Itasca Proposal and Report Writing Guidelines

Itasca Proposal and Report Writing Guidelines

Prepared by:
Itasca International Inc.

Jacki Denison, Editor

May 2022

Table of Contents

1.0 INTRODUCTION

This document details Itasca's general and over-arching guidelines for preparing professional proposals and reports for consulting projects. Each Itasca office may also implement their own report templates, procedures, and checklists for proposal and report writing that builds on these general guidelines.

2.0 PROPOSALS

A proposal is the fundamental document that provides our response to how we propose to solve a problem for a customer and also represents our commitment to perform this service. The proposal should clearly outline the scope of work (problem identification, technical objectives, work plan, schedule) along with an estimate of the resources needed for Itasca to perform the work, including professional fees as well as expenses. It should also outline limitations, deliverables, a timeframe, and payment terms. The following sections discuss different aspects of proposal preparation and content.

2.1 Scope of Work

The scope of work is the objective and extent of work to be performed by Itasca and, on occasion, also describes tasks that are not included in the scope of work. In some situations, it may also be necessary to explicitly indicate exclusions so that the customer's expectations are properly set.

2.2 Risk Evaluation

Professional technical judgment is required to assess professional risk. If the proposal is accepted by the client, it often will become an inherent or integral part of a contract, so it is imperative for the financial and legal implications on our company to be carefully considered and to evaluate the risks involved. Some typical questions to be answered in evaluating risk in a client proposal include:

- Can the work be completed within the technical, time, and budget constraints?
- Does the client have a reasonable understanding of the problem they're trying to solve?
- Does the project require Professional Licenses or Professional Registrations?
- Is the client likely to follow our recommendations?
- Is the client expecting us, or directing us, to arrive at a pre-determined answer, solution, or recommendation?
- Is the client's company in reasonable financial health?
- Have we successfully worked with this client in the past?
- Is a site visit required, and if so, what type of travel, access, documents, and authorizations are required to properly conduct the site visit?

- Has the client entity been cleared of any potential government-imposed restrictions or sanctions (e.g., not on any denied entity lists) that would legally prevent us from conducting the work?
- Is the work requested part of litigation? If so, do we have a comprehensive understanding of the position our work will place us in, especially with the opposing party or parties?
- Are Intellectual Property (IP) clauses in the contract clearly understood?
- Are the payment terms and conditions clearly understood and deemed appropriate? Itasca-preferred terms are monthly invoicing, with net 30 (invoice payment due 30 days after receipt of invoice).
- Is our contract part of a third party's contract that is being submitted to the client? In these cases, understanding the contract with the client and how Itasca's work will be managed and paid for is even more important.

Some projects require Itasca to use subcontractors. We need to ensure that any of these subcontractors:

- Are subcontractors who accept that their work will be monitored and reviewed by Itasca.
- Have liability insurance, where and when necessary.
- Have been cleared of any potential government-imposed restrictions or sanctions (e.g., not on any denied entity lists) that would legally prevent us from conducting the work.

If the proposal includes work by other Itasca offices or subcontractors, the contracting office will be the final reviewer of information supplied by others for this proposal.

2.3 Available Data

Many projects require access to available data from outside sources. It is important to state in our proposals what information is necessary to accomplish the work proposed. This often includes data provided by the client taken on good faith. If we insist upon reviewing or validating data, we may be taking on liability associated with doing so. Nevertheless, it is good professional practice to make every effort to at least make cursory examination of any geotechnical conditions (rock quality as exhibited in the field or in core, water conditions, etc.) involved in our consulting.

The proposal should clearly state the formats required for accessing the information necessary to perform the work and anticipate the course of action (and likely additional resources and time) if this requirement is not met. If a project is on a short timeline and data is required before the project work can begin, be clear that the project timeline begins when Itasca receives all the required data.

2.4 Budget Estimation

Estimating a proposal budget includes:

- Staff time to accomplish all aspects associated with the work being proposed, which should also include activities related to project 'closure and archiving' (cleaning servers, compressing and storing data, etc.).
- Equipment purchase or rental (including cloud computing costs).
- Travel costs (airfare, local transportation, lodging, meals).
- Other costs such as contingency, report preparation, report translation, editorial reviews, etc.

The frequency of invoicing should be clearly indicated. If the project is for one week of work, it is best to invoice at the project's completion. If the project duration is multiple months or years, invoicing should be on a monthly or milestone basis, with payment terms of net 30.

It is important to list the assumptions that form the basis for the estimate. Examples of statements to be included in the estimate are given below.

- Itasca assumes that Company X will provide equipment based upon specifications provided by Itasca. The cost of the equipment is not included in the proposal.
- Itasca assumes that it will be assisted during Phase 1 by Company X staff.
- The proposal assumes that all expenses during a site visit will be covered by Company X (transport, accommodations, meals, etc.). An estimate of accommodation and meal expenses is included in the proposal, as well as the price of airfare for X site visit(s). Actual expenses will be billed (either at cost or adding some administrative mark-up, depending on the policies of the local Itasca office).
- The time proposed to perform the services assumes that the information is provided in a timely manner by Company X and in the formats indicated in Section Y.

A Project Cost Evaluation Form (per task and a summary sheet) may be useful as a basis for estimating project costs. An example summary sheet is provided in Appendix A. Please refer to the GM Guidelines and Policies document for GM and Officer approval requirements based on proposal value.

2.5 Deliverables

Deliverables are the items that we intend to provide the client. Common Itasca deliverables may include reports, test results, instrumentation readings, monitoring procedures, personnel training, data files, etc. These deliverables must be defined explicitly within the proposal. Any

qualifications regarding these deliverables also must be defined (e.g., what information will not be delivered to the client). For example, many project deliverables explicitly exclude any files that may contain proprietary algorithms or functions that provide a competitive advantage for the performance of the work.

Itasca's general policy is to NOT release any of the following files: input data and "save" (*.sav) files for any models; Word files for any reports; Excel files for any calculations; CAD files of any drawings; PowerPoint files; and database files. It is a best practice to only deliver "finished product" material such as PDF electronic files to the client. For a consulting engineer to submit anything editable raises issues of liability, confidentiality, intellectual property, etc. Delivering the model save files should be avoided as it may reduce the potential for follow on work. When providing model output files is necessary, delivering results files is preferred, as results files contain numerical results but cannot easily be used for follow on analysis.

The following wording examples may be used in proposals and agreements:

> *Model input data,'save' (*.sav) files, results files, a report's Word files, Excel calculation files, AutoCAD dwg files, PowerPoint files, and database files are not included among the deliverables for this work.*
>
> *The electronic data files used by Itasca for modeling typically contain functions, data, and other information developed by Itasca engineers and are not considered part of the project deliverables. If required, this proposal can be revised to include development and delivery of customized electronic data files.*

or

> *Itasca will provide an electronic copy of the report in PDF format. Itasca can make results files from our analyses (complete results of numerical modeling) available provided the customer requested them at the proposal stage and/or the office General Manager approves. Unless explicitly defined above, Itasca's policy is to not release the following files:*
>
> - *Input files and .sav files for models*
> - *Word files for reports*
> - *Excel files for calculations*
> - *CAD files of drawings*
> - *PowerPoint files*
> - *Database files*
>
> *We only release "finished product" material, such as PDF electronic files. Releasing anything editable raises issues of liability, confidentiality, and intellectual property.*

The only exception to this policy is if we are asked at the proposal stage to develop any of the above-noted files and deliver these files as a separate or special "task" or "deliverable" item for the project, or the client makes a special request and the General Manager approves. These input files obviously must be commented clearly, and, in some cases, edited for the intended audience, and the time required for this work must be included in the budget at the proposal stage. This can be a major task, and it must be done carefully. In such cases, the client must sign a disclaimer (see attachment B of Appendix C) stating that they are solely responsible for any subsequent use of the file(s) or decisions they may make based on results obtained. The General Manager must also approve of the deliverable. It may also make sense to provide a quote to edit and add comments to the files for release.

2.6 Time Limit

Proposals should include a specific statement regarding the validity period or expiration date of the proposal. The recommended period is no more than three months.

2.7 Review and Approval

The review and approval process, including sign-off, should follow routines established at the local office. An example of a Proposal Review form is found in Appendix B. In this example, the Proposal Review Form requires sign-off by the proposal author, a technical reviewer (an Itasca professional not involved in writing the proposal), an editorial reviewer, and a financial reviewer. The level of review should be aligned with the complexity and price of the proposal. At a minimum, all proposals, regardless of complexity and price, should undergo an editorial review before being submitted to the client.

2.8 Service Agreements

All agreements to provide services to a client for a fee should be documented in the form of a contract or service agreement. These agreements can take several forms. In some instances, with long-term clients, they can be as simple as a confirmation email stating what we propose to do for a given price, given payment terms, and under what specific conditions. Generally, however, these agreements are documented in a more formal written agreement that is a binding legal contract approved and signed by both parties. This formal agreement outlines and defines all issues to be agreed upon by the contracting parties. Normally, the client requires and will provide such an agreement. However, if we need to prepare an agreement on our own, or if the client asks us to prepare one, it should include key sections such as can be found in Appendix C.

Some of the more commonly used descriptions for use in proposals and projects (and included in the example Technical Services Agreement) are as follows:

Ownership and Management of Documents

Unless otherwise specified, all documents and information obtained or prepared by Itasca in connection with the performance of services, including but not limited to Itasca's reports, data, drawings and specifications, laboratory test data, and other similar documents (collectively called "Documents") are the property of Itasca, and Itasca shall, in its sole discretion, have the right to dispose of or retain the Documents. Itasca shall have the right to use the Documents for any purpose, unless such use would cause harm to the client or breach the terms under the section entitled Confidentiality. The client shall have the right to reuse the Documents for purposes reasonably connected with this project, including design and licensing requirements of the project for which the services are provided. No party other than the client may rely upon, and the client shall make no representations to any party that such party may rely upon, Documents without Itasca's expressed written authorization.

Copyright and Title

All software, executables, source code, data files, and scripts produced by Itasca shall remain the property of Itasca and are licensed to the client for the intended purpose of a specific project only. This license may be extended for reuse on other projects, or it may also be cancelled if the client fails to adhere to the intended purpose authorized by Itasca.

Confidentiality

All Documents, reports, disclosures, plans, and other information of any nature and description that the client supplies to Itasca or that Itasca discovers or develops in performance of the Services under an agreement shall be treated as confidential if the Documents, reports, disclosures, plans, and other information are confidential in nature. Itasca shall not disclose any of the same, without the client's written authorization, to any third party except to the extent that the information is in the public domain, is required by law, or under Itasca's professional obligations to be disclosed.

Intellectual Property

All documents, information, and other data to be furnished by Itasca under a Contract or Technical Services Agreement shall be delivered to the client and may be used only by the client for its intended purpose on the Project without restriction.

Unless agreed to under a separate agreement, all software, executables, source code, data files, and scripts produced by Itasca shall remain the property of Itasca and are licensed to the client for the intended purpose of the particular project only. This license may be extended for reuse on other projects upon written agreement between Itasca and the client.

Enhanced Confidentiality

Itasca conducts project work for many different types of clients, some of whom require greater degrees of confidentiality than others.

The **standard level of confidentiality** that should be maintained for all of Itasca's projects includes keeping all specific information about the client and the project confidential. General information, such as the client's name and the general nature of services Itasca is providing, can be shared for projects requiring the minimum level of confidentiality, but sharing of any additional information must receive prior approval by a Principal of the office or the General Manager. Unless otherwise directed, all Itasca projects are considered Confidential (meaning that while one may discuss the project and work and reports done for the client, no specific information may be distributed to anyone outside of Itasca unless the client has provided written authorization).

Some projects are **Public** (including most Government work), but these should be treated as "Confidential" until status as "Public" is determined by the Principal on the project or the General Manager.

On rare occasions, some projects are designated as Highest Confidentiality. These projects may not be discussed with anyone (even other Itasca staff) who is not involved in the work.

2.9 Follow-up on Rejected Proposals

Although our goal is to be successful with every proposal we make, there are cases in which we are not successful. These unsuccessful proposals may provide an opportunity for us to improve our chances in the future if we follow up appropriately. Our objective is always to improve our service to the client by understanding their needs better. Responses received from clients on unsuccessful proposals should be shared with the General Manager and the business manager for that industry segment.

2.9.1 Example questions for following up on rejected proposals

The following are examples of follow-up questions.

As you are aware, we were recently notified that we were not retained for the proposed work on the_____ project. We would be most appreciative if you could provide us with feedback on this proposal (please feel free to insert your comments after the related question).

- *Did our proposal adequately address the expected scope of work?*

- *Were there concerns about the focus of our proposal or the way it was articulated?*
- *Were the personnel suggested qualified?*
- *Were the resumes of the suggested personnel sufficiently focused on the needs of the project?*
- *Did we have too many people involved? Too few?*
- *Was the proposal complete, along with the technical information included that you required?*
- *Was all the documentation you needed complete?*
- *Was the proposal detailed enough?*
- *Was the proposal too expensive? Not expensive enough?*
- *Were the hourly rates competitive?*
- *Were we perceived as being able to complete the proposed work on time and on budget?*
- *Were there issues with previous work we did for your company, if applicable?*
- *Are there other comments you are willing to provide regarding our proposal?*

We value all opportunities to bid on projects and are always striving to improve how we respond to such requests. As a result, any feedback would be much appreciated.

I would like to take this opportunity to thank you for having given Itasca an opportunity to bid on this project.

