



Determining the Need for Professional Involvement in Outsourced Engineering

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The Association of Professional Engineers,
Geologists and Geophysicists of Alberta

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FOREWORD

APEGGA's Practice Standards Committee publishes practice standards and guidelines for the purpose of educating its members and the public about matters of professional practice. Practice standards and guidelines are not intended to be short courses in engineering or geoscience. In general, guidelines are produced to meet the following objectives:

- To assist APEGGA members in performing their professional role in accordance with the *Engineering, Geological and Geophysical Professions Act* and the *General Regulation* under the act.
- To help the public understand the role of APEGGA members and the responsibilities the members have when performing their professional services.

This guideline is a new document, developed in keeping with a recommendation of APEGGA's Practice Review Board. The Board conducted an inquiry into engineering practices in Alberta's major projects. In its report, the Board recommended that a guideline be developed to outline engineers' responsibilities when dealing with outsourced engineering, as defined in this document. Furthermore, the number of questions received by APEGGA about whether outsourced engineering documents require Alberta engineers' stamps also emphasized the need for this guideline.

Comments that would help to improve this document should be addressed to:

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1 OVERVIEW

The Oxford English Dictionary defines the verb "outsource" as "to obtain..... by contract from a source outside the organization or area; to contract (work) out". For the purposes of this guideline, outsourced engineering is defined as engineering obtained from sources that are located outside Alberta. The engineering could be outsourced to a consultant in another province or in the United States or to someone anywhere else in the world. In the context of this guideline, outsourced engineering includes "offshore" engineering, usually meaning the source is outside North America.

Organizations outsource engineering activities for a variety of reasons including the following:

- limited availability of internal engineering resources,
- the desire to continue work "around the clock" in a global context,
- the need for specialized expertise,
- temporary spikes in the demand for engineering resources,
- the ability to convert fixed payroll costs to flexible contract costs,
- the economics of utilizing lower-cost foreign resources.

From a regulatory perspective, the questions that arise with respect to outsourced engineering are usually twofold: (1) does the outsourced engineering need to be stamped by an APEGGA-licensed engineer? (2) what responsibilities do APEGGA-licensed engineers and permit holders have when they are asked to stamp such work?

1.1 Scope

The primary focus of this guideline is on engineering that is outsourced to entities or individuals who are not licensed (registered) to practice engineering in Alberta. While the guideline is written with engineering in mind, it will generally apply to outsourced geological and geophysical work, as well.

1.2 Purpose

The purpose of this guideline is to assist in clarifying the regulatory requirements for the involvement of Alberta-licensed engineers in outsourced engineering that will be used in the province of Alberta. It is also intended to serve as a guide to assist engineers and permit holders to understand their responsibilities when they undertake a review of outsourced engineering for the purposes of stamping such work.

It is not this guideline's purpose to examine the benefits, costs, risks, or economic and social implications associated with outsourcing. Neither is it intended to provide guidance concerning the selection process for outsourcing engineering work. APEGGA's *Guideline for Selecting Engineering, Geological and Geophysical Consultants* addresses that topic.

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1.3 Definitions

For the purposes of this guideline, the following terms and definitions apply.

Commercially manufactured

Equipment that is normally supported by the manufacturer with a warranty, guarantee, and product support and that has had liability and safety issues related to its use addressed by the manufacturer (per Alberta Workplace Health and Safety).

Document

Drawing, detail drawing, report, plan, specification or other form of written communication that expresses design, advice, opinions, calculations, recommendations, instructions or other engineering judgment.

Engineering

Reporting on, advising on, evaluating, designing, preparing plans and specifications for or directing the construction, technical inspection, maintenance or operation of any structure, work or process

- that is aimed at the discovery, development or utilization of matter, materials or energy or in any other way designed for the use and convenience of humans, and
- that requires in that reporting, advising, evaluating, designing, preparation or direction the professional application of the principles of mathematics, chemistry, physics or any related applied subject.

