sign Showing Text Banner Only

What This Means

The state of Texas and TxDOT are better prepared for hurricane evacuation than in 2005. The research in this project contributed to the improved level of preparedness and provided recommendations for implementing further improvements. TxDOT has gained new ideas from among the recommended practices for hurricane evacuation traffic operations.

For More Information:
Research Engineer - Wade Odell, TxDOT, 512-465-7403
Project Director - John Gaynor, TxDOT, 713-881-3060
Research Supervisor - Andrew J. Ballard, TTI, 210-979-9411

Technical reports when published are available at:
http://library.ctr.utexas.edu/index.html

www.txdot.gov
keyword: research

Texas Department of Transportation
Research and Technology Implementation Office
P.O. Box 5080
Austin, Texas 78763-5080
512-465-7403

Figure 6. Sample PSR, Page 2.

Writing a PSR

Word Count

Project summary reports should contain 800 words or less. If you include a graphic, reduce the word count to approximately 600 or 650 words.

Graphic Requirements

No graphics are required, but if you feel a graphic is appropriate to convey information, you may include one. Be sure to reduce the word count proportionately. All graphics should be captioned and referenced in the text of the PSR.

Graphics must be high-quality illustrations suitable for reproduction. When using color, keep in mind electronic accessibility requirements (see Accessibility).

Contact TTI Reports for more information about file formats and for assistance in graphics development.

PSR Writing Pointers

The PSR should be easy to understand and reader friendly. While there may be some technical information included, it should be presented using concise sentences written in active voice as much as possible. Brevity and clarity—as well as technical accuracy—are the keys to a user-friendly style.

COM staff are available to assist with the writing or wording of PSRs. Contact TTI Reports for more information.

- Project summaries generally use past tense because the project is over. Review verb tense to ensure it is appropriate, consistent, and indicates what you intend.
- Do not include too many details about background or methodology. This audience is a "get to the point" crowd. They usually care less about the "how" and more about the "so what does this research mean to the people out in the field."
- Use bulleted points in active voice for giving a series of findings that may be particularly hard to absorb. Skimming down a list of points is easier than wading through a dense and technical paragraph.
- When space allows and multiple topics are being covered, use subheadings within each major section. This helps readers identify their interest areas.
- Think visually when dealing with findings that pertain to relational data. If it can be put in a simplified tabular form or diagram, it will be easier to understand.
- As you proofread, watch for sentence groups that are redundant. When you can find the shortest, most direct way, your style will be more concise and clear.

- Avoid passive sentence structures. For instance, instead of "interpretations were obtained," put an actor in the sentence—"researchers obtained interpretations" or "motorists interpreted signs in the survey." Good actors and verbs for these summaries are:
    - Researchers evaluated . . .
    - The research team conducted . . .
    - The project found . . .
    - The data showed . . .
    - The findings revealed . . .
    - The results indicate . . .

Sections of a PSR

Project Information

The PSR should contain some preliminary information on the project:

- PSR number.
- PSR title (usually the project title).
- Research agency (usually TTI).
- Research supervisor and researchers.
- Project termination date.
- TxDOT research engineer and project director.

"Background" Section

The "Background" section presents a brief statement of the purpose and scope of the project and the need that gave rise to the research.

"What the Researchers Did" Section

The "What the Researchers Did" section contains a concise description of the activities undertaken in the project. Your text should answer the following questions:

- How did researchers address the problem?
- What tasks were performed to discover findings?
- Why were the tasks performed?

"What They Found" Section

The "What They Found" section outlines the findings uncovered by the project. Your text should answer applicable questions such as:

- What did researchers find out as a result of the research activities/tasks?
- Did they meet objectives of the project?
- What are the most relevant points in the major sections of the technical report?

- Are there any startling discoveries? If so, what are the highlights?
- What details are the most useful or interesting to transportation professionals and/or end users of the research?

"What This Means" Section

The "What This Means" section conveys recommendations related to implementation, further research, or other areas. Your text should answer the following questions:

- So now what?
- What do researchers recommend in terms of future or follow-up research?
- Are there any products or useful technology transfer tools from the project?
- Does the researcher recommend the development of a technology transfer product?
- What should TxDOT do with the findings of the project?
- How can districts or divisions utilize the findings of the project?

Submitting and Publishing a PSR

Requirement

Most RMC projects require a project summary report (PSR). PSRs follow a specific two-page format and are laid out at the TxDOT RTI office. Usually once authors submit PSRs to TxDOT, the next time they see the PSR it will be laid out and finalized.

PSR process

The following is the general process a PSR undergoes:

1. The author sends the PSR to COM via e-mail in Word format.
2. COM edits the PSR electronically and returns the file to the author via e-mail.
3. The author revises the PSR and sends the revised file(s) to COM via e-mail.
4. COM forwards the PSR to TxDOT via e-mail for their review, occasional revision, and layout.
5. TxDOT notifies COM that the PSR has been approved and will be posted on their website during the next monthly update.
6. COM sends an e-mail to the researchers, project manager, and appropriate division head saying that the PSR has been approved.
7. TxDOT posts a PDF of the PSR to its website and notifies COM of posting.
8. COM sends an e-mail with the PDF file to the researchers, project manager, and appropriate division head. (The approval and posting steps may be combined.)

Product Development

Overview

Definition

Product—a deliverable other than a technical report or project summary report that is specified in the project contract. It is intended for implementation within TxDOT operations.

