AUTHENTICATION OF ELECTRONIC AND HARDCOPY DOCUMENTS GUIDELINE

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1.0 SUMMARY

This publication was prepared by Engineers Geoscientists Manitoba.

The emphasis is on the authentication of documents to indicate professional responsibility for technical or professional matters. It is intended that formal confirmation of responsibility be a key step in the quality control procedures employed by an individual or an organization authorized to practice professional engineering or professional geoscience.

The basic purpose of authenticating a document (sometimes referred to as 'sealing') is to identify work that has been performed by or under the supervision of a professional and constitutes the practice of professional engineering or professional geoscience.

If a consulting service is being provided, either by a Sole Practitioner or a Practicing Entity, the provider must have a Certificate of Authorization and must apply its Certificate of Authorization stamp to documents in accordance with the Act and By-laws.

Seals, both manual and digital, are issued and owned by the Association and shall be returned to the Association upon the suspension or cancellation of registration, or removal from the register for any reason. While in possession of the practitioner, the practitioner is responsible for their seal remaining secure and under their control.

Any document that constitutes the practice of professional engineering or geoscience, including but not limited to manuals, specifications, and reports, must be authenticated. Documents should not be authenticated if incomplete. Preliminary and incomplete documents should be clearly identified as to their intended purposes or limitations.

Authenticated documents are considered final documents. If alterations need to be done, all modifications, including all elements of the original document affected, need to be authenticated and it needs to clearly identify the professional responsibility of the original author(s) and the author(s) of the modifications.

Back dating a document is not permitted. Withdrawing a seal is not appropriate means to enforce a contractual dispute. If a professional discovers a document they authenticated contains errors, they shall notify the person to whom they have issued the document and recall, cancel, and/or supersede it as soon as possible with a satisfactory replacement.

Documents, both electronic and hardcopy, should be retained for as long as liability for the work exists. Practitioners should ensure that a process is implemented that prevents altercations, or unauthorized use of documents.

A practitioner should always be following the requirements of the Act, By-laws, and Code of Ethics.

2.0 REQUIREMENTS OF THE ACT, BY-LAWS, AND CODE OF ETHICS

The Engineering and Geoscientific Professions Act, By-laws, and Code of Ethics spell out the authentication process by members and licensees.

This document is based on The Engineering and Geoscientific Professions Act (effective November 2017), by-laws (effective October 2019), and Code of Ethics (effective October 2018).

THE ENGINEERING AND GEOSCIENTIFIC PROFESSIONS ACT

The relevant sections of the Act are as follows:

Association to issue manual seal or digital signature

25 In this Part,

"digital signature" means the form of identification issued by the association to a member or specified scope of practice licensee to be used to digitally authenticate documents in computer readable form; (« signature numérique »)

"manual seal" means the form of identification issued by the association to a member or specified scope of practice licensee to be manually impressed onto physical documents. (« sceau manuel »)

26(1) The association must issue a manual seal or a digital signature, or both, to each member and specified scope of practice licensee. A manual seal or digital signature is to contain the name of the person to whom it is issued and

a) if the person is a member, the words "Registered Professional Engineer, Province of Manitoba" or "Registered Professional Geoscientist, Province of Manitoba", as may be applicable; and
b) if the person is a specified scope of practice licensee, the words "Registered Engineering Licensee, Province of Manitoba" or "Registered Geoscience Licensee, Province of Manitoba", as may be applicable.

Ownership of manual seal and digital signature

26(2) A manual seal and digital signature issued by the association remains the association's property and must be returned to the registrar if the registration of the person to whom it was issued is suspended or cancelled or the person's name is removed from the register for any reason.

Authentication of documents by member

26(3) A member must, in accordance with the by-laws and the code of ethics, authenticate every engineering or geoscientific estimate, specification, report, working drawing, plan and other engineering or geoscientific document issued by the member.

Authentication of documents by specified scope of practice licensee

26(4) A specified scope of practice licensee must, in accordance with the by-laws and the code of ethics, authenticate every estimate, specification, report, working drawing, plan and other engineering or geoscientific document issued by the licensee.

Authentication of documents by temporary licensee

26(5) A temporary licensee must authenticate every engineering or geoscientific estimate, specification, report, working drawing, plan and other document issued by the temporary licensee by validating and impressing on it the seal issued to him or her by the association of which the temporary licensee is a member and must comply with any other requirements that are prescribed by the by-laws or the code of ethics.

