



Technical Writing Guidelines

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Preface

TechProse is a technical writing, training, and information technology consulting company in business since 1982. This manual provides technical writing guidance and sets standards for creating logical and professional written material. This manual is proprietary. TechProse provides it to staff writers, consultants, and students studying Technical Writing with a TechProse staff member.

This manual describes the process of writing good documentation. It is designed to be read from beginning to end, as well as to be used as a guide to refer back to once the material is familiar. TechProse staff follow this guidance in preparing all documents.

Some of the material in this guide is based on problems that seem to arise for multiple projects. For example, many writers find the difficulty in writing a report is knowing where to start. The information in the “Getting Started” chapter is designed to help you determine the purpose, use, and audience of your document to facilitate getting started.

Managers expressed concern that reports often are not logically organized, and that the same mistakes appear over and over. To remedy this, the chapters “Correspondence & Memoranda” and “Reports & Studies” describe how to organize documents and put the tasks into perspective. In addition, the chapter “Style & Usage” can help you avoid the common mistakes that plague writers.

Other concerns were that all employees exercise good judgment and ethical standards. The chapter “Your Role As a Writer” addresses professional and ethical conduct when writing documentation.

Throughout this manual, we have used **boldface** to indicate key concepts. In addition, each chapter has a checklist at the end that focuses on the specific points in that chapter. The checklists provide a quick reference to make sure that writers have performed basic quality checks on draft materials prior to submitting them for review. Appendix B provides a combined checklist that covers all points. You can use the checklist to perform a critical review of your own first draft documents, or submit the completed checklist with the draft to anyone asked to perform the review.

An organization needs to maintain consistency in the look and feel of everything that carries its name. This manual is one element in the effort to establish and maintain a high standard of quality for all TechProse materials. It is designed so that staff can continue to improve it over time.

Specifically omitted from this manual are guidelines on developing complete technical guides, such as software user or developer manuals, maintenance manuals, or tutorials. We address these in a separate manual.

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1. Getting Started

Writing well requires more than good grammar. **To create a useful document, you need to express the purpose of the document and identify the audience for it.**

This chapter is designed to help you plan and complete writing projects as simple as a memo or as complex as a software manual. It covers how to:

- Define the purpose of the document and the key information it needs to convey
- Define the audience and their level of technical understanding
- Determine the level of detail necessary for the document
- Organize the data
- Work with a team of authors
- Meet deadlines

It provides a checklist and examples in the final pages of the chapter.

1.1 Determine the Purpose and Use

Establishing the purpose of a document is the first step in creating any written material. **Determine what you want the readers to know or do when they have finished reading.** This is often called task analysis.

Be specific with your objectives. Ask yourself: “Why does the reader need this information, and what do they need to do with it?” Answering this question generally provides a detailed objective that makes the document meaningful. For example, the objective “to describe course improvements” is too general. The objective “to describe ways to make the curriculum of Technical Communication 1 more valuable to the novice technical writer” is a specific objective that helps define the information required.

Writing the objective precisely, in terms of *what* and *why*, helps organize the material. As a test of whether you have adequately formulated your objective, try to make it measurable. For example: “This document provides the information required for this audience to make appropriate decisions on specific course topics, exercises, and reference materials.”

Once defined, the objective guides each step of the process of gathering and organizing information, writing, summarizing, and completing the document. Refer to it to determine what to include and what to leave out. Test the document against the objective to ensure each section supports the overall purpose.

1.2 Identify the Audience and What They Need

A key to good writing is understanding the audience. **The document must be directed at specific readers, and take into account their level of technical knowledge, the amount of detail they want, and their level of interest in the subject.** This is often called user or needs analysis. Design the document to meet the needs of its specific readers in terms of subject matter, vocabulary, level of detail, and writing style. In general, assume that the audience is less familiar with the subject than you are.

For example, if the document is to be read only by engineers, use appropriate scientific vocabulary and detailed supporting data. If it is a tool for executive decisions, present data in lay terms, with clear supporting graphics.

Some documents are designed for multiple audiences. In this case, sections may focus on one type of audience. For example, write recommendations, executive summaries, and abstracts for those who need to understand the general implications of a project. Target appendices containing tables, graphs, and raw data to specialists who wish to examine or use such supporting data. You can include a glossary to assist readers unfamiliar with specific terminology.

It may help to make a checklist of the members of the audience and what information they need. For work at a public water utility, for example, the audience typically includes any or all of the following:

Public	Needs to be informed to understand pros and cons and impacts and costs to make decisions on initiatives or other policy issues
District Board	Needs to understand impacts and costs, schedules, effects, long-term obligations and policy issues.
District Management	Needs to understand costs, schedules, effects, and long-term obligations as a basis for intermediate decision making
Project Team	Needs to understand scientific detail, supporting data, functions, constraints, considerations, and sensitive issues
Maintenance and Operations	Needs to understand design functions, access, operations, and maintenance guidelines
Regulatory Agency	Needs to understand jurisdictional limits, impacts, and mitigation

These groups represent many readers. It helps to write for a single, typical member of a group. A list of characteristics (experience, training, education, etc.) of that reader can also help determine how to present the information.

1.3 Determine the Level of Detail

The objective and the intended audience also dictate the level of detail required. This defines the scope of the document, what supporting information to include, what research is required, and what subject matter experts must contribute.

Determining what to leave out is as important as deciding what to include. Lay readers should not be overwhelmed by detailed research findings; rather, these should be clearly cited and summarized. Include charts and graphs if they support the objectives. Although you may have acquired a great deal of useful data in preparation to write the document, discard data that does not directly apply to the audience and purpose of the document.

1.4 Organize the Data

Next, organize the data to support the objective and the audience. This is a good idea for any document to ensure that you cover all the essential points, but a critical step for complex ones. Develop an outline that lists the topics to cover, the audience for that topic, key points for the topic, and the data required to support these points.

Make sure that the data in the document directly supports the logical flow of the information. It should enhance the key points in the document, not overwhelm them. Put supporting data, including background information, complex tables, or study results, in an appendix. Other source material that is available to readers may be referenced, but should not be included in the document itself. Chapters 3 and 5 discuss these points in detail.

For a complex document with multiple authors, identify who has responsibility for each particular content area. Use the outline to estimate the time required to gather the data, write, edit, and publish the document, as well as to assess potential problems. The outline is a useful tool for strategizing how to troubleshoot problems before they occur.

1.5 When You Work with a Team

When a document is a group effort, first identify the primary contributors and their roles. Then, let each team member know the level of detail required, the audience, and the deadlines. **Provide each contributor the outline of the entire document, so that everyone knows how their section fits into the whole.** Use this writing guide as a sample of what you expect to receive in terms of writing style. Appendix A of this manual acts as a rudimentary style guide that lists key terminology and standard acronyms. You can add to this with terms or conventions appropriate to the specific document.

Have each contributor commit to completing the draft material within the expected timeframe. Since team members often have other responsibilities and busy schedules, follow up with each author to ensure that the commitment is being met and whether any problems have occurred.

For documents with multiple authors, **a project editor can greatly enhance the final product.** The editor's role is to ensure a single, coherent writing style, eliminate redundancies or contradictions, and maintain consistent use of terminology.

1.6 Deadlines

Starting with the outline, **deadlines should be clear, and team members should commit to them in writing.** Managing the development of a complex document is a project management task that requires frequent contact with all contributors. One missed deadline can cause an avalanche of missed deadlines. Therefore, it is important to be aware of potential problems before they occur. If possible, it is always best to plan for some leeway in the schedule so that late contributions do not affect the quality of the project.

Remember to allow adequate time for the project editor as well as for production. As a rule of thumb, an experienced editor can copyedit approximately five pages of highly technical information an hour, up to ten pages of well-written generic information.

Tools such as Microsoft Project are helpful for monitoring progress, but there is no substitute for hands-on management, including frequent communication with all team members.

1.7 Summary

The key to creating a meaningful document is understanding both the purpose the document serves and the audience who will read it. With a thorough understanding of these two guiding principles, the required level of detail becomes clear. Next, develop an outline of what the document should include. For a simple memo, this may be one or two key points directed to the target audience. For complex documents with multiple contributors, it includes topic outlines, deadlines, and individual responsibilities for each section of the document. A project editor can greatly enhance the continuity and readability of documents with multiple authors. The process of developing a complex document is a management task that requires having clear expectations, commitments, and ongoing communication. Plan for each step, and leave time for editing and production. In all cases, test the final document against the original purpose and the requirements of the identified audience.

Checklist 1—Getting Started

Purpose & objective

What is the essential information?

Why do people need to know?

How is the information relevant?

7.1 Rule: Convey to the audience what you want them to know or do when they have finished reading.

Audience—the readers to whom this document is directed

Who specifically needs this information?

What terminology are they familiar with?

What are their skills and preferences?

7.2 Rule: Present information to the audience's level of knowledge.

Data

What information logically supports the key points in the document?

Does it enhance the presentation, not detract from it?

Is it necessary for the audience's understanding of the topic?

Rule: Only include data that supports the information you want to present.

To determine that you're writing for the correct audience, ask:

Have I clearly defined the individuals who should read this document?

Have I told them what the document will help them do?

Have I used words they can understand?

Examples of Purpose and Audience Definition

Instead of “The purpose of this report is to present the results and recommendations of the Study to the District.”

Problem: The study, the specific audience, or what the audience should do with the report has not been defined.

Use “This study is an overview of the factors that affect the structural integrity of Oz Water District (District). It provides data and recommendations to assist District Engineers and Project Managers in recommending channel repair and replacement work along the Oz and Munchkin Creek alignments and estimating the associated costs.”

Solution: Defines both the audience and the objective.

Instead of “This Feasibility Study summarizes current operational practices (including typical annual quantities and disposal costs, outlined in Table 1-1), presents problems involved with current practices, and evaluates solid material management alternatives.

