Connecticut Code Chronicle

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for the use and information of the design and code enforcement communities

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DIGITAL SEALS (AGAIN)

Digital seals were covered last year, but it's a subject that won't go away. Since the State Building Inspector reminded building officials late last year that we have a responsibility to enforce the State regulations pertaining to architects' and engineers' seals, the issue of how to handle digital seals won't go away. As more design professionals have begun to submit their construction documents in digital (PDF) format, the issue has become more of a problem than ever. How are we, as code officials, supposed to deal with it?

As discussed last year, all licensed architects and engineers in Connecticut are required to have an embossing seal. They *may* also have a rubber stamp that is a facsimile of the embossing seal. When physically sealing drawings, they can use either the embossing seal or the rubber stamp. With either, they have to affix the seal to each sheet in a set, and physically sign each sheet in the set. This is often referred to as a "Live" or "wet" seal (and signature.

Unfortunately, it has become commonplace for architects and engineers to make a scanned image of their seal and signature, and to just paste that onto their title block sheet. This is NOT a digital seal as described in the State regulations, and it's also not an original ("live" or "wet") seal. We are not supposed to accept such scanned seals.

How do we know? It depends on whether you are looking at paper prints or digital (PDF) documents.

With both paper and PDF plans, a sure tip-off that a seal and signature are scanned is if the signature appears *exactly* the same on every sheet. In real life, it's impossible for anyone to write their signature exactly the same twice, and it's even more impossible to do so over a seal in such a way that the signature crosses the seal in the exact same way. In general, then, a set of drawings on which the signature coincides with the seal exactly the same on every sheet is a red flag. HOWEVER …

When subscribing to a digital certificate service, most services offer an option to associate an image of the signature with the digital certificate. In such a case, the scanned image will be valid, BUT it will also be accompanied by a digital signature notice, and if viewed as a PDF it will also display the certificate information in most PDF viewers. I have tested this using Adobe Reader, Adobe Acrobat, Bluebeam, FoxIt Reader, and FreePDF 2022. These all allow verification of digital certificates. (Discussion below)

When an architect or engineer first becomes licensed and purchases their seal, it's a one-time purchase. The seal doesn't include an expiration date. My seal and rubber stamp were purchased in 1974 and I can still use them … as long as I maintain my license. Architects' and Professional Engineers' licenses must be renewed every year. The status of a design professionals' license can be verified on-line through the Department of Consumer Protection eLicense Lookup portal on the State's web site: https://www.elicense.ct.gov/Lookup/LicenseLookup.aspx

It isn't necessary to fill in every field to search for a license status. Usually just the first and last name will be enough. For design professionals from other states, do NOT fill in the state field. The eLicense Lookup records are based on the professional's address of record, not the state of licensure (which is, obviously, Connecticut). If you enter a state and that's not where they live, the system won't return a search result.

This is what my license looks like on the eLicense Lookup:

	Name	Credential	Credential Description	Status	Status Reason	City	DBA
Detail	HARWOOD W LOOMIS	ARI.0002973	Department of Consumer Protection	ACTIVE	CURRENT	WOODBRIDGE	

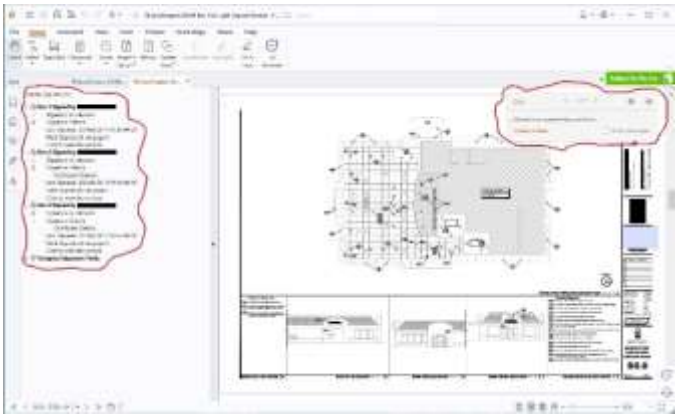
Checking the validity of digital seals and signatures on PDF copies of plans isn't difficult, but it requires the use of a PDF reader that is capable of verifying digital certificates. In Southington, we subscribe to the Municity on-line permitting system. Applicants can upload plans directly to Municity, from which both the Building Department and the Fire Marshal can access the plans for review. However, Municity does not directly verify the validity of digital seals and signatures. To to that, we have to download the PDF files from Municity and open it in a PDF viewer. What the viewer reports will be different depending on which viewer you use.