Identification by holder of certificate of authorization

26(6) When the practice of professional engineering or the practice of professional geoscience is carried out under a certificate of authorization, a form of identification of the certificate holder must, in accordance with the by-laws, appear in the vicinity of the manual seal or digital signature on each engineering or geoscience estimate, specification, working drawing, plan and other engineering or geoscientific document issued by the holder of a certificate of authorization.

THE BY-LAWS

The relevant sections of the By-laws are as follows:

11.1 Use of the Seal

11.1.1 Manual Seal of Professional Members and Specified Scope Licensees

The combined acts of affixing and then validating a manual seal by signing same in the vicinity thereof constitute manual authentication of a document.

An image of the manual seal may be affixed through the use of either an inked stamped impression or a copy of it.

A copy of a validated seal shall not be used for the purpose of authenticating a document.

11.1.2 Digital Signature of Professional Members and Specified Scope of Practice Licensees

A professional member or specified scope of practice licensee may authenticate a document which is in computer readable form by the use of his or her digital signature. Any such authentication will have the same effect as affixing and validating a manual seal on a physical document.

Validation of a document must only be performed with the explicit knowledge of and confirmatory action by the member or specified scope of practice licensee. Any process and/or technology that automatically applies a digital signature to documents without the member's or specified scope of practice licensee's knowledge and action is prohibited.

11.1.3 Temporary Licensee's Seal

The temporary licensee, having affixed his or her manual seal in conformance with the Act, shall validate it by signing the document in the vicinity of the seal, marking his or her licence number and its expiry date directly below the seal, and indicating the date upon which it was affixed.

12.2 Seals and Digital Signatures

The registrar shall issue a manual seal to each professional member and specified scope of practice licensee and manual seals shall not be acquired from any other source.

The registrar shall authorize the issuance of a digital signature at the request of a professional member or specified scope of practice licensee. Such digital signatures shall be issued through a provider approved by the council and digital signatures shall not be acquired from any other source. The authenticity of such digital signatures shall be confirmable and such digital signatures shall be revocable.

Professional members and specified scope of practice licensees shall ensure that their digital signatures and manual seals are secure and remain under their control at all times.

The association shall not issue a manual seal or authorize the issuance of a digital signature to the holder of a temporary licence.

12.3 Stamp: Certificate of Authorization

The form of identification to be placed upon any document that is to be sealed by any holder of a certificate of authorization shall include the identity of the holder and a number on the manual stamp issued or authorized by the association. The image of the stamp may be reproduced by the holder of the certificate of authorization and incorporated into electronic documents.

THE CODE OF ETHICS

Canon 2 of the Association's Code of Ethics for Practice of Professional Engineering and Professional Geoscience stipulates that each practitioner shall:

Offer services, advise on or undertake engineering or geoscientific assignments only in areas of their competence, and practise in a careful and diligent manner and in compliance with applicable legislation.

3.0 AUTHENTICATION

3.1 CONCEPTS AND PRINCIPLES OF AUTHENTICATION

3.1.1 PRINCIPLES

The seal constitutes the distinctive mark of the professional. It certifies that its holder is a member or specified scope of practice licensee of the Association and is licensed to practice professional engineering or professional geoscience within Manitoba.

Authentication of documents relates to the practice of professional engineering or professional geoscience. It is a requirement under The Act and by-Laws. The principles involved in authenticating a document are independent of the methods employed for producing the document.

For reasons of legal and professional security, the integrity of authenticated documents is essential. The authentication of documents should be the last professional act performed with respect to the technical content of the documents, notwithstanding the fact that revisions may be made in the future, thereby creating a new document.

Additionally, practitioners shall sign and seal only those plans and other engineering or geoscientific documents for which they have assumed professional responsibility and which they have prepared, or supervised the preparation of, or reviewed in detail and approved.

3.1.2 PURPOSE OF AUTHENTICATION

Authentication is the distinctive action of the professional. It identifies work performed by, or under the immediate and direct supervision of a licensed professional and which constitutes the practice of professional engineering or professional geoscience. It assures the document's recipient that the work meets the standards expected of experienced professionals who take personal responsibility for their judgments and decisions. This authentication is important because it is a visible commitment to the standards of the profession and signifies to the public that a professional has accepted responsibility for the document.

It should be considered a "mark of reliance", an indication that others can rely on the fact that the opinions, judgments, or designs in the authenticated documents were provided by a professional held to standards of knowledge, skill, and ethical conduct within their profession. Authentication represents the professional's commitment to standards of care and excellence.