Product Format

A written product may be delivered as a stand-alone document or a section within a report, as defined on the project deliverables table, but not both ways. If delivered within a report, the product material must be clearly identified. Depending on the quantity of information that constitutes the product, the product could be included in a separate chapter, appendix, or table.

Written products may use varied formats based on their specific purpose. They do not need to follow the format of technical reports but must meet the same quality standards.

See Chapter 7, Section 5, of the RTI *University Handbook* for more information on product standards.

Examples of Products

Written products include but are not limited to:

- Specifications.
- Field guides, manuals, or brochures.
- Training modules and aids.
- Computer software documentation.

Nonwritten products include but are not limited to:

- Video programs.
- Multimedia presentations.
- Training.
- Workshops.
- Computer software programs.
- Equipment.

Layout Services

COM is available to help you lay out written products for your project. COM can also create graphics and take photographs to make your product more effective and attractive. Contact TTI Reports for more information.

Submitting a Product

Notify COM

E-mail TTI Reports. Completion of each deliverable needs to be documented, so include appropriate information to document your activities.

For non-written products such as equipment and workshops, COM's notice to RTI detailing the delivery of the product serves as the submittal and must be turned in by the due date. Check your deliverable table to see what is expected by TxDOT for your product. Workshop deliverables may require copies of the workshop material for documentation, including the dates, locations, and attendance list for each workshop.

CDs and DVDs

If the product is a CD or DVD, COM can create a label for you and copy the disks for you if requested. (If you prefer to copy and provide the disks to COM at submittal or resubmittal stage, call your deliverables processing contact to ask how many will be needed.) COM will usually prepare a plain CD or DVD label (black-and-white printing, with basic information). If you need a more graphic-intensive label (such as a photo in the background, a splash screen that links to files or instructions, or an interactive menu), talk to your deliverables processing contact in COM. Let COM know if you need additional items, such as a case and cover for instructions or TxDOT information.

The CD or DVD label must contain the following information:

- Title/description of contents.
- Project number, with project name if there is room.
- Complete deliverable number.
- Month and year.
- "Resubmittal" if appropriate, with month and year.
- "Published" if appropriate, with month and year.
- Information about any material that needs to accompany the CD, DVD, etc.
- TxDOT and TTI logos.
- TTI address if there is room.

To transfer your files to the deliverables processing team, send an e-mail message to TTI_Reports@ttimail.tamu.edu with applicable information and any additional details needed to use the files.

Written Products with Custom Document Covers

If you or COM creates a custom cover for your product, it must contain the same information as CD and DVD labels.

Draft Specifications

Draft specifications should follow the format found in the *Style Guide for the 2004 Specifications Book* (see http://www.dot.state and download this publication).

Equipment

If the product is equipment, provide COM with information about the equipment, such as:

- Which product the equipment represents.
- The date delivered.
- The location the equipment was delivered to.
- The name of the person who accepted delivery.
- Photos of the equipment, including front and side views.
- Other proof of exactly what item was purchased/developed and delivered.

COM must submit this information in order to meet the due date for this product.

Workshops

For workshops, identify the location and date, and send information such as the attendance sheet with instructor and student materials used in the workshop. COM must submit this information in order to meet the due date for this product.

If you create presentation materials for your workshop, you might need to follow TxDOT format for the materials. Check with your project director or RTI research engineer to verify.

Training Materials

Some training materials need to be coordinated with TxDOT or other agencies. Check with your PD to confirm the format for your materials.

Video Presentations

Scripts for formal presentations should be submitted to RTI for review at least 60 days prior to the start of production. A draft of the presentation should be presented to RTI and members of the PMC for review prior to final editing.

Appendix A:
Typical Editorial Markings

The following table shows common editorial marks and their meanings, as used in hardcopy markups.

Table A-1. Common Editorial Marks.

Symbol	Definition
	Delete marked item
or	Close up space (first mark is "close up completely" and second mark is "remove extraneous space or line break")
	Insert space
	Insert comma
or	Insert period
	Change marked item to lowercase
	Change marked items to lowercase (may be used instead of a slash when multiple letters change)
	Capitalize marked item
M N	Use em dash or en dash
	Transpose marked text
	Insert line break
	Indent or move to right
	Center horizontally
sp	Spell out (if used with abbreviation) or verify spelling
	Make into new paragraph
	When used within a line of text, this mark means "Insert character(s) shown."
	When used in the margin, this mark means "Check this line of text for editorial marks."
	When used in the margin, this mark means "Passive voice used here may be more effective in active voice."

Appendix B:
Transferring Documents Electronically

Sending Your Electronic File to COM

File Types

Send the Word or PDF file with the report to TTI Reports for processing. Include the deliverable number, the processing stage (e.g., submittal, resubmittal, etc.), and action needed (e.g., edit, submittal to TxDOT, etc.). Also include where you have saved the file.

Word
Word files are also necessary for electronic editing. PSRs should be sent only in Microsoft Word.

Adobe PDF
COM accepts PDF files in most cases. For complex reports with multiple files or special pagination, COM staff recommend that you convert the files to PDF and check them before sending the document to COM.

Printer Drivers
When reviewing your document prior to sending it to COM, choose a printer driver that shows PDF layout, such as the Adobe PDF driver. Contact TTI Reports if you have any questions about printer drivers.

Where to Save Files

To send the file to COM, you can:

- Use shared drive space and indicate the link in your e-mail message (preferred).
- For very small files (less than 1 MB), attach it to your e-mail message (do not attach files larger than 10 MB).
- For files that cannot be transferred using shared drives, upload it to the SharePoint file transfer site (contact TTI Reports for instructions).
- Deliver the file on a CD, DVD, flash drive, or other portable media.

