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Authenticating Professional Work Products



The Association of Professional
Engineers and Geoscientists of Alberta

Document History

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Preface

An APEGA professional practice standard describes the level of performance required of *licensed professionals*. Part 8 of the *General Regulation* under Section 59 allows APEGA to publish standards that define the expectations and professional obligations of APEGA *permit holders* and *licensed professionals*.

The differences between a professional practice standard, a practice bulletin, and a practice guideline are as follows.

- An APEGA professional practice standard sets the minimum standard of practice *permit holders* and *licensed professionals* must meet. It is the standard against which a *permit holder's* or *licensed professional's* practice and conduct will be assessed by APEGA's statutory boards.
- An APEGA professional practice bulletin provides clarity on a specific subject related to professional practice. Bulletins remain in force until a practice standard or guideline on the subject is developed or revised, or until the practice bulletin is repealed.
- An APEGA professional practice guideline provides professional practice advice and best practice recommendations to help *permit holders* and *licensed professionals* meet their professional obligations. APEGA statutory boards may assess a *permit holder's* or *licensed professional's* practice and conduct against practice guidelines.

Practice standards, bulletins, and guidelines should be read in conjunction with the *Engineering and Geoscience Professions Act*, the *General Regulation*, APEGA's bylaws, and any other applicable legislation, codes, or standards.

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Definitions

For the purposes of this standard, the terms and definitions listed below apply. These terms are italicized throughout the text.

APEGA Digital Signature

An encrypted digital *signature* that guarantees the origin of an electronic document, its integrity, and its authenticity. An *APEGA digital signature* is metadata (i.e., information about the document) that can be viewed, but not altered, by accessing the properties of an electronic document. An *APEGA digital signature* is not the visible components of *authentication* or *validation* (i.e., *electronic images* of the *stamp* or *permit holder* information, APEGA ID, *physical signature*, and date of *authentication* or *validation*).

An *APEGA digital signature* applied to a *professional work product (PWP)* guarantees the authenticity of the content of the *PWP* and verifies it has not been modified since being digitally signed.

APEGA digital signatures include professional designations and can only be applied by the holder of a *digital certificate*, which is issued by a *certificate authority* and controlled by APEGA.

Authentication

The act of applying the required *authentication* components to a *professional work product (PWP)*. *Authentication* must be performed in accordance with the practice standard *Authenticating Professional Work Products*. When a *licensed professional* authenticates a *PWP*, this means they have completed, performed a *thorough review* of, or directly supervised and controlled the engineering or geoscience work and accept professional responsibility for the engineering or geoscience involved.

Authentication Date

The date *authentication* occurred. It must be unambiguous with no confusion between the recorded month, day, or year.

Certificate Authority

A trusted organization that provides *digital certificates* used to create an *APEGA digital signature*. The *certificate authority* must have a relationship with APEGA to access registrant identities and continued professional status.

Client

The person, owner, or agent of the owner who requires the services of a *consultant*.

Commercially Engineered Goods

Any commercial off-the-shelf goods designed, used, or produced using *professional services*. They are usually packaged with a complete user manual, specifications, and assembly and safety instructions. They are repeatable, mass produced, and sold in quantity, as well as designed and manufactured in compliance with recognized Canadian or international regulations, codes, or standards. These goods are certified by a recognized technical, regulatory, or legal body. If a *commercially engineered good* is used in a way that deviates from its published specifications, it is no longer a *commercially engineered good*. A *commercially engineered good* is not a prototype or "one-of-a-kind."

Consultant

A permit holder or licensed professional in Alberta who provides professional services directly to a client.

Contract

An agreement entered into between two or more parties that may give rise to obligations the courts can enforce.

Digital Certificate

An encrypted digital attachment that is issued by a *certificate authority*. It enables the *licensed professional* to digitally authenticate and validate *professional work products (PWP)* and it enables the recipient of the PWP to verify the professional status of the *licensed professional*.

Direct Supervision and Control

The high degree of guidance a *licensed professional* provides to one or more individuals. The *licensed professional* accepts professional responsibility for engineering or geoscience tasks performed under their guidance. *Direct supervision and control* includes directing, monitoring, and controlling the engineering and geoscience work performed, including making all decisions related to the practices of engineering and geoscience.

Direct supervision and control requirements are detailed in the practice standard *Relying on the Work of Others and Outsourcing*.

Discipline

A specific field of practice within a profession (e.g., electrical engineering, mechanical engineering, geophysics, geochemistry).

Due Diligence

The level of judgement, care, forethought, and determination a person reasonably uses to avoid harming oneself, other people, property, or the environment.

Electronic Image

A visual representation of a scanned image or an image produced electronically.

Field Review

The work conducted to confirm and verify the engineering or geoscience concepts and specific requirements during implementation or construction of the *professional work product (PWP)*. This includes considering and incorporating all material changes that affect the intended purpose of the original PWP that may have resulted from field changes and that require *authentication* and *validation*.

Licensed Professional

A professional engineer, professional geoscientist, professional licensee (engineering), professional licensee (geoscience), licensee (engineering), or licensee (geoscience) entitled by the *Engineering and Geoscience Professions Act* to practise engineering or geoscience in Alberta.

Operating Name

A name a *permit holder* uses (e.g., a trade name) that is different from its legal name but is listed with APEGA under the same *Permit to Practice* and uses the same *permit number*.

Output

See *Professional Services Output*.

Permit Holder

A partnership or other association of persons, or a corporation that holds a *Permit to Practice* under the *Engineering and Geoscience Professions (EGP) Act*. The Association of Science and Engineering Technology Professionals of Alberta (ASET) permit holders, as defined in Section 86(4) of the EGP Act, are not included.

Permit Holder Name

The *permit holder's* legal company name as registered with the Alberta Corporate Registry.

Permit to Practice

An APEGA certificate given to *permit holders* to practise engineering or geoscience in Alberta.

Permit Number

The unique registration number provided to a *permit holder* licensed by APEGA to practise engineering, geoscience, or both.

Person

An individual or business entity.

Physical Signature

An ink or “wet” *signature*, also referred to as a handwritten or manuscript *signature*. Using only initials is not an acceptable way to apply a *signature*.

Professional Practice Management Plan

A *permit holder's* written corporate policies, procedures, and systems describing the quality control and assurance measures in place to ensure appropriate standards of professional practice are maintained as described in Section 48(1)(d) of the *General Regulation*.

Professional Services

Services that involve the practice of engineering as defined in Section 1(q) of the *Engineering and Geoscience Professions (EGP) Act* or the practice of geoscience as defined in Section 1(r) of the EGP Act. The products of *professional services* are called *outputs*.

Professional Services Output (or Output)

Any product—physical, electronic, or digital—resulting from a *professional service*. Not all *outputs* require *authentication and validation*.

