DIGITAL SIGNATURES
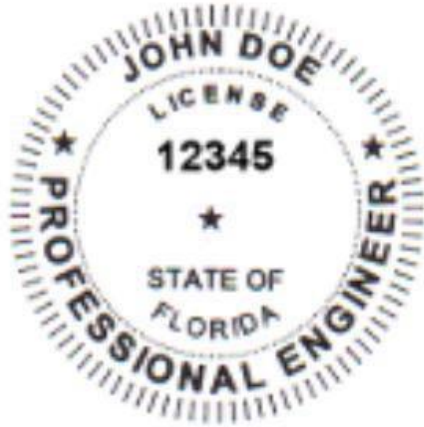
Building a Digital Signature to

Meet State Statute Requirements

Using a Certificate Authority

and the FBPE update Nov. 2015

Adobe Acrobat Pro DC

Adobe Reader DC

THE DIGITAL SEAL AND SIGNATURE

An Engineer, Architect, and Surveyor's Digital Signature must be in compliance with the latest State Statue requirements **471.025 & Florida Administrative Code 61G15-23.003.** We cannot approve the plans for your customer's permit until we receive drawings signed and sealed in accord with the State Statute utilizing a certificate authority and the NEW additional sentences added by FBPE.

JOHN DOE PE
cn=JOHN DOE PE, o=This item has been electronically signed and sealed by JOHN DOE using a Digital Signature. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies., ou, email=jdoe@wintersspringsfl.org, c=US
2016.02.16 16:47:48 -05'00'

A Digital Signature

The online equivalent of a notarized signature, in this case the Certificate Authority (CA) serves as the notary in terms of verifying your identity while a trusted timestamp verifies the date and time the signature was applied. Digital signatures allow users to keep their entire workflow online. Individuals can certify and sign documents as needed right from the comfort of their computers.

A Digital Signature is made up of several components:

1) Adobe Acrobat Standard/Pro or Reader DC – Most Digital Signatures are built using the Adobe platform. Step one creates the digital certificate. Step two involves scanning a professional's seal into a j-peg file on the computer hard drive. Adobe then integrates it with the digital certificate. Step three will add the Certificate Authority's (CA) digital certificate file, token key or serial number to the digital ID as verification of the professional Engineer's identity.

2) Digital Certificate - a way of proving your identity in online transactions and is unique to you when signing a document. The typical digital certificate includes your full name, email address and your professional qualifications for signing.

3) Certificate Authority (CA) - a third party verification entity that certifies your identity with a digital certificate, software or a Token Key on a Smart Card or USB drive. Some companies require background checks or other various ways to verify identity. The verification process can take up to two weeks.

4) Secure Hash - When the Engineer clicks "sign" in Adobe Acrobat, a unique digital fingerprint (called a hash) of the document is created using a mathematical algorithm. This hash is specific to this particular document; even the slightest change would result in breaking the hash. The hash is encrypted using the Engineer's private key from the digital certificate. The encrypted hash and public key are combined into a digital signature, which is applied to the document for security.

5) Professional's Seal - scan the wet stamp of the professional's seal into a 2" square j-peg or pdf file and save on the computer hard drive. It will then be integrated with your digital certificate using the Adobe software.

6) NEW! **Added Language (two sentences) – (1) This item has been electronically signed and sealed by [LICENSEE NAME] using a Digital Signature. (2) Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.**

(These two new sentences can be entered into the "ORGANIZATIONAL NAME" section in the Certificate part of your Digital ID) it is much easier to create a new Certificate by clicking "ADD ID" (See the HOW-TO Below)

How does it Work?

When you apply a digital signature on a drawing, a cryptographic operation binds the digital certificate and the data being signed such as a PDF or other drawing file into one unique descriptor. Any change to the drawing will remove your unique descriptor or break the hash and will be indicated when opened in Adobe, stating the Signature is Invalid "This Document has been modified".

Authentication – since a third-party validated certificate is used to apply the signature, recipients can easily verify the validity of the drawing. A right click on the digital signature displays a pop up screen to validate the Summary, Certificate Authority, Revocation, Trust, Date/Time, Signature Properties and Policies. When the drawing is opened in Adobe it will automatically try to verify the signature.

Data integrity – during the signature verification, Adobe checks to see if the data in the document has been changed since the signature was applied. Even the slightest change to the original document results a fail.

You cannot Self-Sign your own Digital Signature. The new requirement involves having your identity, digital seal and signature validated by a 3rd party Certificate Authority. Local Engineers, Architects and Surveyors are using Adobe Entrust, IdenTrust, Cosign, DocuSign, VeriSign and GlobalSign most frequently. These companies validate your identity then have you download a digital certificate to your computer, use software or they will send you a USB drive with a token key or serial number.

✗ WRONG – Self Signed

**✓ CORRECT – Certificate Authority Attached**
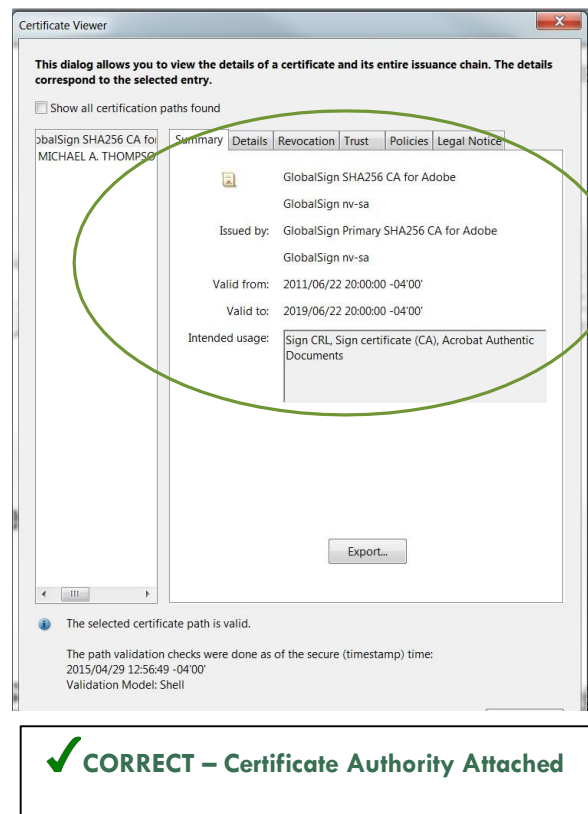
Create a self-signed digital ID in Adobe Acrobat Standard or Pro

How to pdfs are also available for newer versions of Adobe including Reader DC (Free) just visit
our website at ePlans Digital Signatures Guides Page
(Note: Every Adobe version may differ slightly. Some versions have you click
Security instead of Signatures in the Preferences screen below.)
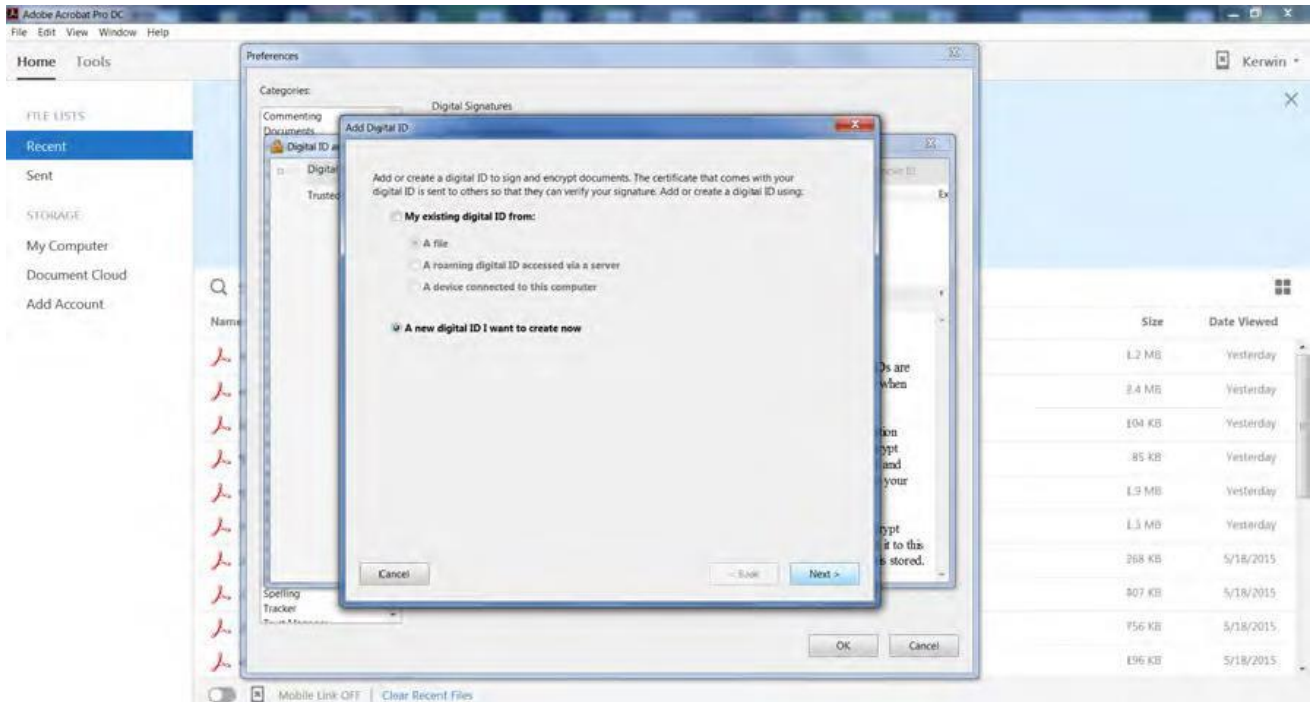**Total Time needed to build a Digital Seal and Signature – about 30 to 45 minutes!**