If you have difficulty transferring files, contact TTI Reports.

Creating a PDF

How to Create a PDF

To create a PDF, you must have installed the complete version of Adobe Acrobat, as opposed to the free Acrobat Reader available at http://www.adobe.com/products. The free Acrobat Reader will only let you view, print, and search PDF files but will not allow you to convert word-processing documents to PDF.

If you do not have Acrobat available, COM can convert the Word file to PDF for you. Contact TTI Reports for assistance.

There are two ways to create a PDF:

1. Use the PDFMaker macro in Word (it should be a menu option).
2. Print to file using the Adobe PDF printer driver.

There are advantages and disadvantages to both. Using the PDFMaker macro will create a tagged document and will convert bookmarks, cross references, tables of contents, etc. to hyperlinks; however, the process can be slow and can even lock up some older computers. Printing to file using the Adobe PDF printer driver is much faster but creates a flat file without tags; the file will not be fully accessible (see Accessibility).

Embed Fonts
Be sure your macro in Word is set to embed all fonts in the PDF file you produce. If you do not embed your fonts, your document may not print correctly. (This is particularly a problem with individuals still using WordPerfect since WordPerfect and Acrobat do not have a licensing agreement regarding fonts; therefore, any WordPerfect fonts that are used in documents often do not print correctly when the PDF is generated.)

Reviewing the PDF

After you have created your PDF file, be sure to review it to make sure that no formatting errors have occurred. If there are formatting errors, correct them in Word and re-create the PDF before sending it to COM. Once the document is in PDF, we have limited editing/corrections capabilities. If you have technical difficulties, please contact TTI Reports.

Appendix C:
Word-Processing Tips
in Microsoft Word

Appendix C Table of Contents

Overview

The following tips are designed to help authors and support staff format their documents more easily and consistently. If you have any questions or need assistance with procedures not listed here, contact TTI Reports.

The following instructions apply to Microsoft Word 2007. Earlier versions may have steps that vary.

Templates

Definition

Template—Every Microsoft Word document is based on a template. A template determines the basic structure for a document and contains document settings such as autotext entries, fonts, key assignments, macros, menus, page layout, special formatting, and styles. Unless you choose a specialized template, Word assigns a template for you (usually the "normal" template).

Templates for various TxDOT deliverables are located on TTINet at http://ttinet.tamu.edu/communications/editing.

Creating a Template Based on an Existing Document

To create a template based on an existing document, follow these steps:

1. Open the document on which you would like to base your template.
2. Click the **Office Button** and select **Save As**. The **Save As** window opens.
3. Enter a title for the template in the **File name** field.
4. Open the **Save as type** drop-down menu under the file name.
5. Select **Word Template**.
6. Click **Save**. The document is saved as a Word template (*.dotx).

Built-in templates can be accessed via the **Office Button**; the **New Document** window has the option **My templates…**, which will lists templates in the application's template folder.

Selecting a Template

To select/use an existing template, follow these steps:

1. From the **Office Button**, select **New**.
2. In the **New Document** window, select a blank document and click **Create,** or select an existing template from **My templates…** and click **OK**.

File Handling

Large Files

Generally it is easier to work on a document that is contained within one electronic file. However, this is not always possible when files become too large to easily handle. Large files are better broken into smaller files because there will be less delay in transferring, opening, and saving the files. Also, when files are long, Word's memory can get overloaded and sometimes corrupt the file.

You can reduce problems with large files by using techniques such as creating master/sub documents, linking graphics rather than embedding them, and dividing files by chapter or section.

Master/Sub Documents

For large files that need to be broken into smaller files, a master document that links to subdocuments can be useful. The file can be printed as one document without overloading computer and printer memory, and a complete table of contents can be created in the master document. For more information, you can search Word's help feature or contact TTI Reports.

Appendices Following References (Endnotes)

In TxDOT reports, the references section should be placed after the main body of the report but before the appendices. However, Word will not allow an autogenerated list of references (endnotes) to come anywhere but at the end of the file. Therefore, appendices need to be placed in a separate file. (Word allows placement of endnotes at the end of each section, but given the arrangement of sections within TxDOT reports, this option isn't feasible.)

See Combining TOCs from Separate Files regarding inclusion of appendix headings in document front matter lists.

References in Appendices

If there are references in the appendices, the references can be listed in a separate references section for all the appendices or individually for each appendix.

Imported Files

Importing an Excel Table into Word

To place a Microsoft Excel® table into Word, follow these steps:

1. In Excel, select the table and copy it.
2. In Word, paste the material.
3. Format the table in Word to be consistent with the other tables in the document.

Tips:

- If you place your cursor just below an existing Word table in your document and paste an Excel file with the same number of columns, the pasted material will adopt the format of the Word table.
- In some cases, you might need to choose **Paste Special** from the **Paste** pull-down menu and select formatted text or object. In most cases, your best result comes from simply pasting material using the default settings.

COM no longer recommends pasting the table as a picture because the table becomes a graphic and therefore is no longer accessible (see Accessibility).

Converting WordPerfect Characters to Acrobat

WordPerfect characters, other than standard text, do not convert to Acrobat. They will either appear as a blank spot or will convert incorrectly. If the file is originally created in WordPerfect, even if converted to Word before going to Acrobat, this glitch may appear. Please check each special character to make sure that it has converted correctly.