Professional Work Product

A professional services output that requires authentication and validation as described in the practice standard *Authenticating Professional Work Products*. Defined in the *General Regulation* as "...plans, specifications, reports, or documents of a professional nature," a professional work product (PWP) is any professional services output with technical information that is complete and final for its intended purpose, and which is relied upon by others, internally or externally. A PWP can be physical (e.g., paper, plastic film), electronic (e.g., electronic document, image), or digital (e.g., code, software, modelling, simulation, or any other computer application that cannot be reproduced in a physical or electronic format). See the *authentication* test in the practice standard *Authenticating Professional Work Products* when assessing whether an output is a PWP.

Responsible Member

A licensed professional who is responsible for providing oversight of the practice of engineering or geoscience by the permit holder and meets the specification in Part 7, Section 48(1)(c) of the *General Regulation*. A Responsible Member must be qualified by education and experience in the profession of engineering or geoscience in which the partnership, corporation, or other entity intends to engage; designated in writing by the permit holder; and registered with APEGA as a Responsible Member.

The Responsible Member must have a sufficiently close relationship with the permit holder to undertake the roles and responsibilities associated with acting as a Responsible Member. The role of Responsible Member may not be delegated to other licensed professionals who are not Responsible Members.

A Responsible Member can be:

- a full-time, permanent employee of the permit holder
- a member of the permit holder
- a sole practitioner
- an individual providing professional services to the permit holder through a contractual arrangement or as a part-time employee

The permit holder's Responsible Members direct, supervise, and control all or part of a permit holder's professional practice in accordance with the permit holder's Professional Practice Management Plan and all relevant legislation, regulations, and codes.

Signature

A traceable and individualized permanent mark attached to stable information. See APEGA digital signature. See physical signature.

Sole Practitioner

Within Alberta, an individual who practises engineering or geoscience as an incorporated entity. A sole practitioner must hold a Permit to Practice.

Sole Proprietor

Within Alberta, an individual who is the sole owner of a business with no legal distinction between themselves and their business (i.e., the business does not exist as a separate entity).

A *licensed professional* practising as a *sole proprietor* does not need a *Permit to Practice* since the *sole proprietor* is not practising engineering or geoscience through a corporation, partnership, or association.

Stamp

A unique, personalized rubber block or electronic file (e.g., PNG, JPEG, or TIFF) that APEGA, or its approved vendors, provides upon request to *permit holders* or *licensed professionals*.

A *stamp* issued to *permit holders* contains the *Permit to Practice* information. A *stamp* issued to *licensed professionals* contains their APEGA licence information.

Technical Information

A term for content or data derived from the practice of engineering or geoscience as defined by the *Engineering and Geoscience Professions Act*, including advice, analyses, assessments, calculations, designs, evaluations, inputs (e.g., to planning or to modelling and simulation), interpretations, notes, opinions, recommendations, and process descriptions.

Thorough Review

An evaluation of the *outputs* of *professional services* prepared by others to verify their reliability, validity, and technical accuracy. *Thorough review* requirements are detailed in the practice standard *Relying on the Work of Others and Outsourcing*.

Unprofessional Conduct or Unskilled Practice

Actions or behaviours of *permit holders*, *licensed professionals*, and members-in-training that are found to be *unprofessional conduct* or *unskilled practice* under Section 44 of the *Engineering and Geoscience Professions (EGP) Act*, in accordance with the discipline processes set out in Part 5 of the EGP Act.

Validation

The act of applying the required *validation* components to a *professional work product (PWP)*. *Validation* must be performed in accordance with the practice standard *Authenticating Professional Work Products*. When a *permit holder's Responsible Member* validates a PWP, this means they have reviewed the PWP to ensure it meets the quality control and assurance measures described in the *permit holder's Professional Practice Management Plan*.

Validation Date

The date *validation* occurred. It must be unambiguous with no confusion between the recorded month, day, or year.

1.0 Overview

This practice standard provides detailed direction for *permit holders* and *licensed professionals* on how to authenticate *professional work products (PWP)* as directed in the following sections of the *Engineering and Geoscience Professions (EGP) Act*:

- Section 3(2): Exclusive use of name engineer
- Section 6(2): Exclusive use of name geoscientist
- Section 78(1): Use of *stamps*, seal, *permit numbers*

Authentication serves the public interest by providing a clear and unique indicator that an *APEGA licensed professional* has completed or reviewed the work.

This practice standard includes several considerations and practices, including:

- defining *PWPs* and clarifying how *licensed professionals* can assess which *professional services outputs* require *authentication*
- defining *Responsible Members'* validation of *PWPs*
- standardizing the *authentication* and *validation* formats to enable *permit holders*, *licensed professionals*, and the public to easily identify the authenticator, the *authentication date*, the *Responsible Member*, and the *validation date*
- addressing the use of digital technology to authenticate and validate *PWPs*
- setting the requirements for authenticating *PWPs* imported into, or exported from, Alberta

1.1 PURPOSE AND SCOPE

This professional practice standard helps *permit holders* and *licensed professionals* comply with the statutory requirements of authenticating *PWPs*. It also helps the public understand the obligations of *licensed professionals* in *authentication* and the use of their *stamp*, as well as the obligations of the *Responsible Member* for *validation*.

Given the diversity and complexity of the practices of engineering and geoscience in Alberta, this standard cannot address all *authentication* questions that may arise. *Licensed professionals* must use *due diligence* and professional judgement to ensure their professional practice conforms with the intent of this standard. *Permit holders* and their *Responsible Members* are expected to adequately document their *authentication* and *validation* processes and protocols in their *Professional Practice Management Plans*. They must clearly define the *permit holder's* expectations regarding which *outputs* of engineering and geoscience require *authentication* and *validation*, and they must describe the internal controls for the *authentication* and *validation* processes.

This practice standard details the requirements for authenticating and validating *PWPs*. The procedures outlined apply to:

- all *PWPs* used in Alberta, regardless of where they were produced
- all *PWPs* produced by, or for, *permit holders*, even if for internal use only (the *EGP Act* does not differentiate between *PWPs* prepared by an engineering or geoscience *consultant* for an external *client* or those prepared by *licensed professionals* for their employer's internal use)
- all *PWPs* produced by *licensed sole proprietors* or any entities practising engineering or geoscience, even if they are not mandated by legislation to have a *Permit to Practice*

1.2 REFERENCES

The following publications support this standard. Refer to the latest versions available at apega.ca/practice-standards.