1)   Main Menu>Choose Edit >Preferences >Signatures>Select Identities & Trusted Certificates and click More.
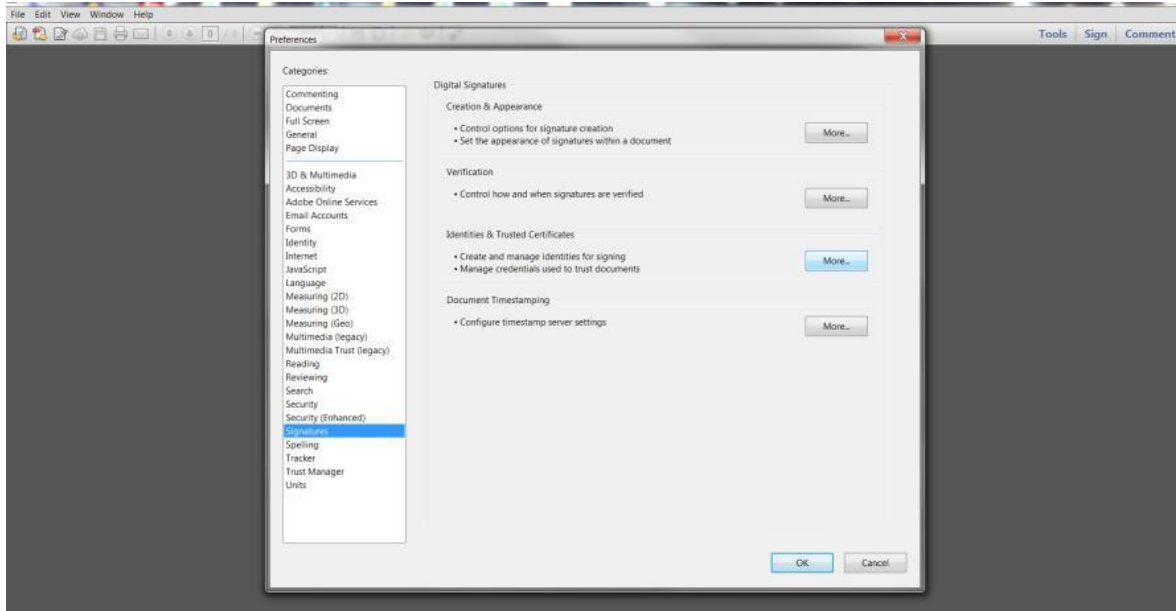
2)   Select Digital IDs on the left column, and then click the Add ID button.
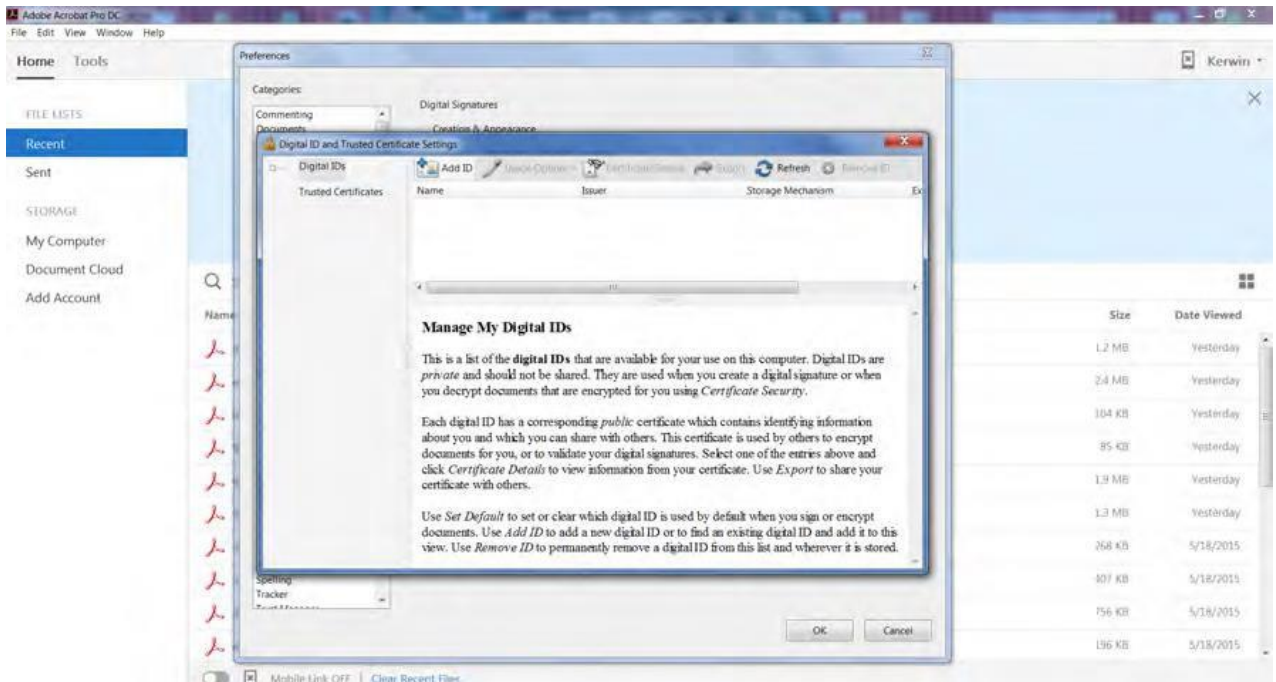
3) Select the option - *A new digital ID I want to create now*, and click Next.

4) Check - *New PKCS#12 digital ID file*, click Next.
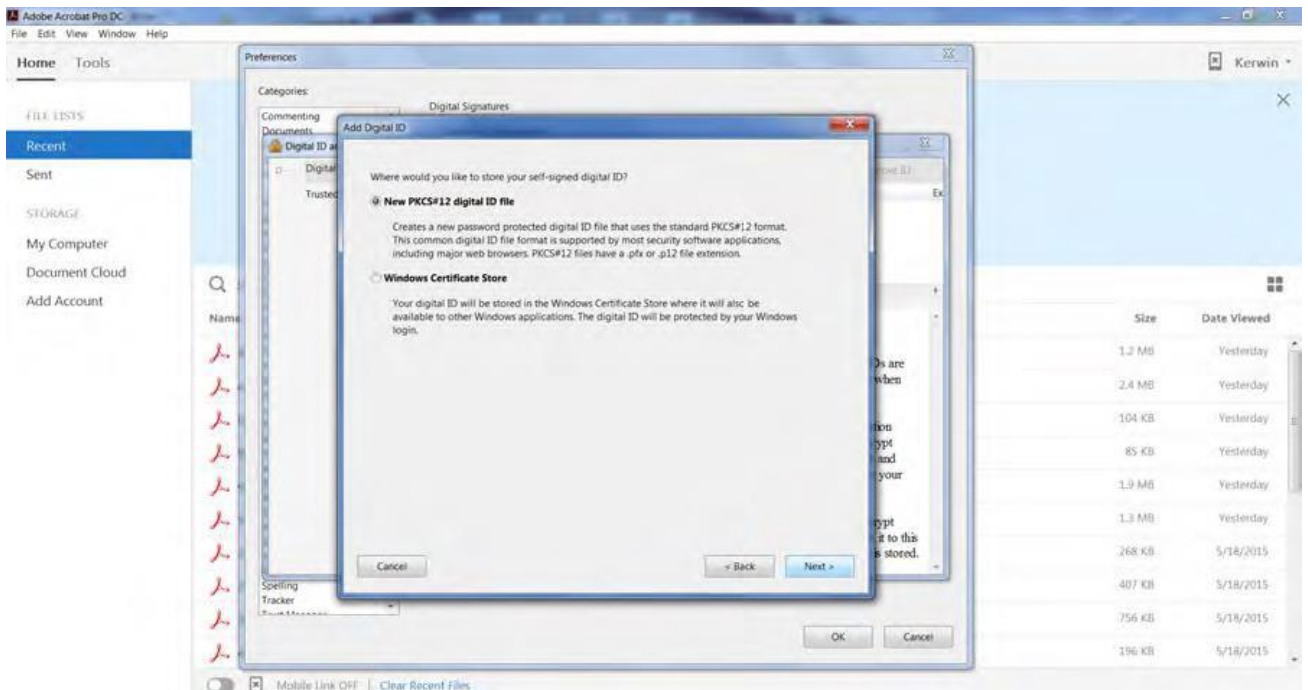
5) Type in your identity information for your digital ID. When you certify or sign a document, the name and email appears on your Digital Signature.