Authentication by a professional makes them assume responsibility and be answerable for the quality of the work presented therein. It is a statement by the professional to others that they can, with a high degree of confidence, depend upon the contents of the document for the furtherance of their projects. Authentication is not, and should not be considered, a certification or warranty of correctness.

It is important to emphasize to professionals that they are still responsible for work in which they are involved but choose not to authenticate.

Authentication shall not be subject to specification or limitation by contract or work arrangements.

3.1.3 OBTAINING A SEAL

The Act states that "the Association must issue a manual seal or a digital signature, or both, to each member and specified scope of practice licensee" In compliance with the Act, every member and specified scope of practice licensee is issued a manual seal. The Association will authorize the issuance of a digital signature to an eligible member or specified scope of practice licensee who makes application and agrees to assume the costs. The application process for acquiring a digital signature can be found on the Association website.

3.1.4 ELECTRONIC VERSION OF A MANUAL SEAL

The holder of the original manual seal may reproduce it by any means to generate an impression, including procedures that use information technologies. The impression must correspond in all respects to the original seal. A copy of the signed and dated image of a seal shall not be used for the purpose of authenticating a document.

The electronic version of a manual seal is not to be confused with a digital signature, which is described below.

3.1.5 DIGITAL SIGNATURE

An electronic document can be authenticated through the application of a "digital signature". The digital signature is a security tag that identifies the author and locks down the document. When you apply your digital signature to a document, it prevents you or anyone else from making any unauthorized or undetected changes to that document. The digital signature is unique to the user and is controlled by a secure password, which verifies that the user (and only that user) signed and sent the document. Authority to use a digital signature shall not be delegated to anyone nor shall the personal security codes which enable use of the digital seal be shared.

Although the security of the digitally signed and sealed document is verified through the digital certificate, an electronic version of the professional's manual seal and signature can be applied in conjunction with the digital signature as part of the digital signing and sealing process.

Members and specified scope of practice licensees may only use the digital signature issued by an approved supplier under the authority of the Association for documents that they are required to authenticate.

3.1.6 DIGITAL SIGNATURE SECURITY

The by-laws state that "Members and specified scope of practice licensees shall ensure that their digital signature is secure and remains under their control at all times". Examples of failing to comply with this by-law includes instances where:

a) a member or specified scope of practice licensee discloses any personal codes or marks enabling any other persons to use their digital signature, including passwords, activation codes or verification codes used for identification purposes, and
b) a member or specified scope of practice licensee allows any other person access to devices that would permit another individual to use the digital signature.

Failure to comply with this by-law may result in the immediate revocation of the digital signature by either or both Engineers Geoscientists Manitoba and the authorized supplier.

3.1.7 OWNERSHIP OF THE SEAL

To meet regulatory requirements, a member or specified scope of practice licensee can only get a seal, whether manual or digital, with the express written permission of the Association. The seal must be obtained from a supplier authorized by the Association and a seal issued to a member or specified scope of practice licensee shall remain under their direct control.

Each seal issued by the Association shall remain the property of the Association and shall be returned to the registrar or will be revoked by the Association upon the suspension or cancellation of registration or removal from the register for any reason. These rules apply equally to manual seals and digital signatures.

An arrangement between Engineers Geoscientists Manitoba and a third-party provider allows the Association to retain control over issuance and revocation of digital signatures.

3.1.8 TEMPORARY LICENSEE'S SEAL

Temporary licensees are not issued a seal by the Association. They are to use the seal issued by the association of which they are a member.

3.2 AUTHENTICATION OF DOCUMENTS

Each document solely prepared by, or solely under the direct and personal supervision of, an individual licensed professional that constitutes the practice of professional engineering or professional geoscience must be authenticated by that professional.

If there is a coordinating professional responsible for adherence to concept, and coordinating the engineering or geoscience of the team, they should also authenticate each document and identify their coordinating responsibilities. Administrative supervision only of the professional team would not entitle the supervisor to authenticate the work as the coordinating professional. If only one authentication is to be used it must be that of the professional taking coordinating responsibility for all the engineering or geoscience work, generally the coordinating professional.

For documents prepared by, or under the direct and personal supervision of several licensed professionals, each should authenticate and identify the specific portion of the document for which they are responsible. This could be accomplished by providing a description in text near the seal. Professionals are encouraged to authenticate all documents they share responsibilities for, regardless of whether there is a coordinating professional.

An individual licensed professional can only authenticate multi-discipline portions of documents if they have adequate training and knowledge meeting the requirements of the Code of Ethics.