- *Engineering and Geoscience Professions Act, General Regulation, and APEGA's bylaws*
- *Professional Practice Management Plan* practice standard
- *Relying on the Work of Others and Outsourcing* practice standard
- *Authentication Requirements for As-Built, Record, and As-Acquired Drawings* practice bulletin
- *Clarifying Authentication Requirements for Drilling and Completions* practice bulletin
- *Ethical Practice* practice guideline
- *Field Reviews of Engineering and Geoscience Work* practice guideline
- *Good Standing Policy*

2.0 Professional Responsibilities

2.1 AUTHENTICATION OBLIGATIONS

Section 54 of the *General Regulation* requires *licensed professionals* to stamp (authenticate) *professional work products (PWP)* they have prepared or thoroughly reviewed, or that were completed under their *direct supervision and control*, showing their professional responsibility for those *PWPs*. The legislative obligation to authenticate exists independently of any contractual agreements between a *permit holder* or *licensed professional* and an employer or *client*, and it also exists independently of any other legislation that may not be aligned with the *Engineering and Geoscience Professions (EGP) Act*. For more information on what is required to complete a *thorough review* or to provide *direct supervision and control*, see the practice standard *Relying on the Work of Others and Outsourcing*.

Licensed professionals are responsible for:

- authenticating a *PWP* only if they are a practising *licensed professional* registered with APEGA
- authenticating only *PWPs* that they have prepared directly, that were prepared under their *direct supervision and control*, or that were prepared by others, and thoroughly reviewed by the *licensed professional*
- authenticating all *PWPs* for which they are legally obligated to accept professional responsibility as required by the *EGP Act* and the *General Regulation*
- forwarding authenticated *PWPs* to their *Responsible Member* for *validation* if working for a *permit holder*

2.2 VALIDATION OBLIGATIONS

Section 49 of the *General Regulation* requires *permit holders* to insert their *permit number* on *PWPs*.

The *permit holder's Professional Practice Management Plan (PPMP)* describes the policies and processes, including internal controls on *authentication* and *validation*, that *Responsible Members*, *licensed professionals*, and others who are contributing to the practices of engineering and geoscience must follow to ensure the quality of the *permit holder's* professional practice.

The *Responsible Member's validation* does not mean the *Responsible Member* has taken professional responsibility for the technical details in an authenticated *PWP*. The *validation* only means the *Responsible Member* has reviewed the authenticated *PWP*, and in the *Responsible Member's* professional judgement:

- the authenticated *PWP* is within the authenticator's area of practice
- the quality control and assurance procedures outlined in the *permit holder's PPMP* were followed to review the technical content of the *PWP* before *authentication*
- the *PWP* was developed according to the Code of Ethics and Rules of Conduct

APEGA recommends that *authentication* and *validation* be performed by different *licensed professionals* because these are two distinct processes that serve different purposes. However, APEGA recognizes that in some cases (e.g., when a *sole practitioner* produces a *PWP*), a *licensed professional* may need to both authenticate the *PWP* and then, acting as the *Responsible Member*, validate the *PWP*. If this is the case, the components in sections 4.2.1 Authentication and 4.2.2 Validation must all still be included and must clearly indicate that the process of *authentication*, and then the process of *validation*, were completed as two separate and distinct processes. When the same *licensed professional* both authenticates and validates a *PWP*, the processes for ensuring that these two distinct processes are met should be outlined in the *permit holder's Professional Practice Management Plan*.

2.3 ETHICAL OBLIGATIONS

When *licensed professionals* authenticate or validate *PWPs*, they are also confirming that the *PWP* was completed according to the Code of Ethics and Rules of Conduct.

The Code of Ethics and Rules of Conduct are in the *General Regulation* and identify the key principles for professional conduct. The Rules of Conduct state that a *licensed professional* must:

- hold paramount the health, safety, and welfare of the public and have regard for the environment
- undertake only work that they are competent to perform by virtue of their training and experience
- conduct themselves with integrity, honesty, fairness, and objectivity in their professional activities
- comply with applicable statutes, regulations, and bylaws in their professional practices
- uphold and enhance the honour, dignity, and reputation of their professions

For more information on ethical practice, see the practice guideline *Ethical Practice*.

2.4 STAMPS

If a *permit holder* or *licensed professional* uses a *stamp*, they must obtain the *stamp* (physical or electronic) from APEGA or its approved vendors and must:

- **not** substantially modify or significantly resize the electronic *stamp* in any way without APEGA's express written approval (the *stamp* must remain as close as possible to its original size and must remain legible)
- secure and store the physical or electronic *stamp* to prevent loss or unauthorized use, as per the requirements of the *Professional Practice Management Plan* practice standard, and must notify APEGA if the *stamp* becomes compromised
- return the physical *stamp* to APEGA or confirm the electronic *stamp's* permanent deletion upon removal from the register, suspension, or registration cancellation, as the *stamp* is the property of APEGA and not of the *permit holder* or *licensed professional*
- only print or stamp using black ink
- only use their *stamps* for engineering or geoscience PWP's
- manually include their APEGA ID if using a legacy *stamp* (i.e., a *stamp* without the APEGA ID already included)
- **not** alter the *licensed professional's* name or APEGA ID, or any other components of the *stamp*, in order to use the *stamp* for another *licensed professional*

2.5 DIGITAL CERTIFICATES AND APEGA DIGITAL SIGNATURES

When using an APEGA digital signature, *licensed professionals* must:

- obtain a *digital certificate* from an APEGA-approved provider, which are selected because they meet APEGA's requirements for an acceptable *certificate authority* (see Appendix 4 for the list of *certificate authority* requirements)
- secure the sign-in credentials for a *digital certificate* to prevent theft or use by anyone other than the individual to whom the *digital certificate* was provided, and must notify APEGA if the APEGA *digital signature* becomes compromised
- only use an APEGA *digital signature* if they are the holder of a *digital certificate*—an APEGA *digital signature* must not be applied by anyone who does not have a protected *digital certificate*

2.6 ABSENCE OF, OR IMPROPER, AUTHENTICATION

It is mandatory for *licensed professionals* to *authenticate* PWP's they have prepared directly, that were prepared under their *direct supervision and control*, or that were prepared by others, and thoroughly reviewed by the *licensed professional*. A *licensed professional's* failure to authenticate a PWP is a violation of the EGP Act and may be investigated by APEGA. Failing to authenticate a PWP is considered *unprofessional conduct* or *unskilled practice*.

Although *authentication* and *validation* are identifiable signs that the practice of engineering or geoscience has occurred, they are not the only indicators. A court can find a *permit holder*, *licensed professional*, or both legally liable for an issued PWP even if it is not authenticated or validated.

3.0 What to Authenticate

3.1 AUTHENTICATION TEST

The *Engineering and Geoscience Professions Act* requires *licensed professionals* to accept professional responsibility by authenticating professional work products (PWP) they have prepared or reviewed.

The *authentication test* provided in Figure 1 can be used to determine whether an *output* is a PWP requiring authentication. It also clarifies that an *output* may require authentication if there is a legal requirement to do so.

The two practice bulletins *Authentication Requirements for As-Built, Record, and As-Acquired Drawings* and *Clarifying Authentication Requirements for Drilling and Completions* provide requirements for specific situations.