You MUST enter your name in the following manner to add the two new sentences that the Florida Board of Professional Engineers (FBPE) requires in their January 2016 Newsletter.

Replace your name in the "NAME" field or "ORGANIZATION NAME" with these two sentences.

> JOHN DOE PE - This item has been electronically signed and sealed by JOHN DOE using a Digital Signature. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

*Some Adobe versions will require you to insert the Name and two sentences into the ORGANIZATION NAME field instead or vica versa.
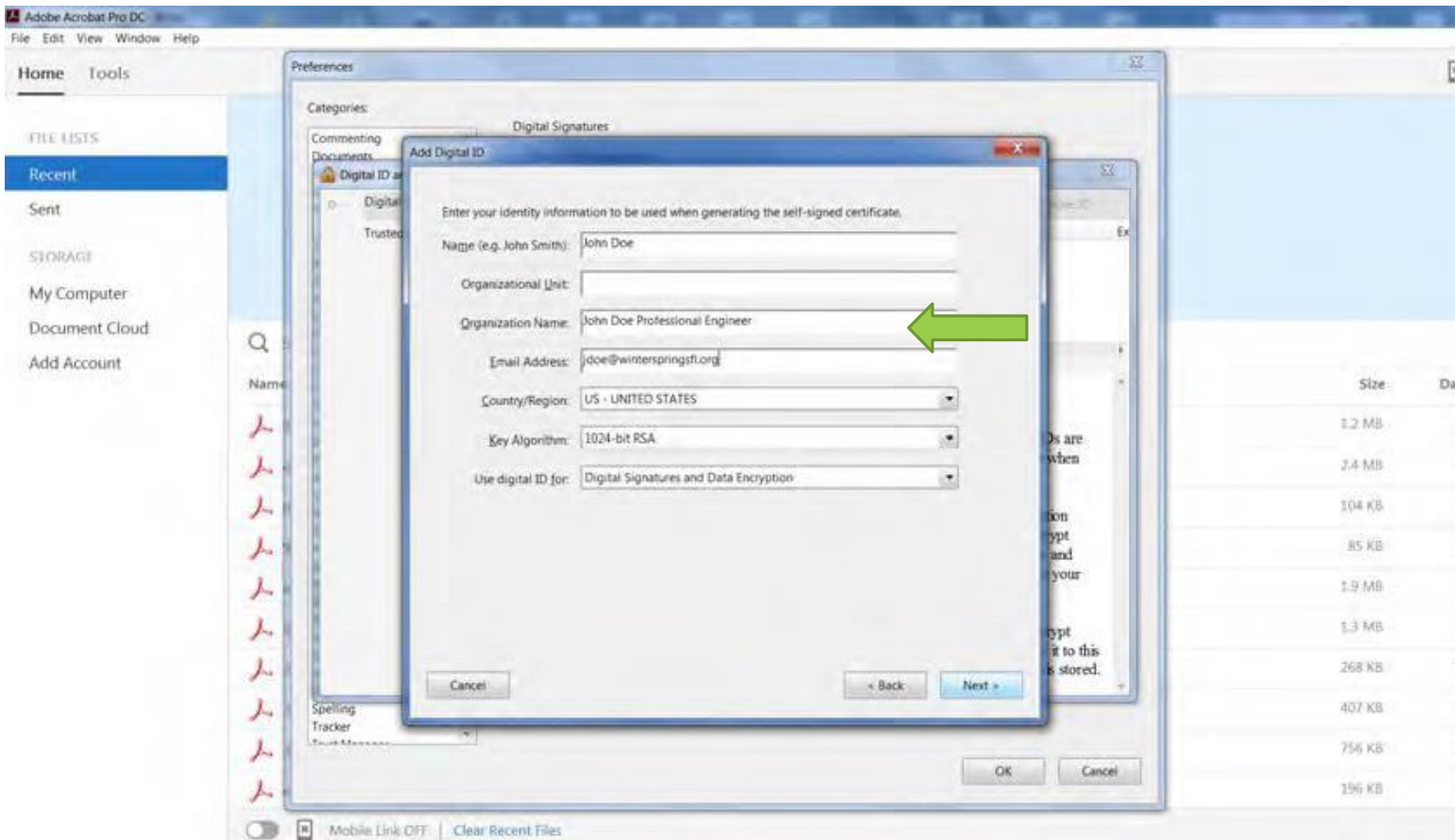
6) Choose where to save your Digital ID and enter your password twice.
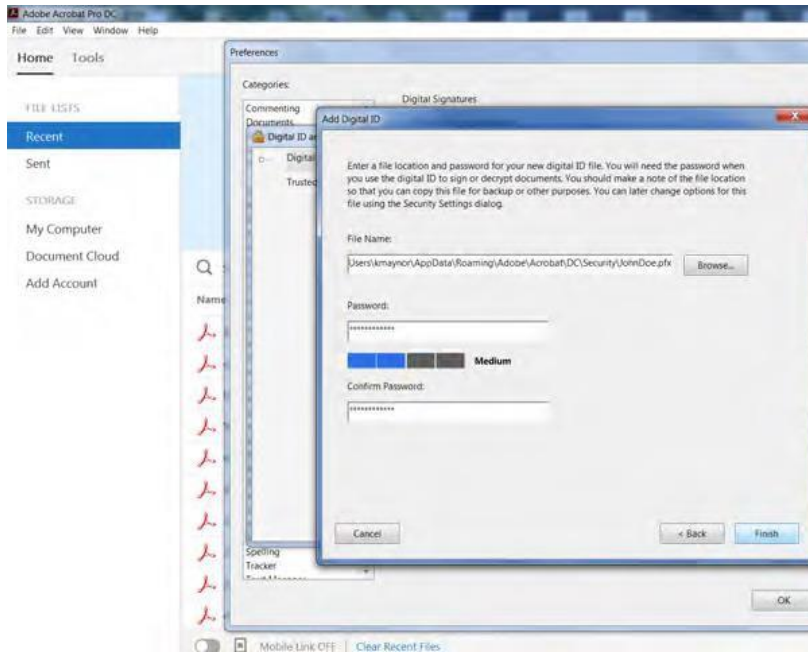
*If an error results in step six or the two sentences do not appear in step seven, switch the Name and two sentence entry from the "Organization Name" entry field to the "Name" entry field or vica versa.

* If the "Confirm Password" entry field in step six is missing, your font sizing setting on your computer is set at +125% or higher. To expose the second password entry field you will have to cancel this ID build, go to your computer's CONTROL PANEL > APPEARANCE and PERSONALIZATION Settings > Fonts (Make text and other items larger or smaller) setting. Adjust the setting to 100% or less, next Logout of your computer then Log back in. Repeat the Digital Signature build steps 1 thru 8 again. When the new Digital Signature is completed and tested you can re-adjust your font settings back the way they were originally set.