If the characters appear incorrectly in the converted file, the best alternative is to replace them with Word characters in the Word file and reconvert. If this option isn't practical, you will have to fix them in Acrobat using the **TouchUp Text** tool. If you don't have Acrobat or need assistance, contact TTI Reports.

Format and Spacing

Paragraph spacing

Word offers the ability to adjust paragraph spacing rather than insert a blank line. Adding paragraph spacing prevents the manually inserted hard return from causing a blank line to appear at the top of a page. Using paragraph spacing instead of blank lines has several advantages — it enhances consistent spacing, avoids undesirable page breaks, and provides a solid basis for electronic accessibility conversion when needed.

® Microsoft Excel is a product of Microsoft Corporation, Redmond, Washington.

To adjust paragraph spacing, follow these steps:

1. Select the paragraphs in which you want to change paragraph spacing.
2. On the **Home** tab in the **Paragraph** group, click the expansion box arrow in the lower right corner.
3. Select the **Indents and Spacing** tab.
4. In the **Spacing** section, enter the spacing you want in the **Before** or the **After** box (12 pt. will create a full line spacing).

Widows and Orphans

Widow—a line that appears alone at the top of a page.

Orphan—a line that appears alone at the bottom of a page.

Widows and orphans are undesirable in page layout and can be avoided by turning on widow and orphan control:

1. Select the paragraphs in which you want to control widows and orphans.
2. On the **Home** tab in the **Paragraph** group, click the expansion box arrow in the lower right corner.
3. Select the **Line and Page Breaks** tab.
4. Select the **Widow/Orphan control** check box.

You can also modify a style and turn on widow and orphan control.

Keep with Next

Headings should be kept together with at least two lines of text. Headings alone at the bottom of a page are undesirable in page layout.

To keep text together, follow these steps:

1. Select the paragraph (or heading) you want to keep with the following paragraph.
2. On the **Home** tab in the **Paragraph** group, click the expansion box arrow in the lower right corner.
3. Select the **Line and Page Breaks** tab.
4. Select the **Keep with next** check box.

You can also modify a style, such as Heading 1, so that it is always kept with the text following it.

Note that if you use a blank line to separate paragraphs, you will have to apply this to both the heading and the blank line following it. This is one reason why setting paragraph spacing is preferable to using blank lines.

Adding a Page Break

To force a manual jump to the next page, use a page break. Do not use returns to space to the next page. Use the **Keep with next** command or other formatting features where possible. If you need to force a manual page break, click CTRL+ENTER or follow one of these steps via the menu (both achieve the same end):

1. On the **Insert** tab in the **Pages** group, click the **Page Break** icon; or
2. on the **Page Layout** tab in the **Page Setup** group, click the **Breaks** pull-down menu and click **Page**.

Adding a Blank Page

In a TxDOT report, major sections begin on a recto (odd-numbered) page. The easiest way to force them onto recto pages is by inserting an odd-page section break:

1. Click at the bottom of the page at the end of the first section.
2. On the **Page Layout** tab in the **Page Setup** group, click the **Breaks** pull-down menu.
3. Click **Odd Page**.

To change how an existing section starts:

1. On the **Page Layout** tab in the **Page Setup** group, click the expansion box arrow.
2. On the **Layout** tab, select the way you would like the section to start in the **Section Start** box.

If you switch to a section with manual numbering (telling Word what page number the new section should start on), "odd page" will not work. Therefore, when you transition from one section to another, the next section's page numbers should be set to **Continue from previous section**. Do not type in a number for **Start at**.

However, when you transition from the front matter to the body of the report (roman numerals to arabic numerals), you will need to change the page number to start at 1 for the body of the report. This means that you will need to add a blank page manually if your front matter ends on an odd-numbered page:

1. Click at the end of the front matter.
2. On the **Page Layout** tab in the **Page Setup** group, click the **Breaks** pull-down menu.
3. Click **Next Page.**
4. Click **Next Page** again. This creates the blank page that makes up an entire separate section. You may need to delete blank lines to bring the Chapter 1 material to the top of the next page.
5. Open the Chapter 1 footer and deselect **Link to Previous**.
6. In the blank page's footer, deselect **Link to Previous**.
7. In the Chapter 1 footer, click **Page Number**, **Format Page Numbers**, and **Start at 1**. Change the number format to **Arabic numerals**.
8. Click **OK**.

9. In the blank page's footer, delete the page number.

Text Styles

Applying a Style Tag

Style tags promote consistency and allow you to create autogenerated lists like a table of contents. Styles will also allow you to change text attributes throughout an entire document. For example, rather than having to reformat every heading in the document, you can change the attributes associated with the heading style tag. Once the heading attributes are altered, Word will automatically make the change throughout the entire document.

When a Word document is first created, the application automatically assigns all text the style tag titled "Normal" or Word's best guess at what you intend.

You can change the style associated with your text by:

- applying an existing style tag (also referred to as a "built-in" style) or
- creating your own customized style tag.

Built-in Style Tags

A built-in style tag is a tag whose attributes have been preset by Word, such as Heading 1, etc. To apply a built-in style to text, follow these steps:

1. Highlight the words, paragraph, list, or table that has a style you want changed.
2. If the **Styles** pane is not open, on the **Home** tab in the **Styles** group, click the expansion box arrow in the lower right corner.
3. Select the desired style. If it does not appear, click **Options** at the bottom of the **Styles** pane. Select **All styles** from the **Select styles to show** drop-down menu. Click **OK**.
4. Your previously highlighted text assumes the characteristic(s) associated with the style tag.