If a *licensed professional* still has doubt after applying the *authentication test* and reviewing the two practice bulletins, they should contact APEGA.

If authentication is required, validation is also required for those who hold a *Permit to Practice*.

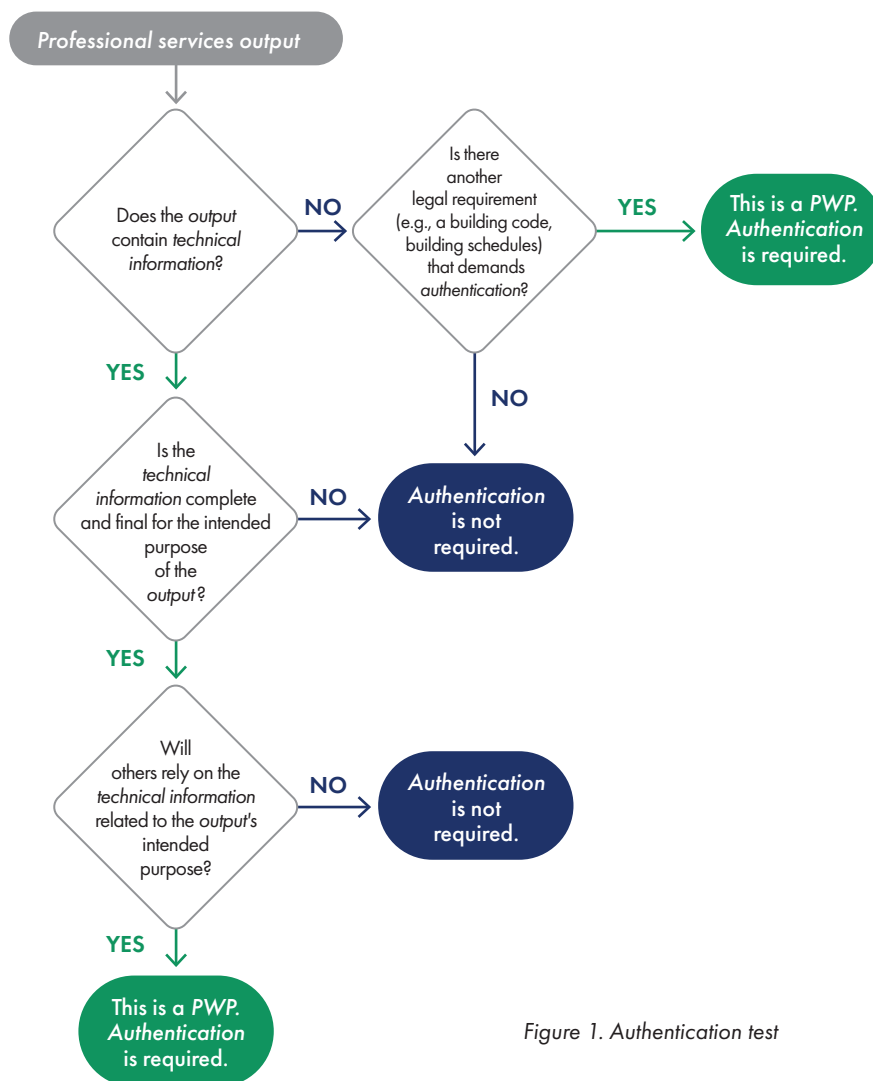


Figure 1. Authentication test

3.2 AUTHENTICATION NOT REQUIRED

The following items do not require *authentication*:

- *professional services outputs* provided for review or comment only (e.g., drafts); such *outputs* are considered incomplete, and they should be clearly marked as such (refer to the *authentication* test in Section 3.1)
- *professional services outputs* that do not contain *technical information*, even if they have relied upon *technical information* to be created (e.g., contracts, checklists, cost estimates, construction schedules, progress claims, payment verifications, correspondence, emails, and brochures) except if required by legislation (e.g., schedules required by safety codes officers under the National Building Code – Alberta Edition)

3.3 PROFESSIONAL WORK PRODUCTS IMPORTED INTO ALBERTA

With interprovincial, national, and international trade, PWP development may be contracted to individuals or companies outside Alberta that may not employ APEGA licensed professionals or have *Permits to Practice*. Regardless of their place of origin, all PWPs imported for use in Alberta or PWPs related to a product imported into Alberta must be authenticated by an APEGA licensed professional. If applicable, they must also be validated by a Responsible Member from an APEGA permit holder. Refer to the practice standard *Relying on the Work of Others and Outsourcing* for more information.

3.4 PROFESSIONAL WORK PRODUCTS EXPORTED FROM ALBERTA

Permit holders and licensed professionals in Alberta may prepare PWPs for use outside Alberta.

If the jurisdiction in which the PWP will be used meets the following conditions, then licensed professionals and Responsible Members are not required to authenticate and validate in accordance with the practice standard *Authenticating Professional Work Products*. Instead, they must meet the requirements of the destination jurisdiction.

The destination jurisdiction must have:

- regulations covering the practices of engineering and geoscience;
- licensure requirements comparable to those for APEGA licensed professionals; and
- authentication processes equivalent to those required in Alberta, as determined by the APEGA permit holder and documented appropriately.

If any of these three conditions are not met by the destination jurisdiction, PWPs exported to that destination must be authenticated and validated in accordance with the practice standard *Authenticating Professional Work Products*.

In all cases, it is the responsibility of permit holders and licensed professionals to know and meet the requirements of the destination jurisdiction in which the PWP will be used.

3.5 PROFESSIONAL WORK PRODUCTS FOR COMMERCIALLY ENGINEERED GOODS

A *licensed professional* does not need to authenticate, and a *Responsible Member* does not need to validate, a PWP for a *commercially engineered good* unless:

- The *commercially engineered good* is part of a larger engineered system (e.g., a turbine in a mechanical system, a pump in a fire-suppression system, a prefabricated beam or truss in a structure, or a commercial software application for a building control system). The *licensed professional* responsible for the design of the larger system must authenticate the PWP, confirming the *commercially engineered good* is integrated adequately into the overall engineered system and can achieve the intended purpose. A *Responsible Member* must then validate the PWP.
- The user of a *commercially engineered good* plans to use the good in a way that deviates from the designer's or manufacturer's published specifications. In such cases, a *licensed professional* must assess if the intended use is safe, and if so, must provide an authenticated PWP that documents this. A *Responsible Member* must then validate the PWP.

4.0 Authentication and Validation

4.1 AUTHENTICATION AND VALIDATION METHODS

Professional work products (PWP) must be authenticated by a *licensed professional*. If the PWP is produced by a *permit holder*, it must also be validated by a *Responsible Member*.

There are two methods of *authentication* and *validation*:

- physical
- digital

Physical *authentication* and *validation* are used with physical PWP. See Section 5.1 Physical Professional Work Products. Digital *authentication* and *validation* are used with electronic or digital PWP. See Section 5.2 Electronic or Digital Professional Work Products.