7) Usage Options - check Signing, Certifying, and Encryption for the Signature. (Reader will not allow all options)
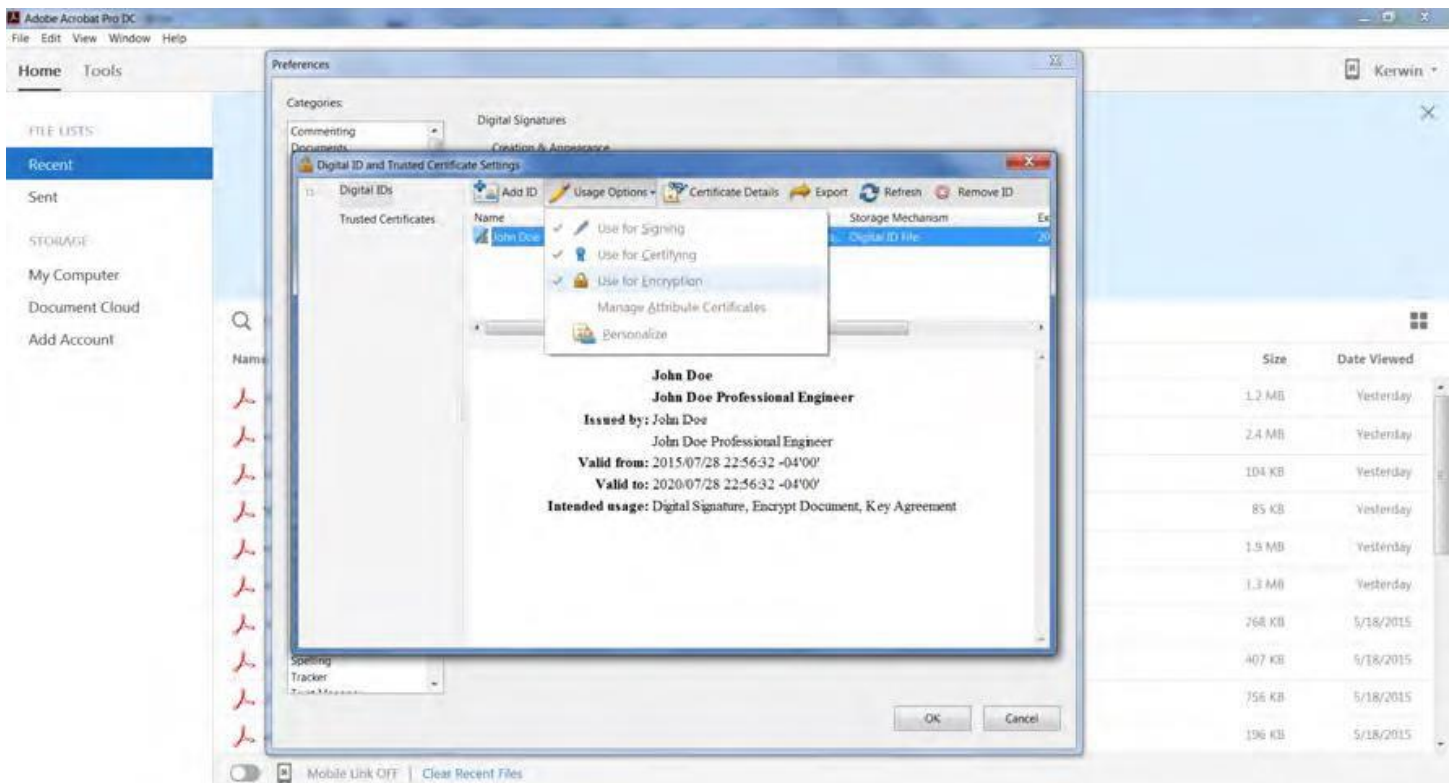
8) Your Digital ID certificate is complete, close screens and return to main menu.

Prepare Your Seal for Import

a) Next, take a blank piece of 8.5 x 11 printer paper and wet seal the paper with your Professional Engineers or Architects seal. A crimp stamp can be used however; you must highlight the ruffled edges of the seal with the side of a pencil lead. DO NOT HAND SIGN the seal. Signing is not required as this becomes your digital signature.

b) Take your time and make it look nice and square as this will represent you for the next five years.

c) Scan the seal into a graphic .jpg or .pdf file and save it on your computer hard drive.

d) Crop the .jpg or .pdf of your seal down to just outside the edges of the seal approximately 2"x2" square in size. *Some Reader versions require the graphic to be a .pdf file instead of a .jpg file.
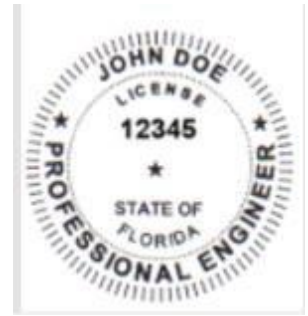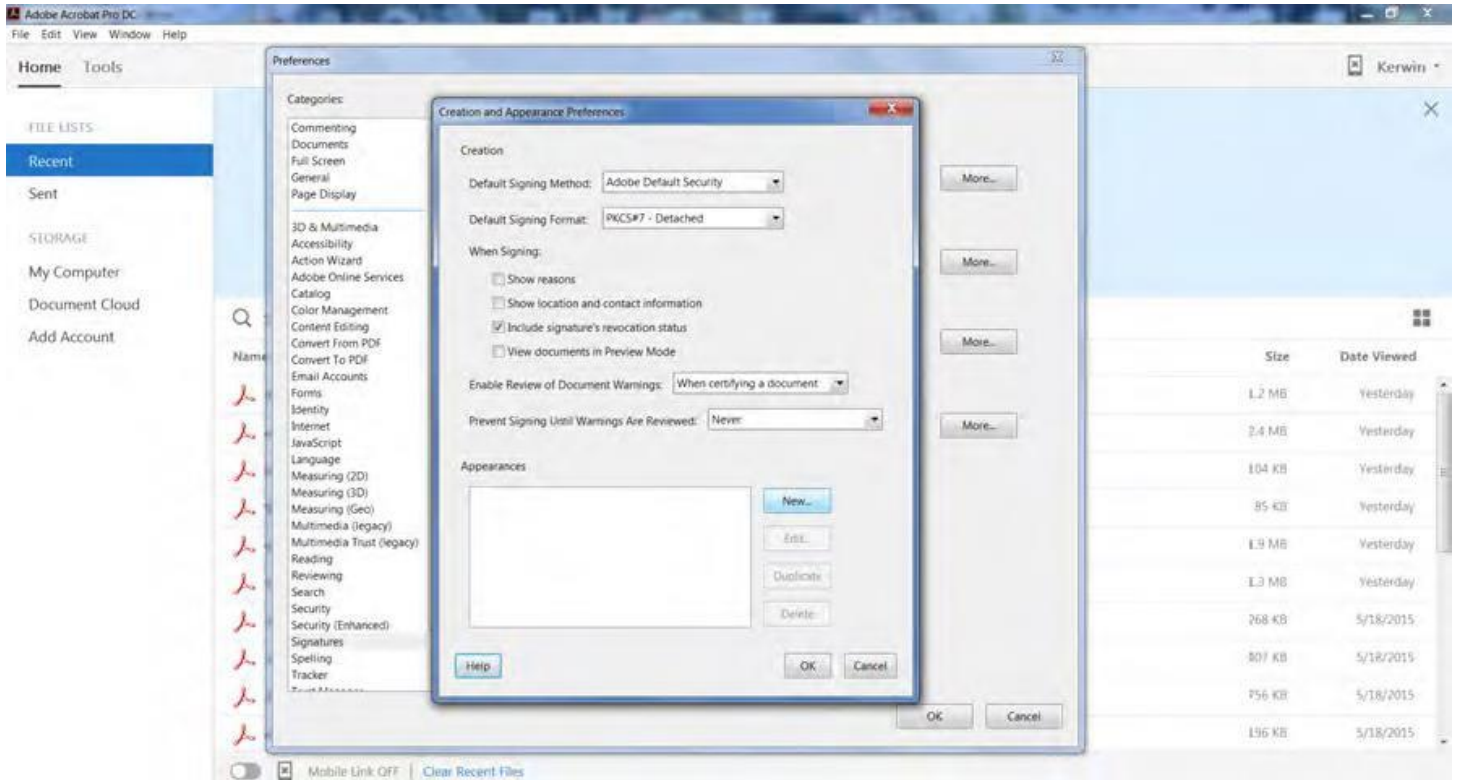
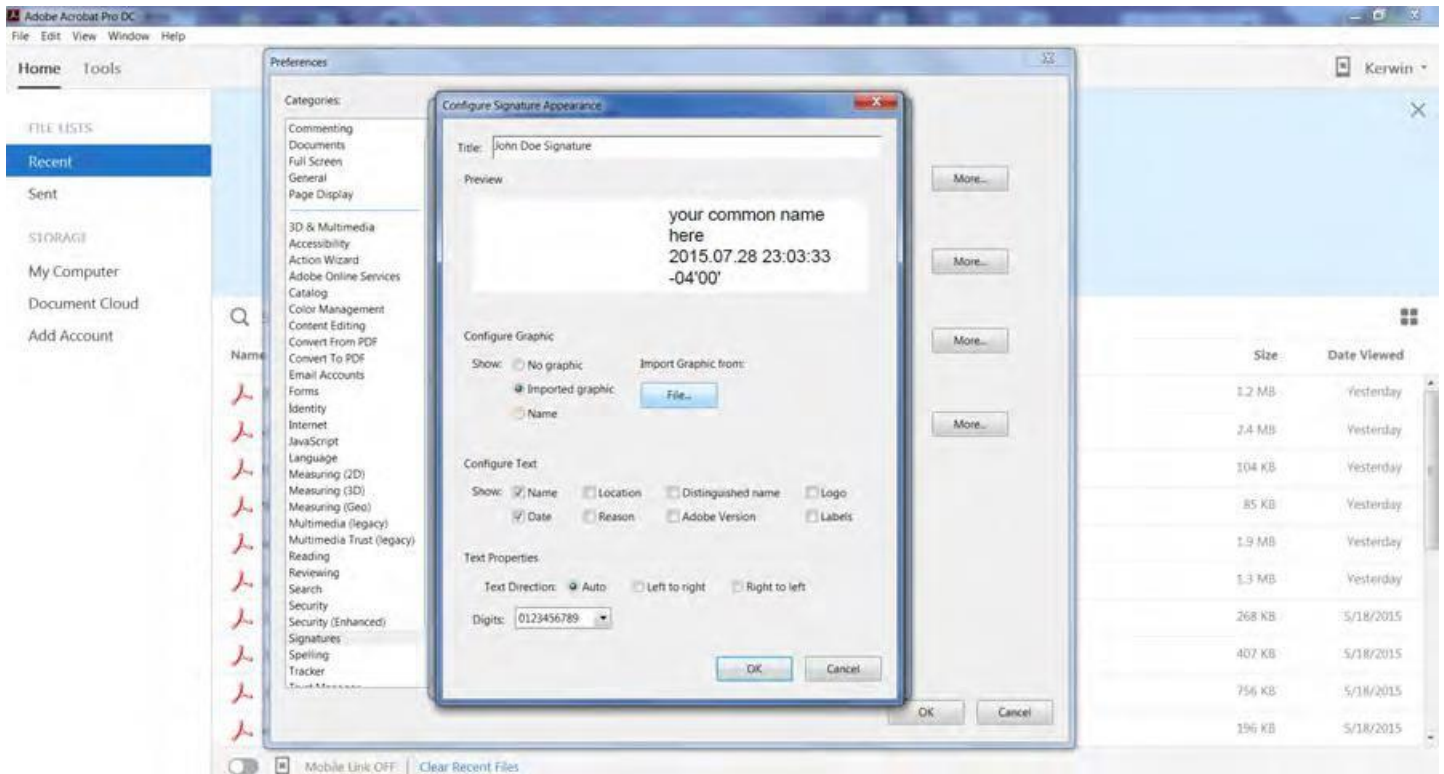# Return back to Adobe Acrobat to begin building your Digital Seal and Signature Combo.

