



Guideline for Professional Engineers
Providing Equipment Certification
as Required by the
Occupational Health and Safety Code

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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 members have when performing their professional services.

This guideline is a new document, developed in response to requests from engineers for clarity regarding their obligations when providing certification of equipment in accordance with Alberta's *Occupational Health and Safety Code*.

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

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1 OVERVIEW

Alberta's *Occupational Health and Safety Code* (OHS Code) puts the onus on an employer to ensure that any equipment used in the employer's operations is safe for the job intended. Usually, the rated capacity or other limitations on the operation of the equipment are contained in the equipment manufacturer's specifications. The manufacturer's specifications may also describe how equipment is to be used, maintained, operated, modified, etc. The OHS Code requires the employer to comply with the manufacturer's specifications in that regard.

However, in the absence of, or as an alternative to, a manufacturer's specifications, the OHS Code allows an employer to comply with specifications that are certified (stamped and signed) by a professional engineer. The employer might want to build a "one-off" piece of equipment and put it into service. The employer might have obtained a machine from a manufacturer but wants to modify it to do something different, so the manufacturer's specifications might no longer be appropriate. The employer might have purchased the equipment "second hand" and not received the specifications from the previous owner. In such circumstances, the employer will need specifications certified by a professional engineer if the employer is to satisfy Alberta Workplace Health and Safety (WHS) that the employer is in compliance regarding the adequacy, performance or use of the piece of equipment.

In some instances, the OHS Code requires the employer to provide an engineer's certificate stating that the equipment is safe to operate. For any of the foregoing reasons, engineers find themselves in the position of having to inspect and certify equipment, prepare certified specifications, or "override" the specifications of a manufacturer. This guideline has been written to answer questions that typically arise about an engineer's responsibility in that regard. WHS has also published an Explanation Guide to the OHS Code. Part 3 of the Guide regarding specifications and certifications is reproduced in Appendix A of this APEGGA guideline.

1.1 Scope

This guideline covers the role of professional engineers who certify specifications for equipment and procedures as provided for in Alberta's *Occupational Health and Safety Code*.

1.2 Purpose

The purpose of this guideline is to assist engineers in understanding their responsibilities that arise from certifying equipment or specifications and to provide guidance on the level of diligence and forms of certification that are acceptable to APEGGA. This guideline is not intended to provide assistance with equipment design or with detailed procedures that may be required for assessment of equipment.

1.3 Definitions

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

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Certified

Stamped and signed by a professional engineer as described in Section 14 of the OHS Code (see Section 2.2 of this APEGGA guideline).

Employer

The person or organization to which the engineer provides certification services. Also, a person as defined under the *Occupational Health and Safety Act*.

Equipment

A thing used to equip workers at a work site and includes tools, supplies, machinery and sanitary facilities, as defined under the *Occupational Health and Safety Act*.

Engineer(s)/Professional Engineer

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

OHS Code

Alberta's *Occupational Health and Safety Code*.

WHS

Alberta Workplace Health and Safety.

1.4 References

This guideline is intended to be read in conjunction with the most recent versions of the following documents (URLs valid at time of publication):

Occupational Health and Safety Act, Alberta
http://www.qp.gov.ab.ca/documents/Acts/O02.cfm?frm_isbn=0779749200

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

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

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

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>

Practice Standard for Authenticating Professional Documents V2.0, April 2002, APEGGA, <http://www.apegga.org/pdf/Guidelines/26.pdf>

2 REGULATORY CONTEXT - EMPLOYER'S VS. ENGINEER'S RESPONSIBILITIES

2.1 Occupational Health and Safety

Alberta Employment and Immigration is the government Ministry responsible for the *Occupational Health and Safety Act*, the *Occupational Health and Safety Regulation* and the *Occupational Health and Safety Code*. This legislation establishes the “rules” that keep Alberta workplaces safe and healthy. These rules place the onus on employers for ensuring the safety of workers.

It is important for engineers to differentiate their responsibilities from those of an employer who has retained the engineer to certify the employer's equipment. The OHS legislation clearly addresses such matters.