These methods are not normally combined. If a *permit holder* combines these methods of *authentication* and *validation* in a single PWP, the *permit holder's Professional Practice Management Plan (PPMP)* must define the procedure that protects the integrity of the *authentication* and *validation*.

4.2 AUTHENTICATION AND VALIDATION REQUIREMENTS

4.2.1 Authentication

Authentication is performed by a *licensed professional* using either a physical or a digital method. Refer to Appendix 2 for examples of permissible *authentication*.

When appropriate, each *authentication* must include a note near the *authentication* describing any boundaries or limitations of the *authentication*. Please refer to sections 4.3 Single-Discipline Professional Work Products, 4.4 Multi-Discipline Professional Work Products, and 4.7 Revisions of Professional Work Products for more information.

Physical authentication consists of the following components, which must all be clear and legible (i.e., the *physical signature* and any other handwritten components must not obscure the *licensed professional's* name or APEGA ID):

- the *licensed professional's stamp*, either applied as an ink impression or printed as part of the *PWP*
- the *licensed professional's* APEGA ID either applied with ink or printed as part of the *PWP*, if not included on the *licensed professional's stamp*
- the *licensed professional's physical signature* across the *stamp* in a manner that does not obscure their name and APEGA ID
- the *authentication date* applied with ink

For *physical authentication*, a *licensed professional* may allow an individual under their *direct supervision and control*—and who is authorized in writing to do so—to apply the *stamp* and APEGA ID, but the *licensed professional* must always personally sign and apply the *authentication date* as the final step in *authentication*. For information on how to authenticate different types of *PWPs*, see Section 4.2.3 Authentication and Validation Placement.

Digital authentication consists of all the visible components of *physical authentication*, plus the *licensed professional's APEGA digital signature* to guarantee the authenticity of the *PWP* and verify that it has not been modified since being digitally signed. The *APEGA digital signature* is not a visible component you see near the *stamp*. It is metadata (i.e., information about the document) that can only be attached to the electronic *PWP* by the holder of an approved *digital certificate*.

Digital *authentication* consists of the following components, which if visible must all be clear and legible (i.e., any *electronic image* components must not obscure the *licensed professional's* name or APEGA ID):

- an *electronic image* of the *licensed professional's stamp*
- an *electronic image* of the *licensed professional's* APEGA ID, if not included on the *licensed professional's stamp*
- an *electronic image* of the *licensed professional's physical signature* across the *stamp* in a manner that does not obscure their name and APEGA ID
- an *electronic image* of the *authentication date*
- the *licensed professional's APEGA digital signature* (supplied by an APEGA-approved provider)

For *digital authentication*, a *licensed professional* may allow an individual under their *direct supervision and control*—and who is authorized in writing to do so—to insert the required *electronic images*, but the *licensed professional* must always apply their own *APEGA digital signature* as the final step in *authentication*. The *APEGA digital signature* cannot be delegated, even to those under the *licensed professional's direct supervision and control*. For information on how to authenticate different types of *PWPs*, see Section 4.2.3 Authentication and Validation Placement.

4.2.2 Validation

Validation is performed by a *permit holder's Responsible Member*, who has been granted authority by APEGA to act as the *permit holder's Responsible Member*. Validation occurs **after** the PWP has been authenticated by a *licensed professional* and can be performed using either a physical or a digital method. Refer to Appendix 3 for examples of permissible validation.

When appropriate, each *validation* must include a note near the *validation* describing any boundaries or limitations of the *validation*. Please refer to sections 4.3 Single-Discipline Professional Work Products, 4.4 Multi-Discipline Professional Work Products, 4.5 Multiple Permit Holders, and 4.7 Revisions of Professional Work Products for more information.

Physical validation consists of the following components, which must all be clear and legible (i.e., the *physical signature* and any other handwritten components must not obscure the *permit holder name* or *permit number*):

- the *Permit to Practice stamp*, which includes the *permit holder name* or *operating name*, and the *permit number* (alternatively, this information may be included without the use of a *Permit to Practice stamp*) either applied as an ink impression or printed as part of the PWP
- the *Responsible Member's APEGA ID* either applied with ink or printed as part of the PWP
- the *Responsible Member's physical signature*
- the *validation date*, which may be different than the *authentication date*, applied with ink

For physical validation, *Responsible Members* may allow an individual under their *direct supervision and control*—and who is authorized in writing to do so—to apply the *Permit to Practice stamp* (or insert its information) and APEGA ID, but *Responsible Members* must always personally sign and apply the *validation date* as the final step in validation. For information on how to validate different types of PWPs, see Section 4.2.3 Authentication and Validation Placement.

Digital validation consists of all the visible components of physical validation, plus the *Responsible Member's APEGA digital signature* to guarantee the authenticity of the PWP and verify that it has not been modified since being digitally signed. The *APEGA digital signature* is not a visible component you see near the stamp. It is metadata (i.e., information about the document) that can only be attached to the electronic PWP by the holder of an approved *digital certificate*.

Digital validation consists of the following components, which if visible must all be clear and legible (i.e., any *electronic image* components must not obscure the *permit holder name* or *permit number*):

- an *electronic image* of the *Permit to Practice stamp*, which includes the *permit holder name* or *operating name*, and the *permit number* (alternatively, this information may be included without the use of a *Permit to Practice stamp*)
- an *electronic image* of the *Responsible Member's APEGA ID*
- an *electronic image* of the *Responsible Member's physical signature*
- an *electronic image* of the *validation date*, which may be different from the *authentication date*
- the *Responsible Member's APEGA digital signature* (supplied by an APEGA-approved provider)

For digital *validation*, *Responsible Members* may allow an individual under their *direct supervision and control*—and who is authorized in writing to do so—to insert the required *electronic images*, but *Responsible Members* must always apply their own *APEGA digital signature* as a final step in *validation*. The *APEGA digital signature* cannot be delegated, even to those under the *Responsible Member's direct supervision and control*. For information on how to validate different types of *PWPs*, see Section 4.2.3 *Authentication and Validation Placement*.

4.2.3 Authentication and Validation Placement

Given the wide variety of *PWPs*, exact placement of the *authentication* or the *validation* is at the discretion of the *licensed professional* or *Responsible Member*.

However, *authentication* and *validation* must be clear, legible, and placed in a prominent, easily visible location on each *PWP*. *PWPs* that can only be relied upon as a whole, not as individual pages (e.g., reports and letters) need to have the *authentication* and *validation* components applied only to the signature page or cover page. *PWPs* that can be split into separate pages for distribution (i.e., each page could be reviewed in isolation and relied upon, such as drawing packages, maps, or cross-sections) must be authenticated and validated separately on each page.

The *validation* must be close to the *authentication* for increased visibility.