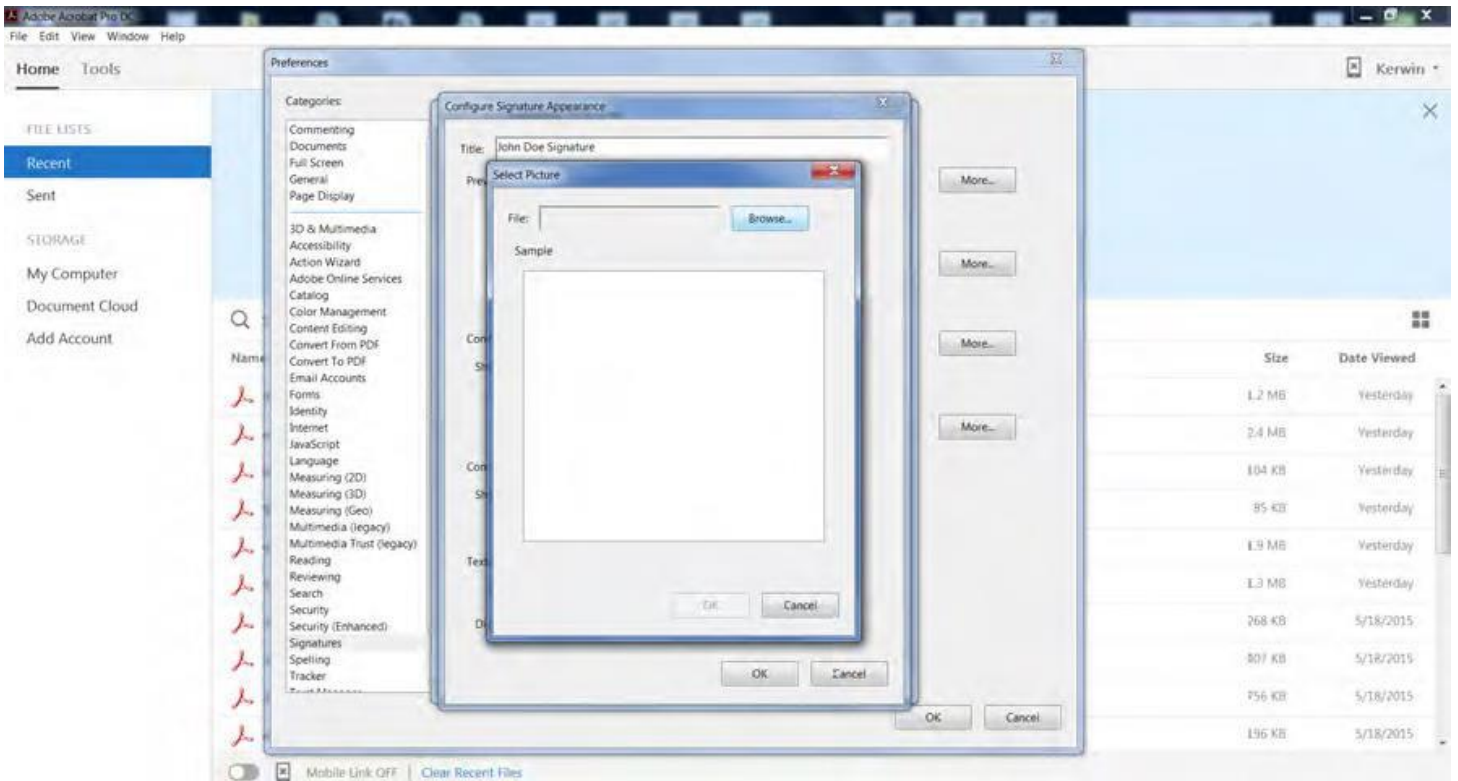1) Main Menu>Choose Edit > Preferences > Signatures>Creation & Appearance, click More.
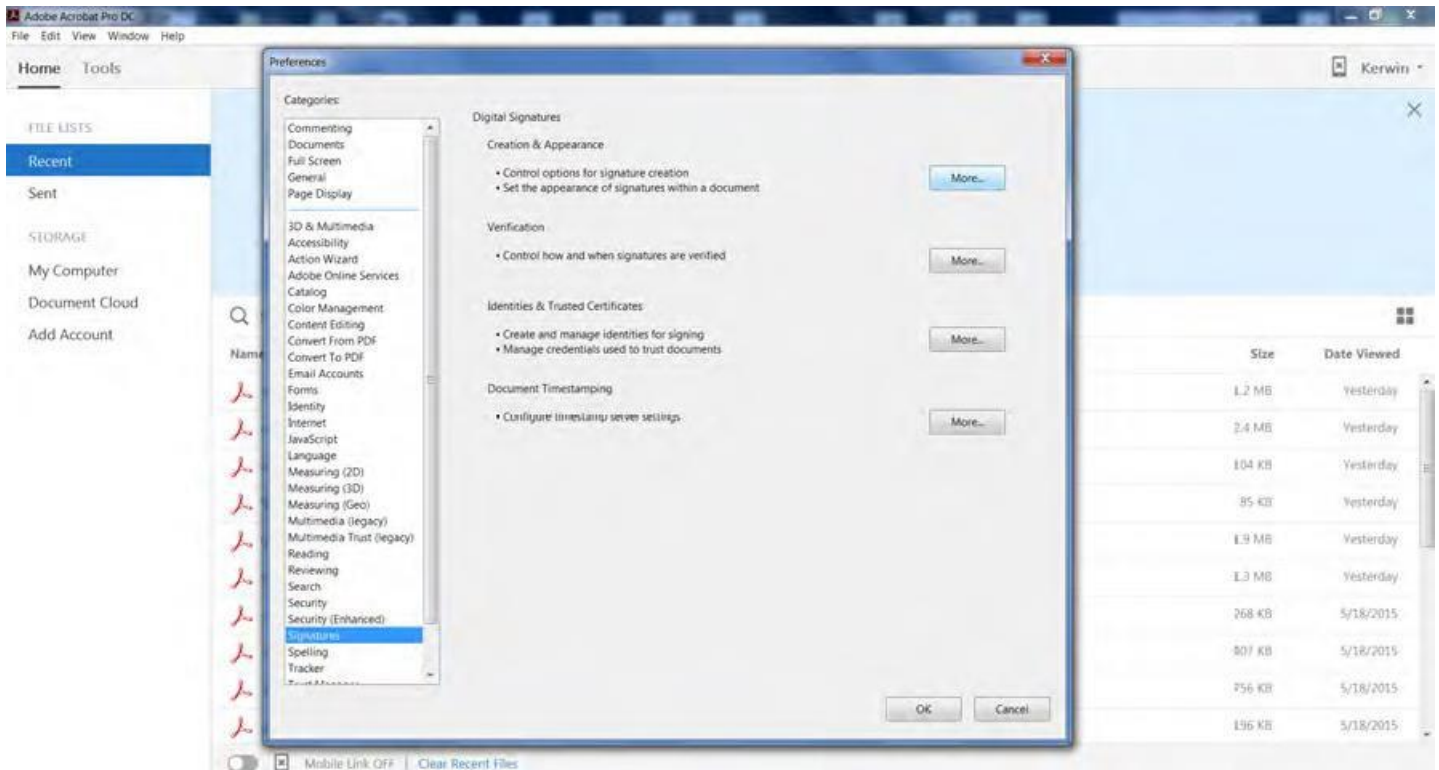
2) Adobe Default Security, PKCS#7 Detached, for Appearances click NEW.
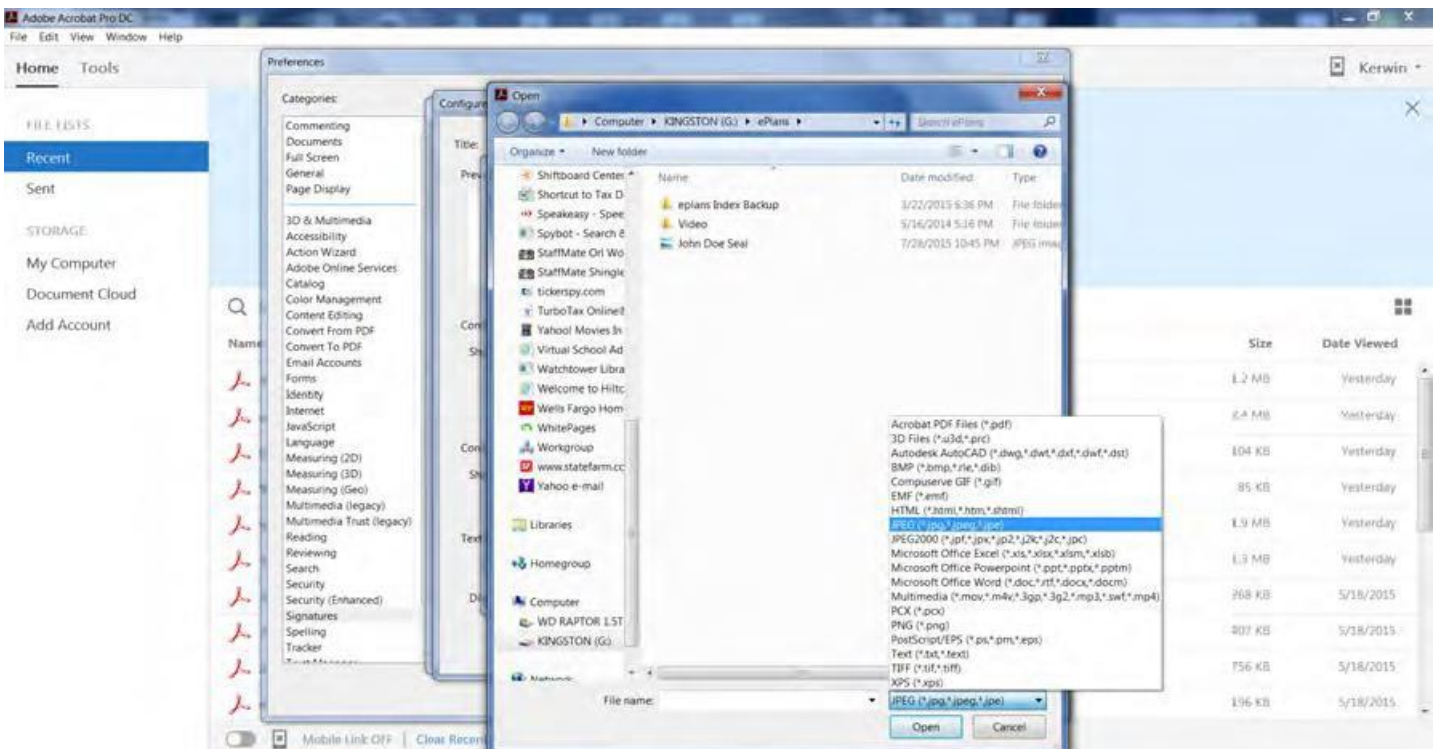