3.0 REPORTS

3.1 Standard Common Elements

Although each office has a different report format, all Itasca reports should contain certain common sections. These include a Title Page, Executive Summary, Table of Contents, Introduction, Background, Approach, Discussion of Results, Conclusions and Recommendations, References and/or Bibliography, and Appendices. Descriptions of each of these parts are included in the ICG Style Guide. The ICG Style Guide is included as Appendix F for convenience

3.2 Limitations

It is important that a project-specific statement of limitations be made in the *Discussion of Results* section so that the reader understands the basis of the report. These limitations may include information received from the client, limits of numerical modeling, or even the timeframe over

which a study was conducted. Describe the limitations of the analysis in terms of the effect on the quality of the modeling predictions. Do the limitations make the analysis more conservative or less conservative? An example of a discussion on limitations is provided in Appendix D.

3.3 Review

3.3.1 Technical review

Before submission to clients, Itasca reports are required to undergo a technical review to ensure that reports are technically sound, meet the needs and objectives of the project, and clearly communicate the conclusions and recommendations to the client. Technical reviewers are Principal-level professionals. Occasionally, external reviewers are involved.

3.3.2 Review process

Each report must be reviewed and approved per local office processes. An example Report Review Form is included in Appendix E. This form requires signed approval by the Project Manager/author, a technical reviewer not involved in the project, and an editorial reviewer.

The completed review process should be documented and saved per local office guidelines.

No letters, reports, figures, or any other written document containing technical interpretations, conclusions, or recommendations from Itasca or any employee are to be distributed to anyone outside of the company without being reviewed and approved (via signature) by a Principal. If a Principal is not available when a review and signature are required, the General Manager (or in extenuating circumstances, an Itasca Officer) can review and approve for the Principal.

3.3.3 Authority

The technical reviewer has the final decision over questions concerning a report written by a staff member for the client. If the reviewer and the author cannot resolve disagreements, the General Manager (or a reviewer designated by the General Manager) must be brought in to review the report. If the General Manager is the author, the III Chief Technical Officer will make the final decision(s).

3.3.4 Manner of delivery

It is recommended that project results, recommendations, and conclusions be included in the final report in PDF format and not conveyed in the text of an email message. While reviewed reports may be sent as an email attachment (and always in PDF format), any documents or files sent to the client must also be archived per local office procedures.

4.0 INTER-OFFICE REPORTS

When Itasca offices work with one another on specific projects, care must be taken to ensure that each office is appropriately recognized for its contributions. Any project report to the project

office's client should be identified as the report of that office. However, as other offices may contribute to that report in various manners, this also should be appropriately documented. For example:

1. An employee at one office who is contracted by another office to write part of a report could write the report on their office's letterhead with appropriate tracking number, with the project office listed as the client. The project office then could take what is needed as part of the project office's report (simply citing those whose words they are using). This way, both the project office and the assisting office have a traceable document.
2. If the contracted writer is the sole author of a report that the project office needs to send to its client, the project office should take the report and put it on its letterhead and use both its and the contracting office's tracking number in the reference number for that document.
3. If the contracted writers are co-authors of a report, the parts should be compiled by whoever is assigned that responsibility at the contracting office, in the contracting office's reporting format. In this case, all authors would be listed with their affiliations noted after their names.

4.1 Citing Software

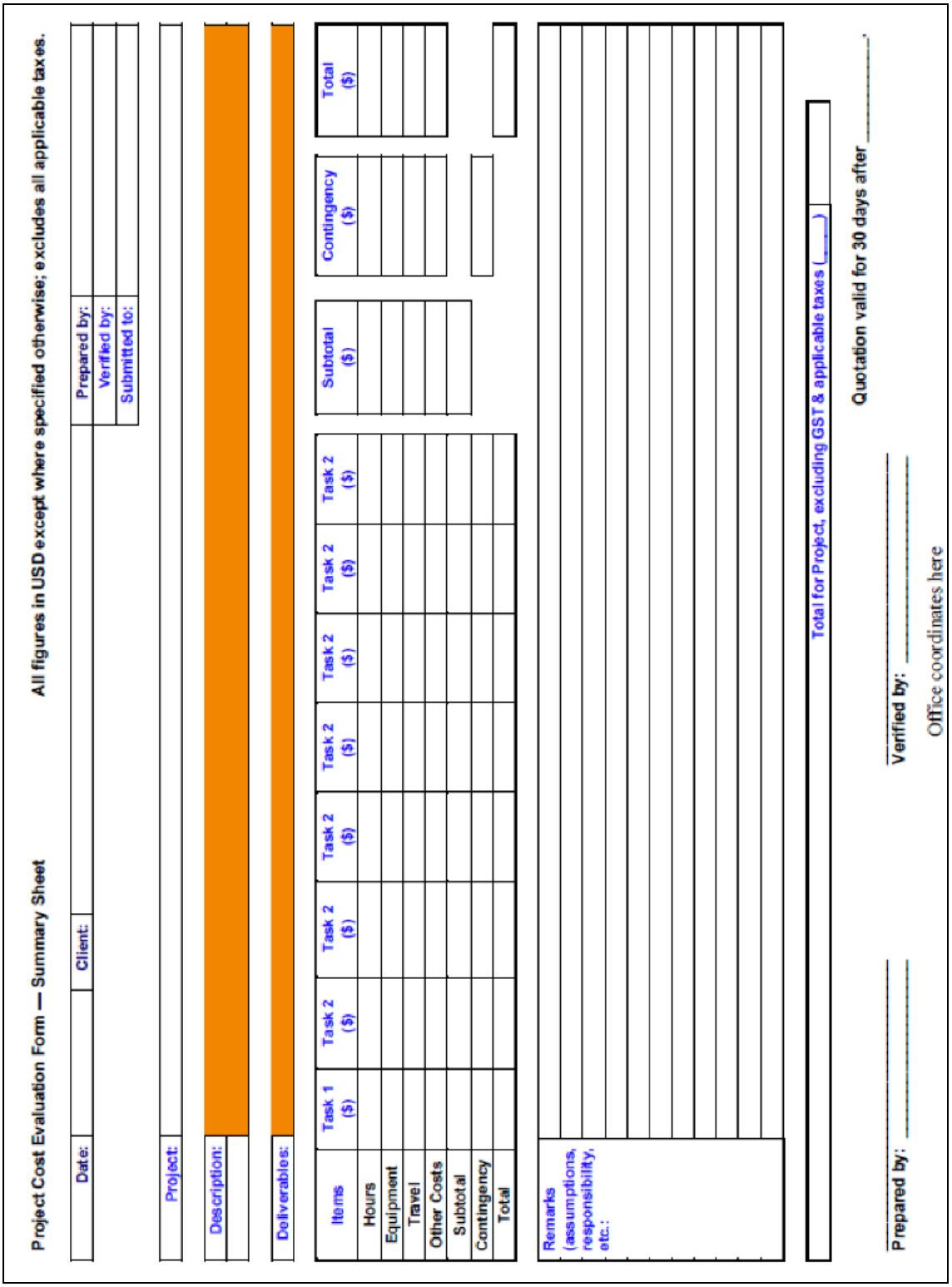
In all written material that refers to the work produced by any Itasca software code, it is important to cite the code version used to create the work in that document. Version numbers and year of release can be found on the ICG website (www.itascacg.com). An example of the reference form for an Itasca code citation is as follows:

> Itasca Consulting Group, Inc. (2020) ***FLAC (Fast Lagrangian Analysis of Continua)***, Version 7.0. Minneapolis: Itasca Consulting Group, Inc.

An example of the reference format for citing a specific part of a code manual is as follows.

> Itasca Consulting Group, Inc. (2020) ***FLAC (Fast Lagrangian Analysis of Continua)***, Version 7.0, *Manual on Theory & Background*, pp. XX-XX. Minneapolis: Itasca Consulting Group, Inc.

5.0 APPENDIX A: PROJECT COST EVALUATION FORM (EXAMPLE)



Project Cost Evaluation Form — Summary Sheet

All figures in USD except where specified otherwise; excludes all applicable taxes.

Date:		Client:		Prepared by:	
				Verified by:	
				Submitted to:	

Project:

Description:

Deliverables:

Items	Task 1 ($)	Task 2 ($)	Task 2 ($)	Task 2 ($)	Task 2 ($)	Task 2 ($)	Task 2 ($)	Task 2 ($)	Subtotal ($)	Contingency ($)	Total ($)
Hours											
Equipment											
Travel											
Other Costs											
Subtotal											
Contingency											
Total											

Remarks (assumptions, responsibility, etc.:

Total for Project, excluding GST & applicable taxes (____)

Quotation valid for 30 days after _____.

Prepared by: _____

Verified by: _____

Office coordinates here

6.0 APPENDIX B: PROPOSAL REVIEW FORM (EXAMPLE)

Proposal Review

Proposal No. _____

Proposal Title _____

1. ***Proposal meets client specifications or requirements:***

_____ _____
Proposal Author *Date*

2. ***Proposed technical tasks can be completed with available resources and within the timeframe proposed:***

_____ _____
Principal or Technical Reviewer *Date*

3. ***Proposal has been reviewed for clarity, grammar and format; sufficient effort for report preparation has been scheduled:***

_____ _____
Editorial Reviewer *Date*

4. ***The proposed effort can be completed for the offered price:***

_____ _____
CEO or Principal *Date*

ITASCA
Consulting Group, Inc.

7.0 APPENDIX C: CONSULTING SERVICES AGREEMENT

AGREEMENT
FOR
CONTINUING CONSULTING SERVICES

This AGREEMENT is made and entered into this xxx by and between

xxxxxxx
xxxxxxxxxxx
xxxxxxxxx

hereinafter called "Client" and

Itasca Consulting Group, Inc.
111 Third Avenue South, Suite 450
Minneapolis, MN 55401

hereinafter called "Consultant".

The purpose of this Agreement is to create a continuing services agreement effective until (DATE), whereby Client may from time to time request Consultant to assist Client in performing services in accordance with the terms and conditions set forth in the following sections and attachments referenced herein which, together with the acceptance, shall constitute the entire Agreement superseding any and all previous correspondence and arrangements.

Section 1.0 - Relationship of the Parties

The relationship between Client and Consultant shall be limited to the performance of services as set forth in this AGREEMENT and any applicable work authorization. This relationship shall not constitute a joint venture, nor a partnership, nor an employer-employee relationship. Neither party may obligate the other to any expense nor liability outside of this AGREEMENT except upon written consent of the other.

Section 2.0 - Work Authorization

Client will request Consultant to perform services using a "Work Authorization" in a form similar to Attachment A, which will specify and identify the following:

1) Scope of Services
2) Cost of Services and Schedule of Fees
3) Time of Performance
4) Any other necessary conditions

Each Work Authorization will reference this AGREEMENT, and once the Work Authorization is accepted, the terms and conditions of this AGREEMENT will apply. If this Continuing Services Agreement expires while a Work Authorization is still in effect, performance under the Work Authorization shall continue in accordance with the terms and conditions of this Continuing Services Agreement. Consultant shall be under no obligation to accept any Work Authorization.

Section 3.0 - Payment

Client shall pay Consultant for all services authorized in writing in accordance with the Schedule of Fees specified in each Work Authorization.
Invoices shall be submitted to the addressee Client provided to Consultant. All invoices will include the name of the Consultant's project and Client's project number. Client will review such invoices and, upon approval, process for payment. Payment to the Consultant will be made within 15 days of the invoice date.

Section 4.0 - Insurance

Without limiting Consultant's liabilities related to performance of this Agreement, Consultant shall procure and maintain, at its sole cost and expense, the following insurance:

(a) Workers Compensation and Employer's Liability Insurance as prescribed by applicable law;

(b) Comprehensive General Liability Insurance (Personal Injury and Property Damage), the limits of which shall not be less than $2,000,000 per occurrence;

(c) Automobile Liability Insurance (including coverage for owned, leased, used, hired, or borrowed vehicles) with a combined single limit for both bodily injury and property damage of $1,000,000 per occurrence; and

(d) Professional Liability Insurance, the limits of which shall not be less than $2,000,000 per claim and in the aggregate annually.

The insurance above shall recognize Consultant's indemnity responsibilities under Section 5.0. All insurance coverage shall be through a company or companies acceptable to Client. Certificates of

insurance evidencing the above coverages, shall be issued to Client prior to commencement of work, and shall include Client as additional insureds with respect to work to be performed under this agreement. The certificates must specify that Client must be given, in writing, thirty days notice of cancellation, termination or alteration of the policies evidenced by the certificate. Insurance coverages similar to the above will be required from any and all subcontractors that may perform in Consultant's behalf.

Section 5.0 - Indemnification

To the fullest extent permitted by law, Consultant shall indemnify, defend, and hold Client, their officers, agents, and employees harmless from and against any and all claims, defense costs, including reasonable attorney's fees, damages, and other liabilities arising out of or in any way related to the acts or omissions of the Consultant, its agents, or employees in performing the services authorized by this AGREEMENT; provided that, Consultant shall not indemnify Client against liability for damages to the extent caused by or resulting from the negligence or intentionally wrongful acts or omissions of Client, their officers, agents, or employees.

Section 6.0 - Professional Responsibility

The Consultant shall be responsible for the professional quality, technical accuracy, and the coordination of all services furnished by the Consultant under this Agreement. The standard of care applicable to Consultant's services shall be in accordance with generally accepted professional practices related to the nature of the work to be performed. The Consultant shall, without additional compensation, re-perform any services not meeting this standard. If Consultant does not re-perform services falling below this standard in a timely manner, then Client may make such corrections or contract to make such corrections and charge Consultant for the costs incurred up to the contracted amount of the Work Authorization.