4.3 SINGLE-DISCIPLINE PROFESSIONAL WORK PRODUCTS

If a *PWP* is completed within one *licensed professional's discipline*, only that *licensed professional's authentication* is required.

If multiple *licensed professionals* in the same *discipline* work together on a *PWP*, it is acceptable for only one *authentication* to be applied, as long as the *licensed professional* taking professional responsibility for the entire *PWP* in that *discipline* has conducted a *thorough review* or provided *direct supervision and control*.

If multiple *licensed professionals* within the same single *discipline* share responsibility for and authenticate their portions of the *PWP* individually, the boundaries and limitations of each *authentication* must clearly show which *licensed professional* is taking responsibility for which part of the *PWP*.

The *Responsible Member* must validate that the *PWPs* have been reviewed, authenticated, and coordinated in accordance with the requirements of this practice standard as documented in the *permit holder's PPMP*.

A *PWP* that involves engineering must be validated by a *Responsible Member* licensed to practise engineering, and a *PWP* that involves geoscience must be validated by a *Responsible Member* licensed to practise geoscience. However, some areas of professional practice involve work practised by both engineering and geoscience *licensed professionals*, such as environmental work. In such areas of practice, a *Responsible Member* with a professional designation in engineering **or** geoscience may provide oversight, as per the definition of *Responsible Member*, and validate the *PWP* according to Section 2.2 *Validation Obligations* of this standard.

4.4 MULTI-DISCIPLINE PROFESSIONAL WORK PRODUCTS

Multi-discipline PWP's must be authenticated by the *licensed professionals* taking responsibility for each *discipline*.

The *Responsible Member* must validate that all multi-discipline PWP's have been reviewed, authenticated, and coordinated in accordance with the requirements of this practice standard as documented in the *permit holder's PPMP*.

A PWP that involves both engineering and geoscience must be validated by a *Responsible Member* licensed to practise engineering **and** a *Responsible Member* licensed to practise geoscience. However, some areas of professional practice involve work practised by both engineering and geoscience *licensed professionals*, such as environmental work. In such areas of practice, a *Responsible Member* with a professional designation in engineering **or** geoscience may provide oversight, as per the definition of *Responsible Member*, and validate the PWP according to Section 2.2 Validation Obligations of this standard.

4.5 MULTIPLE PERMIT HOLDERS

If *licensed professionals* working under different *Permits to Practice* collaboratively produce a PWP, a *Responsible Member* from each contributing *permit holder* must validate the authenticated PWP's, clearly defining which *licensed professionals* worked under which *permit holder*. The contract between the multiple *permit holders* must define which *permit holder* is the coordinator to ensure there are no gaps in the professional responsibilities.

4.6 WORK PRODUCTS FROM NON-APEGA PROFESSIONALS

On occasion, *licensed professionals* rely on work produced by non-engineering or non-geoscience professionals who are certified with other professional associations (e.g., agrologists, biologists, and chemists). In such cases, a *licensed professional* must request that these professionals certify their work according to their regulatory standards.

4.7 REVISIONS OF PROFESSIONAL WORK PRODUCTS

A revised, authenticated PWP must clearly indicate the revising *licensed professional's* acceptance of responsibility for the revisions and the effects of those revisions. The revisions must clearly identify the boundary of professional responsibility between the previous version and the revised PWP if the revisions are made by a different *licensed professional*. Unless all revisions are captured on a new, authenticated PWP at project completion, all revised and authenticated PWP's must be kept.

After *authentication*, the revisions must also be validated in accordance with this standard.

The *permit holder's PPMP* must describe how revisions to authenticated PWP's will be carried out and controlled.

4.8 AUTHENTICATION AND VALIDATION FOR CONTINUOUS OPERATIONS AND FIELD REVISIONS

Some *permit holders* may need to continue production while urgent engineering or geoscience solutions are carried out, preserving continuous operations as best as possible. Any design revisions, change orders, field or operational instructions, or *field reviews* that meet the requirements of the *authentication* test (see Section 3.1 Authentication Test) and affect a previously authenticated *PWP* must also be authenticated and validated as revisions. Refer to the practice guideline *Field Reviews of Engineering and Geoscience Work* for more information on conducting *field reviews*.

The *permit holder* must evaluate if *authentication* and *validation* will cause an impractical delay, considering the situation's urgency or potential risk to people, the environment, infrastructure, or operational reliability. If the *Responsible Member* or *licensed professional* decides action must be taken before *authentication*, they must ensure, at minimum, the following information is documented before acting:

- the names of the *licensed professionals* and those involved
- the circumstances surrounding the need for the change or revision
- the details of the required change or revision
- a summary of the key factors in the professional evaluation or assessment used to determine that an immediate change or revision needed to happen before *authentication*

The change or revision must be formalized, authenticated, and validated as soon as possible after implementation, and the timeline must be defined, justified, and documented by the *permit holder* and *licensed professional* in the context of the *professional services* provided. The *permit holder* must be able to justify its actions and prove that its *Responsible Members* and *licensed professionals* exercised *due diligence*.

The *permit holder's PPMP* must include *authentication* and *validation* policies describing how the *permit holder* controls *authentication* and *validation* for continuous operations using design revisions, change orders, field or operational instructions, or *field reviews*.

5.0 Professional Work Products

5.1 PHYSICAL PROFESSIONAL WORK PRODUCTS

Physical *professional work products (PWPs)* include hard-copy documents and reproducible physical media (e.g., paper or plastic film). Physical *authentication* and *validation* must be applied to all original, physical *PWPs*.

5.2 ELECTRONIC OR DIGITAL PROFESSIONAL WORK PRODUCTS

Permit holders and *licensed professionals* are responsible for ensuring their use of any technology to improve their engineering or geoscience practice conforms to the *Engineering and Geoscience Professions (EGP) Act* and the *General Regulation*.

Permit holders and *licensed professionals* must develop appropriate strategies to ensure proper *authentication* and *validation* when using existing and emerging technologies.

Electronic and digital *PWPs* must be authenticated and validated, and the *permit holder* must describe the policies and procedures for doing so in its *Professional Practice Management Plan (PPMP)*.

5.2.1 Electronic Professional Work Products

Electronic PWP (e.g., electronic documents or *electronic images*) must be digitally authenticated and validated, regardless of their intended medium, so the *licensed professional's authentication* and the *Responsible Member's validation* appear when the PWP is viewed or printed. However, it is the *APEGA digital signature* that confirms the integrity, security, and authenticity of the electronic PWP, not the required *electronic images*. See sections 4.2.1 Authentication and 4.2.2 Validation for exact requirements.