Health and safety of workers - Employer

The *Occupational Health and Safety Act* puts the onus on the employer, not the engineer, for worker safety.

2(1) Every employer shall ensure, as far as it is reasonably practicable for the employer to do so,

- (a) the health and safety of*
 - (i) workers engaged in the work of that employer.*

Availability of certified specifications – Employer

The *Occupational Health and Safety Regulation* says the following about the employer's responsibility for making the engineer's certified specifications available to the workers and WHS.

7(1) If the Act, a regulation or an adopted code requires work to be done in accordance with a manufacturer's specifications or specifications certified by a professional engineer, an employer must ensure that

- (a) the workers responsible for the work are familiar with the specifications, and*
- (b) the specifications are readily available to the workers responsible for the work.*

(2) If the Act, a regulation or an adopted code refers to a manufacturer's or employer's specifications or specifications certified by a professional engineer, an employer must ensure that, during the period of time that the matters referred to in the specifications are in use, a legible copy of the specifications is readily available to workers affected by them.

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(3) *An employer must ensure that the original of the document setting out manufacturer's or employer's specifications or specifications certified by a professional engineer is available in Alberta for inspection by an officer.*

2.2 Engineering

The *Engineering, Geological and Geophysical Professions (EGGP) Act*, the *General Regulation* under the Act, and the *Code of Ethics* govern the practice of engineering in Alberta. The Act and Regulation do not speak directly to matters of safety. However, the APEGGA *Code of Ethics* requires engineers to "hold paramount the health, safety and welfare of the public" concerning the engineering that they practice and to "undertake only work that they are competent to perform."

Certification of equipment or specifications - Professional engineer

The *Occupational Health and Safety Code* says the following about certification by an engineer.

14(1) If this Code requires that procedures or specifications be certified by a professional engineer, the certification must

- (a) *be in writing, and*
- (b) *be stamped and signed by the professional engineer.*

(2) Unless the document states otherwise, certification by a professional engineer implies that the procedures or specifications certified are fit and safe for the workers affected by them.

Obviously, engineers have certain responsibilities when issuing certifications. Some of these are described in the following section.

3 PROFESSIONAL RESPONSIBILITIES

There are a number of scenarios in which an engineer could be asked to certify a piece of equipment. The engineer might be requested to design a piece of equipment from "scratch". He or she might be asked to modify a piece of equipment. The engineer might be asked to issue a certification for an existing piece of equipment. In any of the foregoing instances, the engineer could be employed by the employer, could be acting on behalf of his/her own company in which case he/she would be both the employer and engineer, or the engineer could be providing services as a consultant. Regardless of the engineer's status as an employee or a consultant, his or her responsibilities are still the same with respect to issuing certifications.

3.1 Knowledge of Relevant Regulations, Codes and Standards

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An engineer who undertakes to certify equipment, procedures or specifications needs to be knowledgeable about the regulations, codes and standards that pertain to the particular piece of equipment for which certification is being sought.

3.2 Competence to Practice

An engineer who certifies equipment, procedures or specifications must be competent, by virtue of training and experience, in the required area of engineering practice. An engineer must not issue a certification if the work involved is beyond the engineer's skill of practice.

3.3 Ethical Obligations

An engineer should not issue a certification without having adequate information. The adequacy of information will be determined by the particular circumstances at hand. An engineer should make it clear to his or her client that it is the engineer who will be held responsible for the adequacy or safe operation of the equipment and cannot ethically issue a certification without have done his or her due diligence.

4 SPECIFICATIONS THAT ENGINEERS CERTIFY

The OHS Code allows an employer to rely on an engineer's certified specifications in several ways.

13(1) If this Code requires anything to be done in accordance with a manufacturer's specifications, an employer may, instead of complying strictly with the manufacturer's specifications, comply with modified specifications certified by a professional engineer.