Problem: There is no description of the audience or what they should be able to do after reading the document. Mentioning a detailed table in the summary statement is distracting.

Use “This Feasibility Study summarizes existing practices and future alternatives for solid waste management in the Oz Water District. It presents a detailed overview of these practices and alternatives to provide a basis for decision making for District Engineers, board members, and other interested parties.”

Solution: Defines both the audience and the objective.

Instead of “This Implementation Plan provides overall strategic guidance to staff to ensure that flood protection improvements along the Oz Rive are consistent with the US Army Corps of Engineers requirements and the District’s Clean Safe Creeks Program’s Commitments.”

Problem: This defines the audience as “staff,” but which of the broad categories of District staff comprise the specific audience? Is the report directed to project managers, engineers, someone else? The purpose statement is also vague. Who specifically should read this report, and what exactly does the author expect them to do with it?

Use “This Implementation Plan is directed at Oz Water District project managers and engineers involved in flood control improvements along the Oz River. It is designed to provide an overview of the background, intentions, and challenges to moving forward on flood control initiatives in this area. After reading the report, staff should understand the steps required to make progress on implementing the Oz Flood Protection Project and determining the order of priority for these activities.

Solution: Defines both the audience and the objective.

2. Your Role As a Writer

Technical Writing requires objective analysis and clear presentation. Whatever the topic, it is imperative to act professionally and ethically in all dealings with the your specific audience, the public and government agencies. Because what you write is usually work for hire, either for a company or a government entity, it is important to stay within the guidelines of the funding organization in your writing. Write from your opinion as a representative of that entity.

When the you respond in writing to colleagues, customers, management, or the public, the correspondence becomes part of the corporate or public record, so it is critical that written communication is clear and accurate.

Make sure your letters and emails express your or your company's position without criticizing or offending the recipient. **The correspondence should stay within the bounds of the topic, the area of requested feedback, and the Company's policies.**

2.1 Employ Ethical Principles

The *Handbook of Technical Writing* lists five ethical principles to adhere to when writing¹:

- Avoid language that attempts to evade responsibility.
- Avoid language that could possibly mislead readers.
- Do not de-emphasize or suppress important information.
- Do not emphasize misleading or incorrect information.
- Treat others fairly and respectfully.

Both the National Society of Professional Engineers and the American Society of Civil Engineers have codes of conduct. One of these guidelines that pertain to technical writing is as follows:

- **Engineers shall be objective and truthful** in professional reports, statements, or testimony. They shall include all relevant and pertinent information in such reports, statements, or testimony.

Accuracy of technical information is the responsibility of the writer. Make sure you have the information you need to write accurate reports and procedures.

¹ For information on the *Handbook of Technical Writing*, see the Bibliography.

2.2 Give Credit Where Due

It is unethical to use information or ideas that are not your own without crediting them. Information obtained from the research of a colleague is as important as information you found in a published book. Make sure to add a footnote giving the colleague or the book credit. Microsoft Word has an *Insert Footnote* feature for adding footnotes.

Complete and consistent documentation of your sources of information can:

- Help your readers locate the information and do follow-up research
- Help you support your position, recommendations, or conclusions
- Help you avoid plagiarism

Use footnotes, endnotes, and bibliographies to acknowledge where you found particular bits of information. For example, in many reports, a background section tells the history of the project but doesn't mention where the information came from. In some cases, the information derives from another report or document within the same organization. It is not plagiarism to use something from another document in another document written for the same organization, but it does not help the reader find more information. If you are quoting a substantial amount of material, you need to obtain reprint permission from the publisher. If you are paraphrasing, simply credit the source. This not only acknowledges the contributor, but also lends credibility to your presentation.

2.3 Summary

For all technical writing, professional conduct and high ethical standards are important to maintaining credibility. Although it is sometimes difficult, your responsibility as a writer is to stay neutral and objective whenever possible. Stay within the scope of the project and avoid stating personal opinions or making biased statements in company or public documents. The following checklist provides a series of questions to review as part of developing written communication. Their function is to ensure that information is appropriate and in line with corporate and government expectations.

Checklist 2—Ethics

- Language clearly states who is responsible for what.
- Correctly represents all data
- Avoids language that could possibly mislead readers.
- Provides correct emphasis based on the data.
- Treats the views of others fairly and professionally.
- Clearly cites all sources used to write the report.
- Each alternative is presented in a clear and unbiased manner.
- All recommendations and conclusions are supported by facts presented in the report.
- All judgments, recommendations, or comments are within the scope of the project or the organization's policies.
- Acknowledged and received permission to use copyrighted information used in the report.
- All the material is pertinent to this project.
- Document is checked for comments that might be misconstrued or cause conflict for the funding organization.

3. Style & Usage

This chapter presents some **basic rules of good business writing**. It discusses the components of good writing style, and demonstrates common mistakes and offers improved examples. The chapter includes the following:

- Common elements of good writing
- Phrases to avoid
- A short, alphabetical list of often-misused words and phrases, and examples of correct usage

An editing checklist appears on the final page.

3.1 Elements of Style

The famous writing handbook, *The Elements of Style*, by Strunk and White provides a definitive reference to the rules of good writing. Other important texts to refer to for style and usage information are *The Chicago Manual of Style* and the *Handbook of Technical Writing*. This section cannot cover all the topics in these excellent references. Instead, it presents some important rules for good basic communication.

3.1.1 Present Tense, Active Voice

You may have noticed that in this manual most sentences are in the present tense. We don't say you *will* do this, rather, you do this. Use "wills" and "shalls" when you want to denote something in the future; otherwise, use present tense. For example:

Instead of "The material about the business application will demonstrate..."

Use "The material about the business application demonstrates..."

Instead of "After reading this material, the board will determine appropriate actions..."

Use "After reading this material, the board can determine appropriate actions..."

In addition, minimize the use of gerunds (verbs ending in "ing"). These tend to be vague.

Instead of "Advocate requesting State assistance when available."

Use "Request State assistance when available." This makes it clear that this is the responsibility of this audience to make the request.

Present tense gives the writing energy. In the same way, active voice is direct and demonstrates who is responsible for an action. Active voice takes the form of "A *does* B"; passive voice takes the form of "B *is done*." Active voice avoids the ambiguity inherent in passive voice. Passive voice deflects attention from who performs the specific

action. Phrases like “It is anticipated that...” or “circumstances dictate” are an implied passive construction. Avoid these phrases.

In some cases, passive voice is acceptable. For example, in an extensive report describing construction activity, the reader may not need to know exactly who is excavating or drilling. In these cases, a phrase such as “the ground will be excavated” is acceptable. However, generally, passive construction makes for clumsy prose. For example:

Instead of “It was determined that immediate action was required.”

Use “The committee requested immediate action.”

3.1.2 Simple Sentences

In addition to clearly stating who does what, active voice helps you **write simple, declarative sentences. You can improve many complicated sentences by splitting them into two simpler sentences, each expressing a clear idea.** Read your document and see whether you can clarify the information by breaking up convoluted sentences.

Instead of “Generate realistic and timely cost estimates to minimize disruption of construction activities, because funding availability may be a limiting factor.”

Use “Develop realistic cost estimates and construction timelines at the start of each activity. Funds for overruns may not be available.”

3.1.3 Gender Neutrality

No personal pronoun in English refers to both sexes. The he/she alternative is awkward. When discussing general categories of people, **try to rewrite the sentence in the plural to avoid the issue of gender.** For example:

Instead of “A programmer would see the flaw in this logic. He would correct it immediately.”

Use “Programmers would see the flaw in this logic. They would correct it immediately.”

Use gender-neutral nouns and pronouns, such as chair instead of chairman, and their, they, or them rather than he, she, her, or him.

3.1.4 Abbreviations and Acronyms

The first time you use an abbreviation or acronym in a document, spell it out, even if you think your audience knows the term. The proper format is to spell out the full word or phrase, followed by the abbreviation in parentheses. For example: Massachusetts Bay Transit Authority (MBTA). Thereafter, it is proper to use only the abbreviation throughout the document. However, if sections of the document are designed to stand alone, redefine the term the first time you use it in a section. It is always helpful to include a glossary if your document includes many acronyms and abbreviations of project-specific terms. See Appendix A for an example of a glossary.

3.1.5 Lists

Lists can save readers time by allowing them to see specific items, questions, or directions at a glance. They also allow key ideas to stand out from the surrounding text. **Bulleted lists present a series of like items. Numeric lists denote sequential items or items ranked in importance.** Numbers also help readers refer to particular items, and are thus useful when you wish to present strategies or choices that readers may want to discuss.

Items in all lists should have parallel structure. Don't mix items that are actions and start with a verb with items that are results and start with a noun. If one list item is a complete sentence, all should be. Conversely, all items should be phrases if one is a phrase. Sentences should have periods at the end; phrases should not. If the list has multiple levels, each level should contain items that are alike in function. When indenting in a list, each level should have at least two items.

A list catches one's eye because of the layout, but **too many lists can overwhelm readers**, causing them to not know where to focus their attention. Use lists judiciously to emphasize and clarify.

Tips for Using Lists

- List only comparable items.
- Use parallel structure throughout.
- Use short sentences, phrases, or words.
- Provide adequate transitions before and after lists.
- Use bullets when rank or sequence is not important.
- Do not overuse lists.

3.1.6 Sidebars

Sidebars are used to summarize or draw attention to a specific point in the text.

Sidebars are useful for drawing attention. They are usually brief—from one sentence to a paragraph in length—set off with a box or shading. You can use sidebars in a variety of situations. They may contain a summary of key information that you want everyone to read, or a supporting fact that you want to emphasize. Sidebars are often used to help readers scan for points of interest that they might otherwise miss. **Sidebars should be used sparingly**, and they must relate to the text on the page on which they appear.