Section 7.0 - Compliance with Laws, Regulations, Permitting, and Licensing Requirements

The Consultant warrants that it shall comply with all laws, regulations, codes and ordinances that are applicable to Consultant's work to be performed and products to be delivered under this AGREEMENT. The Consultant shall procure and maintain at its own expense, all permits and licenses, required by law, to perform the services authorized under this AGREEMENT, including without limitation and if applicable, permits and licenses to transport and handle regulated wastes. Consultant shall provide evidence of meeting the permitting and licensing requirements to Client prior to starting work.

Section 8.0 - Notice Regarding Safety

In accordance with generally accepted practices, the Consultant shall be responsible for all matters relating to the health and safety of its personnel and equipment in performance of the work. This includes recognition of the potential health and safety hazards associated with the work and includes compliance with the minimum requirements of any Health and Safety Plan in force for the work.

It is understood that protective measures specified in any applicable Health and Safety Plan are minimum requirements for the work. Where necessary, Consultant shall exercise more stringent health and safety practices specific to the Consultant's work. Any costs associated with Consultant's health and safety practices are the sole responsibility of the Consultant and cannot be billed to Client without written permission.

Section 9.0 - Equal Employment Opportunity

Consultant shall comply with all applicable federal, state, and local laws and regulations regarding equal employment opportunity and non-discrimination

Consultant shall take affirmative action to hire and promote qualified individuals, and shall not discriminate in any employment-related decision or action on the basis of race, color, religion, sex, sexual orientation, national origin, veteran status, disability or perceived disability.

Section 10.0 - Disputes

Unless otherwise identified in a Work Authorization, if a claim or dispute arises out of or relates to the interpretation, application, enforcement, or performance of Services under this Agreement, both Parties agree to attempt to resolve the claim or dispute (1) at a meeting between the principals, and failing resolution (2) mediation. If the claim or dispute cannot be resolved through mediation and, unless otherwise mutually agreed, either party may file suit in an appropriate court in the state of the Client office.

Section 11.0 - Ownership of Documents

All designs, drawings, specifications, notes, data, samples, materials, report reproducibles, and other work developed as a part of each Work Authorization will be the property of Client. Any reuse of these documents, not occurring as a part of this AGREEMENT, will be without liability to the Consultant. The electronic data files used by Itasca for modeling typically contain functions, data and other information developed in-house by Itasca engineers and are not considered part of the project deliverables unless specified in the Work Authorization. If data files are requested as part of a Work Authorization, a disclaimer as shown in Attachment B must be signed by Client. All software, executables, source code, data files and scripts produced by Itasca shall remain the property of Itasca and are licensed to the client for the intended purpose of a specific project only.

Section 12.0 - Changes

Changes in the terms and conditions or the scope of services of this Agreement may become necessary or desirable. Such changes, including increases or decreases of compensation for services to be performed, must be mutually agreed to by Consultant and Client, and incorporated as written amendments to this Agreement to be effective.

Section 13.0 - Assignment and Subcontracting

Consultant shall not delegate any duties, nor assign any rights or claims under this AGREEMENT, nor subcontract any part of the work authorized without prior written consent of Client.

Section 14.0 - Severability and Survival

If any element of this AGREEMENT is held to violate a law, then the element shall be deemed void, and all remaining provisions shall continue in force. However, Consultant and Client will in good faith attempt to replace any invalid or unenforceable provision with one that is valid and enforceable, and which comes as close as possible to expressing the intent of the original provision. All terms and conditions of this AGREEMENT allocating liability between Consultant and Client shall survive the completion of the services hereunder and the termination of this AGREEMENT.

Section 15.0 - Interpretations

Interpretations and enforcement of this AGREEMENT shall be governed by the laws of the state of Minnesota.

Section 16.0 - Termination

(a) Client may terminate this Agreement, by providing ten days written notice. In the event of such termination, Consultant will be paid an equitable amount in proportion to the amount of work completed and will not be entitled to profits expected on services not performed.

(b) Client has the right to terminate this Agreement for default if the Consultant, during performance of the work:

1. Becomes insolvent or makes a general assignment for the benefit of its creditors; files or has filed against Consultant a petition in bankruptcy or an attachment or execution levied upon any of Consultant's property used hereunder; or has appointed a receiver for Consultant's business;

2. Has any legal proceeding commenced against Consultant that, in the opinion of Client, interferes with the performance and satisfactory completion of the Scope of Work;

3. Fails to perform or refuses to proceed with the work in a prompt, safe, and diligent manner, or fails to supply adequate equipment or properly skilled employees;

4. Fails to pay promptly all monies due Lower Tier Subconsultants for services, labor, or materials used in connection with this work;

5. Fails or refuses to proceed in full compliance with all provisions of this Consulting Agreement.

Client may, without prejudice to any other rights or remedy it may have, give Consultant notice in writing setting forth the particulars of such default. Unless such default is corrected within ten days from date of said letter, Client, at its option, may terminate this Consulting Agreement.

Consultant may terminate this Agreement if (i) Client fails to make payment to Consultant when due in accordance with the terms of this Agreement and such failure continues for a period of fifteen (15) days after written notice thereof has been given to Client, or (ii) Client has breached any material provision of this Agreement and such breach continues for a period of thirty (30) days after written notice thereof has been given to Client.

Section 17.0 - Taxes

Except as may be otherwise provided in individual Work Authorizations, the contract price will include all applicable federal, state, or local taxes.

Section 18.0 - Force Majeure

Neither party to this Agreement will be liable to the other party for inability to perform or delays in performing the services, nor for the direct or indirect cost resulting from such inability to perform or delays, that may result from labor strikes, riots, war, acts of governmental authorities, extraordinary weather conditions or other natural catastrophe, or any other cause beyond the reasonable control or contemplation of either party.

Section 19.0 - Access to Records

The Consultant shall maintain accounting records, in accordance with generally accepted accounting principles and practices, to substantiate all invoiced amounts. Said records shall be available for examination by Client during Consultant's normal business hours for a period of six years after Consultant's final invoice to the extent required to verify the costs incurred hereunder.

Section 20.0 - Confidential Information

For the purposes of this Agreement, “Confidential Information” shall include, but not be limited to any relationship between Client and Consultant and all information, computer models, forecasted and current data, etc. about Client’s scope of work, project purpose, and results of analyses whether communicated orally, electronically, or in writing to Consultant.

1. Confidential Information disclosed shall be used by Consultant solely for the purposes authorized by this Agreement, unless otherwise approved in advance and in writing by Client.
2. Consultant shall not disclose the Confidential Information to any entity, individual, corporation, partnership, customer, client, subsidiary, or affiliate, without the prior express written consent of Client, except as authorized elsewhere in this Agreement.
3. Consultant will protect all of Client’s Confidential Information by applying the same standard of care that it uses to protect its own confidential information of a similar nature, but in no event less than a reasonable standard of care.
4. Consultant agrees to limit access to Confidential Information received hereunder to those of its employees or agents who are reasonably required to have access to the Confidential Information to the extent necessary to carry out this Agreement and only if such employees or agents are advised of the confidential nature of such Confidential Information and the terms of this Agreement and are bound by a written agreement or by a legally enforceable code of professional responsibility to protect the confidentiality of such Confidential Information.

These obligations of non-use and confidentiality shall not apply to Confidential Information that is or becomes public through no breach of this Agreement by Consultant; is known by Consultant at the time of disclosure, as shown by competent written evidence; or is rightfully received from a third party without a similar restriction and without breach of this Agreement.

If Consultant is legally obliged to disclose any of the Confidential Information, Consultant shall promptly notify Client so that Client may seek a protective order or other appropriate remedy or waive compliance with the terms of this Agreement, at Client’s sole discretion.

At the request and election of Client, Consultant shall promptly return to Client, and/or certify to Client the destruction of, all documentation as well as physical and electronic forms of Client’s Confidential Information, including all copies, translations, summaries, descriptions, or other materials in any media or form that contain, or were based on, or derived from, the Confidential Information.

The parties have read the foregoing, understand completely the terms and conditions, and willingly enter into this Agreement.

xxxxx

By: _____

Printed:

Position:

Date: _____

Itasca Consulting Group, Inc.

By:_____

Printed:

Position: General Manager

Date:_____

Attachment A

Work Authorization No. 01
To Accompany
Consulting Services Agreement
Itasca Consulting Group, Inc. (Itasca/Consultant)
and
XXXXX

Itasca Job No. _____ Date: _____

Itasca's Authorized Representative: _____

Client's Authorized Representative: _____
[Insert Name, Title]

Project Description:

Deliverables:

Compensation:

Delivery Schedule:

Attachment B

Disclaimer

This disclaimer is between Itasca Consulting Group ("Itasca") and **[CLIENT COMPANY NAME]** ("Client") on the use of the data files for Work Order No.____("Project"). Client has specifically requested the data files needed to perform the analysis.

All software, executables, source code, data files and scripts produced by Itasca shall remain the property of Itasca and are licensed to the client for the intended purpose of the Project only. Client is solely responsible for any subsequent use of the data files: if changes are made, or if used outside of the scope of the Project. This responsibility includes any decisions they may make on the basis of results obtained. Data files cannot be passed to a third party.

By completing the Client information below, you are indicating that you understand and accept the terms of this disclaimer.

Name: _____

Company: _____

Address 1: _____

Address 2: _____

Signature: _____

Date Signed: _____

8.0 APPENDIX D: LIMITATIONS

8.1 Example of Limitations of Numerical Analyses from Richard Brummer (Itasca Canada)

It is important at this stage to reiterate the limitations that are associated with the numerical analyses conducted for this project.

Importantly and foremost, it must be understood that it is not possible to explicitly and accurately represent each and every feature likely to affect the behavior of a complex and highly heterogeneous solid system such as a large-scale rock mass.

Firstly, many of these features will never be fully identified and/or characterized, even after mining will have been completed. Many features that have the potential to affect ground stresses and the reaction of the rock mass to mining, such as local geological units and their contacts, geological discontinuities, zones of weaker/altered rock, local changes in the pre-mining stress field, etc., are simply unknown at the time feasibility-level numerical analyses are performed (and often do remain largely unknown throughout the life of the mine).

Secondly, there are limitations on the level of complexity a large-scale numerical model can handle. Even if intricate details were obtained on a particularly important feature, some level of simplification will generally be required to either make the model run or produce results in a timely manner (the time required to perform numerical simulations increases exponentially with the number of numerical elements in the model, this number itself increasing as the level of geometrical detail increases).

All that can reasonably be expected from advanced numerical modeling is to capture the dominant behaviors and mechanisms of the system being analyzed and obtain reliable indications concerning the expected behavior of this system for various sets of conditions.

In the specific case of the ... feasibility review project, the main uncertainties were related to the following categories:

- *Stress field*. As discussed in Section x, there are some discrepancies between successive stress measurements, which result in an "uncertainty range" of about 34° (between 35° and 32°) for the direction of the in-situ σ1 component.
- *Geological units*. The *3DEC* model of the ... ore body encompasses only three rock types (the hanging wall and footwall units, and the ore material). It does not include the Felsic Tuff, Intermediate Tuff, and Lapillis Felsic Tuff formations identified in the lower section of the ... mine. The various ore lenses (19, 19N, and 20) were also considered as a single lens.

  Considering the very large volume of rock in and around the ... mine, chances are also that many small-scale geological units are present in it, which, depending upon how they are approached and exposed, could affect the local reaction of the rock mass to mining. Such small-scale geological features could be intrusions (such as dykes, for example), shear zones, and/or zones of more altered/weaker material.

  Note that at the time this report was prepared, there was still some uncertainty concerning some of the exact geological settings at depth at ... mine (most

geological information at depth was obtained from exploration drilling rather than direct observation of excavation surfaces). In particular, questions remained concerning the possible silicification of the geological formations at depth, which could have serious consequences on the behavior of the rock mass when it fails.

- *Discrete geological discontinuities*. No geological discontinuities, such as faults, zones of denser jointing, etc., were considered in the *3DEC* model, which was largely run as a continuum (as described in Section x).
- *Mechanical properties*. The mechanical properties of the various materials in the model were derived from back-analysis of the behavior of the … at ... mine. Although we are confident that this calibration exercise is sound, whether the material properties eventually derived are representative of ... mine remains to be confirmed. Note also that the mechanical properties of each material were considered constant, uniform, and isotropic, which is unlikely to be the case everywhere in reality.

Another limitation of the numerical analyses concerns the inability to correctly account for backfill. This aspect was discussed in detail in Section x. Note, however, that the consequences of not considering backfill in the model only became dominant once the rib and sill pillars between the various mining fronts all had been removed. Note also that the same model was used for both the primary-secondary and the pillarless analyses. This model, which incorporates primary and secondary stopes of different sizes, is not an accurate representation of the stopes that would in fact be considered with a pillarless approach (which would all have the same dimensions). This limitation is however not deemed critical at this stage.

This modeling exercise could be revisited once more data specific to ... mine will have been obtained from exploration core, development headings (including the shaft), seismic information, instrumentation measurements, etc. Should the encountered conditions be significantly different from those described in this report and modeled, additional numerical analyses should be done to assess the consequences of these new conditions on the geomechanical performance of the mine. Even if it turns out to be too late at that stage to change the design accordingly, the exercise will at least provide some advanced warning of potential future problems and allow contingencies to be put in place at an early stage.