(2) If this Code requires anything to be done in accordance with manufacturer's specifications and they are not available or do not exist, an employer must

- (a) develop and comply with procedures that are certified by a professional engineer as designed to ensure the thing is done in a safe manner, or*
- (b) have the equipment certified as safe to operate by a professional engineer at least every 12 calendar months.*

The OHS Code should be consulted regarding the requirements related to certification of specific items. This APEGGA guideline is not intended to address such matters. Some examples are taken from the OHS Code simply to illustrate the engineer's responsibilities.

4.1 Rated Capacity of the Equipment

Section 12(b) of the OHS Code states that an employer must ensure that the rated capacity or other limitations on the operation of the equipment, or any part of it, as

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described in the manufacturer's specifications or specifications certified by a professional engineer, are not exceeded.

In the case of certain lifting devices that are not commercially manufactured, an engineer is required to certify the rated load capacity of the device. The employer must ensure that the device has a plate or weatherproof label showing the capacity permanently secured to it.

4.2 Operational Limitations and Procedures for Safe Operation

As noted in the OHS explanation guide, an engineer's "written procedures for the operation of equipment must be specific to the equipment and ensure the equipment will be safe for use. The procedures must also include all the essential ingredients of a typical manufacturer's specifications, such as the limitations and controls to be applied by the operator."

4.3 Repairs and Modifications to Equipment

Using lifting devices as an example again, the OHS Code distinguishes between the employer's and the engineer's responsibilities and is indicative of what should be expected of such certifications in general.

73(1) An employer must ensure that structural repairs or modifications to components of a lifting device are

- (a) made only under the direction and control of a professional engineer, and*
- (b) certified by the professional engineer to confirm that the workmanship and quality of materials used has restored the components to not less than their original capacity.*

(2) If structural repairs or modifications are made, the employer must ensure that

- (a) the repaired or modified components are individually and uniquely identified in the log book and on the component, and*
- (b) the professional engineer's certification makes reference to those components and their identification.*

4.4 Procedures for Equipment Installation

There are numerous instances where an engineer may, in the absence of a manufacturer's specifications, certify specifications for the installation of certain equipment such as fall protection equipment. The procedures must be specific to the equipment and contain all the essential ingredients of a typical manufacturer's specifications.

4.5 Safe to Operate

As noted in Section 13(2) of the OHS Code, an employer can choose to "have the equipment certified as safe to operate by a professional engineer at least every 12 calendar months" as an alternative to having written procedures certified by an engineer.

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4.6 Overriding Manufacturer Specifications

As allowed by section 13(1) of the OHS Code, an employer may request an engineer to “override” a manufacturer’s specifications. Equipment might be used in applications not originally intended or foreseen by the manufacturer. In such cases, new specifications that ensure the continued health and safety of workers may be appropriate. The basis for the new specifications should be fully documented. As with CSA, EN, ANSI, etc. standards referenced in the OHS Code, specifications certified by a professional engineer are treated as legislated requirements. Consequently, the engineer bears a significant responsibility and may be held accountable in the event of an incident related directly to the specifications prepared, whether because of error, omission or otherwise.

5 CONSIDERATIONS TO ADDRESS WHEN CERTIFYING SPECIFICATIONS

The particular matters that an engineer needs to consider when certifying specifications will depend on the nature of the task at hand. Section 3 outlines the professional responsibilities that the engineer needs to consider – knowledge of relevant regulations, codes and standards and the engineer’s competence and ethical obligations.

The engineer will need to determine the extent of work necessary for each project requiring a certification. Most equipment is a function of its design elements, i.e., hydraulic, structural, electrical, mechanical, external and internal components, etc. Functional and structural elements may need to be verified as being in good condition through inspection and testing. The following non-exhaustive list outlines, in no particular order, general matters that an engineer should consider when providing certification related to equipment:

- Applicable regulations, codes and standards the equipment is required to meet
- Employer’s or manufacturer’s unique identification of the equipment or of individual components
- Construction workmanship and quality of materials
- General condition of the equipment
- Environment in which the equipment is, or has been used
- Extent of dismantling, non-destructive inspection or load testing required
- Employer’s operation, service and maintenance program
- Availability of maintenance and inspection records
- Manufacturer’s specifications for repair or non-destructive testing
- Qualifications and experience of third-parties being relied on for information.