3.1.7 Figures and Tables

Figures and tables can provide an instant understanding of complex information. They must be accurate, meaningful, and described in the text. Whenever possible, **keep figures and tables in close proximity to the text that describes them** so that the reader doesn't

have to flip back and forth between the figure or table and its description. **Always refer to the figure or table by number, not “above” or “below.”**

Number figures and tables in sequence. If your pagination is sequential through the text, such as pages 1 to 204, number figures and tables sequentially. For example, if there are 83 figures, label them Figure 1 through Figure 83. If there are 18 tables, label them Table 1 through Table 18.

If the text is numbered by section (pages 1-1 to 1-34, pages 2-1 to 2-75, etc.), number figures and tables with the section number first, followed by the number of the figure. Thus, 10 figures in Section 4 of a document should be numbered Figure 4.1 through Figure 4.10. Five tables in the same section would be numbered Table 4.1 through Table 4.5.

Tables should have meaningful row and column labels. If you use an abbreviation, explain its meaning in a footnote. For example, the general reader may not know what “Per” or “Amt” are in a column head unless these are properly defined in a footnote, a key, or in the text of the report that describes the table.

3.1.8 Cross-references

When referring to chapters or sections that appear elsewhere in the document, **use a cross-reference to guide the reader to the location. Cross-references help the reader know when more information about a topic is available.** Use cross-references throughout the text to refer to information that also relates to the current discussion. A common format is (See <chapter>, <section>).

3.1.9 Footnotes and Endnotes

Notes cite the source of information or provide a brief explanation that supports a specific statement but is not integral to the logical flow of the text. Footnotes appear at the bottom of a page of text. Superscripts in the text match the numbered footnotes, like this.² Endnotes are numbered in the same way, but all the notes appear together at the end of the chapter or document. In general, use endnotes when you would otherwise have more than three footnotes on a given page, or if footnotes are very lengthy.

3.1.10 Redundancy

Avoid using the same words twice in a sentence. For example:

Instead of “Other significant features of the program include expense reporting, detailed payroll capture, time management modules, and benefit features.”

Use “Other significant features of the program include:

- expense reporting
- detailed payroll capture
- time management modules

² Footnotes appear at the bottom of the same page as the text they are notating.

- benefit itemization
- tax itemization”

Instead of “Regulatory agencies have begun to regulate all corporate tax requirements and payments.”

Use “Regulatory agencies are monitoring all corporate tax requirements and payments.”

3.1.11 Final Edit

To ensure a professional submission, **leave time for a final review of your document.** In addition to the standard spelling and grammar checks, your final check should include a review of key terms and acronyms to make sure they are spelled out and defined when they first appear. Check that appropriate information appears on the cover, including authors, date, and volume number if appropriate. Make sure that the page numbers and section numbers for cross-references and entries in the table of contents and index are accurate, since these can change over the course of putting together the document. Finally, include a signoff sheet for reviewer comments and the date these comments are due. See the sample signoff sheet that appears with the checklist at the end of this chapter.

3.2 Wasted Words and Phrases to Avoid

After you write a sentence, look it over and ask whether there are any words you can cut without affecting the meaning. If so, start cutting, because the shorter version is usually better. Avoid words and phrases that don’t add meaning to a sentence. Some words and phrases to avoid include:

- ♦ actual, actually
- ♦ all of (replace with “all”)
- ♦ as it were
- ♦ as to whether (replace with “whether”)
- ♦ as you know
- ♦ at the present moment in time (replace with “now”)
- ♦ basically
- ♦ being that (replace with “since”)
- ♦ completely
- ♦ essentially
- ♦ extremely
- ♦ in order to (replace with “to”)
- ♦ in terms of
- ♦ irregardless (this is not a word; use “regardless” or “irrespective” instead)
- ♦ it can be seen that
- ♦ it has been indicated that
- ♦ it is anticipated that

- ◆ it is imperative that
- ◆ it is interesting that
- ◆ it is significant that
- ◆ it should be noted that
- ◆ it should be remembered that
- ◆ moreover
- ◆ necessitate (replace with “require”)
- ◆ quite
- ◆ totally
- ◆ utilize, utilization (replace with “use”)
- ◆ very

A few more phrases to avoid follow, along with suggestions for improvement.

Capable

The phrase *is capable of* —ing can usually be changed to an active verb with *can* —.

Equally as

Something can be *equally important*, or it can be *as important*, but it cannot be *equally as important*.

The fact that

Usually unnecessary. You can often drop *the fact* and use only *that* alone. For example:

Instead of “I’m surprised by *the fact that* the report is incomplete.”

Use “I’m surprised *that* the report is incomplete.”

On a — basis

Usually unnecessary. For example, replace “on a daily basis” with “daily.”

So as to

The word *to* alone works fine.

3.3 A-Z Reference

The following is an alphabetical listing of common words or phrases and punctuation that writers often misuse.

A or An

Use *an* in place of *a* when it precedes a vowel *sound*, not just a vowel. This confuses people most often with acronyms and other abbreviations. Often, writers think it's wrong to use "an" in front of an abbreviation (like MRI) because "an" only goes before vowels. However, the sound determines which article to use. It's "*an* MRI," assuming you pronounce it "em are eye."

Affect versus Effect

Affect is usually a verb; *effect* is usually a noun. For example, "The committee's decision *affects* pending legislation. The *effect* of the decision is to delay these bills." The adjective for effect is effective, as in "the committee's work is effective." Effect as a verb means "to bring about" or "to accomplish," as in "to effect a change."

Affect as a noun means the general emotional tone of a person. Affective as an adjective means "relating to or arousing an emotional reaction." These terms are generally used in psychological documents.

Alternate, Alternative

Alternate (as an adjective or verb) means to go back and forth between two things, as in alternate Mondays (that is, every other Monday), or "we alternate between meeting here and in Sacramento." *Alternative* means a different way of doing things. "One alternative is a dam, another is a series of levees."

Among versus Between

Follow this simple rule: Use *between* for two things, *among* for more than two.

And/Or

And/or is sometimes necessary in legal documents, but just clutters other writing. One word or the other is usually sufficient.

Assure, Ensure, Insure

Ensure means "to make certain." For example, "the legislation ensures public access to the coast." This is generally the word you want in reports or business communications. *Insure* is a specific word meaning to set aside resources in case of a loss: "We insure our car against accidents." *Assure* means to provide verbal reassurance to someone. Never use *assure* in the sense of "Assure that the wording is correct"; the correct word in this phrase is *ensure* or *make sure*. You can only *assure somebody* that it's correct. To avoid confusion, "make sure" or "be sure" are often good alternative phrases. To avoid confusion, "make sure" or "be sure" are often good alternative phrases.

Colon

A *colon* marks a pause for explanation, expansion, enumeration, or elaboration. Use a colon to introduce a list: item one, item two, and item three. Use it to provide corroborating evidence for a statement that precedes the colon or to provide an example.

Compound Words as Adjectives

When you combine two words to describe a noun, use a hyphen between them if the description comes before the noun. If it comes after the noun, don't use a hyphen. For example: "The report is well written"; "They were excited by the well-written report."

For a thorough explanation on when and when not to hyphenate words, refer to *The Chicago Manual of Style*.

Comprise versus Compose

Comprise means "contain" or "include." *Compose* means "constitute; to form by putting together." The difference between comprise and compose is that parts *compose* the whole, while the whole *comprises* the parts. For example, "The book *comprises* 24 chapters." "Knowledgeable engineers *compose* the committee." Avoid *comprised of* (one way to remember is you wouldn't use "include of").

Dash

A dash is an informal way of marking a parenthetical statement—or a diversion from the main thought—in the midst of a sentence. Avoid using dashes in formal writing; use parentheses or restructure the sentence.

Different

The word *different* is often redundant, as in *several different options* or *many different participants*. *Several options* and *many participants* have the same meaning.

E.g. versus i.e.

The abbreviation *e.g.* is for the Latin *exempli gratia*, which means "for example." *I.e.* is short for the Latin *id est*, which means "that is." A comma should follow (and precede, if appropriate) both abbreviations. Because these terms are often confused, it's often clearer to use the words *for example* or *that is* instead of these abbreviations.

Every

Every requires a singular verb and singular pronouns. Do not write "Every one of the papers *have* been graded"; use "Every one of the papers *has* been graded" or (better) "Every paper has been graded."

Imply versus Infer

A speaker *implies* something by hinting at it; a listener *infers* something from what he or she hears. Do not use them interchangeably. For example: "The report implied that the situation was critical, but did not present clear alternatives." "From the conclusions, the readers were left to infer that immediate action was necessary."

Less versus Fewer

Less means “not as much”; *fewer* means “not as many.” Use *less* for indefinite quantities, like water or satisfaction. If you can count the items, however, use *fewer*. For example, the sign at the express checkout should read: “Nine items or fewer.”

Numbers

The style rules for numbers can vary, but the most important thing is to remain consistent throughout the document. Here are a few suggestions regarding using numbers in text. Refer to *The Chicago Manual of Style* for situations not mentioned here.

Generally, spell out numbers less than 10; write numbers 10 or greater as figures. This applies to both cardinal and ordinal (spell out first or fifth, but use 14th or 122nd) numbers.

Some exceptions to the general rule include:

- ◆ Express time in figures: “11:30 a.m.; 4:00 p.m.”
- ◆ Do not begin a sentence with a figure: either spell out the number (however large), or rewrite the sentence so it does not begin with a number.
- ◆ Very large numbers are expressed in figures followed by the word *million*, *billion*, etc. For example: not *1,000,000,000*, but *1 billion*. This rule applies to general text only. Scientific information or tables may require full numeric expression.
- ◆ Use figures for all percentages and decimals within a sentence. For example: “A score of 3 percent was reached an average of 3.5 times.”
- ◆ Use figures for physical quantities and measurements. For example: 6 meters; 3 cubic feet; 9 gallons.
- ◆ Numbers applicable to the same category are treated alike within the sentence. For example: “Of the 25 books recommended, four of the engineers could only find 7.” “In the past four years, 22 reports were written on the topic.” In the first example, books are one category, so both numbers are written as figures.