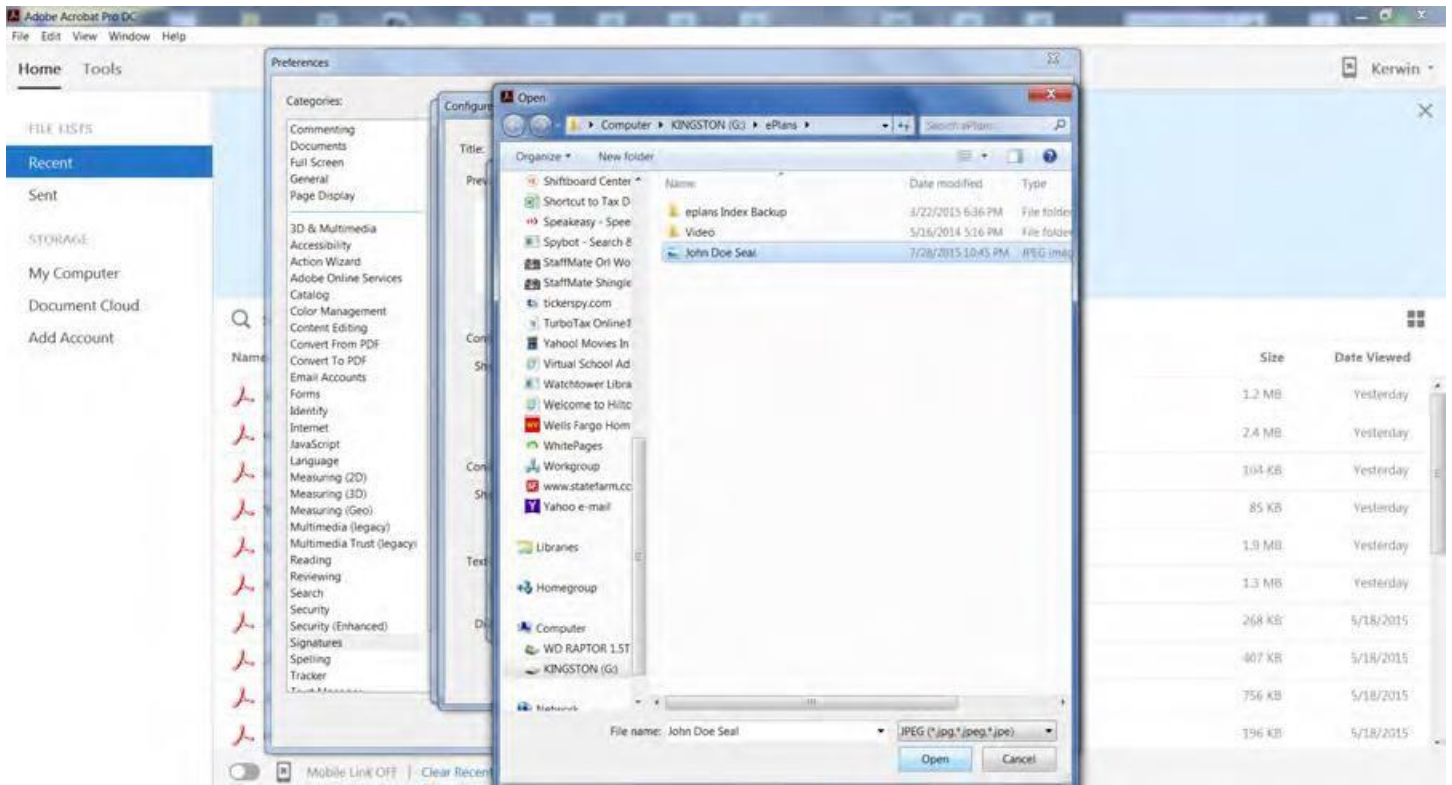3) Type Title or Description of your new Signature, choose Imported Graphic, click File

