

EXCEPTION SERVES to cloud LICENSING SITUATION in Ontario

The good news is that Ontario's industrial exception is about to be repealed. The bad news is that since 1984, the exception has created confusion about when a licence may be required. Clearing up that confusion, as engineering regulators seek to harmonize licensing requirements, is the thorny task of PEO's Repeal of the Industrial Exception Task Force.

One reason why Roman-built arches have survived so long is that the design engineer was required to stand beneath the arch when the trusses were removed.

Licensure was introduced much later in the reign of Charles II in Britain. Following the plague and subsequent Great Fire of London (1666), parliament ordered that all those involved in the construction of London's new sewer system must be licensed.

The next cornerstone of modern engineering was the blueprint, or engineering drawing, which came out of the mass production of the Industrial Revolution. In France, the execution of the aristocracy, who were also the educated, meant that to build ships for the navy, the plans had to be copied from one ship to another.

Charles II also created the Royal Society as an early gathering of scientific minds. However, the society's motto, "Nullius in verba"—meaning "Take no man's word for it"—shows a commitment to establishing scientific truth through experiment, rather than by quoting authority.

Although this seems obvious today, the philosophical basis of the Royal Society differed from previous philosophies, such as scholasticism, which established scientific truth based on deductive logic, concordance with divine providence, and the citation of such ancient authorities as Aristotle, which is a fundamental of engineering in North America.

Specific engineering associations were not formed until the late Victorian era. The UK Iron and Steel Institute was founded in 1869. A couple of years later, a group of coal mining engineers formed the American Institute of Mining Engineers, which was the forerunner of the American Institute of Mining, Metallurgical and Petroleum Engineers today.

In 1854, the first engineering school opened in what is now the University of New Brunswick, and in 1898, the Canadian Mining Institute was founded, but provincial licensure did not follow until another 25 years had passed.

In 1932, the Society of Tool Engineers was formed in the United States, which became the Society of Manufacturing Engineers in 1969.

A common thread of all these associations and institutes was public safety, and preventing use of inferior products in unsafe conditions. Given engineering associations' commitment to public safety, one might wonder why legislation such as the Ontario-only industrial exception [section 12(3)(a) of the *Professional Engineers Act*] ever came into being. The questions therefore become: Why permit exceptions? What is professional engineering?

The latter may need to be part of a separate article on its own, yet it goes to the root of why exceptions and exemptions exist.

By Peter Broad, P.Eng., FEC, and Marisa Sterling, P.Eng.

ENGINEERING IN CONSTITUTION

To quote from a Royal Bank letter published in 1986: “Canada must be the only nation on Earth to have a reference to an engineering work in its constitution. A commitment to complete the Intercolonial Railway linking the Maritimes with the central provinces was a key provision of the *British North America Act*. Another railway, the Canadian Pacific, was needed to bring British Columbia into Confederation and bind the nation together.”

The new Dominion of Canada burst with engineering activity of every known kind in the years that followed. Canada’s great sprawls of rock were turned from a hindrance into a spur to development through the skills of mining engineers. Their colleagues in the pulp and paper industry did the same with our forests. Hydroelectric engineers helped to give Canada a priceless legacy of cheap and reliable energy.

Given the central role engineers have played in the building of our nation, it is fitting that one of them, Sir Sandford Fleming, should rank high among our national heroes. As a frontier surveyor and railway builder, he personified the energy and ingenuity of the engineer in Canada’s formative years. Fleming also represented another tradition among his Canadian colleagues: he was an internationalist whose best known achievement was to establish a system of standard time around the world.

WHAT IS PROFESSIONAL ENGINEERING WORK?

Despite these legacy issues, it remains helpful to return to the public perception of what constitutes professional engineering.

The *Encyclopedia Britannica* defines engineering as “the application of science to the optimum conversion of the resources of nature to the uses of humanity.” *Britannica* points out that it is no accident engineers live by the exercise of ingenuity. The words “engineer” and “ingenious” have the same Latin root, *ingenere*, meaning “to create.” Though engineers had been at work since before history was ever written down, no name existed for their occupation until the Middle Ages, when the term “engineer” was used to describe the person who fashioned “engines of war,” such as swinging battering rams and catapults.

Military engineers never confined their skills exclusively to warfare, however. The paved roads that radiated from Rome throughout Europe and the Middle East were the work of engineering officers, for example. Also, as a process engineer, who needs to bring a source of power to a mineral deposit to create a mine, one needs to involve structural engineering, with power generation, and the interaction of materials to chemicals or heat.

An excellent example of this in antiquity was the construction of the Marib Dam in the Empty Quarter that is now Yemen, dating from around the eighth century BC.

So how do we define professional engineering work today? We find the definition and scope outlined in Ontario’s engineering act. The definition incorporates the acts of creating something novel, considering the resulting effect on the interests of the public, while using applied mathematical and scientific principles. In a manufacturing facility, the design of a custom air treatment system that removes chemicals and particulate before the air is released into the atmosphere is an act of professional engineering, and requires a licence holder or direct oversight by a licence holder.

In considering the origins of the industrial exception in Ontario, it’s helpful to recall what engineering work was exempted from licensing.

In that same manufacturing facility, the custom design of a car’s windshield system and the custom process design that uses heavy equipment to make the windshield system would both be acts of professional engineering. The windshield system design work has always required direct oversight by a licence holder; however, the process design work currently does not, as it falls under the industrial exception. The gap identified by the government was that as a result of the industrial exception in existence since 1984, no legislation provided public interest oversight of the engineering of processing equipment or machinery.