5.2.2 Digital Professional Work Products

The *permit holder* and *licensed professional* are responsible for authenticating and validating any digital PWPs resulting from the practice of engineering or geoscience. Digital PWPs may include code, software, modelling, simulation, or other applications that cannot be reproduced in a physical or electronic format (e.g., control philosophy, trip or logic diagrams, logic functional descriptions, cause-and-effect diagrams, Scientific Apparatus Makers Association diagrams, control narratives, or commissioning plans).

The *permit holder's PPMP* must describe how the *permit holder* will determine whether the PWP is digital and how digital PWPs will be authenticated and validated. *Responsible Members* and *licensed professionals* must ensure *authentication* and *validation* occur when the PWP is complete.

5.3 COPIES OF PROFESSIONAL WORK PRODUCTS

An original PWP is physically or digitally authenticated by a *licensed professional* and validated by a *Responsible Member*, as detailed in sections 4.2.1 Authentication and 4.2.2 Validation. A copy of a PWP is a reproduction or printout of an original PWP. When under the control of *permit holders* and *licensed professionals*, copies of PWPs must be clearly marked as such (e.g., by including "copy" or "copy if printed" on the PWP). Examples of copies include photocopies, scanned PWPs without *APEGA digital signatures*, or printed electronic PWPs.

Because an *APEGA digital signature* is metadata (and not one of the visible components of *authentication* and *validation*), it cannot be printed. When a PWP has been digitally authenticated and validated, hard copies of the PWP are not considered to be original PWPs, nor are PWPs with multiple pages that have been digitally separated after the *APEGA digital signature* has been applied once to the entire PWP. With digital *authentication* and *validation*, APEGA recommends including text on the PWP that states "digitally signed" or "electronic version," so that copies of the PWP are easy to identify.

When setting the requirements for *professional services*, the *permit holder*, *licensed professionals*, and the *client* must clearly define the expectations involving original PWPs and copies of them, including whether they are to be provided physically, electronically, or digitally. *Clients* are entitled to receive original PWPs or copies of them.

The *permit holder's PPMP* must include policies describing how PWP copies are identified (i.e., marked as copies) and controlled.

5.4 RETAINING PROFESSIONAL WORK PRODUCTS

5.4.1 Period of Retention

The EGP Act has no explicit requirements for the retention of *PWPs*. However, *permit holders* and *licensed professionals* must comply with the retention obligations of all applicable legislation. At a minimum, authenticated and validated originals or their copies must be kept for reference or for defence against legal claims or complaints. As outlined in relevant provincial legislation, a *PWP* must be kept at least until the limitation period for claims of wrongdoing expires. As of the date of publication of this standard, the period of limitation is just short of 12 years, including possible extensions that may be legally authorized.

Depending on the nature of the *PWP*, the likelihood of litigation might suggest that the retention period be longer than stated in legislation. *Permit holders* and *licensed professionals* must consider the lifespan of a *PWP* (e.g., bridges, buildings, dams, and operating facilities) when determining the appropriate retention period. Infrastructure-related *PWPs* might need to be retained past the limitation period stated in legislation. *Permit holders* and *licensed professionals* are encouraged to consult insurers and legal counsel for other retention requirements.

The *permit holder's PPMP* must include policies and procedures describing how long a *permit holder* stores *PWPs*, who has access to them, and how they are disposed of.

5.4.2 Storage of Professional Work Products

The *permit holder's PPMP* must include policies describing how a *permit holder* stores original authenticated and validated *PWPs* and their copies. No matter how the *PWPs* are stored, the *PPMP* must detail how the *permit holder* defines which version is the original *PWP*.

PWPs must be stored in a way that maintains their integrity and prevents their unauthorized use or distribution.

5.4.3 Providing Copies to Employee and Contract Licensed Professionals

Licensed professionals might ask if they can keep copies of *PWPs* they have prepared, authenticated, or validated in the case of a claim or complaint against them. This topic must be discussed between the employer and employee, or *client* and contractor or *consultant*, when setting the conditions of employment or *contract* for professional services. The *permit holder's* retention policy and *PPMP* must include information on whether *PWP* copies will be provided to employees and contractors if a claim or complaint should be made against them.

Appendix 1

Examples of Permissible Stamps

Current - Stamps issued by APEGA at the time of publication.

Legacy - Stamps previously issued by APEGA that are still acceptable if the APEGA ID is added manually.

CURRENT Engineering		
Professional engineer  1.25" (small) 1.75" (large)	Licensee (engineering)  1.75" (large)	Professional licensee (engineering)  1.75" (large)
CURRENT Geoscience		
Professional geoscientist  1.25" (small) 1.75" (large)	Licensee (geoscience)  1.75" (large)	Professional licensee (geoscience)  1.75" (large)

LEGACY	Engineering	
Professional engineer  1.25" (small) 1.75" (large)	Licensee (engineering)  1.75" (large)	Professional licensee (engineering)  1.75" (large)
LEGACY	Geoscience	
Professional geoscientist  1.25" (small) 1.75" (large)	Licensee (geoscience)  1.75" (large)	Professional licensee (geoscience)  1.75" (large)
LEGACY	Geology	
Professional geologist  1.25" (small) 1.75" (large)	Licensee (geology)  1.75" (large)	Professional licensee (geological)  1.75" (large)
LEGACY	Geophysics	
Professional geophysicist  1.25" (small) 1.75" (large)	Licensee (geophysics)  1.75" (large)	Professional licensee (geophysical)  1.75" (large)

CURRENT**Permit to Practice**

PERMIT TO PRACTICE
(NAME OF PERMIT HOLDER)

RM SIGNATURE: _____

RM APEGA ID #: _____

DATE: _____

PERMIT NUMBER: P #
The Association of Professional Engineers and
Geoscientists of Alberta (APEGA)

LEGACY**Permit to Practice**

PERMIT TO PRACTICE
(NAME OF PERMIT HOLDER)

Signature _____

Date _____

PERMIT NUMBER: P #
The Association of Professional
Engineers and Geoscientists of Alberta

Appendix 2

Examples of Permissible Authentication

PHYSICAL AUTHENTICATION REQUIRES THE FOLLOWING COMPONENTS:

- the *licensed professional's stamp*, either applied as an ink impression or printed as part of the *PWP*
- the *licensed professional's APEGA ID* either applied with ink or printed as part of the *PWP*, if not included on the *licensed professional's stamp*
- the *licensed professional's physical signature* across the *stamp* in a manner that does not obscure their name and APEGA ID
- the *authentication date* applied with ink

DIGITAL AUTHENTICATION REQUIRES THE FOLLOWING COMPONENTS:

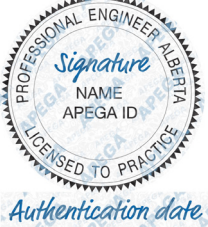
- an *electronic image* of the *licensed professional's stamp*
- an *electronic image* of the *licensed professional's APEGA ID*, if not included on the *licensed professional's stamp*
- an *electronic image* of the *licensed professional's physical signature* across the *stamp* in a manner that does not obscure their name and APEGA ID
- an *electronic image* of the *authentication date*
- the *licensed professional's APEGA digital signature* (supplied by an APEGA-approved provider)

The visible components of both physical and digital *authentication* are **shown on the following pages**.