Engineer(s)

Professional engineers, licensees, registered professional technologists (engineering) having appropriate scopes of practice, or permit holders licensed to practice engineering.

Equipment

A thing used to equip workers at a work site and includes tools, supplies, machinery and sanitary facilities (per Alberta's *Occupational Health and Safety Act*).

Member of the association/APEGGA member

A person who is registered as a professional member or a member of a class or category of membership established under the *Engineering, Geological and Geophysical Professions Act*.

Permit holder

A partnership or other association of persons or a corporation that holds a permit under the *Engineering, Geological and Geophysical Professions Act*.

1.4 References

This guideline is intended to be read in conjunction with the following publications (URLs valid at time of writing):

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Engineering, Geological and Geophysical Professions Act, Government of Alberta.
http://www.qp.gov.ab.ca/documents/Acts/E11.cfm?frm_isbn=077970147X

Guideline for Relying on Work Prepared by Others v1.0, June 2003, APEGGA,
<http://www.apegga.org/pdf/Guidelines/29.pdf>

Guideline for Ethical Practice v2.1, June 2005, APEGGA,
<http://www.apegga.org/pdf/Guidelines/02.pdf>

Occupational Health and Safety Code 2006, Government of Alberta.
http://employment.alberta.ca/documents/WHS/WHS-LEG_ohsc_2006.pdf

Occupational Health & Safety Explanation Guide 2006, Government of Alberta.
<http://employment.alberta.ca/cps/rde/xchg/hre/hs.xsl/3969.html>

Occupational Health and Safety Regulation, Alberta Regulation 62/2003, Alberta.
http://www.qp.gov.ab.ca/documents/Regs/2003_062.cfm?frm_isbn=077971752X

Practice Standard for Authenticating Professional Documents v2.0, April 2002,
APEGGA, <http://www.apegga.org/pdf/Guidelines/26.pdf>

2 DETERMINING THE REQUIREMENT FOR ENGINEERING INVOLVEMENT

The requirement for engineering involvement in a project is often raised in the context of stamping engineering documents (drawings, specifications, etc.). With respect to outsourced engineering, the question most frequently asked is, “Does this particular document need to be stamped by an APEGGA-licensed engineer?” The underlying question that needs to be addressed is, “Is the involvement of an APEGGA-licensed engineer required?”

2.1 Regulatory Context

The *Engineering, Geological and Geophysical Professions Act* (the EGGP Act) pertains to individuals or entities (e.g., corporations, partnerships, etc.) who practice engineering in the province of Alberta. The EGGP Act requires an individual who practices engineering in Alberta to be registered as a member of the Association. The EGGP Act and the *General Regulation (Engineering, Geological and Geophysical Professions Act)* (Regulations) under the EGGP Act require an APEGGA member to stamp engineering documents that he or she has prepared or for which he or she has taken professional responsibility. The Act does not have any authority over a non-member who is practicing engineering outside Alberta. Neither does the Act govern actual construction or project work.

The EGGP Act is not the only Alberta legislation that speaks to engineering, however. Numerous statutes like the *Safety Codes Act*, the *Occupational Health and Safety Code*, the *Alberta Building Code*, the *Alberta Fire Code*, etc., pertain to specific projects or kinds of work or particular items or processes that require the involvement of a

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professional engineer. In some cases, statutes also accept professional engineers who are licensed outside Alberta. Where such legislation requires the involvement of an APEGGA-licensed engineer, the engineer must stamp the engineering documents he or she prepared (or reviewed), in accordance with the EGGP Act and Regulations.

For instance, under the *Safety Codes Act*, the *Alberta Building Code* stipulates that an Alberta professional engineer's stamp must be affixed to certain documents where engineering work is involved. Authorities that issue building permits are required to reject applications or to stop work on buildings if APEGGA-licensed engineers are not involved. The *Alberta Fire Code* has similar requirements. Other legislation, such as the *Pressure Equipment Safety Regulation*, which is also found under the *Safety Codes Act*, requires the involvement of a professional engineer, but recognizes any professional engineer licensed to practice engineering in any province or territory of Canada or in any state of the United States.