As noted earlier in this guideline, the engineer’s responsibility is to provide the certification, and it is the employer’s responsibility to comply with the other requirements of the OHS Code (e.g., legibly identifying component parts, showing rated load capacities, logging repairs or modifications, making the engineer’s certified specifications for work procedures available to affected workers, etc.). It is appropriate that the engineer will inform the client (who may or may not be the employer) that there are rules and requirements with which the employer needs to comply and to point out that it is the employer’s responsibility to determine what those requirements are. The engineer can

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direct the client or employer to the Workplace Health and Safety Contact Centre for further information: 1-866-415-8690.

6 FORM (MANNER) OF CERTIFICATION

There is no particular form which an engineer must follow when certifying a specification or a piece of equipment, other than the requirement that the certification must be in writing and must be stamped, signed and dated by the engineer. The OHS legislation and the EGGP Act and Regulation are specific in that regard. The OHS legislation requires that the employer ensures the availability of the original document certified by the engineer.

The document might take the form of a letter or it might be an actual form that the engineer has developed to record the pertinent information. Specifications for operating limitations or procedures for safe operation, installation or repair of equipment should be of the same form as a typical manufacturer's specification. Specifications for operation or for rated load capacity or other matters need to refer to the particular item, recognizing that it is the employer's responsibility to uniquely identify the item.

Whatever form the engineer's certification takes, it should be clear regarding what the certification pertains to (e.g., rated load capacity, suitability for service, operating limitations, etc.), preferably in the title of the certification document as well as in the body of the document itself. The basis of the certification and any limitations regarding the validity of the certification (e.g., inspection periods, frequency of recertification, misuse of equipment, etc.) should be noted if applicable. The certification document should contain sufficient information that clearly identifies the equipment or its components (e.g., make, model, serial number, part number, etc.) and the relevant certified information. A design certification needs to be clear about the element the engineer is specifically certifying, particularly if there are other design elements present. The certification document should provide for traceability of any related relevant documentation.

Notwithstanding any requirements under the OHS Code, APEGGA's legislation demands that the engineer stamp, sign and date the certification document. If the engineer is an employee of an organization, the organization must also indicate its APEGGA permit number on the document.

APPENDIX A - OCCUPATIONAL HEALTH AND SAFETY CODE 2006 – EXPLANATION GUIDE

The following is reproduced, verbatim, from the Explanation Guide. The section numbers refer to the respective sections of the OHS Code.

Part 3 Specifications and Certifications

Highlights

Part 3 establishes the importance of manufacturer's specifications and of specifications certified by a professional engineer.

Requirements

Section 12 Following specifications

The employer must ensure that equipment is adequate for the job. The equipment must be of sufficient size, strength, design and made of material that can withstand the stresses created during work. Whenever there is a question about how equipment is to be used, maintained, operated, etc., the answer should be found in the manufacturer's specifications or specifications certified by a professional engineer.

The term "manufacturer's specifications" is defined in the OHS Code and refers to written specifications, instructions or recommendations that describe how the equipment is to be used, maintained, operated, etc. Equally effective are specifications certified by a professional engineer, meaning that the specifications are signed and stamped by a professional engineer recognized by the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA). The author of the specifications, be it the manufacturer or a professional engineer, is considered to know the equipment best.

If an Occupational Health and Safety Officer is in doubt as to whether an employer is in compliance regarding the adequacy, performance or activity of an item of equipment, the officer may request a copy of the manufacturer's specifications or specifications of a professional engineer. After reviewing the specifications, the officer should be able to reasonably judge whether the employer is in compliance with this section.

Section 13 Manufacturer's and professional engineer's specifications

Subsection 13 (1)

Although the employer is required to comply with the manufacturer's specifications, this subsection provides the employer with the flexibility to modify specifications. This may result in the equipment being used in applications other than those originally intended by the

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manufacturer. A large power drill for example, may be fitted with a gear reduction mechanism and used as a hoisting mechanism on a swingstage.