3.2.1 AUTHENTICATING MANUALS, SPECIFICATIONS, REPORTS, AND OTHER TYPES OF DOCUMENTS

Manuals, specifications, reports and other types of engineering or geoscientific documents must be authenticated. See 3.2.3 regarding specifications.

Manuals prepared for direction and guidance of others in technical and public safety areas shall be authenticated using the same principles of quality control and professional responsibility as applied to other professional documents.

Articles intended for non-specific, general information such as to be published in a technical journal or presented at a conference or seminar are not required to be authenticated.

Letters containing engineering or geoscientific content should be authenticated.

Design notes or calculations normally do not require authentication. However, if the design notes or calculations are issued for review or use by another person, either in accordance with the scope of the project or by agreement, the cover sheet shall be authenticated in a manner that clearly indicates acceptance of professional responsibility for the notes or calculations without needing to authenticate each page. Design notes and calculations should be prepared in a format which records the names of the responsible professional, designers and checkers and the dates on which their work was performed.

3.2.2 INCOMPLETE / PRELIMINARY DOCUMENTS

Documents should not be authenticated if incomplete.

Where professional documents are issued for some restrictive purpose, they shall be complete for the intended purpose, and clearly identified as to their intended purpose or their limitations, e.g., “For Budget Purposes”, “For Site Planning Only”. Preliminary documents should be clearly marked as “Preliminary” or “Not for Construction”.

In addition, practitioners should insert language stating their limitations in providing such documents. Such a warning could read:

Warning

*These documents have been provided to the Client for the purpose of developing preliminary pricing. These documents **must not** be used for construction*

3.2.3 SPECIFICATIONS

Specifications that form part of a set of design documents, which are to be read in conjunction with authenticated drawings, and which are directly referenced to the drawings, need not be sealed. Standalone specifications must be authenticated.

The frequency and location of the seal shall be such that the removal of the seal would render the overall document incomplete.

Where different elements or sections of a complete set of specifications that are to be authenticated, are prepared by more than one practitioner, then the practitioner responsible for each section should apply their seal to that section of the document. If this is not practical, the document shall be authenticated by the coordinating professional to indicate professional responsibility for the entire document.

3.2.4 FABRICATOR DRAWINGS

There may be several kinds of drawings that might be referred to as fabricator drawings. The fabricator commonly prepares them after they review the drawings and specifications supplied by a professional. Authentication requirements are as follows:

Fabricator General Arrangement Drawings

Drawings that specifically describe the location of structural members, connections and components to be supplied by the fabricator, and that may be reproducible copies of the drawings provided by a professional on whom the fabricator's information is noted, are not considered to be design drawings and therefore do not require authentication.

Fabricator Detail Drawings

Drawings produced by the fabricator to provide information needed by shop personnel to fabricate or assemble the items are not required to be authenticated since they do not contain any fabricator's engineering design.

Fabricator Design Drawings

Structural elements or special connections that have been designed for a particular application by a professional acting for a fabricator shall be authenticated.

Fabricator Proprietary Items

Drawings for proprietary items (such as open web steel joists) shall be authenticated by the professional who prepared them.

Standard Connections

A professional may specify that standard connections be selected from industry handbooks. Although the connection drawings do not require authentication, the professional responsible for their selection shall authenticate the specification.

Erector Drawings

Drawings or documents produced by the erector to address temporary loading, temporary bracing, false work and erection sequence instructions shall be authenticated.

3.2.5 SHOP DRAWINGS

Generally applicable design details developed by manufacturers or standards organizations, verified by testing and/or approved by government bodies, do not need to be authenticated. However, details or subsystem designs produced by manufacturers or contractors for specific projects, or applications that require professional engineering design or judgment, needed for coordination by the Engineer of Record, must be authenticated, to ensure there is consistent delineation of design responsibility for all aspects of the work.

All shop drawings should be provided to the Engineer of Record for review and coordination prior to fabrication or installation. Professionals preparing shop drawings should cooperate in working with other professionals engaged on a project, including providing the Engineer of Record with all the information they require for design, coordination, or review in a timely manner.

Professionals acting as the agents of people or organizations receiving materials are often required to review shop drawings prepared by others for the purpose of confirming compliance with the specifications and drawings of the devices, systems, structures, and other apparatuses indicated on the shop drawings. Professionals should note that this review is for the sole purpose of ascertaining conformance with the general design concept and does not indicate an approval of the design details. In other words, the reviewing professional is not taking responsibility for the design. Therefore, a reviewing professional must not authenticate shop drawings. However, if such a review is completed an indication shall appear on the document, by a mark or stamp, confirming by whom and when the review was completed.