There are countless legislated requirements (acts, regulations, codes, standards, etc.) that require the involvement of APEGGA-licensed engineers. If there happen to be any instances where there are none, then engineering designs that were prepared by non-members outside Alberta may be used to build some thing or some process even though the documents have not been stamped by an APEGGA-licensed engineer.

While APEGGA administers the EGGP Act and Regulations, it does not administer any other legislation. Questions concerning whether or not a particular activity, process or thing is governed by such legislation can best be resolved by consulting the relevant authority that administers the legislation.

The following examples may be helpful in understanding whether an APEGGA-licensed engineer's stamp is required. The references to certain pieces of Alberta legislation requiring an engineer's involvement are intended to be illustrative, not exhaustive.

Engineering designs prepared in Alberta for items to be constructed in Alberta

Since the designs are prepared in Alberta, the practice of engineering takes place in Alberta. The provisions of the EGGP Act and Regulations apply. Therefore, engineering work performed by an organization located in Alberta must be stamped by an APEGGA-licensed engineer who prepared the design. In addition, the organization for which the design engineer works must have a permit from APEGGA entitling it to practice engineering in Alberta. The organization must show its permit number on the design drawings.

Engineering designs prepared outside Alberta for items to be constructed in Alberta

Since the designs are not prepared in Alberta, there is no engineering being practiced in Alberta. The provisions of the EGGP Act and Regulations do not apply to engineering practiced outside Alberta, nor do they apply to construction. As far as the EGGP Act and Regulations are concerned, the design drawings are not required to be stamped and permit numbers are not required. However, there are other Alberta regulatory

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requirements that do specify the involvement of APEGGA-licensed engineers, requirements such as those in the *Alberta Building Code* or *Pressure Equipment Safety Regulation* mentioned as examples above. Whoever is constructing the item is responsible for being aware of those requirements and complying with them.

For example, if the item being constructed is a piece of equipment as defined under Alberta's *Occupational Health and Safety Code*, an employer using the equipment in its operations "must ensure that the equipment is of sufficient size, strength, design and made of suitable materials to withstand stresses imposed on it during its operation and to perform the function for which it is intended or was designed." The employer must also ensure that "the rated capacity or other limitations on the operation of the equipment, or any part of it, ... as described in the manufacturer's specifications ... are not exceeded." Furthermore, the employer must ensure that the "equipment and supplies are erected, installed, assembled, started, operated, handled, stored, serviced, tested, adjusted, calibrated, maintained, repaired and dismantled in accordance with the manufacturer's specifications". In the absence of a manufacturer's specifications, the employer must ensure that specifications which have been certified by an APEGGA-licensed engineer are followed instead. Such certifications must be stamped and signed by the engineer. Under the EGGP Act and Regulations, an APEGGA corporate permit number would also need to be shown if the engineer is employed by a company or organization located in Alberta.

To extend the example further, in the case of equipment such as lifting devices, rigging, scaffolding, platforms, aerial devices, etc., if the equipment is not commercially manufactured, the employer must ensure that the equipment is designed and certified by an engineer who is licensed with APEGGA. The design and certifications must be stamped by the engineer.

Items brought into Alberta that have been designed and constructed outside Alberta

In this scenario, a vendor-supplied item from outside Alberta does not involve either engineering practice in Alberta or construction in Alberta. Although the EGGP Act and Regulations do not require APEGGA-licensed engineers' stamps on design drawings, other legislation could impose such requirements. For example, Alberta's fire and building codes govern installation of certain items and require the plans, drawings and specifications to bear the stamp of a professional engineer licensed to practice in Alberta.