Digital *authentication* requires the application of the *licensed professional's APEGA digital signature* in addition to the visible components.

Current - Stamps issued by APEGA at the time of publication.

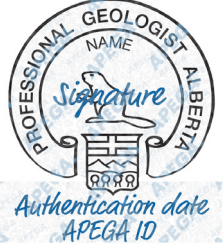
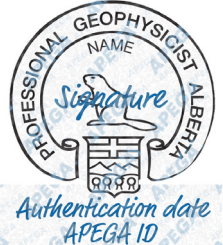
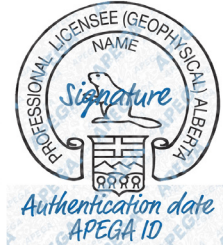
Legacy - Stamps previously issued by APEGA that are still acceptable if the APEGA ID is added manually.

CURRENT		
Engineering		
Professional engineer	Licensee (engineering)	Professional licensee (engineering)
		

LEGACY		
Engineering		
Professional engineer	Licensee (engineering)	Professional licensee (engineering)
		

CURRENT		
Geoscience		
Professional geoscientist	Licensee (geoscience)	Professional licensee (geoscience)
		

LEGACY		
Geoscience		
Professional geoscientist	Licensee (geoscience)	Professional licensee (geoscience)
		

LEGACY	Geology	
Professional geologist 	Licensee (geology) 	Professional licensee (geological) 
LEGACY	Geophysics	
Professional geophysicist 	Licensee (geophysics) 	Professional licensee (geophysical) 

Appendix 3

Examples of Permissible Validation

PHYSICAL VALIDATION REQUIRES THE FOLLOWING COMPONENTS:

- the *Permit to Practice stamp*, which includes the *permit holder name* or *operating name*, and the *permit number* (alternatively, this information may be included without the use of a *Permit to Practice stamp*) either applied as an ink impression or printed as part of the PWP
- the *Responsible Member's APEGA ID* either applied with ink or printed as part of the PWP
- the *Responsible Member's physical signature*
- the *validation date*, which may be different than the *authentication date*, applied with ink

DIGITAL VALIDATION REQUIRES THE FOLLOWING COMPONENTS:

- an *electronic image* of the *Permit to Practice stamp*, which includes the *permit holder name* or *operating name*, and the *permit number* (alternatively, this information may be included without the use of a *Permit to Practice stamp*)
- an *electronic image* of the *Responsible Member's APEGA ID*
- an *electronic image* of the *Responsible Member's physical signature*
- an *electronic image* of the *validation date*, which may be different from the *authentication date*
- the *Responsible Member's APEGA digital signature* (supplied by an APEGA-approved provider)

The visible components of both physical and digital *validation* are **shown on the following page**.

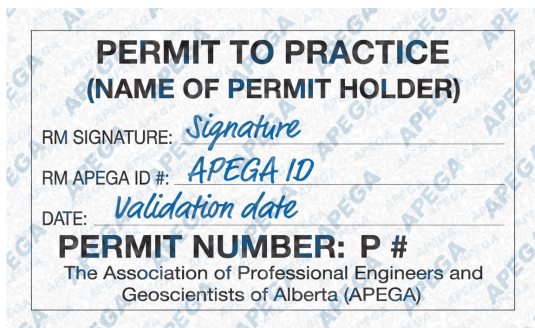
Digital *validation* requires the application of the *Responsible Member's APEGA digital signature* in addition to the visible components.

Current - Stamp issued by APEGA at the time of publication. Information may be included without the use of a Permit to Practice stamp.

Legacy - Stamp previously issued by APEGA that is still acceptable if the APEGA ID is added manually.

CURRENT

Permit to Practice



PERMIT TO PRACTICE
(NAME OF PERMIT HOLDER)

RM SIGNATURE: *Signature*

RM APEGA ID #: *APEGA ID*

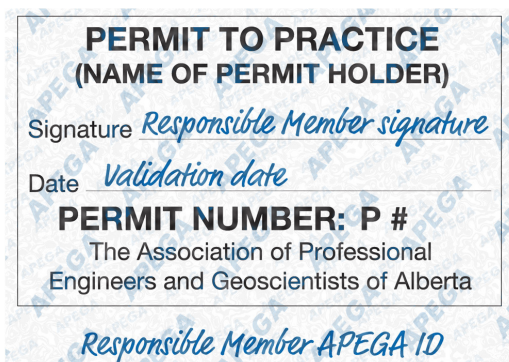
DATE: *Validation date*

PERMIT NUMBER: P #
The Association of Professional Engineers and Geoscientists of Alberta (APEGA)

Name of permit holder
APEGA permit number
Responsible Member signature
Validation date
Responsible Member APEGA ID

LEGACY

Permit to Practice



PERMIT TO PRACTICE
(NAME OF PERMIT HOLDER)

Signature *Responsible Member signature*

Date *Validation date*

PERMIT NUMBER: P #
The Association of Professional Engineers and Geoscientists of Alberta

Responsible Member APEGA ID

Appendix 4

APEGA Requirements for an Acceptable Certificate Authority

For APEGA to confirm the integrity, security, and authenticity of documents that have been authenticated digitally, the following must occur.

1. APEGA *licensed professionals* must apply a *digital signature* supplied by a *digital signature* provider **independently** verified by a third party as meeting APEGA's best practices. APEGA must confirm the verification documents.
2. To meet APEGA best practices, the *certificate authority* must:
 - be experienced in providing this *authentication* technology to members and licensees of other professional associations
 - have the resources, technical support, and systems in place to provide continued service for the foreseeable future
 - have protocols ensuring only APEGA *licensed professionals* are granted the authority to manage and use an *electronic image* of their *stamp* with their personalized *digital certificate*
 - have protocols enabling APEGA to withdraw or suspend an APEGA *licensed professional's* ability to use the *digital certificate*
 - have a platform that offers flexibility and ease of use for a wide range of purposes and applications (e.g., compatibility with different file formats)
 - use a public-key infrastructure, which is a combination of hardware, software, people, policies, and procedures needed to create, manage, distribute, use, store, and withdraw *digital signatures*
 - have a *digital certificate* compliant with the International Telecommunication Union X.509 V3 standard
 - maintain the *digital certificate* under the sole control and possession of an APEGA *licensed professional*
 - allow the *digital certificate* to be stored on the medium of the APEGA *licensed professional's* choice (e.g., hard drive or memory stick)
 - provide interfaces between the technology and the software used by APEGA *licensed professionals* so the image of the APEGA *stamp* with *signature* and date appears when printing or viewing the *professional work product*