Custom Style Tags

To create a new custom style tag, follow these steps:

1. Open the **Styles** task pane if it is not already open. (On the **Home** tab in the **Styles** group, click the expansion box arrow in the lower right corner.)
2. Click the **New Style** button**.**
3. In the **Name** field, enter a name for the new style.
4. Select a style type from the **Style type** drop-down menu.
5. Select the desired attributes (click the **Format** button to see more options).
6. When you have finished selecting the attributes, click **OK**.

An existing style can be used as the basis of a new/custom style tag:

1. Select the text on which to base your new style, e.g., Heading 1 (referred to as the base style).
2. On the **Home** tab in the **Styles** group, click the bottom arrow on the styles menu.
3. Click **Save Selection as a New Quick Style**.
4. Name your new style, e.g., Table Caption.
5. The attributes associated with your new style will be the same as those associated with the text you just highlighted. Make additional, customized changes.
6. Click **OK**. Your new style is added to the list of style tags.

Modifying an Existing Style Tag

Use Word's capability to redefine a style if you wish to change the attributes of previously tagged text.

To make this change, you do not have to retag (or reformat) every heading in the document but rather simply change the attributes associated with the heading style tag. Once the heading attributes are altered, Word will automatically make the change throughout the entire document.

When you change a base style (e.g., Heading 1), all custom styles that originated from that base style will also reflect the change.

To modify an existing style tag, follow these steps:

1. Open the **Styles** task pane if it is not already open. (On the **Home** tab in the **Styles** group, click the expansion box arrow in the lower right corner.)
2. Right-click the style you want modified.
3. Click **Modify**.
4. Change the tag's attributes.
5. Click **OK**.

If you want to use a modified custom style in a new document that has been based on another template, select the **Add to Quick Style list** check box in the **Modify Style** window. Word will then add the modified style to the template attached to your active document.

Be careful when formatting text that has italics, bold, superscripts, subscripts, etc. If the text is given the same style a second time, these items will be turned into regular text.

Table of Contents, List of Figures, and List of Tables

Creating Autogenerated Lists

In order for Microsoft Word to automatically generate the TOC, LOF, and LOT, the correct style (Heading 1, Heading 2, etc.) must be applied to all headings and table/figure captions.

To create a TOC, LOF, or LOT, follow these steps:

1. Click where you want to insert the table of contents.
2. On the **References** tab in the **Table of Contents** group, click the **Table of Contents** button.
3. Click **Insert Table of Contents**.
4. Click **Options**.
5. Under **Available styles**, find a style you've applied to headings in your document.
6. Under **TOC level**, to the right of the style name, enter a number from 1 to 9 to indicate the level you want that heading style to represent. Note: If you want to use only custom styles, remove the TOC level numbers for the built-in styles, such as Heading 1.
7. Repeat steps 5 and 6 for each heading style you want to include in the table of contents.
8. Click **OK**.
9. Select any other table of contents options you want. Click **OK**. Word generates the TOC.
10. Verify that all appropriate headings were included.

Adjusting Entries with Two or More Lines

TxDOT style requires at least three leader dots between the entry text and its page number. If a list generates without sufficient space, you can adjust the formatting of the list:

1. Select the list and right click on it.
2. Select **Edit Field**.
3. Click the **Table of Contents** button.
4. Click the **Modify** button.
5. Highlight **TOC1** and click the **Modify** button.
6. Click the **Format** button and select **Paragraph**. Set **Indentation Right** to 0.5. Click **OK**.
7. Click the **Format** button and select **Tabs**. Set the right dot leader tab to 6.5 (if you use a 1-inch margin).
8. Click **OK** until the windows are all shut.
9. A message appears asking if you would like to replace the selected table. Click **OK**.

You may also manually format the list by forcing a soft line return (using SHIFT+ENTER). However, this formatting will be lost if you regenerate the list fully.

Saving TOC Styles

Once you have an appropriate TOC style (i.e., the desired font choice, spacing, etc.), you can save the style for use in future documents:

1. Select the entire TOC.
2. Click the References tab and the Table of Contents drop-down box.
3. Select Save Selection to Table of Contents Gallery and give the style a name. Click OK.
4. When you close the document, save the changes to the gallery.
5. The next time you create a TOC, this style will appear as an option in the Table of Contents drop-down box. (You can delete a style by right-clicking on it in the Table of Contents drop-down box and choosing Organize and Delete.)

Updating Lists

Microsoft Word allows users to update either the entire list—replacing existing headings with new input from the body of the report—or only the page numbers shown in the list. If you choose to update the entire list, you may lose manual formatting added to the list after its generation. If you update only page numbers, manual formatting will remain in place.

To update the TOC, LOF, and LOT, follow these steps:

1. Right-click on the table and select **Update Field**, or select the table and hit F9.
2. Select either **Update page numbers only** or **Update entire table**. If you update the entire table, format changes that were made to the table may be lost.
3. Verify that changes were made correctly.

Manually Adjusting Lists

Most formatting of lists (TOC, LOF, and LOT) should be specified during their creation. However, after generating lists you may want to adjust some formatting manually (i.e., change something in the list by hand).

Avoid manual formatting as much as possible. Any manual formatting added to a list after generation may be lost when the list is fully updated. You will need to reapply manual changes each time the list updates.

Combining TOCs from Separate Files

If you have appendices in a file separate from the body of the report and want to add their headings to the main TOC, follow these steps:

1. In the appendix file, begin page numbering using the page number following the references section; i.e., if the last page of the references is page 122, then begin the appendix body on page 123.