4) Click Browse to find the file location where you saved the scanned .jpg of your PE seal.
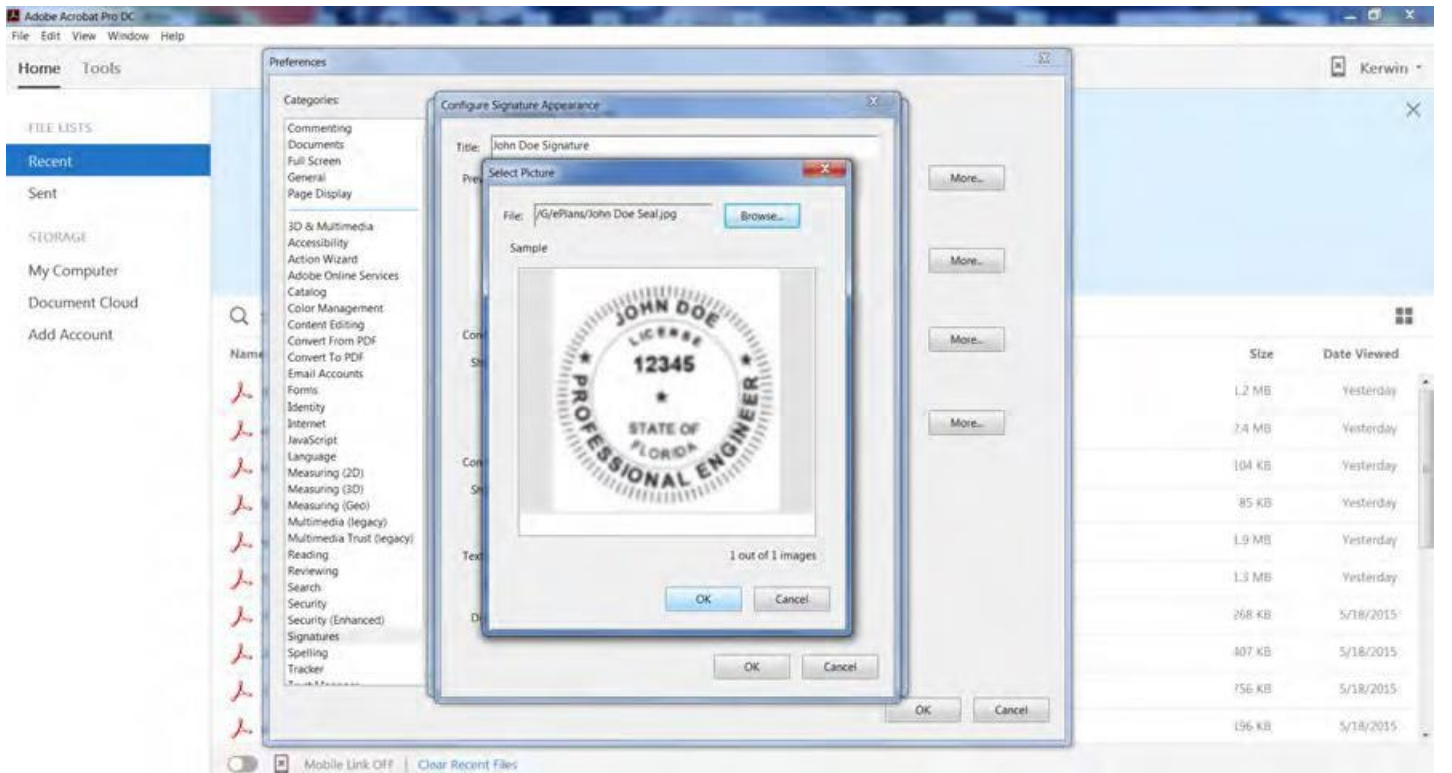

5) Change the File Name Format from PDF to JPEG .jpg to find your scanned PE Seal .jpg file.
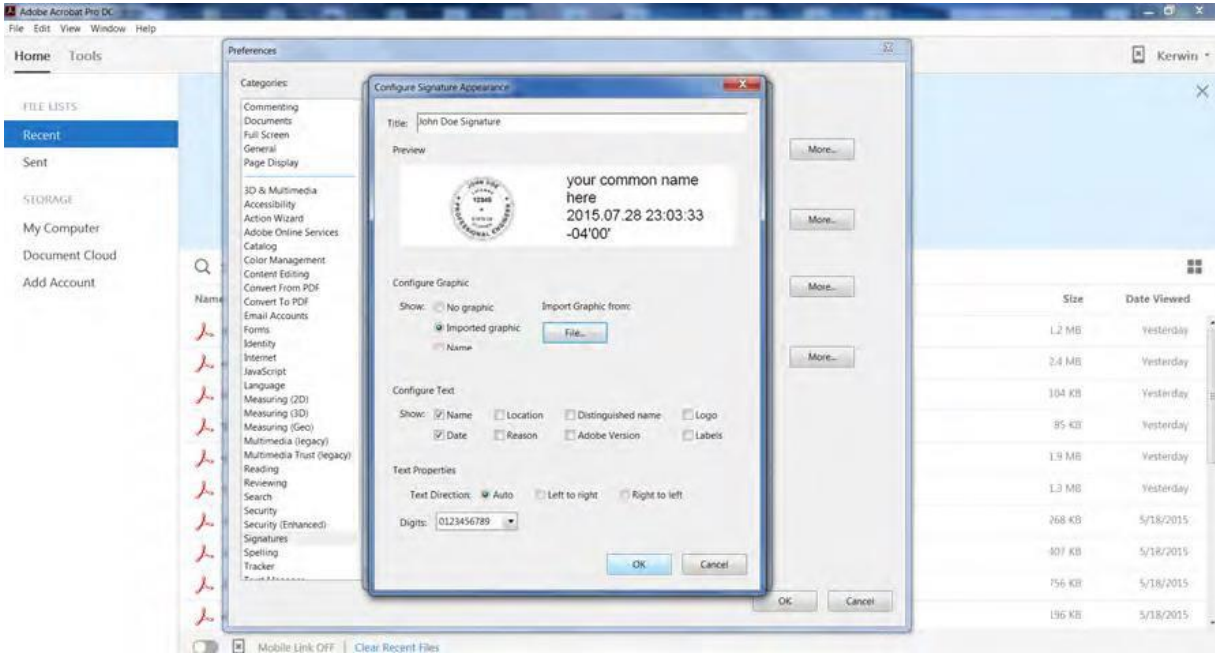
6) Select the file name of your scanned .jpg PE seal and Click Open.

7) The Seal will appear ready for import into the digital signature, click OK.

8) Verify your seal; *Configure Text,* Check only the Name, Distinguished Name and Date checkboxes, click OK.

Your Digital seal and signature combo is now ready to attach the Certificate Authority

Add the Certificate Authority (CA) Verification Certificate

Certificate Authority – As mentioned earlier you must have a third party company verify your identity via an added digital certificate. Each company will vary in the way they verify your identity and how you receive the digital certificate. Most will have you download the certificate from their website, others will use software or send you the certificate on a smart card or usb drive to attach to the computer you sign with. When downloaded the CAs digital certificate will automatically attach to your digital seal and signature combo.

The required digital certificate will be similar to those used by FDOT such as an Access Certificate for Electronic Services (ACES). It meets the Laws & Rules set by the Florida Board of Professional Engineers in Florida Statutes 471 and as implemented in Florida Administrative Code 61G15-23 for signing and sealing documents that are delivered electronically.

> While we cannot recommend which third party company to use we have narrowed down the list to the following companies that meet the requirements for signing construction plans and are already in use by other local Professional Engineers.

For Your Information – Links to websites
Adobe Reader DC (FREE) - https://acrobat.adobe.com/us/en/products/pdf-reader.html?promoid=KSNEW
Adobe - https://acrobat.adobe.com/us/en/products/acrobat-pro.html
Approved Certification Authority Companies

Identrust – http://identrust.com/fdot/   *Cosign* – http://www.arx.com/digital-signature/
DocuSign - https://www.docusign.com/products/electronic-signature
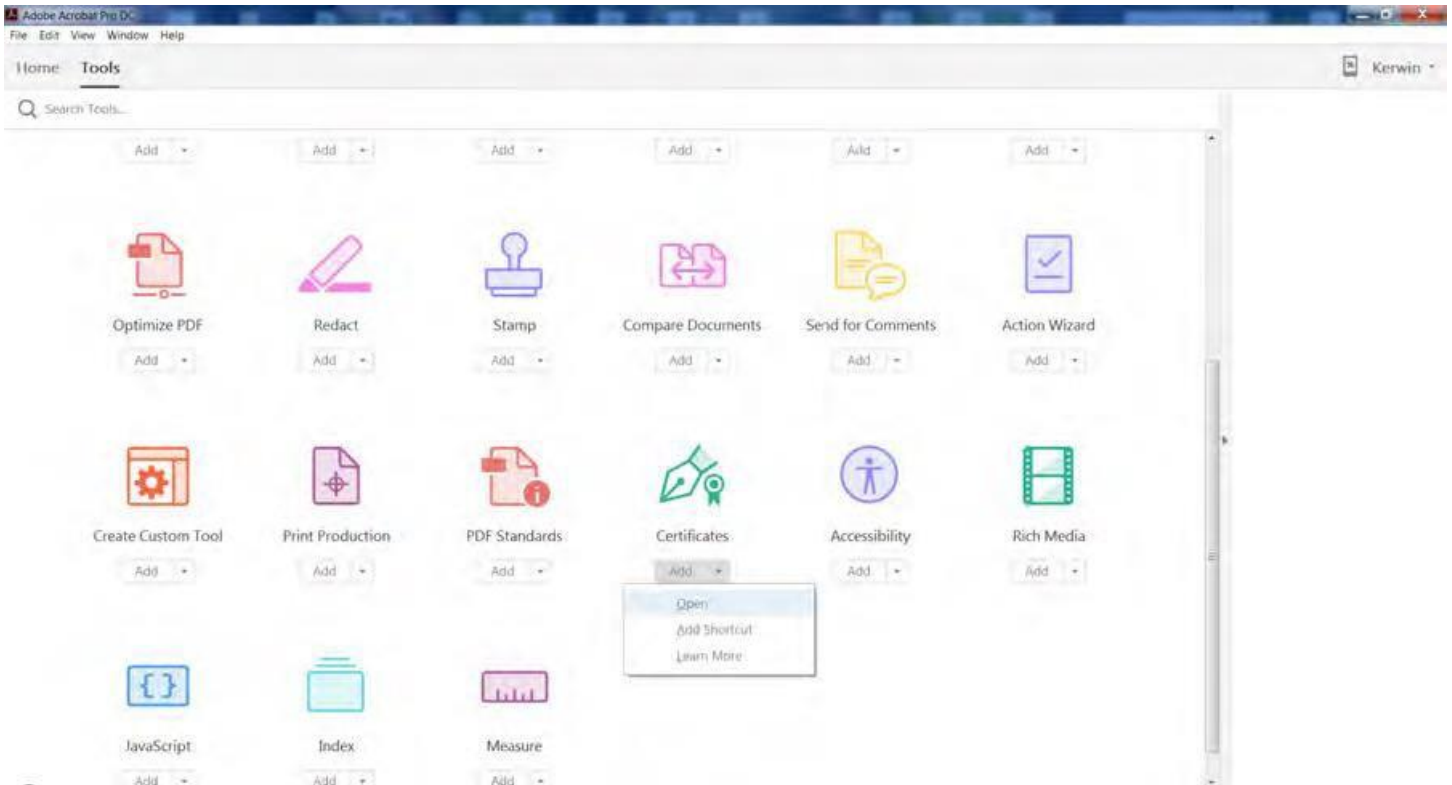*Globalsign* – https://www.globalsign.com/en/digital-signatures/
VeriSign - https://www.symantec.com/products/information-protection/eca-certificates/pricing