A professional engineer must certify such modifications. The engineer providing the certification is responsible for ensuring that the equipment continues to be safe to use, maintain, operate, etc. according to the modified specifications. The subject matter of the specifications must be within the engineer's scope of practice.

Subsection 13(2)

In some instances, the employer will not be able to follow the manufacturer's specifications as required in the OHS Code because the manufacturer's specifications are not available or do not exist. The employer is offered two alternatives:

- (a) have written procedures certified by a professional engineer. The procedures must be specific to the equipment and ensure the equipment will be safe for use. The procedures must also include all the essential ingredients of a typical manufacturer's specifications, such as limitations and controls to be applied by the operator, or
- (b) have the equipment certified as safe to operate by a professional engineer at least every 12 calendar months.

Section 14 Certification by a professional engineer

This section describes what is meant by the phrase "certified by a professional engineer". The certification must be in writing, be signed and stamped, and ensure the safety of workers who may be affected by it.

This section only applies where a section of the OHS Code requires that procedures or specifications be certified by a professional engineer.

Section 15 Approved equipment

Equipment requiring approval from a standards setting, certifying or approving organization normally has the organization's seal, stamp, logo or identifying mark affixed to the equipment. The presence of one of these markings indicates the equipment has been certified or approved by the organization and the marking can then be used as evidence of compliance with the applicable standard referenced in the OHS Code.

Because some types of equipment are used and operated under harsh conditions, the markings can fade, chip, wear off or otherwise become illegible. Recognizing this and the fact that the organizations listed above do not provide markings except at the time of equipment certification or approval, employers are required to use their "best efforts" to retain equipment markings. Markings should be protected to remain legible for as long as possible. Where this is not reasonably possible, original documentation referring to the equipment's certification or approval can be accepted.

APPENDIX B – TYPICAL QUESTIONS REGARDING CERTIFICATION

Design drawings

- *Is an engineer required to include design drawings when providing a rated load capacity certification regarding a piece of equipment for which an employer has no records or specifications of any kind?*

Since the engineer was not involved in the design of the equipment, he would not be expected to provide design drawings. Although the engineer may have developed drawings or sketches to assist in determining the load rating, they may not be part of the certification. However, an illustration might aid in identifying specific components to which the certification pertains or might help to clarify procedures for safe operation or for repairs or modifications to equipment. The equipment or components should be clearly identified in the engineer's certification, along with the respective load rating. The certification must be stamped, signed and dated by the engineer.

Equipment labelling

- *Is the engineer responsible for supplying the employer with a tag or label that identifies the equipment and that states the rated load capacity which the engineer has certified?*

No, the employer is responsible for uniquely identifying the equipment or the components and for indicating the rated load capacity on the equipment in an appropriate fashion. The engineer is responsible for determining the capacity and providing the employer with his or her written certification of that capacity.

Commercially manufactured

- *Who is responsible for determining whether something is commercially manufactured?*

There are numerous references in the OHS legislation to equipment that is "not commercially manufactured". In some instances, the OHS Code requires an employer to obtain an engineer's certification of the item's rated load capacity. In others, it requires an employer to ensure that certain equipment is designed and certified by an engineer, and that the specifications for the assembly, use and maintenance of such equipment are certified as well.

The onus is on the employer to determine whether something qualifies as having been commercially manufactured or not and to obtain an engineer's certification where required. The authority in that regard is Alberta Workplace Health and Safety.

Workplace Health and Safety takes the view that in general, a commercially manufactured product has the following qualities:

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- (a) it is designed and built to some standard or generally accepted engineering principles that make it safe for use;
- (b) it is designed and built by person(s) with the skill or competence to be able to make the product safe;
- (c) it is produced with the intention of being generally available to anyone who wants to buy it – normally there is an exchange of money;
- (d) it is normally supported by the manufacturer with a warranty, guarantee, and product support; and
- (e) liability and safety issues related to its use have been addressed by the manufacturer.

It is implied in the OHS Code that a product that is “commercially manufactured” is “safe” because it has been produced by a “manufacturer” that has the skills and competencies to do so.

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