3.2.6 AS-BUILT AND RECORD DOCUMENTS

Documents referred to as “as-builts” are prepared by a third party, or by the professional using information furnished by the contractor or other field staff. Documents referred to as “record documents” are those prepared by the reviewing professional after verifying in detail the actual conditions of the completed project. For some projects, this verification may require frequent or continuous presence on site. The distinction between as-built and record documents determines whether documents representing the final state of the project should be authenticated.

Because professionals are responsible for the content of documents bearing their seals, as-built documents should not be authenticated, since the engineer is not responsible for the content of these documents.

In some instances, documents submitted by a third-party (e.g. the contractor) are sufficient to meet the client’s needs. In other instances, the client wishes to have record documents prepared by the reviewing professional after verifying in detail the actual conditions of the completed project. For some projects, this verification may require frequent or continuous presence on site. Ideally a practitioner should determine in advance whether the client requires record documents. They should then perform the adequate amount of work necessary to responsibly state that the documents represent actual conditions.

Because professionals are responsible for the content of documents bearing their seals, as-built documents should not be authenticated, since the professional is not responsible for the content of these documents. If the professional (or their office) assists in preparing these documents, a warning should be placed on the document. Such a warning could read:

WARNING

These documents have been prepared based on information provided by others. The consultant is under no obligation or duty to verify the accuracy and/or completeness of this information and has not done so. The consultant shall not be responsible for any errors or omissions that may be incorporated as a result of erroneous information provided by others.

As-built documents might include changes authorized by the professional during construction. They might also reflect changes initiated by other parties due to site conditions or other causes. Changes by the professional will already have been documented by change orders, authenticated sketches, or reports, so there is no need to authenticate as-built documents. Where changes are by others, the

professional should not authenticate these documents. If documents are produced by making changes to the original construction documents, the authentication should be removed if already in place, and the documents labelled appropriately. In place of the authenticated seal, there should be a note referencing the original authenticated documents.

Professionals acting as the agents of people or organizations receiving materials are often required to review as-built documents prepared by others for the purpose of confirming compliance with the specifications and drawings of the devices, systems, structures, and other apparatuses indicated on the documents. Professionals should note that this review is for the sole purpose of ascertaining conformance with the general design concept and does not indicate assurance that the documents are in fact a true representation of the completed work. In other words, the reviewing professional is not taking responsibility for documenting whether construction was in conformance with the as-built documents. Therefore, the reviewing professional must not authenticate as-built documents. However, if such a review is completed an indication shall appear on the document, by a mark or stamp, confirming who and when the review was completed as well as the purpose of the review.

3.2.7 SOFTWARE AND FIRMWARE

The creation or modification of software and firmware programs that involve the practice of the professions results in products of a professional nature. These include, for example, programmable logic controller (PLC) code, application, modelling, and simulation programs. The original version and modifications of the program or code (either written or electronic) shall be authenticated.

3.2.8 DIGITAL MODELS

In many emerging fields of engineering, development and transmission of professional work is made using digital files that cannot be converted to PDF format. For example, research and development often includes the development of digital files 3D models and their accompanying tables. The following guidance is provided for authentication of these files.

Is it Engineering Work?

If it is engineering work, then the member must consider the purpose of the intermediate, prototype, or model being developed. If use or testing of the objects may expose others, including businesses, to harm or significant loss then the design documents that have led to the creation of the objects should be authenticated. The need for authentication may exist even for internal use.

Model Representation

For traditional drawings, authentication is straightforward and sealing is required. However, for electronic documents used to instruct a 2D or 3D printer or multi-axis CNC, some judgment must be used.

Electronic Material

If the document's normal form is an electronic file which is usually read by a machine rather than by a person, such as a 3D printer file, the same rules which apply to a drawing would apply to that file. If there is relevant engineering or geoscience content that would be sealed if it were a paper document, then the file should be sealed by the professional taking responsibility for the content. If the file format

does not support the inclusion of comments that allow the sealing professional to specify the intended use of the file in a manner similar to an annotation on a paper document, then the sealing professional has the option of including the file in a multiple-file package. That multiple-file package file should then be authenticated using the digital signature.