Similarly, if the item is a piece of equipment under Alberta's *Occupational Health and Safety Code*, the onus is on the employer using the equipment to ensure that the equipment is safe for the job intended and to ensure that it is put into place and operated in accordance with the manufacturer's specifications. In lieu of a manufacturer's specifications, an employer would need to obtain an APEGGA-licensed engineer's certification of comparable specifications. In the presence of a manufacturer's specifications, however, an engineer's certification would not be required. As noted above, specific equipment that is not commercially manufactured requires an APEGGA-licensed engineer's involvement in its design and certification.

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2.2 Business Context

Legislated requirements notwithstanding, project owners, constructors or engineering consultants might choose to involve APEGGA-licensed engineers in reviewing engineering obtained from outside Alberta. The reasons, among others, include due diligence on the part of the organization outsourcing the engineering or the desire to transfer liability or professional responsibility. A study conducted in 2005-2006 by APEGGA's Practice Review Board into major projects in Alberta found that "companies engaged in outsourcing employ Alberta-registered professional engineers to adequately review and control outsourced engineering."

2.3 Obtaining an Alberta Engineer's Involvement

Compliance with the requirement for involvement of APEGGA-licensed engineers can be achieved in several ways.

Obtaining an Alberta License

Individuals who wish to provide engineering services from outside Alberta might be eligible for registration with APEGGA. Suitably qualified Canadian citizens or landed immigrants living in Canada may apply to APEGGA and become registered as professional engineers. Others may qualify to become registered as licensees. Individuals are not required to live in Alberta in order to be licensed in Alberta.

Having become licensed in Alberta, the individuals would be able to meet the requirement for the involvement of APEGGA-licensed engineers and for the requisite stamped professional documents.

Review by an Alberta-registered Engineer

Individuals or organizations who are not licensed in Alberta and who wish to provide engineering work that requires the involvement of an APEGGA-licensed engineer can retain an engineer who is registered with APEGGA to review their work and accept responsibility for it. The EGGP Act and Regulations allow an engineer to stamp work that has been prepared by others after the engineer thoroughly reviews the work and accepts responsibility for it. The engineer is required to expend as much effort on the review as necessary, since the engineer will be held professionally accountable for the documents he or she stamps.

2.4 Corporate Permit to Practice

The EGGP Act and Regulations require an entity (corporation, partnership, etc.) that practices engineering in Alberta in its own name to hold an APEGGA permit (i.e., be licensed to practice). Permit holders (entities) are required to show their permit numbers on any engineering documents that they issue. Permit stamps are not required.

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If the location of the entity's practice is outside Alberta, the EGGP Act and Regulations have no authority over the entity. In other words, the entity would not be required to hold a permit and any documents it produces would not need to show a permit number, unless some other piece of Alberta legislation made that a requirement.

Although it may seem counterintuitive, submitting engineering drawings for use in Alberta is not the same as practicing engineering in Alberta. If a company's office was located in Alberta, it would be regarded as practicing in Alberta. If the company's engineers were actually in Alberta engaging in engineering, the company would also be regarded as practicing in Alberta. If neither of these is the case, then the company would not be practicing in Alberta even though its engineering drawings might be used in Alberta.

3 PROFESSIONAL RESPONSIBILITIES

The Regulations under the EGGP Act were revised in 1999, allowing a professional engineer registered in Alberta to stamp and accept responsibility for engineering documents that were prepared by someone else, after the engineer has "thoroughly reviewed" the documents. The responsibility an engineer assumes by stamping someone else's documents is regarded as being the same as if the engineer had prepared those documents himself or herself. The simple implication of the provision in the Regulations is that it is permissible for an engineer to stamp outsourced engineering documents without being involved in their preparation.

Engineers who review outsourced work need to be aware of their professional responsibilities, regardless of the reasons for their involvement. Organizations that employ those engineers also need to understand their obligations.

3.1 Permit Holders' Obligations

The organization that employs engineers or retains engineering consultants to review and stamp outsourced work must understand that the engineers are ethically and professionally accountable for their actions under the EGGP Act.