Figure 37 is a schematic section (not to scale) looking north showing two of the joint sets (the *F3* set runs parallel to this view and has little effect on the stability of the hanging wall). The *F1* set runs sub-parallel to the ore body and does locally daylight into the excavation, whereas the *F2* set is nearly flat, which is a stable configuration.

The reason why so little failure is predicted to occur is as follows. Once the stope is excavated, the ground stresses are relaxed around the excavation due to the movement of peripheral blocks near its surface. Once these ground stresses have been shed further inside the rock mass, gravity becomes the largest external force acting upon the discrete blocks at the periphery of the excavation. Under these circumstances, *F2* largely controls stability at the excavation periphery — friction is mobilized along the wide sub-horizontal surfaces, and no toppling is allowed to occur as the blocks are literally locked in place, with no kinetic freedom to rotate. Note, however, that the spacings modeled are twice those reportedly mapped, which intrinsically renders the system

stiffer and stronger. The failure mechanisms, however, remain the same. The randomly distributed intact rock bridges considered in the model between the joints further stabilize the system.

Limitations of the Jointed Analyses

The jointed analyses were kept conservative by considering no cohesion and no tensile strength along the joints and by limiting their friction angle to 20°. However, several issues need to be kept in mind.

Limitations of the Analyses

When looking at these results, it is important to remember that:

- The *3DEC* model was run as a continuum and considered only one rock type, no major geological discontinuities, and no ubiquitous joint sets.
- The *3DEC* model was not calibrated against documented failures.
- The *3DEC* model does not account for the potentially destabilizing effects of passing time, water seepage, blast damage on the stope walls, blast-induced vibrations, and concussions, drilling deviations, etc.
- Our estimates of overbreak are based upon criteria that we believe are defendable but are not "firmly" established.
- We are not aware of any guidelines concerning an "equivalent" depth of failure that could be used as a stand-off mining distance.

Firstly, only the three dominant joint sets were modeled based upon the information provided to Itasca at the start of the project. The presence of additional geological features (either local joint sets or larger scale structures, such as faults) will have a detrimental effect on the stability of the excavation surfaces.

Local variations in the mean dip directions, dip angles, and spacings of the three joint sets modeled may also result in more instability. Very weak surfaces — weaker than those modeled — may also be encountered. For example, Bélanger (2005) reports the presence of sericitic materials in the felsic dyke, which can result in smooth surfaces if a high degree of alteration is present. Some sericitic joints are also reported as very smooth, with a friction angle of 22° and a cohesion of 250 kPa (Bélanger, 2005) — these values are however still above those used in the simulations. Certain faults are also reported to have exhibited weak epidotite and/or biotite infilling — this occurrence, taken to be rare, would have adverse effects on the stability of the local rock mass.

Please note that Itasca collected none of the data that were eventually used in the jointed model, but, rather, used data collected by third parties. (These data however appear reasonable to the principal author, based on his August 2005 site visit.)

Only an idealized "sample" stope has been examined in detail with the jointed *3DEC* model to

provide a sense of the intrinsic stability of the three dominant joint sets. Note that larger spans and irregular wall shapes are likely to increase the level of instability in the hanging wall and footwall. In this note, it may be worthwhile to simulate with the jointed model the final geometry that will eventually be retained for the underground expansion. It may also be worthwhile at this point to examine in detail the behavior of the crown pillar (which was not modeled at high resolution in this work), particularly to determine whether an arched back should be maintained inside the stopes, during their extraction, to control potential caving and arching.

As discussed, the jointed model was not zoned, which caused the blocks delineated by the geological features to be rigid (i.e., unable to deform, build-up stress, and eventually fail). However, this issue was addressed, although separately, by the continuous simulations described in Section 4. As with the continuous simulations, no time-dependent and weathering effects were considered in the jointed *3DEC* simulations, which will adversely affect stability. Certain occurrences can be expected to further destabilize the excavation surfaces, such as the presence of water, undercutting the walls due to off-profile breakage or drilling deviation, the failure of a local wedge, etc. Submitting the excavations to repeated strong blast-induced vibration levels will also contribute to destabilize their surfaces.

8.2 Example from "Numerical Investigation of Deformation, Mass Flow, and Heat Transfer During a Criticality Event in a Dual-Purpose Canister"

There are some important limitations of the model, which are listed below. Some of these limitations will be addressed in future work.

- The mechanical model assumes a linearly elastic, perfectly plastic material behavior. It is known that the mechanical response of steel is nonlinear in the failure region.
- The vessel mechanical response to pressurization is quasistatic and neglects dynamic effects. Coupling the quasistatic response to the time-dependent thermal hydraulic model may overpredict the rate of deformation during fast loading.
- This model assumes the heat from the criticality event is distributed between the canister metals (fuel, cladding, basket, and other canister internals) and the water proportional to the relative thermal masses. This assumption overpredicts the rate of water heating and consequently overpredicts the rate of canister pressurization. In a real system, it is expected that around 90% of the heating occurs in the fuel and a time-dependent heat transfer process heats the water. The timescale of this heat transfer process may be relatively slow. Accounting for the heat transfer from the fuel to the water will be addressed in future work.
- The zero-dimensional approximation is valid for times above 0.500 msec. Realistic prompt transient criticality events may be on this timescale and localized in a small region inside the canister. In a real system, spatial gradients in pressure and temperature may exist for short times, and local boiling may occur in the area of the criticality. The model presented in this work transfers heat instantaneously. As a result, boiling is not

predicted. Despite this limitation, the vessel responds mechanically to the average internal pressure over the timescale of interest.

- The coupling of the backfill pore pressure with the thermal hydraulic model is approximate and may underestimate mass flow during early times in the case of fast loading. This will be addressed in future work.
- The model is currently implemented for single phase liquid water only; this will be addressed in future work.

The mechanical response curves shown in Figure 3 are only valid for a given starting fracture length and only for monotonically increasing pressure. They do not describe the unloading and reloading behavior. There is a size effect on the pressure required to grow the fracture, longer fractures grow at lower pressures because the stress concentration is higher. This will be addressed in future work by running the mechanical model for different initial fracture lengths. This will improve the accuracy of the model for predicting the behavior of repeated events.

8.3 Example from "Application of Machine Learning to the Continuous Estimation of Rock Strength: A Case Study at the Newcrest Cadia East Mine"

This was the first application of modern machine learning techniques to PLT data performed by Itasca Consulting Group, Inc. Several challenges had to be overcome and important lessons were learned in the process.

The challenges can be summarized as the following:

- Data format – It was a substantial challenge to merge non-uniform logging intervals. The machine learning portion of effort consisted of 90% data manipulation and homogenization and 10% machine learning training and evaluation.
- Data noise – PLT testing is inherently noisy because of the underlying variation in the geological material and the nature of the test method. Three PLT tests performed on core with the same logged features may give three different Is50 results.
- Missing data – There is ambiguity and inconsistency in the original data between when data is missing or if a given item was not observed. Missing data was filled in with global default values, except for density, which used a nearest neighbor imputation scheme (see Beretta and Santaniello, 2016 for further discussion). To make good predictions, the machine learning model needs all the features to be defined.

The lessons learned can be summarized as the following:

- Feature engineering – Adding human expert domain knowledge to machine learning models is critical to success. Simply feeding the raw data into a generic machine learning algorithm does not produce acceptable results. The strongest features in each of the

predictors were the engineered features, and collaboration with the Cadia East geology team was critical to understanding the data and refining these engineered features.

- Accuracy – It is hard to specify a meaningful single number for model accuracy. The best approach was to present an accuracy metric in line with how the data will be used. For the pseudo-regression by classification approach taken in this work, the rolling mean metrics were the most meaningful indicators of model performance because geospatial techniques are subsequently applied to the predictions.
- Prediction insights – Although some valuable insights are available by inspecting feature importance, understanding why a predictor gives a particular prediction is difficult to ascertain. The predictions are a complex combination of the 21 features. Although the general structure of a decision tree can be understood, why a random forest of these trees gives a specific prediction is not easy to understand. All the logging sheets contributed to the prediction of strength; the geotechnical logged features are the most important, followed by mineralization, alteration, and lithology.
- Comparison to traditional strength domaining – Traditional strength domaining may use lithology and alteration facies to set strength domains. This work demonstrates that many factors contribute to rock strength, and geotechnical factors are stronger indicators of strength than lithology.

8.4 Example from *PFC3D* OpenFOAM coupling:

This work is intended as a demonstration of how to connect *PFC3D* to a CFD solver. The implementation given here is limited in the following ways:

- No linear relaxation is used to stabilize the equations. Numerical instabilities are likely to occur.
- No turbulence model is included in the analysis. The pressure predictions in flows with turbulent effects will be inaccurate.

Time derivatives of porosity are not included in the momentum or continuity equations. Flows driven primarily by particle displacement may be inaccurately represented.

9.0 APPENDIX E: REPORT REVIEW FORM (EXAMPLE)

Report Review

Job No. _____

Report No. _____

Report Title _____

1. Report prepared to contract/client specifications:

_____ _____

Report Author *Date*

2. Report meets technical standards, and conclusions are technically justified and clearly stated:

_____ _____

Principal *Date*

3. Report has been reviewed for clarity, grammar and format:

_____ _____

Editorial Reviewer *Date*

4. Review comments have been incorporated, and the report meets client expectations (if applicable):

_____ _____

Principal or Project Manager *Date*

5. Has the primary author

received permission from the client to use data and/or figures from the report in our marketing materials?	___ *Yes* ___ *No*
received permission to quote the client on the completed work?	___ *Yes* ___ *No*
put the images from this report in the graphics database?	___ *Yes* ___ *No*

ITASCA Consulting Group, Inc.

10.0APPENDIX F: ICG STYLE GUIDE

ICG Style Guide

A Reference for All Written Communications

Contents

LANGUAGE MECHANICS

SENTENCES

Write in complete sentences and end a sentence with a period. By definition, a sentence must have a subject and an appropriate verb (i.e., the verb must match the singularity or plurality of the subject). If unsure of the appropriate verb, use the “it-they” test.

Examples

A series of tests were conducted.

The subject (“series”) is singular, as denoted by “a,” and “it” can be used to replace “a series.” Saying “It were conducted” is obviously wrong. The sentence should read, “A series of tests was conducted.”

Series of tests were conducted.

Here, “series” is plural (no preceding “a”) and can be replaced by “they.” “They were conducted” is correct, so the sentence is correct as it is.

The series of tests were conducted.

The series of tests was conducted.

Because "the" can be used with either singular or plural nouns, the singularity or plurality of these sentences is determined solely by the verb. Both sentences are correct, with the first having "series" as a plural noun and the second having "series" as a singular noun.

Sentences should be separated from each other by only **one** space. Using two spaces to separate sentences was commonly used in the past to improve readability, but current word processors do not require two. Solitary sentences are to be avoided, as there is no such thing as a one-sentence paragraph (which, by definition, is a series of sentences on one "topic").

Avoid ending a sentence with a preposition. For example, "He's the person I wanted to speak with," is incorrect. The correct sentence is, "He's the person with whom I wanted to speak."

All parts of a sentence relate to either the subject or the verb (who or what did something when, where, why, and /or how). Introductory participial constructions should relate to the grammatical subject of the sentence. Modifiers that do not relate to the subject or the verb should not be used.

Example

Inspecting the files, the error was found.

"Inspecting the files," as the sentence is written, obviously does not relate to the subject of the sentence ("error"). It would need to be rewritten as follows: "The error was found when he inspected the files."

The longer the sentence, the more difficult it is to maintain clarity. When writing longer sentences, be sure to place descriptive phrases close to that which they describe.

Example

Incorrect: **The geometry took several hours to construct in this case, although simple.**

Correct: **In this case, the geometry, although simple, took several hours to construct.**

Singular and Plural Nouns

Particular attention must be paid to the singular and plural forms of Latin-based nouns. The following is a list of some of the more commonly misused words of this type.

SINGULAR	PLURAL
datum	data
spectrum	spectra
medium	media
stratum	strata
phenomenon	phenomena
criterion	criteria

Plurals of nouns generally are formed by adding "s" (run, runs), "es" (mass, masses), or "ies" after dropping an ending "y" (penny, pennies). For nouns that add "s" to make their plural form**, no apostrophes are used—even for nouns such as PCs and the 1950s**.

Verbs

Keep the tenses of your sentences consistent with the action being described. Usually in engineering reports, past actions are described, present thoughts are given, and future actions are proposed.

Example

We ran (past tense) **several problems and found** (past tense) **several anomalies. It is** (present tense) **clear that these represent** (present tense) **a serious breakdown of the code's ability to…As you will see** (future tense) **in Figure 1,…**

Abbreviations

Abbreviations for titles require periods.

Ph.D.

B.S. (B.Sc.)

Dr. P.E.

Prof.

Organizations and countries usually are abbreviated without periods.

USA

RSA

NRC

DOE

ISRM

There are a few exceptions to this rule.

U.S. (not US)

U.K. (not UK)

R.O.C. (not ROC)

While some abbreviations are well-known universally (for example, PC is used for "personal computer"), others are not. The best way to handle abbreviations is to give the complete name as well as its abbreviation on first mention, if you plan to use the abbreviation more than once.

Examples

The International Society of Rock Mechanics (ISRM) is pleased to announce the release of…

The distinct element method (DEM) has been used for many years.