Parentheses

Parentheses mark information that is not part of the main thought of a sentence or paragraph, but provides relevant supplementary information. If the parenthetical remark appears within a sentence, do not use a period within the parentheses, even if it is a complete sentence. If the parenthetical remark stands alone and is a complete sentence, place the period within the parentheses.

Per

Avoid using *per* to mean *according to*. Use *per* to express mathematical relationships, such as feet per second.

Prepositions at the End of Sentence

Avoid ending sentences and clauses with prepositions, such as *to*, *with*, *from*, *at*, and *in*. Instead of writing “The topics we want to write on,” consider “The topics on which we plan to write.” Prepositions generally go before the words they modify.

On the other hand, don’t let the need to move a preposition make your writing clumsy or obscure. If a sentence is clearer with a final preposition, let it stand. Remember Churchill’s famous remark to his editor: “This is the sort of nonsense up with which I will not put.”

Semicolon

The semicolon provides a pause between two complete sentences when the second sentence follows directly from the first. For example: “The prevalent wind is from the north; the high banks on the south are designed to allow for this.” Both the phrase before the semicolon and the one following it must be complete sentences; the sentences must directly relate to each other. In this way, the semicolon eliminates the use of conjunctive phrases, such as *thus*, *in addition to*, and *therefore*.

Unique

Unique means “one of a kind.” There are no degrees of uniqueness: something is either unique or it isn’t. If you want a word that implies degrees, use *special* or *unusual*.

3.4 Summary

Good writing is a combination of orderly ideas presented simply and the appropriate use of words, phrases, and conventions. These include the use of lists, references, figures and tables, and abbreviations. Overall, text should be in active voice, present tense, and use short, declarative sentences. Check your writing to eliminate unnecessary words, substitute simple words for overly complex ones, and ensure that you have used words and phrases correctly. An editing checklist appears on the following page.

Checklist 3—Editing

- Checked for present tense, active voice.
- Checked for unnecessary words.
- Used gender-neutral wording.
- Acronyms and abbreviations defined when first mentioned.
- Checked for subject/verb agreement.
- Used abbreviations and other terminology consistently.
- Checked misspelled words (do not rely solely on a spell checker).
- Checked for correct use of punctuation.
- Figures and tables numbered correctly and appear in the correct location.
- Supporting documentation located to appendices.
- Figures, tables, and appendices referred to accurately.
- Bulleted and numbered lists have parallel construction and consistent punctuation.
- Heading levels follow sequentially. If you create one subhead, you must have at least two. For example, don't create heading 1.1.1 without a heading 1.1.2. If information for only one subhead exists, it should all appear under the main heading, 1.1.
- Pagination is correct (for example, if sections are numbered 1-x, 2-x, etc., each section starts on page x-1).
- Glossary identifies all key terms.
- Updated and validated TOC and index entries.
- Title page lists the title, authors, volume number, date.
- Attached sign-off sheet with comments and date that revisions are due.

Presented to:



Presented from:

Project Title:

Date:

Deliverable:

Review Contents:

Reviewers'

Instructions:

Due Date:

Comments from
Author:

Comments from
Reviewer:

I have reviewed the attached document with changes as noted in writing.

Signature acknowledges authorization to incorporate comments and proceed with next draft.

Reviewer Name, Title

Date

4. Correspondence & Memoranda

Corporations and governmental organizations have standards for correspondence, email, and some types of memoranda. In addition, there are often timing and content requirements for quality records for companies that have a quality management system.

This chapter covers the appropriate format and content for:

- Email
- Correspondence
- Meeting agendas and minutes
- Memoranda

A checklist appears at the end of the chapter, along with samples and templates.

4.1 Correspondence

In your role as a technical writer, you may need to respond in writing to other companies, agencies, colleagues, management, or the public. In many cases, the **correspondence becomes part of the public record, so it is critical that written communication be clear and accurate.**

4.1.1 Keep Comments within the Scope of the Organization's Responsibility

Make sure your letters and emails express the organization's position without criticizing or offending the recipient. Correspondence should **stay within the bounds of the project, the area of requested feedback, and the organization's policies.** Comments outside of these areas may provoke angry commentary, and they never enhance the organization's reputation or relationship with others. An example follows.

Instead of (In a letter to the City of Oz Planning Department regarding an report)
"This project is inconsistent with the City of Oz' Riparian Corridor Policy."

Problem: Water District staff should not presume to tell the City about inconsistencies within the City's policies and projects. This is not the District's role.

Use "The District is concerned with the project's impact on the riparian corridor of Oz Creek."

Solution: It is the District's role to oversee and protect the creek. Present any concerns about the project's effect on the creek only as they reflect the organization's role.

4.1.2 Eliminate Personal Opinions

Keep personal feelings and opinions out corporate letters or emails. This can be difficult if you feel strongly about some aspect of a project, or you see something that others may have missed. If this is a public policy issue, write a personal letter to the governing body under your own name, on your own stationery, from your home address. You as a citizen have a right to comment and to have an opinion, but it is inappropriate to use your position with a company or government organization for this purpose. An example follows.

Instead of (In a letter regarding an environmental impact report) “The report does not provide adequate information supporting statements that there is a continuing high demand for golf courses in the city, nor does it compare this need to other recreational needs in the city. Because of the environmental impacts of the project and the fact that this unique parcel is in city ownership, the city should consider another type of park use which better utilizes and protects the natural character of the park.”

Problem: This is a personal opinion and should not be in a government report.

Remove the above example from the report. If use of this unique area is of personal concern, write a letter on your own stationery with your comments.

When stating a professional opinion on behalf of the organization, state the objective basis for the opinion or cite the source (planning study, regulation, manual, etc.) when appropriate, and adhere to the principles discussed in Chapter 2. For examples of professional opinions stated as conclusions or recommendations, see sections 5.1.4 and 5.1.5 of this manual.

4.1.3 Use Proper Format

Letters should state their purpose in the first paragraph, provide supporting information in the body, and summarize their content in the final paragraph. Most companies and government agencies have specific policies for correspondence. A letter template in Microsoft Word that incorporates some general guidelines appears at the end of this chapter. In the absence of such directives, use the *Gregg Reference Manual* as a standard for business communication.

4.2 Email

Increasingly, email is becoming an important means of communication. **Email should adhere to the same standards that apply to correspondence.** Whether within or outside the company, email is part of the corporate or public record. It is often used in court to substantiate events.

The ease and rapid-fire nature of email can lead to inappropriate content. This section focuses on basic email etiquette, expectations as to content, and some tips on how to maximize the benefits of email.

4.2.1 State the Subject Clearly

Use the email subject line to succinctly define what the email is about. For example:

Instead of Formatting issues
Use Suggestion about Word templates

Instead of Yesterday's meeting
Use ABC Features and Functions Meeting 10-11-02

Don't misuse email's reply feature (Re: xxx) to state the subject. If you've moved on to a new topic, enter a new subject line.

Clearly identify your audience and any action you expect from them. Send copies to those who need to be informed but from whom no action is expected.

4.2.2 Write Short, Readable Communications

As you write your email, keep in mind that many people get between 20 and 200 emails a day. If you want your email to be read and answered, **make the topic and any key information clear in the first few sentences**. It should be clear, polite, and short. Include details that help the reader identify the information. It may have been weeks since they thought about this particular topic.

Instead of "Sorry to be late on getting back to you, but my schedule has been packed. I know you needed this information last week, but hope it is still relevant (smile). In regard to the revisions to the tables supporting section 1, I have requested the information we need from Jane. She is the one who has access to the internal reports that provide what we need. She promised to get back to me asap. That was three weeks ago, but I'm still waiting. Will let you know as soon as I receive the information."

Use "You asked me to provide revisions to the tables supporting Section 1 of the Upper Guadalupe River Implementation Report. Jane Sable at the Army Corps of Engineers is the individual who can provide this information. I have contacted her by email and by phone (email: name@xxx.com, phone xxx-xxx-xxxx), but have not yet received the information. I will follow up weekly and report any progress. I apologize for the delay."

4.2.3 Employ Email Etiquette

Email should employ basic politeness, standard capitalization and punctuation, and good grammar. If you receive angry email, refrain from replying in kind. Angry emails do not foster a professional image.

Some speedy conventions have found their way into acceptable email. These include dropping letters out of words (thru and shd are common), as well as BTW (by the way), EOD (end of day), IMHO (in my humble opinion), etc. These are helpful shortcuts as

long as you're not turning your email into acronym soup. For example: BTW IMHO this shd be done by EOD. Use acronyms sparingly, if at all.

More misunderstandings occur in writing than in spoken conversation because you cannot read the person's body language or hear the nuance in tone. This is true of both correspondence and email. In an email exchange, called a "thread," a person coming into the conversation in the middle will need the whole thread to be able to follow the discussion. If you find it necessary to delete something, make sure all of the pertinent information remains. In most circumstances, it is better to leave some extraneous information than to err on taking out too much.

4.3 Meeting Agendas and Meeting Minutes

Agendas and minutes are before and after pictures of the same event. The agenda documents who was invited and the meeting's intent, and the minutes document who attended and what happened.

4.3.1 Meeting Agendas

Distribute meeting agendas before the meeting. This lets the participants know the purpose of the meeting, how long it may take, and whether they need to prepare materials and/or information. Depending on the subject matter, an agenda can help even an informal meeting be more productive.

The agenda should include the following:

1. Date, place, start time and, if possible, expected end time
2. List of participants
3. Purpose/Objective
4. Issues to be discussed
5. Items to be presented

Include materials for review along with the agenda, or distribute them well ahead of the meeting so people have time to review the material before they need to comment. This saves time and reduces the possibility of needing a follow-up meeting on the same subject. The following is a sample agenda for an internal meeting of multiple authors preparing a planning study:

Agenda: Authors Meeting to prepare for XXX Reference Manual

Date: June 17, 2003

Time: 1-2 pm

Location: Building X, Conference Room Y

Participants: Name 1

Name 2

Name 3...