A permit holder is corporately responsible for the integrity of its work. A permit holder is responsible for putting in place an organization that enables skilled, professional practice to be carried out by competent professionals. It is responsible for putting sufficient quality control procedures in place to preclude errors or omissions in the technical content of a professional document so that the result is a complete and accurate document. A permit holder is responsible for carrying out its business in accordance with the *APEGGA Code of Ethics*. Permit holders' obligations (through the firm's designated responsible members) are outlined further in the *APEGGA Practice Standard for Authenticating Professional Documents*.

- Permit holders must not place the engineers under duress to stamp documents which the engineers consider to be deficient.

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- Permit holders must provide adequate time and resources for the engineers to conduct a thorough review of the work.
 - Permit holders must respect the engineers' recommendations regarding modifications or corrections that may be necessary.
 - Permit holders must recognize that fair and reasonable compensation for such reviews and re-engineering is an ethical obligation on their part.
 - Permit holders must show their permit numbers on documents that their engineers have stamped with their professional engineers' stamps.

3.2 Engineers' Obligations

Not having been involved in the preparation of a document places a significant burden on the engineer who undertakes the task of reviewing the document for purposes of stamping it. What constitutes a thorough review will depend on the complexity of the particular matter that is placed in front of the engineer. Documents prepared by professional engineers registered in other jurisdictions would probably be reviewed differently from those that are prepared by non-professionals. Familiarity with the author of the document and knowledge of the author's experience would also play a part. However, by stamping a document, the engineer is accepting professional responsibility for the document notwithstanding its source. APEGGA's *Guideline for Relying on Work Prepared by Others* may be of some assistance in determining the level of effort required for the review.

The following are some general considerations:

- The engineer must be competent in the subject matter being reviewed.
- The engineer must take an adequate amount of time to thoroughly review the work before stamping it.
- The engineer must refuse to stamp documents that are deficient.
- For work that is specifically governed by Alberta legislation, the engineer must ensure that the work meets the requirements set out in that legislation.
- For work that is not governed by Alberta legislation, the engineer must ensure that the work has been done in accordance with acceptable engineering practice.
- The engineer must correct any deficiencies in the work before he or she can stamp the work. The engineer should establish an audit trail of deficiencies corrected.

3.3 Directing Construction

The EGGP Act stipulates that the practice of engineering also includes, among other activities, directing the construction of any "thing" (structure, work or process) where the

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directing requires engineering judgment (“the professional application of the principles of mathematics, chemistry, physics or any related applied subject”, Section 1(q) of the Act). In other words, if directing the construction of some thing is complex enough that it requires engineering judgment, an engineer is required to direct that construction. Understandably, the directing of construction does not always require engineering input.

Statutes like the *Alberta Building Code* and the *Occupational Health and Safety Code*, to name only two, clearly define when the involvement of an engineer is required. The building code, for instance, specifies that owners must retain an engineer, not only for the design of buildings, but also for field review during construction. With respect to certain kinds of equipment that is not commercially manufactured, the OHS Code specifies that an engineer must design and certify that equipment. In such instances, APEGGA-licensed engineers’ stamps are required, so the engineer directing the construction of such things would proceed on the basis of an engineer having taken responsibility for the design of the thing.

Engineers who are asked to direct the construction of some thing on the basis of unstamped, outsourced engineering documents are faced with a difficult situation. They cannot ethically direct the thing to be constructed according to the design documents if they recognize a deficiency in the documents, particularly if the matter concerns public safety. However, without having done a thorough review of the engineering documents, the engineers face the distinct possibility of not recognizing any deficiencies. Doing a thorough review of a complex design would require a significant amount of time. If engineers are asked or required to direct the construction of some thing and their scopes of work do not provide for detailed checking of unstamped designs, they should seriously consider the responsibilities they might be accepting.

Engineers who discover deficiencies in unstamped engineering work are obligated to raise the matter in order that the deficiencies are corrected before construction begins or continues. Ownership of the obligation to correct the deficiencies will depend on how the project is organized and on the agreements amongst the parties setting out their responsibilities.