2. Save your file at this stage.
3. At the end of the appendix file, create a TOC for the appendix.
4. Select the generated TOC field and press CTRL+SHIFT+F9 to turn the field into stable text.
5. Copy and paste this text into the TOC of the main report file. Save the main report file but *do not* save the appendix file.
6. When your file is ready to publish, delete the TOC in the saved appendix file.

Pasting Lists (Fields) from Other Files

When you copy and paste lists such as TOCs, LOFs, and LOTs from one document to another, sometimes the text does not stay stable (i.e., it cannot find the source text, etc.). To avoid changing the content of the list, click the list field and then press CTRL+SHIFT+F9. This changes the field to stable text that you can copy and paste into the new file. Once you change a field result to regular text, the information is static and cannot be updated the way field results can. Make sure *not to save* the original file after changing the list to regular text.

Dot Leaders/Tabs

If you create a TOC, LOF, and LOT without using an autogenerated list, you will need to set up dot leaders. Using manual periods instead of dot leaders will prevent text from lining up properly. To set up dot leaders, follow these steps:

1. After the figure caption, press tab and type the page number.
2. Select the lines of text to have dot leaders.
3. On the **Home** tab in the **Paragraph** group, click the expansion box arrow in the lower right corner.
4. Click **Tabs**.
5. Under **Tab stop position**, type the position for a new tab (this should usually be your right margin) and clear any extraneous tabs.
6. Under **Alignment**, select **Right**.
7. Under **Leader**, click the period (**.**), and then click **Set** and **OK**.

Footnotes, Endnotes, Captions, and Cross References

Endnotes/Footnotes

To insert an endnote or footnote, follow these steps:

1. Click where you want to insert the note reference mark. The number should be placed before the period and at the end of the sentence or section where you cited/discussed the author or idea (unless needed elsewhere for clarity).
2. On the **References** tab in the **Footnotes** group, click the expansion box in the lower right corner to open the **Footnote and Endnote** window.
3. Select **Footnotes** or **Endnotes**.

4. By default, Word places footnotes at the end of each page and endnotes at the end of the document. You can change the placement of footnotes and endnotes by making a selection in the **Footnote and Endnote** window.
5. In the **Number format** window, click the format you want.
6. Click **Insert**. Word inserts the note number and places the insertion point next to the note number.
7. Type the note text.
8. Double-click the number to get back to the text. Italicize the endnote number in the text and place parentheses around the number.
9. You can insert subsequent footnotes or endnotes by clicking the **Insert Footnote** or **Insert Endnote** button on the **References** tab in the **Footnotes** group. As you insert additional footnotes or endnotes in the document, Word automatically applies the correct number.

Do not repeat a reference. To insert a previously referenced endnote, follow these steps:

1. On the **Insert** tab in the **Links** group, click the **Cross-reference** button.
2. For **Reference type**, select **Endnote**. For **Insert reference to**, select **Endnote number**. Under **For which endnote**, select the endnote you're referring to.
3. To see both the text and the endnote at the same time, go to the **View** tab in the **Document Views** group and click the **Draft** button. On the **References** tab in the **Footnotes** group, click **Show Notes**. A second pane will appear at the bottom with the footnotes/endnotes. You can toggle this view on and off by clicking the button.
4. To view and/or change the endnote separator (the line before the notes), select it from the drop-down menu in that same pane.

Automatic endnotes and footnotes will update numbering as needed. However, you need to verify that all endnotes, footnotes, and cross references are updated in your final file. To update all fields, select your entire document (ALT+A) and press F9.

Automatic Figure/Table Numbering

A portion of your table or figure caption ("Figure" and the number) can be generated automatically by Word. The advantage to automatic captions is that numbers can be automatically updated if you add, delete, or move a figure. Cross-references to captions can also be autogenerated and easily updated. To insert automatic figure/table numbers, follow these steps:

1. Position your cursor where you wish to insert the caption.
2. On the **References** tab in the **Captions** group, click the **Insert Caption** button. The **Caption** window opens.
3. Select **Figure** or **Table** and click **OK**. Word inserts a consecutive figure/table number.
4. Type the rest of the caption.

5. Apply the correct style to the caption (note that if you wish to autogenerate the list of figures and list of tables, figures and table captions will need to have different styles applied (i.e., Figure Caption style for figure captions and Table Caption style for table captions).

Automatic Cross Reference to Figures/Tables

To create an internal link to a figure or table number in the current document, follow these steps:

1. On the **References** tab in the **Captions** group, click **Cross-reference.** The **Cross-reference** window opens.
2. For **Reference type**, select **Figure** or **Table**. For **Insert reference to**, select **Only label and number**. Under **For which caption**, select the figure/table you're referring to.
3. Click **Insert**.

Page Breaks Inserted by Word
Sometimes automatic cross references cause a glitch in Word where a page break is inserted before the cross reference or other glitch appears. To control this, select the problem cross reference and lock the field by pressing CTRL+F11. This prevents Word from updating the cross reference and inserting a page break. However, if you need to later update the field, you will need to remember to press CTRL+SHIFT+F11 to unlock the field.

Automatic Cross Reference to Headings

To create an internal link to a heading in the current document, follow these steps. These instructions will only work if you have applied heading styles throughout the document.

1. On the **Insert** tab in the **Links** group, click the **Cross-reference** button**.**
2. For **Reference type**, select **Heading**. For **Insert reference to**, select **Heading text**, **Page number**, etc., depending on the nature of the cross reference. Under **For which heading**, select the heading you're referring to.
3. Click **Insert**.