State abbreviations should not be used. Itasca, for example, does not reside in MN. Rather, we reside in Minnesota. (Remember that we have many foreign clients who may mistake MN as the name of the area in which we are located.)

Capitalization

The first word of a sentence gets capitalized.

Names of people, organizations (and their members), councils, congresses, historical periods, and events get capitalized.

Dr. Smith

Boy Scouts of America

Council for Economic Development

4th U.S. Rock Mechanics Symposium

the Middle Ages

Names of places, districts, regions, etc. get capitalized.

Minneapolis

the Middle East

the Southwest

However, do not capitalize words indicating a compass point direction.

Example: **The fault strikes northeast.**

Capitalize the full names of geographic features, places, buildings, etc.

Yucca Mountain

Kidd Creek Mine

Mill Place

Capitalize key words in titles.

Fig. 3 Cross-Section View of the Pillar

“A Review of the Literature Concerning...”

Spelling

Unless requested to do otherwise, use American spellings.

Examples

meter	not metre
behavior	not behaviour
modeling	not modelling
center	not centre

Remember that spell-checkers, which allow the user to enter individualized words, are only as good as the information they are given. If you "tell" the speller to remember the spelling of an unusual word, be sure it is told the correct spelling.

Preferred Spelling

Some terms may have more than one valid spelling. The preferred spelling for common terms in Itasca documents is listed below.

groundwater	(as noun or adjective; not “ground water” or “ground-water”)
factor of safety	(as noun or adjective; not “factor-of-safety”)
modeling, modeled	not “modelled” or “modelling”
gridpoint	not “grid point”

Note: The phrase “in situ” is hyphenated when it is a compound modifier preceding the word(s) it describes (in-situ stress), but it is not hyphenated otherwise (measurements performed in situ).

Listings

When listing parallel actions or items, do so in appropriate parallel form. Be sure you list what you say you are listing.

Examples

We recommend you do the following: 1) determine the parameters; 2) model set-up; and 3) run the program.

Here, the base sentence defines the list to be verbs ("you do"). Items 1) and 3) meet this requirement, but item 2) does not, because "model set-up" is a noun phrase. Changing "model set-up" to "set up the model" will make this sentence correct.

The following objectives were attained: 1) identification of input parameters; 2) selection of appropriate geometry; and 3) determine model size.

In this case, "objectives" is a noun, and the list should be composed of nouns. Item 3) is a verb phrase and should be changed to "determination of model size.”

If you list a series of items, be sure to use the correct punctuation and denotation. If the items you are listing are not numbered or lettered, simple commas suffice.

Example: **He had three hot dogs, a bratwurst, and four beers.**

NOTE: Itasca includes the final comma before the conjunction in a list (known as the Oxford comma). See the section on commas below for more information. If the items you are listing are numbered or lettered and "flow smoothly" within the sentence structure, be sure to enclose the number or letter within parentheses and use commas.

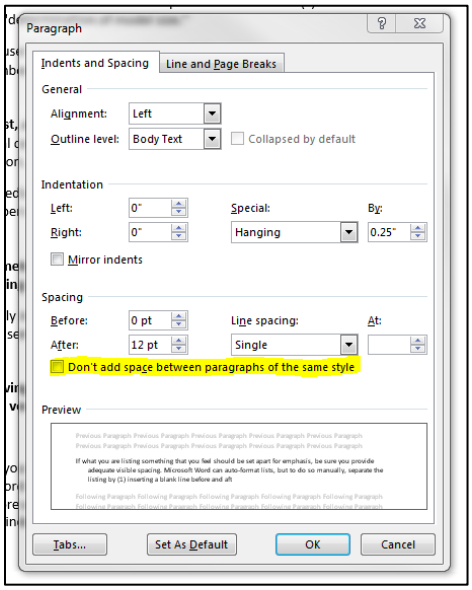
Example: **We found that (1) the input parameters were faulty, (2) the geometry was wrong, and (3) the wrong version of the code was being used.**

If the denoted items do not fit smoothly into the sentence structure or you wish to emphasize them, use a colon as the primary divider and semicolons as the secondary dividers.

Example: **We suggest that you do the following: (1) input the correct parameters; (2) choose the correct geometry; and (3) use the newest version of the code.**

Note: Only one space follows a colon.

If what you are listing something that you feel should be set apart for emphasis, be sure you provide adequate visible spacing. Microsoft Word can auto-format lists, but to do so manually, separate the listing by (1) inserting a blank line before and after the listing, (2) indenting the beginning of each line ½ inch, and (3) creating a hanging indent for those items longer than one line. Please note auto-formatted lists will not add spacing between bullets. To correct this, open the “Paragraph” options in Word, and uncheck the box that says not to add space between paragraphs. See snip below of this option menu.



Example

We suggest that you do the following:

- **input the correct parameters;**

- **choose the correct geometry; and**
- **use the newest version of the code, which we will provide to you at no cost.**

Note that Itasca style primarily uses bullets, unless numbering items adds clarification. Capital letters and Roman numerals should not be used in text form. They are better suited for outlines.

Please also note that because the listed items in the above example are phrases (not complete sentences), they should not begin with a capital letter unless they begin with proper nouns.

If what you are listing is a series of sentences, they should be preceded by a complete sentence, have regular capitalization, and follow the form given below.

Example

The following recommendations are offered.

1. **Mining staff should provide Itasca with detailed maps of the region of interest.**
2. **Brief descriptions outlining the scope of work should be completed by the end of June.**

Passive Voice

Using the passive voice instead of an active voice in technical writing can eliminate several common problems in technical writing.

- The passive voice avoids any issues regarding gender-specific writing.
- Use of the passive voice more easily states facts without adding any sort of personal bias.
- Pronouns like “you” and “we” can sometimes lead to more casual writing. The passive voice generally sounds more professional and formal. Also, avoid using “it” whenever possible to reduce ambiguity in a sentence.

  Problematic: The user can stop his program at any stage.
  We will create this *FISH* function for the *FLAC* model using the *Fish editor* pane.
  It should be noted that there are several variables affecting run time.

  Correct: The user can stop the program at any stage.
  Create this *FISH* function for the *FLAC* model using the *Fish editor* pane.
  Note that there are several variables affecting run time.

PUNCTUATION

Commas

When read orally, commas indicate a short pause in the flow of what is being read.

- Use commas to separate two independent clauses that are joined by a conjunction.

  Example: **I looked at the file, and I found the error.**

- Use commas to separate items listed within a sentence.

  Example: **I looked over the report and found three non-cited references, one dangling modifier, and four misspellings.**

  NOTE: In the past, Itasca documents omitted the final comma in a list before the conjunction (often called an "Oxford comma"). Including the Oxford comma or excluding it depends entirely on the style being used. Because of the complexity of subject matter covered in Itasca documents, the final comma is included to add clarity.

- Use commas to set off parenthetical expressions.

  Example: **Itasca's codes, *FLAC*, *UDEC,* and *3DEC*, are designed to…**

  Here, the basic sentence refers to the design of all Itasca codes. Naming the codes is not required and is parenthetical to the sentence.

  *Note, all of Itasca's software codes must be written in all caps and italics.

  Example: **The Itasca code *FLAC* was used to…**

  Here, because the sentence refers to one specific code, naming *FLAC* is essential to the sentence, and no comma is required.

- Use commas to separate titles and degrees from surnames.

  Example: **John B. Smith, Ph.D., P.E., D.D.S., M.D.**

- Use commas to separate dates from the text as in the following examples.

  Examples

  In 2008, we went to Argentina.
  In May 2012, I was in Minneapolis.
  We started out on May 17, 2014.
  On May 17, 2012, we travelled to Brazil.

Colons

Use colons to introduce words, phrases, or clauses that explain, amplify, or summarize what has gone before.

Example: **The report was in terrible shape: two-thirds of it needed rewriting.**

Use colons to introduce long quotations.

Use colons to introduce a list.

Use colons to separate chapter and verse numbers and act and scene numbers.

Example: **James 1:4** or **II:ii**

Use colons to separate hours and minutes in time designations.

Example: **9:30 a.m.**

Use colons as the ending punctuation of the salutation in a business letter.

Example: **Dear Mr. Smith:**

Do **not** use colons after abbreviations.

Incorrect: **Be sure that your data are correct (i.e.: …)**

Correct: **Be sure that your data are correct (i.e., …)**

Parentheses

Use parentheses to enclose information that is an aside to the main sentence. Information enclosed in parentheses is not required to understand the rest of the sentence but adds information.

Example: ***PFC* is installed from either a flash drive (usually) or a DVD (occasionally).**

Ending punctuation goes after the final parenthesis. If a parenthetical sentence occurs at the end of the primary sentence, it should stand alone. (In this case, the primary sentence ends with a period, and the parenthetical sentence, with first-letter cap and period, follows it.) Ending punctuation goes inside the ending parenthesis in this case.

Brackets

Use brackets to:

- enclose words in quoted matter written by someone other than the author;
- set off parenthetical expressions that are already contained in parentheses (i.e., two sets); and
- indicate errors in quoted material.

Examples

He said, "You [the defendant] must remain silent."

The error is obvious (see, for example, Fig. 2[a]).

Her letter ended, "Regritibly [sic] yours, Morgana Fey."

Points of Ellipsis

Use three spaced points (points of ellipsis) to:

- indicate omissions of words or sentences within quoted material; and
- indicate omissions of words or sentences at the end of quoted matter.

Example: **According to Smith (1963), "There is little reason to doubt…the sincerity of his words but much reason to doubt the validity…"**

Dashes

Em dashes (—) are not en dashes (–), minus signs (−), or hyphens (-). There is no space between an em dash and the surrounding text. Em dashes are used to:

- indicate a sudden break in continuity (The problem—if there really is one—can be explained.);
- set apart an explanatory, defining or emphatic phrase (This is the test—the final test—of importance.);
- set apart a parenthetical matter (For all his faults—and he had many—he was a great statesman.);
- set off a summarizing phrase or clause. (It is important that care be taken in choosing parameters—that is, be sure to include…)

En dashes are used as range indicators and can be read as the word "through."

Example**: The study took place from 2001–2006.**

Minus signs are only used in mathematical expressions.

Hyphens

Use hyphens when writing out fractions, compound numbers, and numbers used as adjectives.

Examples

I found one-half of what was needed.

There were thirty-six errors.

He found a 5,000-year-old fossil.

Hyphens can be used to link compound adjectives, adverbs, and nouns used as adjectives for more clarity.

Examples

In-situ	**text**	observed in situ
Plan-view	**section**	section in plan view
Special case: **cross-sectional**		view in cross-section

Example: **The hard science teacher was absent.**

This example can be understood in two ways, depending on whether (1) the science teacher was not an "easy" teacher; or (2) the teacher taught a "hard" science. When spoken, the meaning of this sentence becomes clear with inflection. When read, however, the sentence has the potential for being unclear, and therefore, hyphenating is suggested to avoid this. If the meaning was intended to be a hard science, not a hard teacher, "hard" and "science" should be hyphenated.

Adjective phrases containing an adverb ending in "ly" do not need to be hyphenated.

I love eating freshly laid eggs for breakfast.

If a compound adjective is a dictionary headword (a set of words that together have their own definition listed in the dictionary), no hyphen is necessary. As described above, a hyphen is included to add clarity. A phrase with a single, unequivocal definition makes the hyphen superfluous. A common example found in Itasca documents is "factor of safety calculations." Anyone reading an Itasca manual knows exactly what "factor of safety" means, which makes writing "factor-of-safety calculations" unnecessary.

Quotes

Quotes are used to show what someone has said or written. They are also used to differentiate journal articles from book titles, and they can be used to show that a word is unusual in usage (slang) and/or meaning.

When quoting directly and the quote is less than four lines long, quotation marks should be used. When quoting something written, be sure you cite the reference and appropriate page number(s).

Examples

He said, "This doesn't make sense."

According to Smith (1963, p. 23), "There is no reason to believe…"

Jones, B. K. (1972) "The Art of Picasso," Art Review, ***6***(4), 123-134.

The XZBIG routine is contained in "XZBIG.SYS".

If what you are quoting is longer than four lines, separate the quote from the text with a blank line before and after it, set the indent on both sides to half an inch, and ***do not*** use quotation marks.

Example

According to Smith (1963):

> blah, blah (pp. 4-5).

Quotes inside of marked quotes get single quotation marks.

Example: **The officer said, "What the Chief actually said was, 'I'm tired.'"**

Quotation marks and punctuation marks are troublesome. The logical placement of punctuation following a quoted item is outside the quotation mark, and convention reflects this for parentheses, question marks, exclamation points, semicolons, colons, dashes, and points of ellipsis. They are illogically placed, however, for periods and commas. This is said to be the result of a decision made by hand-set typesetters long before the advent of typewriters and word-processing systems. Because commas and periods are the most common punctuation markers and early printers discovered that they often got separated from ending quotation marks, it was decided to put them inside the quotation marks. This is not a practice followed by the British or many scientific journals.

As illustrated in most of the previous examples, periods and commas immediately following an item with quotation marks are put inside the quotation marks. While this convention is easily followed for most cases, there are several situations for which the convention should be disregarded. Some examples of these are given below.

Examples

The file is called "BIG.SAV".

"BIG.SAV" is a file name. To call this file, it is necessary to type "BIG.SAV". Putting the sentence-ending period within the end quotes may cause confusion. The meaning is much clearer when the period follows the end quotes.

My email address is "Kathy@ht2.me.umn.edu".