Since that time, the Pre-Start Health and Safety Review (PHSR) process, implemented under the *Occupational Health and Safety Act* and its Regulation 851 in 1991, has helped to close this gap by checking the design for human safety, but only at the stage when the equipment is installed for use. However, when deficiencies are found, correcting them costs businesses in re-work efforts, downtime and start-up delays—not to mention added administration once the Ministry of Labour is involved.

The repeal of the industrial exception will now ensure that legislation exists to coordinate the engineering design phase with the PHSR process, and will create one integrated and more effective process that puts the public interest first.

Additionally, the mobility of engineers to work between provinces and territories will be improved once this Ontario-only licence exception is repealed. Both the Ontario and Canadian governments are working towards a harmonized engineering profession and a national regulatory framework.

WHAT HAPPENS NEXT?

So when is the exception to be repealed? What happens next? Ontario’s *Open for Business Act, 2010*, which included the repeal of the industrial exception, was approved by the Ontario government and received royal assent in October 2010. The final step to establish when the industrial exception repeal will take effect is the proclamation of this change by the lieutenant governor.

We are currently awaiting proclamation, which has allowed PEO to reach out proactively to industry and help stakeholders understand and plan how to adjust to this change, if necessary.

Although the passage of the act, known as Bill 68, did not provide for an industry grace period, the time between royal assent and proclamation can be thought of as such, and it supports PEO council’s recommendations to government to allow for a transition period for industry. The task of deciding if an employee’s duties require him or her



REPEAL OF INDUSTRIAL EXCEPTION A WORK IN PROGRESS

By Michael Mastromatteo

to hold a licence rests with that employee. To assist, PEO has created a working group of 21 industry representatives from across Ontario, called the Repeal of the Industrial Exception Task Force (RIETF). The task force has been working with employers to review job responsibilities and help interpret the definition of professional engineering to determine which tasks are engineering and which are not. When it is found that employees currently doing engineering work are graduates of engineering programs, graduates of technical schools or have received on-the-job training, the RIETF helps to explain what types of licences may apply to that individual or what type of licence holder may be able to supervise that individual once the industrial exception is repealed. Employers and employees are invited to contact PEO at any time for assistance at consultwithus@peo.on.ca or via www.engineeringinontario.ca. 

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PEO council established the Repeal of the Industrial Exception Task Force (RIETF) in September 2010 to help industry prepare for a post-industrial exception regime and to alert the manufacturing and processing industry as to what may be at stake.

The RIETF team was built from key industry experts across Ontario from the PEO chapters, including major employers, such as Ontario Power Generation.

Repeal of the exception was part of a series of initiatives contained in the Ontario government's Bill 68, *Open for Business Act*, which, among other things, seeks to streamline licensing and registration practices for all Canadian regulators and remove barriers to obtaining a licence.

PEO originally requested government consideration for the repeal to take effect five years after Bill 68 received royal assent in October 2010. However, the province is seeking a shorter implementation period and has charged PEO with the task of alerting and assisting companies and employees to the upcoming change.

The exception allows owners of production facilities to employ non-engineers to design and analyze production machinery or equipment for use in the employer's facilities making products for the employer. The exception is contained in section 12(3)(a) of the *Professional Engineers Act*.

The industrial exception has been in force since 1984. Ontario is the only province in Canada with such an exception.

Repeal of the exception supports creation of a national framework where all Canadian jurisdictions have the same requirements in the public interest.

Throughout 2011, members of the RIETF have identified and informed more than 110 industry associations and more than 6000 facilities in Ontario, classified by the North American Industry Classification System (NAICS) as carrying out manufacturing and/or processing.

The RIETF has clarified for industry the definition of professional engineering work and the right to the engineer title. Through industry letters, 21 public presentations across Ontario in partnership with PEO chapters, over 15 meetings with employers, a published guideline

and journal articles, the RIETF is bringing more awareness of the repeal and the ways to come into compliance. As such, the task force looks to find creative ways to simplify the licensing process and allow companies and individuals to establish compliance plans to facilitate a smooth implementation of this change.

The RIETF hopes to identify those people who currently do professional engineering work relating to production machinery in their employers' facilities and who do not hold a licence to practise professional engineering. The task force is looking to work with these people and their employers to put together a plan for how they can either become licensed or work under the supervision of a professional engineer, or a limited licence holder.

In a message to the Canadian Tooling & Machining Association, Marisa Sterling, P.Eng., project manager for the RIETF, outlined scenarios for those who might be affected by the repeal. Essentially, these employees have two options: apply for a P.Eng. licence or limited licence (assuming the individual has the required qualifications), or have a licensed engineer oversee and take responsibility for the work.

Sterling reiterates that professional engineering remains specifically defined, but with protection of the public interest as the primary concern. Employees unsure if the work they are doing might involve professional engineering should ask themselves three questions:

- Do your actions involve the planning, designing, composing, evaluating, advising, reporting, directing, supervising or managing of the work?
- Do your actions require you to apply engineering principles to the work?
- Do your actions concern the safeguarding of life, health, property, economic interests, public welfare or the environment?

Anyone answering yes to all of these questions should understand they are doing professional engineering work. As such, these individuals should either seek to become licensed or ensure an engineer takes responsibility for the work they are doing.