Prototypes

It is recognized that some prototype or model material will be of interest only to those checking appearance, size, finish or similar characteristics. However, some prototypes are produced for destructive testing. If this testing is to be undertaken in a fashion that creates risk (i.e., not under tightly controlled lab conditions with experience people involved) then authentication is recommended.

4.0 CERTIFICATE OF AUTHORIZATION

4.1 CONCEPTS AND PRINCIPLES OF THE CERTIFICATE OF AUTHORIZATION

4.1.1 PRINCIPLES

The certificate of authorization stamp is the distinctive mark of the partnership, corporation, or other legal entity that is entitled to practice professional engineering or professional geoscience. It is a way of identifying that its holder is registered with the Association, which in turn identifies the entity as one where members or licensees are employed. In addition, it identifies that the entity maintains professional liability insurance appropriate for the provision of professional services.

Application of the stamp to documents relates to the provision of professional engineering or professional geoscience services by a company to an external entity. It is a requirement under the Act and by-laws. It provides assurance to the public by ensuring that the services are completed by a registered company.

4.1.2 OBTAINING A STAMP

Every holder of a certificate of authorization will be issued a manual stamp by the Association.

4.1.3 ELECTRONIC VERSION OF A MANUAL STAMP

The original stamp may be reproduced by a designate of the holder by any means to generate an impression, including procedures that use information technologies. The impression must correspond in all respects to the original seal.

4.2 APPLICATION OF STAMP TO DOCUMENTS

Each new, modified or record document prepared by the holder of a certificate of authorization that constitutes the practice of professional engineering or the practice of professional geoscience must have the holder’s stamp applied to it. The stamp shall be placed in the vicinity of the practitioner’s seal.

The responsible member shall implement a process that ensures that all professional documents contain the identity and number of the holder. The responsible member need not sign or date the impression.

5.0 RECOMMENDED POLICIES

5.1 MODIFICATIONS TO DOCUMENTS

All authenticated documents are considered to be final documents. Such documents may need to be modified (i.e. edited, altered, or amended) either during the course of the project or as part of a new project. In order to ensure that professionals are not unknowingly accepting responsibility for work they did not do, it is important that documents, once authenticated, are not altered without undergoing an additional authentication process.

Modifying an authenticated document constitutes a professional act that should be identified as such. Authors of the modifications are professionally responsible for the work segment directly or indirectly affected by their modifications, particularly if they affect the original concept.

The author(s) should authenticate modifications, including all elements of the original document affected by the modification, and clearly identify the professional responsibility of the original author(s) and the author(s) of the modifications.

In cases where altering of documents previously authenticated is required, the following procedure should be followed:

- original authentication is to remain on documents unaffected by the alterations;
- any professional(s) altering documents authenticates their work;
- any professional(s) clearly identifies alterations on the documents, notes a revision mark in sequence to the last authentication process, and who is responsible for them;
- newly authenticated documents are to be considered distinct from each previous authentication process.

The same principles and procedures for authentication of documents as per Section 3 of this guideline should apply to the modification of documents

5.2 WITHDRAWAL OF SEAL

If a professional discovers that a document they have authenticated and issued to someone contains errors, they shall notify the person to whom they have issued the document and recall, cancel, and/or supersede it as soon as possible with a satisfactory replacement. If appropriate, the original author of the document should be informed.

It is not appropriate to withdraw an authenticated document as means to enforce a contractual dispute.

5.3 BACK-DATING AUTHENTICATIONS

Authenticating a document with some prior date is not permitted. The authentication of a document is intended to record and communicate an acceptance of responsibility for the quality and the accuracy of the document to which it is affixed, on the date of such authentication (i.e. the standards might have changed in the interim). Back dating the seal amounts to a qualification or limitation of the seal and is therefore not in the public interest.

5.4 RETENTION OF DOCUMENTS

Documents should be retained for as long as any liability for the work exists. Once a document is authenticated, it should be stored in a manner that preserves the integrity of the document and its authentication.

Practitioners responsible for document management should ensure that a process is implemented that prevents the possibility of:

- others altering authenticated documents without the knowledge of the author or adhering to Section 5.1 of this guideline;
- removal or duplication or unauthorized use of the seal; and
- unauthorized use of documents.

In providing this protection, those responsible should incorporate the following:

- procedures that assure that all documents that so require it have been prepared by or under the direct supervision of a professional;
- procedures that assure the design, report, or other output of technical work complies with all applicable regulations, codes, industry standards, practices, etc.;
- an authenticating procedure to ensure that all documents are authenticated by the professional(s) taking responsibility for the work;
- procedures that assure data integrity by prohibiting unauthorized and/or undocumented changes;
- procedures to identify unauthorized copies of final documents;
- established document retention periods; and
- protection of records against loss or inadvertent destruction.

