Submission #5

1. Title of Submission

Digital seals for PEO licence holders

2. Please briefly describe the issue, problem, risk or gap that this submission addresses.

With the advent of the COVID-19 pandemic, the preparation of reliable electronic documentation is more important than ever. Currently, there does not exist a way to seal an electronic document (such as a PDF) while also assuring the customer and the public that the seal was not tampered with.

The current guidance on the use of the seal by PEO is 15 years old ("Use of the Professional Engineer's Seal" July 2005, Revised Nov., 2008). That document itself states that "Because electronic documents can easily be changed and copied with no obvious indication, engineering organizations must have well documented processes to support the authenticity and validity of documents with electronic signatures and seals."

Many engineering organizations have resorted to using a "self-signed" digital certificate, perhaps in conjunction with the image of an engineer's written signature. This method is free of charge, and can be implemented by anyone with Adobe Reader. This method does not provide any assurance whatsoever that the person signing a given document is the one whose name and signature image/ PEng. seal are being used. Moreover, this also provides no assurance that the signee is affiliated with PEO in any way.

3. Please summarize the action that you are requesting from Council and how it will address the issue, problem, risk or gap stated above.

The onus for the security of a signature cannot be left to companies, or individual practitioners. It is necessary to provide all practitioners with the opportunity to obtain a third-party certificate that will be valid and verifiable on any computer in the world. There is only one company that provides third-party digital signatures in Canada (Notarius), which are on Abobe's Approved Trust List (AATL), and they do not provide signatures to individuals unless they are affiliated with a professional organization. It is being proposed that PEO partner with this third-party digital signature provider, which will allow licence holders to purchase, at their own expense, a digital certificate and software for digital signing of documents. Ten (10) out of the twelve (12) Provincial Engineering regulatory bodies have partnered with Notarius, with PEO and Northwest Territories and Nunavut Association of Professional Engineers and Geoscientists (NAPEG) being the sole exceptions. It would also be appreciated, though this is not the intent of this proposal, if the PEO could subsidize some of the $185 yearly subscription cost for members that choose to sign up, if possible.

4. Please cite and briefly summarize any research that supports the proposed action.

From the Engineers Nova Scotia website:

"The Digital Seal affixed to a document by an Engineer:

- Guarantees the **origin** of the document. The origin of the document includes proof of the signer's identity, their Engineers Nova Scotia's professional affiliation (at the time of the signature) as well as the date and time of the document's finalization;

- Ensures the **integrity** of the document (as well as its data contents), so that the document has not been altered since its completion;
- Establishes the **authenticity** of the document. The authenticity implies that everything necessary to prove its origin and integrity is embedded in the document;
- Ensures the **longevity** of the document. Longevity provides the ability to open, read, authenticate and preserve the reliability of a document over time, or any period exceeding twelve years (rule of thumb)."

5. As applicable please describe how the proposed action will contribute to serving and protecting the public interest as it pertains to the regulation of professional engineering and the engineering profession.

The implementation of digital signatures provides assurance to the public that an electronic document has the same integrity as a paper document with the traditional P.Eng. stamp. To quote from the "Use of the Professional Engineer's Seal" document, with emphasis added,

"It assures the document's recipient that the work meets the standards of professionalism expected of competent, experienced individuals who take personal responsibility for their judgments and decisions. The seal is important because it is a ***visible commitment*** to the standards of the profession and signifies to the public ***that a particular P.Eng. accepted professional responsibility for the document***.

Affixing the seal to a document is a statement by a professional engineer to others that they can, with a high degree of confidence, depend upon the contents of the document for the furtherance of their projects. Since the outcome of a project depends on factors beyond the control of an engineer, however, a successful outcome cannot be guaranteed by an engineer. The seal is not, and should not be considered, a certification mark or warranty of correctness. According to the Supreme Court (Edgeworth Construction Ltd. v. N. D. Lea & Associates Ltd.), the "***seal attests that a qualified engineer prepared the document.*** It is not a guarantee of accuracy". Instead, ***it should be considered a "mark of reliance",*** an indication that others can rely on the fact that the opinions, judgments, or designs in the sealed documents ***were provided by a professional engineer*** held to high standards of knowledge, skill and ethical conduct."

6. Please identify any legal considerations (eg., the need for changes to the statute, regulation, by-laws etc.) that may affect Council's ability to implement the proposed action.

None. The partnering with Notarius does not change the intent of, or supercede any regulations pertaining to the use of the seal.

7. Please identify any considerations that are relevant to the timing (or urgency) of the proposed action.

It would be most appreciated if the PEO could consider and implement this proposal as quickly as possible, in order to minimize the time-at-risk, or risk exposure of practitioners who must prepare and sign electronic documents using insecure methods, at their employer's request during the COVID-19 lockdown. In many cases it isn't even possible to seal a paper copy of a document, since most people do

not have access to the large-format plotters and scanners that are necessary for many engineering drawings.

8. Please provide any other information that you feel will assist members of the AGM and Council in understanding your submission, in particular your proposed action.

Anybody can create a digital signature purporting to be somebody else, because Adobe's process for creating a self-signed certificate prompts the user to input their name, email address etc., and an image of a hand signature, optionally. A forged digital signature appears to another user as indistinguishable from one produced by the real individual. This is where a third-party signature provided by a trusted issuer of digital certificates, makes all the difference- a valid signature shows up as valid when a PDF is opened, whereas one produced with a self-signed certificate is always flagged as untrusted ("Signature validity is UNKNOWN," "At least one signature has problems," etc.)

9. Please list any attachments to this document.

PEO's "Use of the PE's Seal" document:

https://peo.on.ca/sites/default/files/2019-10/UseofProfessionalEngineerSeal.pdf

Engineers Nova Scotia page:

https://engineersnovascotia.ca/news/view/?news.id=129

Member #1 (name/signature):

Digitally signed by
Tiberiu C. Preda, P.Eng.
Date: 2020.05.12
17:17:59 -04'00'

Tiberiu Cristian Preda, P.Eng.
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Member #2 (name/signature):

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