Updating Cross References

To update the cross references in the document, follow these steps:

1. Select the entire document (CTRL+A) (note that this will also select any autogenerated table of contents, list of figures, and list of tables).
2. Hit F9.
3. When the dialog box opens, select either **Update page numbers only** or **Update entire table.** Click **OK.**
4. Verify that changes were made correctly.

Software to Aid in Reference Citation

Many researchers find a software program called Endnote helpful in citing references. The program works with Microsoft Word and allows you to select the reference you would like to cite. For more information, visit www.endnote.com.

Tables

Inserting a Table

To create a table use Word's Insert Table feature. This feature allows you to insert a table as well as set table properties and add or delete rows and columns.

1. On the **Insert** tab in the **Tables** group, click the **Table** button.
2. Either select the cells for your table, or select **Insert Table…** and type in the number of rows and columns.

Setting Table Properties

To set properties of an existing table, follow these steps:

1. Click in the table.
2. The **Table Tools** (**Design** and **Layout** tabs) become active. You can select from the options on these tabs.
4. On the **Layout** tab in the **Alignment** group, click the **Align Center** button.
5. On the **Layout** tab in the **Table** group, the **Properties** button opens the **Table Properties** window, which gives options for table, row, column, and cell.

Adding and Deleting Table Rows and Columns

To add a row to a table, follow these steps:

1. Place your cursor in the table in the row below (or above) where you want to add a row.
2. Right-click the table.
3. From the pop-up menu, select **Insert** and choose **Insert Rows Above** (or **Insert Rows Below**).

Follow these steps to add a column to a table:

1. Place your cursor in the table in the column to the right (or left) of where you want to add a column.
2. Right-click the table.
3. From the pop-up menu, select **Insert** and choose **Insert Columns to the Left** (or **Insert Columns to the Right**).

Images

Inserting an Image

To insert an image in your document, follow these steps:

1. On the **Insert** tab in the **Illustrations** group, click the **Picture** button (or the **Clip Art** button for clip art). The **Insert Picture** window opens.
2. Locate, select, and insert the desired object.

Layout of Image

To ensure that a graphic moves when the surrounding text moves, follow these steps:

1. Right-click on the graphic.
2. From the pop-up window, select **Text Wrapping** and **In Line with Text**.

If placing the image in line with text causes problems, you can choose **Top and bottom** instead (you will need to manually move the image):

1. Right-click on the graphic.
2. From the pop-up window, select **Text Wrapping** and **More Layout Options**. The **Advanced Layout** window opens.
3. On the **Text Wrapping** tab, select **Top and bottom**. Enter whatever distance from text you desire or leave it at zero.
4. Click **OK**.

Page Numbers

Page Orientation

Sometimes it is necessary to orient illustrations and tables by landscape (11 inches × 8.5 inches), rather than portrait (8.5 inches × 11 inches), on the page. In these cases, make sure that when you turn the printed book clockwise 90 degrees, the illustration is right-side up.

Place page numbers in portrait orientation, even on a landscaped page, so that page numbers appear consistently in the same location throughout the report.

The easiest way to do this is to flip the graphic in the program it was created in. Then insert the image into the portrait page.

Otherwise, you will need to change the page orientation to landscape and create a portrait page number:

1. Before the page you wish to change to landscape, insert a section break: on the **Page Layout** tab in the **Page Setup** group, click the **Breaks** button and select **Section Break Next Page**. Delete any extra returns.
2. After the page you wish to change to landscape, insert a section break the same way. Delete any extra returns.
3. Double-click in a header or footer. This causes the **Headers & Footers Tools** (**Design** tab) to become active. Click inside the footer following the landscaped page and deselect **Link to Previous**. This will preserve the page numbers for the sections following the landscaped pages.
4. Click inside the footer for the first landscaped page and deselect **Link to Previous**. Delete the page number.
5. Click the **Close Header and Footer** button.
6. On the first landscaped page, on the **Page Layout** tab in the **Page Setup** group, click the **Orientation** button. Select **Landscape**.
7. Insert the illustration and caption or table on the landscaped page.
8. Double-click in a header or footer. Click in the footer of the first landscaped page. On the **Design** tab in the **Header & Footer** group, click the **Page Number** button. Select **Page Margins** and then **Large, Left**.
9. Click on the page number. On the **Format** tab in the **Text** group, click the **Text Direction** button once to change the direction of the text.
10. On the **Home** tab, change the size of the font.
11. Click the **Close Header and Footer** button.

Two Sets of Page Numbers

Occasionally, you will need to create a file with two sets of page numbers. For example, if you create an appendix that contains a previously printed document with internal page numbering, you want to leave the internal page number intact but add consecutive page numbers for the full document. To create a second set of page numbers within a document, you will need to work with Word fields.

The quickest way to create a duplicate set of page numbers, and the way most frequently needed, is to add a predefined number of pages to the automatically generated page number. The internal appendix page numbering for the previously printed document would be the "real" page number recognized by Word. To get that number:

1. Start a new section.
2. Double-click in the footer.
3. Deselect **Link to Previous**.
4. Deselect **Link to Previous** in the footer of the next section.
5. Click in the footer of the section that needs two page numbers.
6. On the **Design** tab in the **Header & Footer** group, click the **Page Number** button. Choose where you want your page number to appear.
7. Click the **Page Number** button and choose **Format Page Numbers**. The **Page Number Format** window opens.
8. Select the button for **Start At** and enter 1 (or the appropriate starting page number for your previously printed report).