In the versions of Abobe Reader and Adobe Acrobat I use (older versions, because I prefer the "classic" menu rather than the ribbon-style menu), the program initially only shows that there is a digital signature. This is on the left of a colored bar that appears across the top of the screen, above the document:

To obtain specifics, click on "Signature Panel" at the right-hand side of the colored bar to open up a panel through which you can verify the current status of the digital certificate associated with the digital signature.

In Bluebeam Revu, according to the Bluebeam web site, when a document that has been digitally signed is opened in Revu, signatures are automatically checked for validity. One of seven icons will be displayed to indicate the status of a signature's validity.

The free version of FoxIt Reader, which is arguably the most popular PDF reader after Adobe Reader, also makes it easy to verify digital signatures:



Other PDF readers should offer similar capability. If yours does not, check to see if you need an updated version. FreePDF, for example, only incorporated digital signature validation in the 2022 version. If your PDF viewer does not allow you to verify digital signatures, ask your IT department to install one that does. It won't cost your municipality anything. FoxIt offers a free reader version, which can verify digital signatures. FreePDF 2022 can verify digital signatures. Bluebeam used to offer a free version called Bluebeam Vu (*not* ReVu). Although Bluebeam no longer officially supports the free Vu version, it can be downloaded and installed—completely free. Another free PDF reader that can verify digital signatures is SlimPDF. I'm sure there are other free PDF readers that can verify digital signatures.

According to Cynthia Fernandez, a staff attorney at the Department of Consumer Protection, even if an architect's or engineer's license is current, if they use a digital seal and the validation key isn't current, we are not supposed to accept the documents. In an e-mail dated May 7, 2024, Ms. Fernandez wrote:

> "The expired certificate should be remedied by the architect even if their license is current with DCP. The digital seal should be verifiable independent of separately searching for the credentials online."

Digital certificate providers offer a variety of subscriptions, which may run month-to-month or which may be for periods of up to three years. This means the digital certificate that authenticates a digital seal will almost certainly not correspond to the period of the design professional's license from the Department of Consumer Protection. This leaves us with no choice other than to perform two checks: (1) verify the current license status through the DCP eLicense Lookup portal; and (2) independently verify the status of the digital signature using a PDF reader.

Most PDF readers that can verify digital signatures will also report whether or not the document has been edited after the digital signature was applied. If the document has been edited after signing, then the digital signature is no longer valid and we should not accept the document(s).

How much of this deep dive into the digital certificates is necessary? It depends on whether the PDF reader indicates problems with the digital signature. In an e-mail dated May 7, 2024, Omarys Vasquez wrote the following summation:

> "Yes two checks.
> "Otherwise they have to use a wet seal.
> "The digital check is only required if you see a warning pop up on the PDF. Otherwise business as usual."

PAPER PLANS

What about paper prints of drawings that were signed digitally? Obviously, they can't be checked in a PDF reader. And most likely any seal they display will be a scan of the design professional's rubber stamp image and signature.

Plans that have been printed from files that were digitally signed will include an information panel that includes more than just an image of the seal and signature. The appearance of this panel may vary depending on the software used to enter the digital seal but, typically, it will include the name of the person to whom the seal belongs (which has to match the name in the seal itself), along with information about the digital certificate as well as the date and time when the digital signature was applied.