Purpose: To discuss roles and timeline for development of XXX Reference Manual

If you cannot attend, please notify <Name> by the end of day on June 15.

1. Introductions: 5 minutes
2. Review contribution assignments, file location, style guide, timelines: 15 minutes
3. Review data and source materials, identify gaps: 20 minutes
4. Determine strategy to obtain missing data: 15 minutes
5. Schedule next meeting: 5 minutes

4.3.2 Meeting Minutes

Meeting minutes document what occurred at the meeting. They are **not an opportunity to present a position or to add new materials and comments.**

The format should follow the agenda closely, including:

1. Date, time, and place of meeting
2. Names of those in attendance
3. Purpose of the meeting
4. Each issue addressed and highlights of the discussion
5. A notation of any materials handed out at the time
6. Outcome or decisions made (if an agreement was made to meet again, note place and time of next meeting)

For most meetings, simply **documenting the topics discussed and decisions reached should be sufficient.** The following is a sample of the meeting minutes that corresponds to the above sample agenda:

Minutes of Authors Meeting to prepare for XXX Planning Study

Date: June 17, 2003

Present: Name 1

Name 2

Name 3...

Next meeting: None scheduled

All authors met to determine the roles, responsibilities, and timeline for their contribution to the XXX Planning Study. <Name> is managing this project. <Name> introduced the contributors, and provided the URL for the Division style guide, as well as hard copy of the Document Review Checklist.

Agreements and assignments from this meeting are as follows:

1. All authors will complete the Checklist and attach it with their draft submissions.
2. All authors agreed to meet the attached schedule of deliverables.
3. The project editor, <Name>, will contact authors weekly to remind them of due dates.
4. <Name> is responsible for obtaining the missing data from xxx.
5. We do not anticipate the need to meet again as a group until after delivery of the draft report.
6. <Name> will schedule the next meeting after consulting with all authors by email after the draft report is complete.

Always attach copies of materials distributed at the meeting or note where to find them. Since minutes are often reviewed months or years later, it is important to have access to supporting documents with the minutes.

4.4 Memoranda

There are many types of memos. The two described here are technical memos and documenting memos. Both types are frequently used to track technical projects, especially if an organization has quality assurance procedures in place.

4.4.1 Technical Memos

Technical memos are quality records used as part of engineering or planning and design procedures. Staff review and comment on the content and recommendations made in a technical memo before the project teams or consultants can continue with their work. These memos are used to evaluate issues and discuss problems, objectives, plan selection, and design. **Memos should be clear, to the point, and formal.**

Technical memos should include the following:

Title: (Indicates the subject and type of technical memo.)

Prepared by: (Names the staff person or engineering or consulting firm.)

Date: (Displays current date and/or date of the review. For example, Submitted May 10, 2004, Reviewed June 3, 2004.)

Summary: (Names the project, describes its purpose, and briefly states any conclusions or recommendations made in the memo.)

Background: (Includes a short discussion of the project background and why this issue has come about.)

Evaluation: (Discusses the issue in-depth, and evaluates the problem or situation and its possible solutions. It also includes any questions for the participants to consider.)

Recommendations: (Provides detailed conclusions and recommended solutions to the issue or problem.)

Clarity is extremely important in technical memos, so outline your thoughts before presenting them. Use simple, straightforward language.

Instead of “The purpose of this technical memorandum is to present the final architectural design criteria at each water treatment plant. This refers basically to the proposed ozone structures, liquid oxygen storage facilities, washwater clarifications buildings, and new chemical facilities. This memorandum has been finalized after receiving and incorporating review comments.”

Problem: The statement fails to identify clearly which plants it is discussing. It uses vague, wasted phrases and passive voice.

Use “This final technical memorandum incorporates previous review comments from the Oz Water District relative to the architectural design criteria for new water treatment plants within the District. These criteria include:

- ◆ Proposed ozone structures
- ◆ Liquid oxygen storage facilities
- ◆ Washwater clarifications buildings
- ◆ New chemical facilities”

An example of a technical memo and a template are included at the end of this chapter.

4.4.2 Documenting Memos

Documenting memos put a variety of information in writing as a formal record.

Quality records for most corporate or governmental projects include a documenting memo on problems and objectives, and a memo on project selection. Other memos simply note delivery of a document or completion of a milestone. Each type of memo contains different information.

Generally, documenting memos include the following:

Title: (Indicates the subject and type of documenting memo.)

Prepared by: (Names the individual or firm.)

Date: (Provides current date.)

Re: (Provides the overall project identification number or other identifying information.)

Background: (Includes a short discussion of the project background and why this issue has come about.)

Documentation/Justification: (Includes the information that makes up the body of the memo—for example, the document delivered, and review solicited, the review comments, or other information.)

An example of a documenting memo and a template are included at the end of this chapter.

4.5 Summary

Remember you represent your organization whenever you write as its employee. The information you present must be factual, unbiased, and supported by accurate up-to-date data. Whether dictated by statute, or required by a company policy, it is important to use the correct format and flow of information as you write. This chapter only contains a few examples. Become familiar with the requirements of each document type for your organization. Use the checklists to help you organize the information into a clear, concise, well-written document.

Sample letters and memos appear after the checklists, along with templates for technical and documenting memos. The templates do not have headings or page numbers.

Checklist 4—Correspondence & Memoranda

Letters

- Follows standard format (see sample, which follows this checklist)
- Starts with introductory paragraph that clearly states the purpose of the letter
- Provides logical, supporting paragraphs for the body of the letter
- Summarizes key points in the final paragraph
- Discusses only items within the jurisdiction of the organization
- Refrains from personal opinions
- Maintains professional tone throughout

Email

- Identifies topic of *this* email (not a previous one) in the Subject line
- Keeps content short and to the point (one screen of information if possible)
- Uses proper punctuation and grammar
- Discusses only items within the jurisdiction of the organization
- Refrains from personal opinions
- Maintains professional tone throughout

Memoranda (see samples of technical and documenting memorandum, which follow this checklist)

- Follows standard format
- Summarizes key points in initial paragraph
- Keeps content short and to the point
- Maintains professional tone throughout

Sample letters and memos appear on the following pages, along with templates for technical and documenting memoranda. These pages do not have standard headers or footers, but do have page numbers.

August 31, 2004

File: 17644
Yellow Brick Creek

The Great and Powerful Oz
End of Yellow Brick Road
Oz, CA 88888

Re: Oz School

Subject: Grading at the Proposed Oz School Site

Dear Mr. Jacobs:

The Oz Water District (District) has reviewed the revised grading and erosion control plans received on August 8. Also included was an exhibit showing the approximate limits of the 100-year flood plain following the placement of fill as proposed for the project. The District has the following comments:

1. As discussed in our phone conversation, change the flow direction in the swale north of the trees to flow south to the tree area. Also, clearly indicate the location of swale in the plan view.
2. At the southernmost tip of the grading area, revise the contour lines so that they follow the alignment of the levee easement prior to merging with the existing contour lines.
3. Please be advised that the proposed erosion control method of placing stipping material on the newly created slope is unacceptable to the District unless it can be demonstrated that non-native species will not be transplanted in the process. Acceptable erosion control methods are:

a. Erosion Control Blankets

Blankets should be installed according to manufacturer's recommendations to ensure that blankets are uniformly in contact with soil. Blankets shall be composed of straw and/or coconut fibers contained within two biodegradable net layers. The entire product must be biodegradable; photodegradable materials are prohibited. Several commercial sources exist for the purchase of blankets including North American Green and Greenfix America.

b. Wood Mulch

Wood mulch shall be double ground woody material such as shrubs, tree trimmings, or clean wood products. Deleterious material such as rocks, glass, plastics, metals, soil clods, weeds, weed seed, salts, paints, petroleum products, pesticides, or other chemical residues shall not exceed 0.1 percent of total volume. Eighty-five percent or more shall have a particle size between 1 inch and 3 inches long and not less than 3/8 to 1/16 inch thick.

Wood mulch moisture shall not exceed 60 percent. It shall be coarse enough to allow swift infiltration into the soil. Mulch should be uniformly applied to a depth of 4 to 6

Letter to The Great and Powerful Oz

Page 2
August 31, 2004

inches to completely cover the newly constructed bare slope. A plant-based trackifier may be required, depending on the consistency of the mulch used.

4. Provide a plan and cross section detail that shows the existing creek bank and a new fill to be placed on the bank; and also results of fill settlement and blank stability analyses to ensure that the additional fill load does not undermine the stability of existing bank.
5. The fill material shall be the same or equivalent of the levee fill material specified on the attached specifications.

In addition, please provide a copy of the Storm Water Pollution Prevention Plan of this project, which details the proposed erosion control measures at this site. If you have any questions, please contact me at (888) 444-1212, extension 12121.

Sincerely,

Dorothy What
Associate Civil Engineer
Community Projects Review Unit

Attachment: Levee Fill Specifications
Delivery Method: Federal Express
cc/enc:
cc:

File Name Notation: 0831g

Design Development		
OZ Water District	DOCUMENT NUMBER	REVISION A Effective Date: 6/24/2004

Technical Memorandum
Final Technical Memorandum 3.14
Architectural Design Criteria

Prepared by: Lion, Tin Woodsman

Date: January 23, 2004

Summary

The purpose of this memo is to present the final architectural design for improvements to the ozone structure and for the proposed public viewing corridor in the ozone generation building of the Oz Water Treatment Plant (WTP).

Design consideration was given to the visual impact of the improvements on surrounding neighborhoods. Exterior finishes will blend with the existing architecture to produce visually pleasing process structures.

The District uses the Oz WTP for public tours. A viewing corridor for the general public will be provided in the ozone generation building.

For the District's consideration:

- Designate an area for tour vehicle loading and unloading to lower the impact on work activities at the facility.
- Advise us of special provisions for display cases and exhibits for the viewing corridor.
- Have occupancy classifications for the viewing corridor reviewed by local building department authorities during the construction document completion phase.