9. Click **OK**.
10. If your appendix restarts page numbering internally (such as from front matter to the body of the report), change the numbering using the **Start At** function as required.

To create the consecutive page numbering for the entire document, you need to construct a false page number that includes the current page number known to Word and adds any pages prior to the last **Start At** command. The steps to construct that false page number are:

1. Go to the page that needs two page numbers and determine the number of pages preceding it (usually shown on the status bar at the bottom of your screen). For purposes of this example, we will say there are 50 pages.
2. Double-click in the footer and place your cursor where you want your consecutive page number (usually just below the internal page number).
3. On the **Insert** tab in the **Text** group, click the **Quick Parts** button and select **Field**. The **Field** window opens.
4. Select **Page** and click **OK**. The second page number appears.
5. Click the **Quick Parts** button again and select **Field**.
6. Click the **Formula** button. The **Formula** window opens.
7. In the formula line, type =50+1 and click **OK**. (For this example, using 50 as the preceding number of pages.)
8. Show field codes (ALT+F9 will toggle highlighted fields).
9. Highlight the page number code you inserted in steps 3 and 4—{ PAGE * MERGEFORMAT }—and cut it (using the menu choice or CTRL+X).
10. Highlight the number 1 in the remaining formula code you inserted in steps 5 to 7 and replace it by pasting the page number code you just cut. Your code should then look like this sample: { =50+{ PAGE * MERGEFORMAT } }.
11. Toggle the field code and check several consecutive pages to see if it presents the total page count you expect.

Special issues may arise when transitioning from roman to arabic numerals, and vice versa.

Other Techniques and Shortcuts

Word Count

On the **Review** tab in the **Proofing** group, click the **Word Count** button. The results will show pages, words, characters, paragraphs, and lines.

Selecting Noncontiguous Text Items

Select some text (individual characters, words, sentences, paragraphs) and then hold down the CTRL key while making another selection. Word highlights everything you have selected.

Selecting a Large Block of Text

Place your cursor where you would like to begin the selection. Press F8. Scroll down and place your cursor where you would like to end the selection. Press ESC or your next command (such as CTRL+C).

Inserting a Comment

In order to mark a file for revision, authors and editors can insert comments that can be toggled on and off from view/printing. Follow these steps:

1. Select the text or item you want to comment on.
2. On the **Review** tab in the **Comments** group, click **New Comment**.
3. Type the comment text.

Smart Quotes

To have smart quotes (“ ” and ‘ ’) generated as you type, follow these steps:

1. Click the **Office Button**, and then click the **Word Options** button.
2. Click **Proofing**, and then click **AutoCorrect Options**. The **AutoCorrect** window opens.
3. Click the **AutoFormat As You Type** tab.
4. Under **Replace as you type**, select the **"Straight quotes" with “smart quotes”** check box.
5. Click **OK**.

To change the appearance of individual quotation marks, press CTRL+Z immediately after you type the quotation marks.

If you have straight quotes (" and ') already in a document (this often happens when text is imported, such as from e-mail), you can find and replace all instances of single or double quotes in your document. On the **Home** tab in the **Editing** group, click the **Replace** button**.** In both the **Find what** and **Replace with** boxes, type ‘ or “, and then click **Find Next** or **Replace All**.

Quick Access Toolbar

You can add commands to the Quick Access Toolbar (that line of icons above the tabs and next to the Office button):

1. Click the appropriate tab or group to display the command that you want to add to the Quick Access Toolbar.
2. Right-click the command, and then click **Add to Quick Access Toolbar** on the shortcut menu.

If you press and release the ALT key, little flags come up on the ribbon, customized to each user’s layout. You can press those numbers or letters to execute the function.

Shortcuts

Instead of going to the top menu in Word, certain combinations of keys can have the same effect. Table C-1 shows some useful Word commands.

Table C-1. Microsoft Word Shortcuts.

Command	Key Combinations
Insert a page break	CTRL+ENTER
Insert a soft return	SHIFT+ENTER
Insert a nonbreaking space (useful between numerals and measurements)	CTRL+SHIFT+SPACE
Insert a nonbreaking hyphen (useful between numerals and measurements)	CTRL+SHIFT+HYPHEN
Insert em dash (—)	CTRL+ALT+Num-
Insert en dash (–)	CTRL+Num-
Print	CTRL+P
Delete a word	CTRL+BACKSPACE
Go to the beginning of the document	CTRL+HOME
Bold	CTRL+B
Italicize	CTRL+I
Copy	CTRL+C
Paste	CTRL+ V
Save	CTRL+S
Select all	CTRL+A
Select to the beginning of the document	CTRL+ SHIFT+HOME
Select to the end of the document	CTRL+SHIFT+END
Open	CTRL+O
Spell-check	F7
Update field	F9
Insert a hyperlink	CTRL+K
Repeat your last action	F4 or CTRL+Y
Find	CTRL+F
Find and replace	CTRL+H
Undo	CTRL+Z
Go to page, section, line, etc.	CTRL+G
Toggle between uppercase, lowercase, and sentence case for the selected text	SHIFT+F3
Toggle smart quotes to straight quotes right after you type them	CTRL+Z
Lock a field to prevent it from updating, such as a cross reference to a figure or table	CTRL+F11
Unlock a field to update it	CTRL+SHIFT+F11
Toggle show hidden codes	ALT+F9
Show Word Help	F1

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