[redacted]
CT LIC: ARI. 00145[redacted]

The first example above includes complete information about the digital certificate. The second example does not, and should be viewed with caution. If possible, the second example should be viewed in digital form to allow proper authentication of the digital signature. This is always a good idea, since it is possible to enter what appears to be a valid digital signature without having the signature being backed by a trusted third-party digital certificate authority.

As an example of a digital signature that is not valid because it is not backed by a trusted, third party certificate authority, the following is a digital signature I entered on a sample document using FoxIt Reader's digital signature function:

The following is a digital signature I entered on a sample document using Adobe Acrobat's digital signature function:

Although both of the above appear to be authentic digital signatures (and both were created digitally), I do not currently subscribe to a trusted third-party authentication service. When the digital signature properties are checked, it reports that the digital signature is valid; it reports that the document has not been changed since it was signed; BUT it also reports that "This CA Root certificate is not trusted." That means it is not linked to a trusted third-party digital certificate authority such as DigiCert, EnTrust, or IdenTrust.

It's probably going to take some time for small firms and individual practitioners to get on board with proper digital seals and signatures. In the meanwhile, as Omarys wrote, they always have the option of submitting paper plans with a "live" or "wet" seal.

PLAN STAMPING

"Plan stamping" is when a licensed design professional puts his or her seal and signature on a drawing or document that was not prepared by himself or herself, or under their direct supervision. Under the rules promulgated by the respective licensing boards, plan stamping is not allowed *at all* for architects. It is allowed for professional engineers, but only subject to limited conditions:

Before affixing his or her seal and signature to work prepared by another party not under the engineer's direct supervision, an engineer must perform a review to satisfy himself/herself that the work is correct, and he/she must prepare a written evaluation spelling out the nature of the review performed. Although the code doesn't require it, I recommended that Building Officials ask for a copy of this report when they receive drawings that were obviously sealed and signed by someone other than the author of the drawings.

CONCLUSIONS

As Bob Dylan famously wrote in a song, "The times, they are a changin'." Whether or not we are ready for it, digital project management and digital document management are either here, or coming fast.

State law requires that architects and professional engineers have seals, and that they use their seals in accordance with the regulations of their respective agencies. This means they either physically seal each sheet of a set of construction drawings (using either the embossing seal or the rubber stamp facsimile)

and physically sign each sheet, or they use digital seals and signatures that conform to the regulations promulgated by their respective licensing boards.

The building code then makes it our responsibility to verify that the design professionals are following their regulations. The path to this responsibility is indirect, but it is there. Section 107.1 of the IBC portion of the 2022 Connecticut State Building Code says:

> **107.1 General.** Submittal documents consisting of *construction documents*, statement of *special inspections*, geotechnical report and other data shall be submitted in two or more sets, or in a digital format where allowed by the building official, with each *permit* application. The *construction documents* shall be prepared by a *registered design professional* where required by the statutes of the jurisdiction in which the project is to be constructed. Where special conditions exist, the *building official* is authorized to require additional *construction documents* to be prepared by a *registered design professional*.

The statutes spell out when construction documents have to be prepared by a licensed design professional. The regulations adopted pursuant to the statutes then require that when a licensed design professional prepares construction documents for a permit, the licensed design professional has to affix his or her seal and signature.

And we are supposed to check to ensure that the construction documents comply with all relevant laws, ordinances, rules and regulations.

It's always difficult to enforce a provision of the code or the law that other municipalities aren't enforcing. The sooner we all start checking digital signatures and enforcing the regulations, the fewer complaints we'll get that, "They don't make me do that in [fill in the blank]."

NOTICE: The preceding article does not represent an opinion or an interpretation from the Office of State Building Inspector. However, I did submit it to OSBI prior to publication and they did not find any significant errors in it.

The editor is a licensed architect and a licensed building official, with more than 40 years experience. I offer non-structural plan review services for projects of any size, with special rates for municipal building departments.

Please contact me to discuss your needs.

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What topics would you like to see discussed in future issues? It helps all of us if we can all be on the same page, to avoid those "But I never have to do that in [town]" complaints.

Send me an e-mail if you think of any issues that affect all building officials, everywhere.