5.4.1 RETENTION OF ELECTRONIC DOCUMENTS

Storing documents electronically presents the risk that, at some point in the future, the documents will not be accessible due to, for example;

- substantial changes in software formats; or
- storage systems becoming obsolete.

While the Association ensures that digital signatures for practitioners address considerations of security, revocation, and authentication/verification, the Association cannot directly address storage methods. This is something that must be addressed by the practitioner. This said, the Association recommends, as a matter of prudent practice that practitioners have in place document storage, backup, and recovery systems that meet legal and regulatory requirements. Practitioners are strongly encouraged to consult with legal and information technology professionals to determine if they are adequately protected.

5.5 TRANSMISSION OF DOCUMENTS

Though it is common practice to communicate over email, caution should be taken when communicating engineering or geoscientific information.

If the information constitutes professional engineering or professional geoscience, ideally the information would be placed as a PDF attachment to the email, and the PDF would be authenticated.

APPENDIX A – DIGITAL SIGNATURES

DIGITAL SIGNATURES IN THE REAL WORLD

This guideline deals primarily with the rules and rationale for authentication. It is not intended as a complete instruction manual on how to use and apply the digital signature.

DOCUMENTS

The same principles of authentication apply to documents created by CAD and related software applications. Images of a practitioner's seal and signature can be placed in each of the title blocks after which the document is then converted to .pdf format and the digital signature is applied.

When issuing a set of documents, practitioners may either:

a) create a single document with one digital signature, or
b) create multiple documents, each with its own digital signature.

The recommended (best practice) when dealing with a multi-page set of documents is to create a separate .pdf file for each page. The technology may allow for bulk/batch conversion of such files as well as bulk/batch digital signature application. This method is similar to what happens in the physical world where a person has to physically apply the seal and sign each page. The advantage here is that the process is a lot quicker and easier in the electronic world. The individual digitally signed .pdf files for each document can then be "bundled" together in a single "zip" or other archive file for transmission or archiving as a single file containing many individual .pdf document files.

The main advantage to this method is that if a single sheet needs to be changed, that change can be made in the CAD/Design software, the revision tracking information can be typed into the template, and that page can then be converted into a single .pdf file and digitally signed. That page can then standalone without having to convert and print the entire set again.

For smaller sets of documents where changes are not anticipated, practitioners may convert all of them into a single .pdf format file to which the digital signature is applied. The advantage of this method is that the signature only needs to be applied once. The disadvantages are that:

- a control sheet must be included detailing whether the set is original, whether it is a revised set, as well as every revision made to the set;
- each page of the bundle must include wording indicating that it is part of a complete set and can only be trusted if the set remains together; and
- the extra image that appears when the digital signature is applied will only appear once in the set.

HARD COPIES

If the document is one which will be printed out and provided in hard copy form, wording must be added to each page (either in the title block or some other prominent location) signifying it is a paper copy of the electronic original as well as the conditions on which it can be relied.

An example of this wording is:

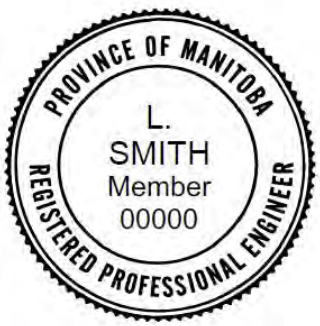
> *This is a print of a document that has been electronically authenticated with technology authorized by Engineers Geoscientists Manitoba. The original is in electronic form.*
>
> *Any printed version can be relied upon as a true copy of the original when supplied by the original author, bearing images of the professional seal and digital signature or when printed from the digitally signed electronic file.*

The document is then converted to .pdf format and the digital signature is applied.

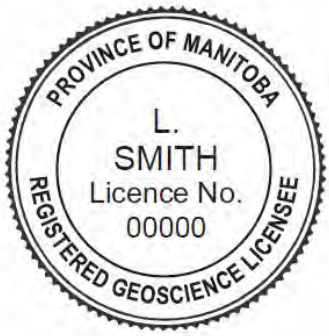
APPENDIX B – SEAL EXAMPLES

Acceptable examples of Engineers Geoscientists Seals are below.