The material in quotes is very specific. In order for someone to reach me at that email address, the address needs to be typed exactly as it is shown within the quotation marks.

Putting the period outside the quotes enhances the correct usage of the term.

MEASUREMENTS, NUMBERS, & EQUATIONS

- **Three seconds** (three secs), but **0.25 second** (0.25 sec).
- "Point seven five," for example, is written as **0.75**.
- Abbreviate feet and inches as **ft** and **in**, not with the symbols ' and ".
- Do not use periods after units of measure unless they occur at the end of a sentence.

  Example: **The length of the test track was 100 m and its width was 50 m.**

- Note the spacing in the following examples. Units of measure are separated from the preceding number by a space, with the exception of a degree symbol.

  455 kHz **30°**

  20 mm **20°C**

  10^5 N

- Numbers less than 10 should be written out (one, two, three); numbers 10 and higher should be written numerically.
- Equations should be inserted into reports using MathType. In the text, abbreviate "equation" by using "Eq." or "Eqs.," unless the word begins the sentence. In that case, fully spell out "Equations."

PROBLEMATIC LANGUAGE

Commonly Misused Words and Phrases

- **Compare to** versus **compare with**

You compare **different** things **to** others (i.e., insects to humans).

You compare **similar** things **with** others (i.e., Paris with London).

- **To differ/be different/be similar**

  Things differ **from** others but are similar **to** others.

  Example: **The result is different from what was expected; in fact, it is similar to the original test case.**

- **Can** = to be able
  ≠ may
  ≠ should
  ≠ would

  Examples

  Can you send me the report? (Are you able to send me the report?)

  May you send me the report? (Is it ok for you to send me the report?)

  Should you send me the report? (Is it your obligation to send me the report?)

  Would you send me the report? (Will you send me the report?)

- **Lay** versus **lie**

  Lay = to place (objects)

  Lie = to recline (people)

  Examples

  Lay the book down and lie on the floor. (present tense)

  I laid the book down and lay on the bed. (past tense)

  Please note that "lay" is also the past tense of "lie" (see above example), which can cause more confusion.

- **Affect** versus **effect**

  Affect = to influence (verb)

  Effect = result (noun)

  Example: **We wanted to see how the model size would affect run time; we found that the effect was insignificant.**

- **Farther** versus **further**

Farther refers to distance. (**It's farther than I remembered.**)

Further refers to time or extent. (**If I can help further, please let me know.**)

- **That** versus **which**

  That = particular

  Which = non-particular (adds information and is frequently preceded by a comma)

  Examples
  That book belongs to me.
  The book, which belongs to me, is on the table.

- **A** versus **the**

  A = non-restrictive

  The = restrictive

  Examples
  There is a book. (any book)
  There is the book. (particular book)

- **A** versus **an**

  Usually, you use **a** when it precedes a word that begins with a consonant (**a** book, **a** technical report, **a** numerical model). You use **an** when it precedes a word that begins with a pure vowel (**an** applied pressure, **an** eagle, **an** isometric test, **an** optical illusion, **an** umbrella).

  However, there are cases in which you would use **an** preceding a consonant-beginning word. These cases are defined by the "sound" of the word. For example, NRC, is pronounced "en are cee." Because "en" sounds like a word which begins with a vowel, you would say "**an** NRC report."

- **Deal,** as in "a good deal of…" or as in "deals with"

  Deal = verb = to apportion or distribute

  Deal = noun = an undetermined quantity

  Don't use "This report deals with…" Instead, use, for example, "This report concerns…"

  Don't use "a good deal of time." Use, for example, "a large (or small) amount of time."

- **Myself**

  Myself is a word of emphasis and is used only with the word "I".

Examples

I, myself, will do this.
I'll do it myself.

Never use it in the form "If you have any questions, please contact Sam or myself." The correct usage is "If you have any questions, please contact Sam or me." An easy way to remember the correct form is to take out the other person. Would you say, "If you have any questions, please contact myself?" Of course not! Since not, you shouldn't say it with the inclusion of others.

- **If it were** versus **if it was**

  "If" denotes a conditional expression, not a statement. The correct usage is, for example, "**If this were true, it would be difficult to believe."**

  In other words, the sentence is not a true statement, which requires the use of the "subjunctive mood," or the use of "were" instead of "was." In cases where the statement *could* be true, or is *most likely* true, "was" is acceptable. The circumstances should be fairly clear, though.

  Example

  If I was to run into John in the break room, we'd chat about the weather. Use "was" if this is a frequent or likely occurrence.

  If I were to run into John in the break room, we'd chat about the weather. Use "were" if you no longer work with John, and therefore wouldn't run into him in the break room.

- **Of the order of** versus **on the order of**

  of the order of = of the type

  You wouldn't say "It's on the type of," so don't say "It's on the order of!"

  Example: **The error is of the order of 100 times that experienced in the test case.**

- **Between** versus **among**

  Between = between two

  Among = among several

  Example: **Between you and me, I think the report actually was written by Sam and Paul, among others.**

- **Your** versus **you're**

  Your = 2nd person possessive pronoun

  You're = contraction for "you are"

Example: **You're the person I want! I have your book.**

- **Who** versus **whom** versus **which** versus **whose** versus **who's**

  "**Who**" refers to people as a subject.

  Examples
  I am the person who said that.
  Who wrote that?

  "**Whom**" refers to people as an object.

  Examples
  He is the person whom you wanted to see.
  To whom do you refer?

  "**Which**" introduces descriptions of things.

  Example: **The NRC, which has provided invaluable assistance…**

  "**Whose**" introduces descriptions of people.

  Example: **Dr. Jones, whose help has been valuable…**

  "**Who's**" is the contracted form of the words "who is."

  Example: **Dr. Jones, who's now in Germany, has been very helpful.**

- **Comprise** versus **compose**

  "Comprise" means "to contain," while "compose" means "to make up." With "comprise," the whole is listed first and is followed by the parts: **The puzzle comprises 1000 pieces.** If we replace "comprises" with "contains" in this example, the sentence still makes sense. The common error is to instead use "comprised of," which is incorrect. A sentence reading "The puzzle is comprised of 1000 pieces" turns into "The puzzle contains of 1000 pieces," which isn't grammatically correct.

  With "compose," the parts are followed by the whole: **An introduction, 11 chapters, and one appendix compose the manual.** Unlike "comprised of," the phrase "composed of" is still correct (e.g., "The manual is composed of an introduction, 11 chapters, and one appendix.").

- **As** versus **since** versus **because** versus **like**

  As = at the same time
  = to the same degree or extent, in the same way
  = for example

  Example
  He arrived as I was leaving.

It has the same difficulty as the first case had.

since = from then until now

= continuously after

Example

Since 1983, I have been employed at...

Since then, he has dedicated his life to the pursuit of happiness.

because = for the reason that

Example: **The test failed because the input data were flawed.**

According to some sources (e.g., Merriam-Webster), there are instances where it is acceptable to use since in replace of because, as it can also mean in view of the fact that. (Example: Since we started using new computers, there haven't been any problems.) But this is not the preferred use of the word, and the ICG Style Guide supports using these words only as defined above (i.e., because = for the reason that, and since = at a time in the past). **You may interchange as and because, but you should not use since to mean because.**

- The non-verb **like** is one of the most troublesome words in our language. It can be a preposition, an adjective and an adverb. It sometimes is also used as a conjunction.

  Used as a **preposition**, it can mean:

  (a) similar to;

  (b) in the typical manner of;

  (c) inclined or disposed to;

  (d) as if the probability exists for; or

  (e) such as.

  Examples

  Love is like hate in its intensity.

  It's not like you to take offense.

  I felt like leaving.

  It looks like rain.

  Save things like newspapers and cans for recycling.

  Used as an **adjective**, it can mean:

  (a) similar; or

(b) alike.

Examples

On this and like occasions, he is prone to giving a lengthy speech.

They are as like as two peas in a pod.

As an **adverb**, it can be used as:

(a) an intensifier of action;

(b) an informal word for "probably" or "likely"; or

(c) a non-standard "emphasizer".

Although it is often so used, "like" should not be used as a conjunction. Instead, rewrite the sentence to avoid such usage.

INCORRECT: The model runs like it should.
INCORRECT: It looks like the project will take six months to complete.

CORRECT: The model runs as it should.
CORRECT: It looks as if the project will take six months to complete.

- **Where** versus **were** versus **we're.**
  Where refers to place.
  Were is the past tense form of are.
  We're is the contracted form of the words "we are."

  Example: **We're going to where we were yesterday.**

- **Insure** versus **assure** versus **ensure**

  Insure means to provide financial assurance.
  Assure means to provide general assurance.

  Ensure means to make certain.

  Example: **I assure you, the funds will insure us against financial loss and ensure our future.**

- **Relation** versus **relationship**

  While these words are closely related, it is best to use **relation** when referring to the association of things and **relationship** when referring to the association between people. (Note that we sometimes personify things—for example, Itasca becomes personified and the **relationship** between Itasca and the University of Minnesota might be discussed).

  Examples

  The relation between force and displacement is significant.
  Itasca's relationship with CSIRO has lasted a long time.

- **Its** versus **it's**
  Its = possessive form of it
  It's = the contracted form of "it is"

  Examples
  The simplicity of the code belies its power.
  It's difficult to read this.

- **divided into** versus **composed of**
  These are not equivalent terms. “Divided into” indicates how a whole is partitioned, while “composed of” describes how parts make up a whole.

  Example: **The report was divided into three sections for rewriting; each section was composed of five subsections.**

- The following words do **not** end in "s" (Adding an "s" ending reflects dialect, colloquialism, and British usage.):

toward	**inward**
backward	**downward**
upward	**afterward**
outward	

- **Inside** versus **inside of**
  Inside means to be contained within. (**Inside the enclosed folder, you will find…**)
  Inside of means to occur in less than. (**The next version of *FLAC* will be released inside of three months (joke).**)

- Use **based on**, not based upon.

- "**i.e.,**" "**e.g.,**" "**etc.**"

  e.g. — This is an abbreviation for the Latin phrase *exempli gratia*, meaning “for example.”

  i.e. — This is an abbreviation for the Latin phrase *id est*, meaning “that is.”

  These abbreviations have periods as noted and should be followed by a comma (because they are parenthetical expressions meaning "that is," "for example," and "and so on," respectively) except when "**etc.**" occurs at the end of a sentence. Note that "**i.e.**" and "**e.g.**" should never end a sentence. They should also never be italicized or followed by a colon!

  etc. should follow a minimum of three items (as in "**plots**, **print-outs**, **cards, etc.**"), but do not use **etc.** with a series preceded by "for example".

  Examples
  I like to eat vegetables (e.g., carrots, peppers, broccoli).

  By using e.g. in this sentence, you know this is a list of vegetables I like to eat. It is also clear that it's not a finite list of every single one, but rather just a few examples.

I like to eat vegetables (i.e., mushrooms and carrots).

This sentence shows exactly what vegetables I like to eat. By using i.e., it is clear that the only vegetables I like are mushrooms and carrots, and nothing else.

When trying to remember which is which, forget about the Latin meanings! Instead, think of them this way:

- e.g. begins with "E," so just think "**e**xample;" and
- i.e. begins with "I," so think of it as "**i**n other words."

- **However**

When used at the beginning of a sentence, "**however**" means "to whatever extent, as in "**However you look at it, the problem is complex.**" Most often it is used to mean "but" in a compound sentence, and it usually is best to use **but**.

Example: **We ran the problem; however, it did not work.** In this case, it is better to say, "**We ran the problem, but it did not work."**

Redundant Expressions

Avoid using redundant expressions. Usually one word suffices, as illustrated in the examples given below.

Don't Use	**Use**
ascend upward	ascend
descend downward	descend
basic fundamental	fundamental
past history	history
join together	join
protrude out	protrude
mine out	mine
excavate out	excavate
RAM memory	RAM
whether or not	whether
on-going	continued or active
transitions from	changes from or makes a transition from
foreseeable future	near future

Expressions to Avoid

Don't Use	**Use**
due to the fact that	because
as to whether	whether
finalize	complete
utilize	use

firstly, secondly, etc.	first, second, etc.
thusly	thus

WRITING ITASCA TECHNICAL DOCUMENTS

All reports, memos, and proposals must be reviewed by the Technical Editor (Jacki) prior to sending to clients. It is imperative that project managers build in enough time for editorial review. Ideally, a one- to two-day window would be given for editing a document that is 15 pages or less. Documents that are 30–50 pages should be given three days, and 50–75 pages at least five days. Anything over that amount should be given ample time for editing depending on length.

Always start writing your document in the appropriate Itasca template, found on SharePoint. If you must pull material together from several sources to create your document, be aware that pulling text from multiple documents into one tends to be problematic in Word, as it pulls in the formatting styles from each document. To avoid these extra issues, it is best to start typing your document in the most current Itasca template without copying text from other places whenever possible. Copying text between documents both using Itasca templates should (theoretically) not create significant issues.

If Word is being stubborn and creating formatting issues, Jacki can fix it during the editing process, but you should then factor in extra time for that.

REPORTS

The following sections detail the format for a standard report. A much briefer "**memo**" format can be **used if the** audience is highly informed on the topic being discussed.

Title Page

- The **title** should describe the report contents.
- The **client(s)** should be listed, with company affiliation.
- The **author(s)** should be identified.
- The submittal **date** of the report should be given.
- A **report-specific reference number** should be provided. For Itasca reports, an example of the format is 2-XXXX-1:22RXX, where "2-XXXX-01" is the Itasca job number, "22" refers to the year the report is written, "R" denotes the type of document (R for Report, TM for Technical Memo, PR for Progress Report), and the final "XX" is the document number assigned by the editor (which denotes the sequential number of that particular report for the year).