Background

An initial meeting was held with District staff to review the architectural design criteria for the Oz plant. District staff then visited existing ozone generation facilities to assist in developing preferences for the design of the new facility. The ozonation improvements technical memorandum review meeting minutes dated July 24, 2000 reflect staff comments.

This current work builds upon previous architectural studies completed for the Water Quality Regulation Compliance Project. They formulated exterior treatments for new ozone and chemical facilities and contributed to the development of floor plans for this ozone generation building.

Architectural and Facility Design Considerations

This section reviews specific design considerations made for each aspect of the project.

Public Accommodation

The Oz WTP is the only facility with plans for special accommodations of public tours. These facilities include a viewing corridor at one end of the ozone generation building. The new elevator and access to the viewing corridor will meet disable access requirements for the public. The District should designate a vehicle loading and unloading area for tours prior to the start of construction document preparation.

Facilities designated as public access will be designed for accessibility as required by law. Other facilities, such as the ozone contractor structures, will not be designed for public access. The basis for not designing these areas for access is:

- These are security-restricted areas not intended for public access.
- Employees do not customarily occupy these areas, except for maintenance and operational duties.
- District employees that are physically capable of performing the essential functions of WTP operations, maintenance, and other duties associated with these facilities will be physically capable of navigating stairs or ladders for access.
- The physical requirements of these facilities due to hydraulics, chemical containment, site restrictions, or other safety or process constraint does not readily accommodate at-grade access.

We recommend review of this basis for compatibility with District policies and the District's interpretations of its obligations under the current law.

Interior Finishing

The District visited the Wicked Witch of the West WTP in West Oz and the Good Witch of the East WTP in East OZ. District staff liked the concrete floors and painted walls and suspended acoustical ceilings of the East WTP ozone facility. For Oz, we will paint the walls and ceilings, where appropriate.

Access Doors

District staff preferred the large steel doors with unequal leaves and removable transom panels. This has the advantage of allowing the use of the smaller leaf for normal ingress and egress while the larger leaf is available for moving large components into and out of the building.

Landscaping

Landscape design is not part of this scope of work. Additional landscaping will be designed and constructed by the District as a separate project. To accommodate future design, exterior walk areas should allow for later planting, empty PVC pipe sleeves should be provided under concrete for future irrigation piping and control valve wiring, and one or more electrical conduits may need to be provided for future irrigation controller use (120 volt power).

Recommendations/Conclusions/Action

We considered the visual impacts of Stage 2 improvements to the surrounding neighborhoods and have designed the facilities. Exterior finishes will blend with existing architecture and produce visually pleasing process structures. We will prepare photo-realistic graphics to show the views from the neighbors' perspective. Drawings of the proposed ozone facilities are attached to this memorandum.

Oz WTP will be primarily used by the District for tours. A viewing corridor for the general public will be provided at the ozone generation building. The District should designate a public tour route for Oz, indicating where tour vehicle loading and unloading will occur for coordination with the new facility design.

Other facilities, such as the ozone contractor structures, will not be designed for public access. We recommend review of this basis for compatibility with District policies and the District's interpretations of its obligations under the current law.

The District should advise us if special provisions for displays and exhibits are desired for the viewing corridor.

Occupancy classifications and viewing corridor exiting should be reviewed with the local building department authorities during the construction document completion phase.



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P.O. Box 1018 • LAFAYETTE, CA 94549-1018 April 29, 2004

Documenting Memo

Huge Rail Car, Inc.
29 Machine Avenue, Bldg. 4
Industrial, NY 10000

Title: Document Submission
To: Mr. Garret Morris
Manager of Publications and Training
From: Excellent Manager
Subject: Submittal of Educational Program Pla
Re: MBTA Bi-Level Coach Project, CDRL 9898

Attached please find the draft Educational Program Plan for your review and comment.
This satisfies the submission requirements of CDRL 9898.

Should you have any questions, please do not hesitate to call.

Letter No: TP-KRC-006

<p>Company Info</p>	<p>DOCUMENT NUMBER</p>	<p>REVISION</p> <p><a, b, c, etc.></p> <p>Effective Date: <date></p>
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Technical Memorandum
(Name of Technical Memorandum)

Prepared by: (Name of writer or consulting firm)

Date: (Date or date submitted)

Summary

(Include purpose of memo and summary of conclusions.)

Background

(Summarize background of this particular issue as it relates to this project.)

Evaluation of Issues

(Explain the issues involved and any related information that is pertinent to decision making or needed to support your conclusions and recommendations.)

Recommendations/Conclusions/Action

(Your recommendations, conclusions, or recommended actions supported by information in this memo.)

Company Name

MEMORANDUM

TO:
SUBJECT:

FROM:
DATE:

Purpose: (Summarize memo purpose and briefly introduce the topic.)

Discussion: (Discuss and evaluate issues. Present data and information that can help the reader understand the issue and make related decisions. This data and information should also support whatever is presented in the conclusions section.)

Conclusion/Expected Action/Recommendations: (Refer to data presented. Summarize and conclude with specific recommendations and expected actions.)

<Title>
Department

5. Reports & Studies

This chapter provides information about the structure of, the elements in, and the flow of events involved in writing complex documents. It presents a guide for developing an effective outline for communicating information. The chapter starts with general rules for report content, with good and bad examples taken from sample reports. The chapter concludes with a checklist that covers basic organizational principles.

This chapter covers:

- Guidelines for reports
- Rules for presenting content of various types
- Rules for coherent flow of information

5.1 Report Guidelines

Reports vary in technical level, subject addressed, and purpose. The following guidelines apply to report writing in general. Following these guidelines ensures that your reports will be meaningful and effective.

5.1.1 Executive Summary—A Stand-Alone Chapter

The executive summary is a key element in any report of more than 10 pages. **The executive summary serves as a stand-alone document that average, non-technical readers can use to determine if they want to read the report.** The executive summary is often the only chapter of a document recipients read. Therefore, the information presented here is key to the value of the document as a whole. It consolidates the principle points of the document. It must state the purpose—the objectives or the problems it addresses—a summary of the findings, and the major conclusions and recommendations, if there are any. Although this chapter is the first one readers see, it should be the last one authors write, because it is essential to draw the content for the summary from the document itself. It should be specific and concise. A simple example of an initial sentence for an executive summary follows.

Instead of “The purpose of this report is to present the results and recommendations of the Study to the District of Oz.”

Problem: This sentence is meaningless.

Use “This report presents data on the structural integrity of XYZ Creek to assist Oz District Engineers and Project Managers to estimate costs and prioritize the importance of proposed channel repair and replacement work.”

Solution: Now you know for whom the report is written, and what they should do with it.

Once the report is complete, create the executive summary by extracting the main points from the report text. The summary must cover the content in enough detail to reflect the meaning of the data, but do so concisely and clearly so that busy people with little time or knowledge of the subject can grasp key information.

Make an effort to keep the executive summary as short as possible. Two to four pages are usually sufficient to provide a summary of most technical reports. The executive summary should be clear and meaningful independent of the report. Therefore, do not refer to figures, tables, or references contained elsewhere in the report. The summary itself can contain figures, tables, or footnotes, as long as the information is integral to the summary and key to supporting the recommendations. Because executive summaries are frequently read in place of the full report, all uncommon symbols, abbreviations, and acronyms should be spelled out and, if appropriate, defined.

Never add new data or conclusions in the executive summary. Every statement in the summary is information already in the report. The summary should never introduce information not contained in or supported by the report, and it should not exceed the document's scope. For example, if the purpose of a report is only to explore possible alternatives and present findings, the summary should not include recommendations. Conversely, if the document is to summarize a policy decision, clearly state that decision and the reasons behind it, but not necessarily go into details of the process behind the decision.

5.1.2 Summary Paragraphs

Open each chapter with a summary paragraph. The summary paragraph provides an overview of the chapter in much the same way the executive summary provides an overview of the report as a whole. For example, look at the first paragraph of this chapter. It explains the purpose of the chapter, what it contains, and where to find a quick overview of the information.

The function of the summary paragraph is to let readers know whether to read this chapter or not, and if they want to read it, where to find the information that interests them. For example, management might only want to read the executive summary and the summary paragraph of each chapter of a detailed report. From this reading, they should be able to gather all the essential points of the document and find key supporting data, without delving into the details of every topic.

A good summary uses present tense, active voice, and clearly states what is in the section it summarizes. An example follows.

Instead of "In this section, the advantages of the alternative selected for monitoring water quality in Oz are summarized. Discussion will include an overview of the problem as we see it, all the suggested alternatives studied, the research about each alternative, and how the conclusions and recommendations of District staff were reached."

Problem: Vague and uninformative.

Use “This section details the recommendations of the District staff for effective monitoring of water quality in Oz. We present the problem statement first, followed by our recommendation. The remainder of the section presents all alternatives studied, and the methodology and supporting research used to form the conclusions that led to these recommendations.”

Solution: Informs the reader exactly what is included and the order of the presentation.

As with the executive summary, write the summary paragraph of the chapter after the chapter is complete. Draw only on the contents of the chapter to create the summary.

5.1.3 Main Body of the Report

The body of the report is where the author presents detailed information. The contents should be organized as follows to present information in a logical flow:

- **Introduction**—Provide the background and origin of the study, the location and study limits, an overview of the problem or issues studied, and how the information is organized.
- **Methodology** (approach)—Discuss what the study proposes, what the investigator is trying to learn, what data is required and why. A work plan for the study or a discussion of similar research is appropriate here. Document any assumptions or constraints.
- **Data**—Discuss the findings, the pertinent data gathered, the key information of the report. Put supporting or background data not critical to the flow of the main report in appendices. Reference data from other sources so readers can locate it.
- **Analysis**—Provide an analysis drawn from the data presented. Note any deficiencies or unexplained data.
- **Conclusions**—Present a professional opinion as to the meaning of the data and your analyses. Discuss options and limitations. (See Section 5.1.4 for more information.)
- **Recommendations**—Present a professional opinion as to the action or policy indicated. (See Section 5.1.5 for more information.)
- **Appendices**—Present detailed supporting information that would detract from the flow of the report but is required as supplementary information. (See Section 5.1.6 for more information.)