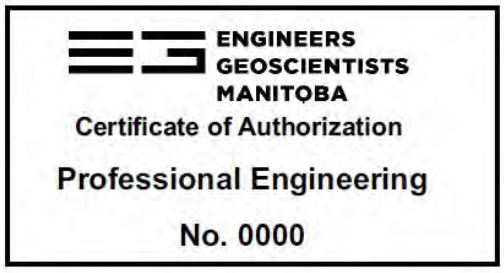
Professional Engineer or Geoscientist:



Professional Engineer or Geoscientist Licensee:



Certificate of Authorization:



APPENDIX C - DEFINITIONS

DEFINITIONS

“Act” means The Engineering and Geoscientific Professions Act.

“Association” means Engineers Geoscientists Manitoba.

“Authentication” means affixing the seal of the member or specified scope of practice licensee, then validating it by signing and dating; or affixing the temporary licensee’s seal of his or her jurisdiction (including signing and dating as required by his or her jurisdiction) including licence number and its date of expiry; or affixing a digital signature in accordance with the requirements of The Engineering and Geoscientific Professions Act and By-laws.

“By-laws” means by-laws of the Association.

"Certificate of Authorization" means the certificate issued under the seal of the association certifying that a partnership, corporation, or other legal entity is entitled to practice professional engineering or professional geoscience within the province through partners or employees who are members, temporary licensees or specified scope of practice licensees

“Coordinating professional”, means the professional responsible for integrating the expertise and work of other professionals and who may take overall and total responsibility for the work including authentication of the documents.

“Digital signature”, means the form of identification issued by the Association to a member or specified scope of practice licensee to be used to digitally authenticate documents in computer readable form. This is not to be confused with an electronic version of a manual seal.

“Direct supervision,” means the immediate and direct personal supervision and guidance of a natural person, member in training, or other professional.

“Document” means a single coherent body of information recorded on any medium in the form of words, symbols, sounds or images or any another system of symbols. The information is defined and structured, according to the medium used, by tangible or logical features and may be rendered using any type of writing.

"Electronic document" means data that is recorded or stored on any medium in or by a computer system or other similar device and that can be read or perceived by a person or a computer system or other similar device. It includes a display, printout or other output of that data.

“Engineer of Record” means the professional member or licensee responsible for the overall practice of professional engineering for a project which may include the efforts of other professional members or licensees or just the effort of this member or licensee.

“Final Document” describes any record, written or graphic created for the purpose of transmitting information or instructions based on engineering expertise or judgment that is intended to be relied on by others. In general, “final” means “final for the purposes intended”.

“Impression” means a facsimile of a seal on a document, regardless of the medium used.

"Manual seal" means the form of identification issued by the association to a member or specified scope of practice licensee to be manually impressed onto physical documents.

“Manual Stamp” means the form of identification issued by the association to any company that holds a Certificate of Authorization. This stamp contains the identity of the holder and their identifying number.

“Member” means a natural person who holds a valid and subsisting certificate of registration and whose name is entered on the register of the association as a professional engineer or professional geoscientist.

“Practice of Professional Engineering” means any act of planning, designing, composing, measuring, evaluating, inspecting, advising, reporting, directing or supervising, or managing any of the foregoing, that requires the application of engineering principles and that concerns the safeguarding of life, health, property, economic interests, the public interest or the environment.

“Practice of Professional Geoscience” means any act of documenting, analysing, evaluating, interpreting or reporting on the earth's materials or on resources, forms or processes, or managing any of the foregoing, that requires the application of the principles of geology, geophysics or geochemistry and that concerns the safeguarding of life, health, property, economic interests, the public interest or the environment.

“Practicing Entity” means a corporation that offers Professional Services, directly or indirectly, by more than one P.Eng. or P.Geo. who take(s) responsibility for the work.

“Original” means an authenticated document that emanates directly from the author.

“Responsible Member” means a Member who is full time employee or partner of the holder of a Certificate of Authorization who undertakes to provide responsible direction to and personal supervision of a portion of the holder’s professional practice.

“Retention” means to store original authenticated documents or a legally accepted alternative so that they can be found later, on request, without having been altered.

“Signature” means the name or personal mark that a person affixes to a document and routinely uses to express consent or acknowledge responsibility with respect to the document.

“Sole Practitioner” means a member who owns his or her own company, employs no other Professional Members, has five or fewer employees, and takes responsibility for all the work done.

“Software” means all information, commands, instructions, programs or procedures required to use and operate a computer system, one of its components or any other digital data processing device. Software is independent of the medium in which it is recorded.

“Transmission” is the action of sending and receiving a document from one person to another using information technology.