Executive Summary

An executive summary is usually no longer than 10% of the original document. It can be anywhere from one to 10 pages long, depending on the report's length. Executive summaries are written for an executive who most likely does not have the time to read the entire document.

- Executive summaries make a recommendation.

- Accuracy is essential. Decisions, based on your summary, will be made by people who have not read the main document.
- Executive summaries frequently reference more than one document (e.g., progress reports for the same project).
- Executive summaries are written after the document has been written.

Table of Contents

The table of contents lists the parts of the report in the order they appear, along with their page numbers.

- Executive Summary
- Table of Contents
- Table of Figures (optional)
- Table of Tables (optional)
- Body of the report (including Intro, Approach, Conclusions, References, etc.)
- Appendices

Note: Tables of Tables and Figures are provided only for tables and figures as they appear in the main report—not in appendices.

Introduction

The Introduction provides the purpose and scope as well as helpful background information.

The purpose of the report describes why the report was written and specific technical objectives. It is not a "how to;" rather, it provides technical or economic reasons for the activities conducted. Purpose can include:

- improvement of method or process;
- identification of best conditions for some activity;
- improvement of quality;
- determination of how well a design meets specifications;
- validation of properties or behavior;
- improvement of safety; and
- a description of what is known and what needs to be known.

The scope of the report defines the boundaries of the "investigation," provides criteria for judgment and focus, and forms the basis for the conclusions reached.

The background provides information the reader needs to know in order to follow the report.

- Theoretical principles for the specific topic. (Use theory sparingly. Detailed and lengthy discussions of theory do not belong in the body of the report; such discussions belong in an appendix.)

- Problem history.
- Practical/scientific value of the results.
- Advantages of the technology used.

Approach

The approach section in a report concerns straightforward information concerning what was done. This includes a short but clear description of any equipment or materials used, providing diagrams, schematics, photographs, etc. of all items used for the study that are mentioned in the text. Figures/tables (with appropriate numbers and titles) should be placed as close as possible to their text references (not in appendices). The approach also consists of a short but clear description of the procedure used to obtain the results.

Discussion of Results

This discussion reports the results obtained and provides interpretation of them. It also answers the following questions.

- What do the results tell me about the objectives?
- Do the results confirm expectations? If not, why not?
- How reliable are the data used?

Although one should discuss what happened, do not be too specific; such detail is the basis of the Conclusions and Recommendations section. Given that most Itasca reports are based on numerical modeling results, there should be a discussion of the limitations associated with the numerical analyses conducted.

Conclusions and Recommendations

This section provides answers to questions or solutions to problems presented in the section describing purpose and scope. Conclusions are your judgments, opinions, and interpretation of results. If the number of conclusions does not match the number of objectives, you either did not state your objectives fully, or you did not focus on the objectives clearly. Recommendations are suggestions for action or non-action based on your conclusions.

Citations, References and Bibliography

When you use information from a source in your writing, you must cite it with a *citation*. For reports, the **name form** of citation is used. A citation is a short indicator for a *reference* that the reader will find in the References section of the document. The *reference* contains the full information pertaining to the information source that is necessary to allow the reader to find, using his/her resources, that information source (in a library, online, etc.). So citations appear in the body of the document, in name form, and are collected and listed alphabetically, by author, in the References section.

Note: In other publications (journal articles, for example), a **number form** may be required. This form assigns a sequential number to each reference used, placing that number within brackets (e.g., **[1]**) immediately following the information used in your text. Each time you use information from that source,

you would cite it with **[1]**. This form requires that all cited works be listed in the reference section according to sequential number.

Name Form for Citations

The **name form** cites the name(s) of the author and the year of the publication from which the information you are using has been taken. Use a parenthetical form immediately following the information as used in your text. So, for instance, if you used information from a report written by E. T. Brown in 2003, the in-text citation would be **(Brown, 2003)**. You would use this parenthetical citation each time you use information from this reference. For two authors, the form is **(Smith and Jones, 2001)**. For three or more authors, "et al." is used with the name of the first author only — a 2004 report by Brown, Smith, and Jones becomes **(Brown et al., 2004)**.

Reference Forms

The **name** style requires that you list all cited works alphabetically by author, then by year, then by title of work. In general, the structure of a reference is:

[Author(s)] [Year] [Specific Title] [Collection/Container Title] [Volume/Issue/Page Locators] [Editor(s)] [Publisher Location] [Publisher].

Author(s): In Itasca reference style, the principal author is always listed last name first, followed by a comma, followed by initial(s) (as shown in the source), followed by a comma. The second and following authors are listed by initials and last name, separated by a comma. The last author's first initial is preceded by "and", and the last name is followed by a period. So the author listing for an article by Meriwether J. Lewis, John Kennedy, Frank Lloyd Wright, and P.D.Q. Bach would be: Lewis, M.J., J. Kennedy, F. L. Wright, and P.D.Q. Bach. Note John Kennedy's middle initial ("F") is not included if it does not appear in the author's name as seen on the source. Also note there is no spaces between initials if there are three or more of them.

Specific Title: this refers to the title of a source that appears inside a container (e.g., the title of an article in a journal). For some reference types this does not occur (e.g., a book). Most of the time a specific title is put in quotation marks.

Collection/Container Title: this is an area of much divergence. A book title will be bold and italicized, as will a proceedings title. A journal title will be italicized. A web site will be ??.

Editors: in contrast to authors, editors are listed, from first to last, by initials and last name, with an "and" before the last editor's name, and followed by ", Ed." (single editor) or ", Eds." (multiple editors) following the last editor's name.

Volume/Issue/Pages Locators: volume numbers are presented in bold italic, issue numbers are in plain text, and page numbers should be preceded by "p." (single page) or "pp." (multiple pages). An en dash (not a hyphen) should appear between the pages numbers.

Publisher Location and Publisher: publisher location should be reported in the form city/township, state/province/country (Mineola, New York; Ottowa, Quebec; Nairobi, Morocco; etc.). In cases where the location of the city is generally well-known (London, Paris, New York, Tokyo) the state/province/country

element may be omitted, but no harm is ever done if it is included. The publisher name should match the name as printed in the source indicia, if available/known.

While the structural information above gives an idea of what references look like, references come in many forms (articles, books, conference papers, etc.) and also media (print, film, web, verbal communication, etc.). Each one of these will have its own reference style; not all of the elements above will appear in each type. If information is not available for a given type, it may be omitted from the reference *as long as the other information present is sufficient to allow a reader to find it*. For instance, it is probably okay to omit page numbers from a reference for an article in a journal, if for some reason they are not available. Omitting the year of publication of a book or the url for a web site reference, however, could be sufficient to render those references useless.

Itasca uses a software tool called "Zotero" for managing its Library. When writing a document, if a resource can be cited and added to the references of the document using Zotero (meaning there is an entry in the Itasca Library catalog for that source), the formatting of the citation and reference will be done for you. However, if you have a source that is not listed in the Itasca Library catalog, you will need to manually create the reference for it. Examples of typical entries in the "Itasca style" for various types of references appear below.

Example Reference Formats

Article in a Journal

Firpo, G., R. Salvini, M. Francioni and P.G. Ranjith. (2011) "Use of Digital Terrestrial Photogrammetry in Rock Slope Stability Analysis by Distinct Elements Numerical Methods," *Int. J. Rock Mech. Min. Sci.*, ***48***(7), 1045-1054, October.

- The entire article title is in title case in quotation marks.
- The journal title is abbreviated and italicized, e.g., *Int. J. Rock Mech. Min. Sci*.
- The journal volume and issue are listed in that order, ***48***(7), followed by the page numbers, 1045–1054, and month, October.
- If any of the data bits in the locator information are missing they are simply omitted (there may be no issue number, or volume number, or date information, for instance).

Book

Frost, N. E., K. J. Marsh and L. P. Pook. (1999) ***Metal Fatigue***. Mineola, New York: Dover Publications.

- The title is bold and italicized.

Chapter/Section in a Book

Hatcher Jr., R. D. (1981) "Thrusts and Nappes in the North American Appalachian Orogen," in ***Thrust and Nappe Tectonics***, pp. 491-499. London: Geological Society of London.

- "Thrusts and Nappes in the North American Appalachian Orogen" = specific title
- ***Thrust and Nappe Tectonics*** = container (book) title
- The publisher location could be "London, England" but is ok as is.

Paper in a Proceedings

Richards, L. R., and S. A. L. Read. (2011) "A Comparison of Methods for Determining *mi*, the Hoek-Brown Parameters for Intact Rock Material," in ***Proceedings, ARMA 45th U.S. Rock Mechanics / Geomechanics Symposium (San Francisco, June 2011)***. Paper No. ARMA 11-267, A. Iannacchione, G. Esterhuizen, and A. Tutunca, Eds. Alexandria, VA: ARMA.

Antikainen, J., A. Simonen and I. Makinen. (1993) "3D Modelling of the Central Pillar in the Pyhasalmi Mine," in ***Innovative Mine Design for the 21st Century (International Congress on Mine Design, Kingston, Ontario, Canada, August 1993)***, pp. 631–640, W. F. Bawden and J. F. Archibald, Eds. Rotterdam: Balkema.

- Itasca style parenthetically appends the location, month, and year of a conference to its title – even though this is information is not part of the formal title. In cases where the proceedings has a title that does not match the conference name, the name of the conference is also included at the start of the parentheses (see the second example).
- In this case, there are not page numbers; a paper number is supplied instead as a locator.
- Though it seems redundant to put the year in the reference and the title, there may be cases where the proceedings are not published in the same year in which the conference was held.

Paper Presented at a Conference/Presentation not Otherwise Published

Bergman, S. M. (1983) "Storage of Oil and Gas in Mines and Caverns," presented at the Virginia Oil and Gas Seminar, Blacksburg, Virginia, October.

Personal Communication

Pothitos, F. (2007) *Personal Communication*, May.

- Note: If desired, specific file names or email subject lines can be included to clarify. Place in quotation marks after the year and before "*Personal Communication."*

Electronic/Online Source

The Engineering Toolbox. "Thermal Conductivity," accessed June 1, 2015. "http://www.engineeringtoolbox.com/thermal-conductivity-d_429.html"

- The Engineering Toolbox: Company name/owner of site/title of site/author
- "Thermal Conductivity": title of page, if present
- Date of access is included
- web address (URL) of page is in quotes and is NOT hyperlinked, underlined, or in blue.

Technical Report

Rawson, G., and J. D. Collins. (1986) "Prediction of Joint Patterns in Rock," ACTA Inc., Report to DNA, Contract DNA001-86-C-0025, Subcontract to ARA 5985-86-ACTA. Torrance, California.

*Note that:

- "Prediction of Joint Patterns in Rock,": report title

- ACTA Inc.: authors' company name
- DNA: company the report was sent to and written for
- Contract DNA001-86-C-0025, Subcontract to ARA 5985-86-ACTA: reference information
- Torrance, California: location of the authors' company (ACTA Inc.)

Thesis/Dissertation

Adachi, J. I. (2001) ***Fluid-Driven Fracture in Permeable Rock***. Ph.D. Thesis, University of Minnesota, December.

Itasca Software Codes

Itasca Consulting Group, Inc. (2015) *FLAC — Fast Lagrangian Analysis of Continua*, Ver. 8.0. Minneapolis: Itasca.

Itasca Consulting Group, Inc. (2012) *FLAC3D — Fast Lagrangian Analysis of Continua in Three-Dimensions*, Ver. 5.0. Minneapolis: Itasca.

Itasca Consulting Group, Inc. (2014) *PFC Suite — Particle Flow Code in Two and Three Dimensions*, Ver. 5.0. Minneapolis: Itasca.

Itasca Consulting Group, Inc. (2008) *PFC3D — Particle Flow Code in Three Dimensions*, Ver. 4.0. Minneapolis: Itasca.

Itasca Consulting Group, Inc. (2014) *UDEC — Universal Distinct Element Code*, Ver. 6.0. Minneapolis: Itasca.

Itasca Consulting Group, Inc. (2013) *3DEC — Three-Dimensional Distinct Element Code*, Ver. 5.0. Minneapolis: Itasca.

Itasca Consulting Group, Inc. (2015) *KUBRIX®*, Ver. 15.0. Minneapolis: Itasca.

Itasca Consulting Group, Inc. (2016) *Griddle*™, Ver. 1.0. Minneapolis: Itasca.

*Note that:

- Itasca codes must always be in italics; and
- The parenthetical citation is (Itasca, year).

If citing non-commercial software (e.g., *REBOP*), contact the developer of that software for year and version number. Format follows that of other software products.

If you are citing a specific manual, the reference looks like this:

Itasca Consulting Group, Inc. (2004) *UDEC — Universal Distinct Element Code*, Ver. 4.0, User's Manual. Minneapolis: Itasca.

For *Griddle*'s manual:

Itasca Consulting Group, Inc. (2016) ***Advanced Grid Generation for Engineers*** (*Griddle*™, Ver. 1.0, and *BlockRanger*™, Ver. 1.2, User's Guide)**.** Minneapolis: Itasca.

If you wish to call the reader's attention to works that are related to the topic but have not been cited in your report (as typically is done in a literature review, for example), you may include a **bibliography** section following the reference section.