Each chapter or section should flow logically from the one before. That is, present the problem, the method used to explore the problem, and the findings. Then analyze the data, develop conclusions based on this analysis, and, if appropriate, present recommendations based on the conclusions.

If your report contains multiple chapters of data, present the data so that the reader can follow from the initial findings through more complex detail. Title each chapter clearly, so that readers can easily find the chapters of interest.

A common mistake in reports is to refer to figures or tables that you have not yet presented. **Data and appendices must be presented in order. Only reference data after it has been introduced and explained, not before.**

5.1.4 Conclusions

Conclusions are designed to tie together the main ideas of the document in light of the document's objectives. Writers must draw their conclusions from the data and analyses presented in the report. **Conclusions build from the data presented; they do not present new data or draw on other sources.**

As part of the process of creating the document, you define its specific purpose. The conclusions must be consistent with that purpose. They serve as the focal point of the document, the goal toward which the report was created. For example, if the objective of the report is to provide alternatives for water treatment plant processes to enhance water quality, the conclusion must be a presentation of specific alternatives. It should not discuss the aesthetic value of the design, the surrounding open space, or the plans of other groups or organizations.

The following is an example of the conclusion from a Planning Study. The stated purpose of the report is to provide a concise overview of the project and alternatives to reduce flood damage potential. Even without reading the report, this conclusion summarizes the findings and presents a clear alternative. It discusses only those issues relevant to the problem, and presents a clear and concise conclusion, based on the data and analyses presented in the report.

The existing flood-carrying capacity of Oz Creek is considerably less than the 1 percent design flow. The culverts at the road crossing and the Southern Pacific Railroad represent a significant bottleneck in the existing channel system. Because of the inadequate culverts and channels, Oz Creek has the potential to flood over 1,600 existing structures to depths of up to 2 feet. The estimated flood damages from a 1 percent flood are approximately \$21 million. The proposed flood control project would provide protection from the 1 percent flood, improve local drainage, and enable the facility to be more effectively maintained. The project will cost about \$10.9 million and would be financed over eight years from existing revenue sources.

The only improvement to the above example might be some slight editing:

The existing flood-carrying capacity of Oz Creek is considerably less than the 1 percent design flow. The culverts at the road crossing and the Southern Pacific Railroad represent significant bottlenecks in the existing channel system. Because of inadequate culverts and channels, Oz Creek has the potential to flood approximately 1,600 existing structures to depths of up to 2 feet. The estimated

flood damages from a 1 percent flood are approximately \$21 million. The proposed flood control project would provide the following benefits:

- * protect against the 1 percent flood
- * improve local drainage
- * enable efficient facility maintenance

The project cost is approximately \$10.9 million, and can be financed over eight years from existing revenue sources.

Note that the conclusion above is not a recommendation. However, the information is presented in such a way that the benefits of the proposed action are clear, and the recommendation that follows in the report needs no further substantiation.

5.1.5 Recommendations

Writers often confuse conclusions and recommendations. Conclusions are the synthesis of the data presented in the report. **Recommendations are suggested actions or policies based on the conclusions.** Recommendations move a step beyond the conclusion to recommend a specific choice or decision.

Recommendations should only appear if they are part of the scope of the document and within the expertise of the author. Going beyond the scope, or making unsolicited recommendations or recommendations that exceed the author's purview, are activities that often have adverse consequences for the organization. This can be true whether inappropriate recommendations appear in an email, letter, or formal report.

Before including recommendations in your writing, be sure that they are warranted, solicited, and supported by data. For example, a feasibility study may include conclusions drawn from the report as to whether various courses of action are feasible and recommendations on which alternative to pursue. These recommendations should focus on issues that have to do with quantifiable objectives from the scope of study, not on ancillary issues such as perceived public opinion.

The following recommendation examples pertain to the proposed alternative to provide backwater relief by creating a spillway for Oz Creek.

Instead of "Substantial biological resource impacts could result from this alternative. Actual mitigation requirements are not known, but based on the difficulties of identifying suitable mitigation sites for other project alternatives, adequate mitigation for these unavoidable biological impacts may not be available. This proposal is almost certain to be controversial with the City, environmental groups, and the general public."

Problem: This was labeled as a recommendation in the report. However it doesn't appear to recommend anything. It doesn't identify any specific alternatives, is written largely in the passive voice with wasted phrases and repeated words, and doesn't present a clear statement of the action desired. It is not based on objective data and conclusions.

Use “We do not recommend the proposed alternative of cutting a spillway to Duck Marsh from Oz Creek’s northerly levee. Munchkin Marsh is a bay habitat, and infrequent fresh water inundations from Oz Creek would have a potential negative impact on this habitat. At a minimum, this alternative would require an Environmental Impact Report to determine feasibility.”

Solution: Even without reading the preceding chapter, this recommendation succinctly summarizes the specific findings and presents a clear recommendation focused on the issue.

Instead of “To ensure the efficient operation of the proposed flood control measure and to continuously evaluate the need for removal of sediment, debris, and vegetation, a maintenance program is necessary.”

Problem: This recommendation is written in the passive voice, and doesn’t clearly identify the project or specify the maintenance program.

Use “Based on the history of flooding in Oz, East Oz, and West Oz, and the detailed findings of this study, the District of Oz believes the Oz Creek study area requires a maintenance program to eliminate hazardous conditions that contribute to potential flooding. We recommend the following program (list details of recommendation).

Solution: This recommendation clarifies the basic problem, identifies the specific area of study, and sets the stage for the details of the maintenance plan.

5.1.6 Appendices

Appendices contain materials that supplement or clarify the data presented in the report. Although not a mandatory part of a report, an appendix can be useful for explanations that are too long or complex to include as a footnote or endnote, but are helpful for the reader seeking further assistance or a clarification of points made in the report. A well-written report usually contains all the information required to present the objective, how it was investigated, the conclusions, and if appropriate, recommendations. **Any detailed, lengthy supporting information belongs in an appendix. This keeps the details from impeding the orderly presentation of ideas.**

Appendices typically include background information or the complex history of a project, passages from documents and laws that reinforce or illustrate the text, detailed charts and tables, letters and other supporting documents, calculations, raw data, and case histories. An appendix, however, is not a parking place for miscellaneous bits of information you were not able to work into the text. **Each entry in the appendix should support the information in the text.**

Generally, each appendix contains only one type of information. The contents of each appendix should be identifiable without having the reader refer to the body of the report. **When a report contains multiple appendices, arrange them in the order to which they are referred in the text.** Each appendix starts on a new page and is identified with a title describing its contents. An introductory paragraph describing the context of the appendix is often helpful.

5.1.7 Headings

Headings in a document are like road signs on a highway. **Select brief, descriptive headings to help readers navigate easily through the document.** Typically, headings appear flush left, are a different font from text, and are larger and in bold face.

Appropriate headings help readers quickly scan through the document to find what they need. However, headings are not arbitrary markers. They follow basic rules, including:

- Headings follow standard rules for capitalization of titles.
- At least one sentence of text should appear beneath the heading that describes what the heading covers. For example, don't have a blank heading labeled Conclusions, then immediately a subheading labeled Conclusion 1. Summarize what the conclusions contain with at least one sentence of text, then present the individual conclusions under subheadings.
- Subheads must always be in groups of two or more. If you have no text for a particular heading, or fewer than two subheadings, combine the information to eliminate the need for headings for the topic. For example, in this chapter, 5.1 is a heading, and 5.1.1 through 5.1.8 are subheadings.
- Do not indent headings for reports. Leaving them left justified makes them easy to scan.

5.1.8 Reference Information

References to data are important in technical documents. However, writers should only refer to information they have presented previously. Do not refer to a table that appears in a following chapter. **Present information in a logical sequence, so that the supporting data appears with the discussion.** You can then refer back to it, if necessary, to reinforce a conclusion. Charts or graphics that explain text should appear with the text on the same page or a facing page, if possible. Detailed tables and complex technical information usually belong in an appendix. In this case, refer to the appendix when you first define the information it supports and, as necessary, as you explore the topic.

5.2 Summary

A clear and logical presentation of information is key to transferring knowledge to the reader. Outlining the points in a logical sequence should be the first step in preparing a report. The following pages provide a checklist.

Checklist 5—Reports & Studies

Audience & Purpose

- Clearly defines the individuals who should read this document.
- Tells this audience specifically what the document will help them do.
- Uses words they can understand.

Executive Summary

- Is a stand-alone document that average, non-technical readers can use to determine whether they want to read the report.
- Content is drawn from the report and does not reference anything outside the report.
- States the objective of the report.
- Summarizes key points in the report.
- States the conclusions or recommendations of the report.
- Refrains from personal opinions (applies to entire report).
- Presents conclusions or recommendations that are within the jurisdiction of the organization (applies to entire report).
- Is not more than four pages.

Report Body

- Written in present tense, active voice.
- Each chapter begins with a summary paragraph that provides an overview of the chapter.
- Content follows logical order: objective, methodology, data, analysis, conclusions, recommendations.
- Supporting material is placed in appendices, not in the body of the report.
- Data is referenced only after it has been presented.
- Proper punctuation and grammar used throughout.
- Brief, descriptive headings help readers navigate easily through the document.
- Professional tone maintained throughout.

C

Conclusion

- Built from the data presented.
- Does not present new data or draw on other sources.
- Presents opinions drawn from the analysis of the data so that the reader can easily determine the best course of action.
- Does not specifically recommend an action

R

Recommendations

- Only appear if appropriate for this report.
- Suggest a policy or course of action based on the conclusions.
- Clearly summarize the conclusion on which it is based.
- Are within the jurisdiction and expertise of the author.

Appendix A. Glossary

This glossary serves as an example of terminology commonly used in water district reports. It does not represent terms used in this document. It appears as a two-page example of the format and level of information a glossary should provide.

ABA

Architectural Barriers Act

ACM

articulated concrete mattress

acre-foot (af)

A quantity of water that would cover one acre to a depth of one foot, equal to about 325,000 gallons of water.

ad valorem tax

A tax based on property value.

ADA

Americans with Disabilities Act

ADT

average daily traffic

aggradation

The geologic process by which streambeds and flood plains are raised in elevation by the deposition of material eroded and transported from other areas. The opposite of degradation.

alluvial

Pertaining to material or processes associated with transportation and/or subaerial deposition by concentrated running water.

ambient

Existing or background (e.g., ambient conditions). Commonly used to describe existing air, soil, water, or habitat conditions in a given area. Any unconfined portion of the atmosphere (i.e., outside).

armoring (hydrology)

The application of various materials to protect stream banks from erosion.

amortization

The process of liquidating a debt by installment payments or payment in a sinking fund; to prorate over a defined period at a specified interest rate.

anadromous

A fish that migrates from salt water to spawn in freshwater, as salmon of the genera *Salmo* and *Oncorhynchus*.

aquiclude

A body of rock that absorbs water slowly, but does not transmit it fast enough to supply a well or spring.

aquifer

A body of rock or formation that is sufficiently permeable to conduct groundwater and to yield economically significant quantities of water to wells and springs.

aquitard

A saturated but poorly permeable stratum that retards but does not prevent the flow of water to or from an adjacent aquifer.

articulated concrete blocks (ACB)

Small, interlocking, precast concrete blocks tied together in a mat with high strength polyester cables. Used for erosion protection on creek banks and inverts. Available with holes for vegetative growth and percolation through the blocks.

attractive nuisance

Something that invites people into a dangerous situation.

A-weighted sound level (dBA)

A sound level to which the A-weighted scale has been applied. The A-weighted scale approximates the frequency response of the human ear by weighting the frequency range of 1,000 to 5,000 hertz more heavily than other frequencies. (Unweighted sound levels are expressed in the unit dB.) It is possible to measure A-weighted sound levels using an instrument with an "A" filter.

bank erosion

Removal of sediment and soil particles from a bank, primarily by running water. Climate, ice, debris, chemical reactions, and changes in land and stream use may also contribute to bank erosion.

bankfull discharge

A bankfull discharge or channel-forming discharge is a single discharge equivalent in its effect to the range of discharges that govern the shape and size of the channel.

bank stabilization structure

Feature installed or constructed to reduce bank erosion.

bar

A deposit of sediment (boulders, gravel, sand, and mud on the bed of a stream), typically formed and modified at high flow and exposed at low water.

Appendix B. Document Checklist

Document Title _____
Author _____
A udience & Purpose
<input type="checkbox"/> Clearly defines the individuals who should read this document.
<input type="checkbox"/> Tells what the document will help the audience do.
<input type="checkbox"/> Uses words readers can understand.
L etters
<input type="checkbox"/> Follows standard format.
<input type="checkbox"/> Starts with introductory paragraph that clearly states the purpose of the letter.
<input type="checkbox"/> Provides logical, supporting paragraphs for the body of the letter.
<input type="checkbox"/> Summarizes key points in the final paragraph.
<input type="checkbox"/> Discusses only items within the jurisdiction of the organization.
<input type="checkbox"/> Refrains from personal opinions.
<input type="checkbox"/> Maintains professional tone throughout.
E mail
<input type="checkbox"/> Identifies topic of <i>this</i> email (not a previous one) in the Subject line.
<input type="checkbox"/> Keeps content short and to the point (one screen of information, if possible).
<input type="checkbox"/> Uses proper punctuation and grammar.
<input type="checkbox"/> Discusses only items within the jurisdiction of the organization.
<input type="checkbox"/> Refrains from personal opinions.
<input type="checkbox"/> Maintains professional tone throughout.
M emoranda
<input type="checkbox"/> Follows standard format.
<input type="checkbox"/> Summarizes key points in initial paragraph.
<input type="checkbox"/> Keeps content short and to the point.
<input checked="" type="checkbox"/> Maintains professional tone throughout.

Reports & Studies

Executive Summary

- Is a stand-alone document that average, non-technical readers can use to determine whether they want to read the report.
- Content is drawn from the report and does not reference anything outside the report.
- States the objective of the report.
- Summarizes key points in the report.
- States the conclusions or recommendations of the report.
- Refrains from personal opinions (applies to entire report).
- Presents conclusions or recommendations that are within the jurisdiction of the organization (applies to entire report).
- Is not more than four pages.

Report Body

- Written in present tense, active voice.
- Each chapter begins with a summary paragraph that provides an overview of the chapter.
- Content follows logical order: objective, methodology, data, analysis, conclusions, recommendations.
- Supporting material is placed in appendices, not in the body of the report.
- Data is referenced only after it has been presented.
- Proper punctuation and grammar used throughout.
- Brief, descriptive headings help readers navigate easily through the document.
- Professional tone maintained throughout.

Conclusions

- Built from the data presented.
- Does not present new data or draw on other sources.
- Presents opinions drawn from the analysis of the data so that the reader can easily determine the best course of action.
- Does not specifically recommend an action.

Recommendations

- Only appears if appropriate for this report.
- Recommends a policy or course of action based on the conclusions.
- Clearly summarizes the conclusion on which it is based.
- Are within the jurisdiction and expertise of the author.

Ethics

- Language clearly states who is responsible for what.
- Correctly represents all data
- Avoids language that could possibly mislead readers.
- Provides correct emphasis based on the data.
- Treats the views of others fairly and professionally.
- Clearly cites all sources used to write the report.
- Each alternative is presented in a clear and unbiased manner.
- All recommendations and conclusions are supported by factual information presented in the report.
- All judgments, recommendations, or comments are within the scope of the project or the organization's charter.
- Acknowledged and received permission to use copyrighted information used in the report.
- All the material is pertinent to this project.
- Checked the document for comments that might be misconstrued or cause conflict for the organization or between organizations.

Editing

- Checked for present tense, active voice.
- Checked for unnecessary words.
- Used gender-neutral wording.
- Acronyms and abbreviations defined when first mentioned.
- Checked for subject/verb agreement.
- Used abbreviations and other terminology consistently.
- Checked misspelled words (do not rely solely on a spell checker).
- Checked for correct use of punctuation.
- Figures and tables numbered correctly and appear in the correct location.
- Supporting documentation located to appendices.
- Figures, tables, and appendices referred to accurately.
- Bulleted and numbered lists have parallel construction and consistent punctuation.
- Heading levels follow sequentially. If you create one subhead, you must have at least two. For example, don't create heading 1.1.1 without a heading 1.1.2. If information for only one subhead exists, it should all appear under the main heading, 1.1.
- Pagination is correct (for example, if sections are numbered 1-x, 2-x, etc., each section starts on page x-1).
- Glossary identifies all key terms.
- Updated and validated TOC and index entries.
- Title page lists the title, authors, volume number, date.
- Attached sign-off sheet with comments and date revisions are due.

I have reviewed the attached document with changes as noted in writing.

Signature acknowledges authorization to incorporate comments and proceed with next draft.

Reviewer Name

Date

Appendix C. Suggested Resources

These books comprise an excellent reference library for technical writing. They are easy to read and very accessible to anyone interested in becoming a better writer. We particularly recommend the *Handbook of Technical Writing* and *The Visual Display of Quantitative Information*.

The Chicago Manual of Style

14th Edition. The University of Chicago Press, 1993

The standard reference for published material.

The Craft of Scientific Writing

Alley, Michael. Third Edition. Springer-Verlag, 1996.

Easy-to-read, comprehensive discussion of what goes into a scientific report.

The Elements of Style

Strunk, William, Jr., and E.B. White. Third Edition. Allyn and Bacon, 1979.

Anyone who writes anything should read this little book. It is well written, easy to read, and packed with the essentials.

The Elements of Technical Writing

Blake, Gary and Robert W. Bly. Macmillan Publishing Company, 1993.

Written in the same style as *The Elements of Style*.

Envisioning Information

Tufte, Edward R. Graphics Press, 1990.

One of two excellent books by this author on using charts and graphs to enhance technical information.

The Handbook of Non-Sexist Writing

Miller, Casey. Barnes and Nobel Books, 1981.

Good overview of how to avoid gender-specific issues in technical writing.

Handbook of Technical Writing

Alred, Gerald J., Charles T. Brusaw, and Walter E. Oliu. St. Martin's Press, 2000.

A well-known reference in the field and highly recommended.

Harbrace College Handbook

Harcourt Brace & Company, 1994.

Standard college grammar text; small and handy for quick reference.

Sin and Syntax

Hale, Constance. Broadway Books, 1999.

An easy-to-read book that uses literature and humor to enlighten us about grammar and usage.

The Visual Display of Quantitative Information

Tufte, Edward R. Graphics Press, 2001.

Our personal favorite of two excellent books by this author on using charts and graphs to enhance technical information.

Bibliography

Alley, Michael. *The Craft of Scientific Writing*. 3rd ed. New York: Springer-Verlag. 1996.

Alred, Gerald J., Charles T. Brusaw, and Walter E. Oliu. *Handbook of Technical Writing*. 6th ed. Boston: Bedford/St. Martins. 2000.

Blake, Gary and Robert W. Bly. *The Elements of Technical Writing*. New York: Macmillan Publishing Company. 1993.

The Chicago Manual of Style. 14th ed. Chicago: University of Chicago Press. 1993.

Code of Ethics for Engineers. National Society of Professional Engineers.

Standards of Professional Conduct for Civil Engineers. American Society of Civil Engineers. www.asce.org.