A bibliography contains the same information as a reference list, but entries are listed alphabetically by author (then by title), with the year being the last item listed. In this style, the above list would be written as such:

> Finn, D. "Instability Report South Wall of the Pit," Cadia Valley Operations, Internal Memorandum, AD 18 20060930, 2006.
>
> Hoek, E., P. K. Kaiser and W. F. Bawden. ***Support of Underground Excavations in Hard Rock***. Rotterdam: Balkema, 1995.
>
> Itasca Consulting Group, Inc. ***3DEC (Three-Dimensional Distinct Element Code)***, Version 4.02. Minneapolis: ICG. 2007.
>
> Li, T. "Geotechnical Engineering at Newcrest Mining," *ACG News.*, ***25***, 1-13 (2005).
>
> Pothitos, F. "CH Pit Rockmass Parameters 2005," Cadia Valley Operations, Internal Memorandum, WB008, June 2005.
>
> Pothitos, F. *Personal Communication*, 2007.
>
> Sjöberg, J. "Analysis of Failure Mechanisms in High Rock Slopes," in ***Proceedings of the 9th ISRM Congress on Rock Mechanics (Paris, 1999)***, Vol. 1, pp. 127-130. Rotterdam: Balkema, 1999.

Appendices

An appendix is a collection of selected material that provides additional information (raw data, computer print-outs, detailed calculations, theory, detailed equations, etc.) for select readers. The included material may support the information provided in the report, but it should not be necessary for understanding the report. For the reader, appendices are optional.

To help the reader decide if it is worth his or her time to read the appendix, list the appendices you create for the report in the Table of Contents by appendix title (e.g., Appendix A, Fibercrete Properties), and refer the reader to a particular appendix at a relevant point within the report.

Note that if you have only one appendix, you should refer to it as the Appendix. (A letter or number would be superfluous.) If you have more than one appendix, you should name them by number (Appendix I, Appendix 1) or by letter (Appendix A). Note, too, that appendices should be named in the order they appear in the report. For example, the first-cited appendix would be Appendix 1 (or Appendix I or Appendix A), the second Appendix 2 (or Appendix II or Appendix B).

Appendices are standalone sections; as such, they have separate section-, page-, figure-, and table-numbering that reflects this (e.g., Section A1.1, Table B2.3, Figure C3.1).

Tables and Figures

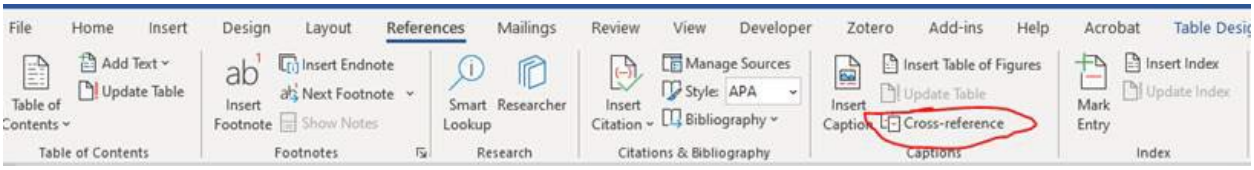
Tables are collections of information displayed in rows and columns for easier understanding. Figures are illustrations (maps, photos, diagrams, charts, schedules, etc.) that aim to clarify something said in the report text.

Each table and figure should be cited in the report text and the figure or table placed as close as possible to that citation. Each table and figure should also be numbered sequentially from the start of the report and provided a short but descriptive title. Table titles go above the table; figure captions go below the figure.

Tables should follow the format and style of the example below.

Heading 1	Heading 2	Heading 3	Heading 4	Heading 5
Example 1	Example 2	Example 3	Etc.	Etc.

If you copied text from another place and are having issues with cross-references in your new document, the first step is to ensure they are inserted correctly using the "Cross-references" tool under "References". This allows you to quickly update the cross-reference links with a few clicks instead of manually changing each reference to match the new numbering if new sections are added later or the order is changed.



If you copy a reference from another document, the link should still work as long as you copy both the cross-reference and its source. If both are copied in the new document and you need to update the number to match it, right-click on the number and then click "Update Field" in the drop-down list. If the cross-reference was not already linked, it should be reinserted properly to create the link.

MEMOS

Not surprisingly, a memo report (or technical memorandum) is intended to be a **short** report on a defined subject for an audience that is narrower in scope than that of a technical report. The parts of a memo report include a defined title section that is standard in memos:

Date: Month date, year

To: Name of person, company/organization

From: Author(s) (Note: company not needed, as it is on the letterhead)

Subject: A Descriptive Title

Ref: A tracking/report/job no.

The document should open with one or two paragraphs that provide the purpose and scope of the work, the method(s) used, the conclusions/findings, and recommendations (if any).

Reports more than 20 pages in length are presented as full technical reports; those less than 20 pages may be technical memos.

PROPOSALS

Proposals have the same general formatting style as technical reports or technical memos. The purpose of a proposal is to provide information that will convince a client to pay Itasca for the work needed, or even to convince a potential client that the client company needs a specific type of work that only we can do best.

The parts of a proposal include a defined title section that is standard across Itasca communication:

Date: Month date, year

To: Name of person, company/organization

From: Author(s) (Note: company not needed, as it is on the letterhead)

Subject: A Descriptive Title

Ref: Proposal no. (issued by Accounting)

The document should open with an introduction that includes the history of proposal invitation and general company qualifications, a technical section that includes problem identification and significance, technical objective and work plan, schedule and deliverables, and Itasca qualifications including related experience and existing in-house tools/services.

For this type of proposal, the following sections should be included.

1. Introduction
    a. History of Proposal (solicited in writing, following discussion, etc.)
    b. General Itasca Qualifications
2. Technical Section
    a. Problem Identification and Significance
    b. Technical Objectives
    c. Work Plan
    d. Schedule
    e. Deliverables
3. Specific Itasca Qualifications
    a. Related Experience
    b. Existing In-house Tools/Services

    c. Suggested Staff

4. Costs
    a. Labor
    b. Expenses
    c. Miscellaneous
    d. Note: Costs for staff time (including support staff), report preparation, and review should be included.

Regarding Deliverables: Example wording that may be used to define what the client receives (and/or doesn't receive) as a result of Itasca's work is provided below.

> Itasca will provide an electronic copy of the report in PDF format. Itasca will make the "save" files from our analyses (complete results of numerical modeling) available on request. Unless explicitly defined above, Itasca's policy is to not release the following files:
>
> - Input files for models
> - Word files for reports
> - Excel files for calculations
> - AutoCAD files of drawings
> - PowerPoint files
> - Database files
>
> We only release "finished product" material, such as PDF electronic files (the electronic equivalent of a paper report or drawing). Releasing anything editable raises issues of liability, confidentiality and intellectual property.

Response to a Request for Proposal (RFP)

In many ways, the easiest proposal to write is one in response to an RFP, because these requests often include specific instructions on what the proposal should include. A major disadvantage of this type of proposal is that a great deal of information can be requested (CVs of all staff who possibly may work on the proposed project, lists of clients for whom previous and similar work was done, etc.). In addition, RFPs often have very strict deadlines.

The author should provide his or her reviewers with a copy of the RFP so that they can determine whether all points in the RFP have been answered in the format required.

All proposals need to be reviewed for grammar/formatting, for proposed technical services, and for cost. Only a Director, Officer, or Principal of Itasca may commit or obligate the company to provide or perform services. A standard contract is available for use.

SOFTWARE DOCUMENTATION

The following section details information primarily used in software documentation, but these issues occasionally appear in other Itasca documents. Note: Jacki is still developing this section and will be adding new information as the need to include it becomes evident.

Formatting Standards

In general, when specifically naming a button, window, selection, etc. in the UI, it should be written exactly as it appears in the software (e.g., capitalization, abbreviations, punctuation).

Different types of objects in the user interface have specific formatting guidelines.

- A named object is italicized (*Control Panel*, *Editor* pane, *Options* dialog, *Hide this* checkbox).
- A user-supplied value is in quotations. (Type "ball attribute" in the command prompt.)
- A menu sequence is surrounded by pipes with steps separated by arrows (| File —> Open… |).
    - Notation in Sphinx: :menu:`File —> Open…`
    - To format, the correct role (.. role:: menu) must be applied at the top of the RST file.
- A keyboard key should be formatted in Courier New (`Ctrl + O`)
    - Notation in Sphinx: :keyb:`Ctrl + O`
    - To format, the correct role (.. role:: keyb) must be applied at the top of the RST file.
- A button should be formatted to look like a button. (Click Next .)
    - Notation in Sphinx: :button:`Next`
    - To format, the correct role (..role:: button) must be applied at the top of the RST file.

Itasca software codes are written in all capital letters and italicized. In the past, "2D" and "3D" were superscript, but this is no longer required.

FLAC
FLAC3D
PFC2D
PFC3D
UDEC
3DEC

To achieve this formatting in Sphinx, place pipes around the code name in lowercase (e.g., |flac3d|).

There is a standard method of formatting for occasions when discussing a concept that applies to both versions (2D and 3D) of a software code in one sentence, but there are essential differences in 2D versus 3D. Brackets { } are used to set off the pertinent phrase and a semicolon separates the two ideas.

Example

***PFC* can be viewed as a simplified implementation of the Distinct-Element Method because of the restriction to rigid {circular in 2D; spherical in 3D} particles.**

When referring to section or chapter titles, they should be capitalized and placed in quotations, not italicized.

Example **PFC uses this information for geometric calculations and contact detection (see the "Domain" section for details).**

When referring to titles of manuals, they should be italicized with no quotations.

Example **For further information, see the *Command Reference* volume.**

FIGURES AND TABLES

Ideally, figures should be inserted at the closest reasonable point after citation. If included at the back of a section, as the last section or in an appendix, it should be so noted at the time of reference of the first figure. Note: A table should not be a graphic and called a figure. Create a table. Similarly, tables should not be included in collected figure sections; if a report has many tables, they may comprise a single appendix.

Titles and Captions

The heading of a table should be treated as a title, not a sentence. Apply title case and do not end with a period.

Figure captions should be numbered sequentially and should be succinct sentences ending in a period. If a report contains a great number of figures, you may wish to number them sequentially in sections (for example, Fig. 1.2-1, 1.2-2, 1.3-1). If additional information is required, it should be placed within parentheses two spaces after the end of the title.

Spacing

There should be a 6pt space before a figure caption, and 12pt space after.

GENERAL WRITING TIPS

Allow (or try your best to do so) time to incorporate these basic writing tips into your report-writing schedule.

- As you begin preparing to write a report, draw up a general report outline and fill in sections that will be required. Remember, for example, that a report is **not** an article prepared for publication. The former may have an executive summary, the latter an abstract. They are not identical.
- Write a first draft keeping your audience in mind. Aim for clarity. Don't overwhelm with words. The ideas are important; expressing them clearly should be the focus of this draft.
    - Use specific, concrete terms; place modifiers as close as possible to the words they modify.
    - Make sure that the references in your sentences are clear.
    - Define terms your reader may not know.
    - Avoid emotional words (these are usually words that end in **y**). It is better to give a number (where possible) instead of saying it was ver**y** big or ver**y** small.

    - Spend time to select the name of important nouns in the report and then use that word throughout the report. Technical reports are not novels. For example, decide whether to use the word “drift,” “tunnel,” or “excavation”. These are all similar, but if we use all these words, the reader may be confused. Be consistent throughout the entire document even for less vague terms, such as “square foot” or “ft^2.”

- Once you feel your writing is clear, review it for conciseness—that is, check to see if what you’ve written is clear without being wordy.
    - In general, the fewer words used to describe something, the better the report. For example, “mining sequence” is better than “sequence of mining”.
    - Look for logical shortcuts. We often read “We used all the information available.”, but it is difficult to use information that is not available!
- Then review (or have someone else review) your work for formatting, spelling, grammar, and punctuation. (See the “Language Mechanics” section of this document and report templates on SharePoint for further information on these topics.)
- The next step is to review your work for completeness. Does the reader have what he or she needs to understand your work? Have you referenced every citation?
- For reports/papers written “by committee” (here, by various Itasca offices), you’ll need to make sure that the entire report/paper, once put together, has one voice. Is the spelling used throughout the paper consistent [e.g., American English (which it should be if ICG is the office preparing the paper) or, say, Australian English (if I-Australia is preparing the paper)]? Do the headings match in form? Are the references in the same style?
- Despite Itasca’s having hired only brilliant staff, no one is able to proof what he or she has written with 100% correctness. The mind tends to see what it expects should be there, not necessarily what is there. Technical and language reviewers help to make your work better.
- No letters, reports, figures, or any other written document containing technical interpretations, conclusions, or recommendations from Itasca or any employee are to be distributed to anyone outside of the company without being reviewed and signed (or initialed in the case of a figure) by the Principal. If the Principal is not available when a review and signature is required, an Itasca Officer can review and sign for the Principal.
- It is recognized, however, that Itasca provides frequent, daily support for Itasca’s software users. Much of this support involves recommendations sent to the user via email. To have each of these written recommendations reviewed and approved by a Principal would be burdensome and unnecessary. Therefore, Itasca code-support personnel, at their discretion, may provide such recommendations to Itasca’s software users without Principal review.
- If you are in any doubt concerning the applicability of this policy to a specific document, consult with one of the Officers before releasing the document outside of Itasca.

FURTHER REFERENCES

More style guides on specific topics can be found on SharePoint.

Templates for various reports and proposals are also found on SharePoint.