Test your new Digital Signature

1) **You will be using Adobe Acrobat Pro DC to sign your drawings**
2) Select Tools on the upper left, then select the Add button under Certificates, click Open to open a document.

3) Select the Drawing or Document you want to test your Digital Signature on, then click Open.
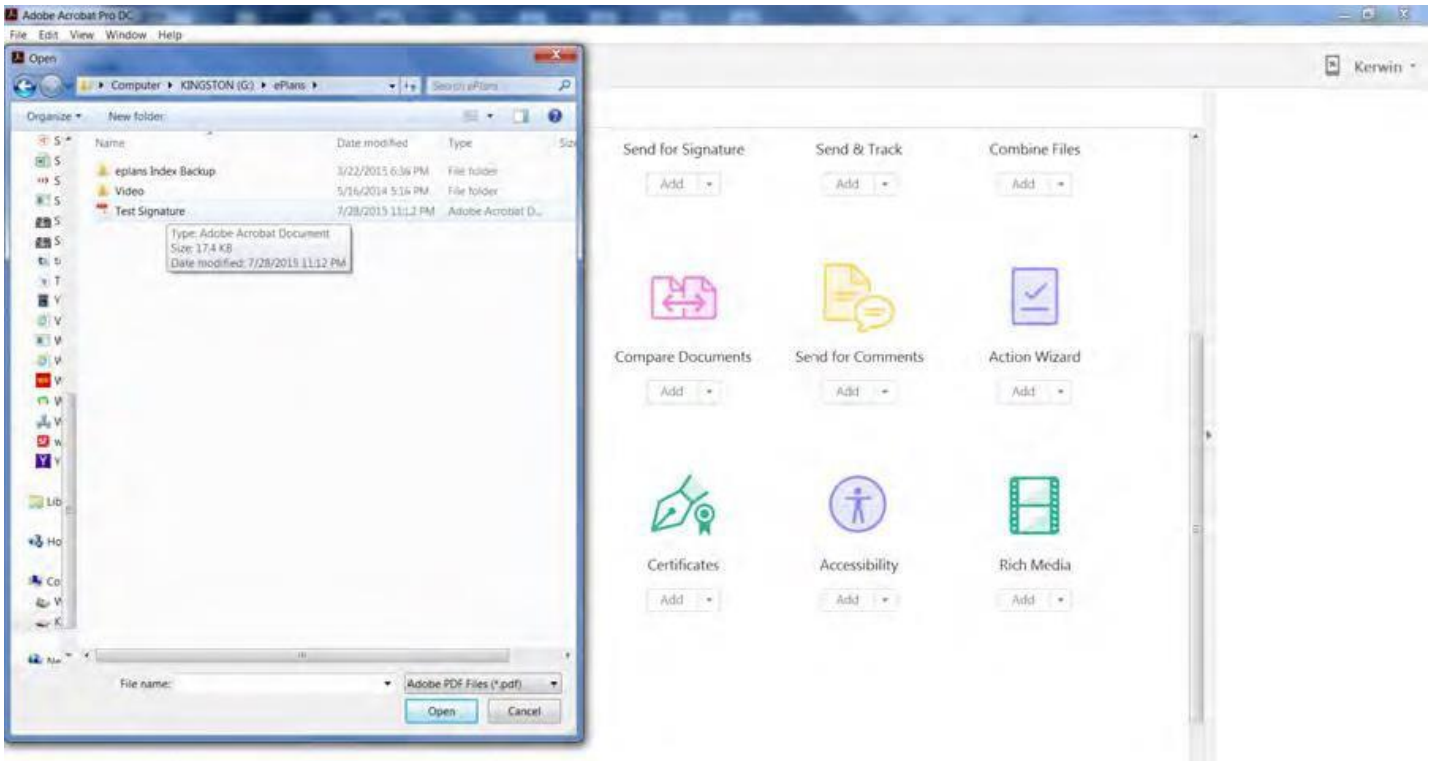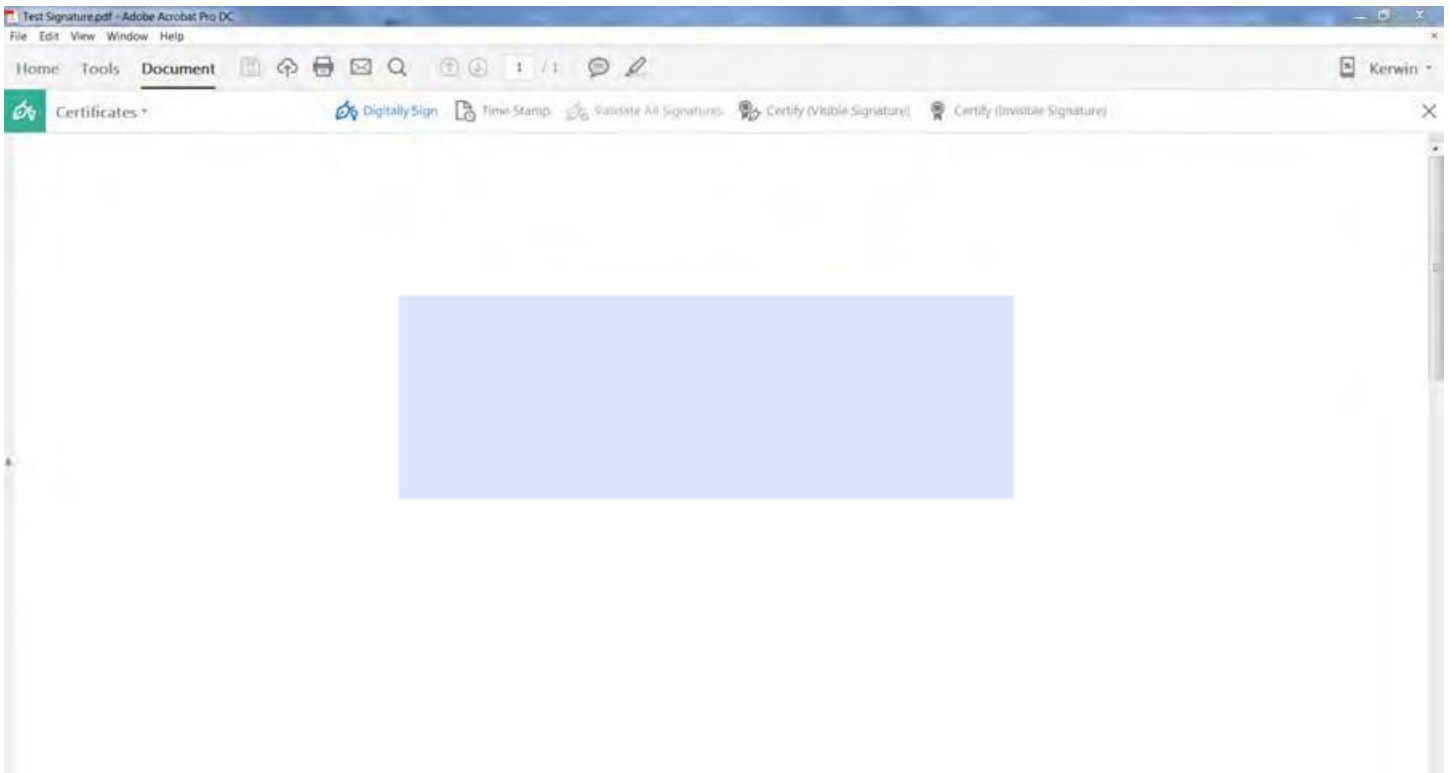
4) Your Test document will load, select Digitally Sign on the Certificates heading.
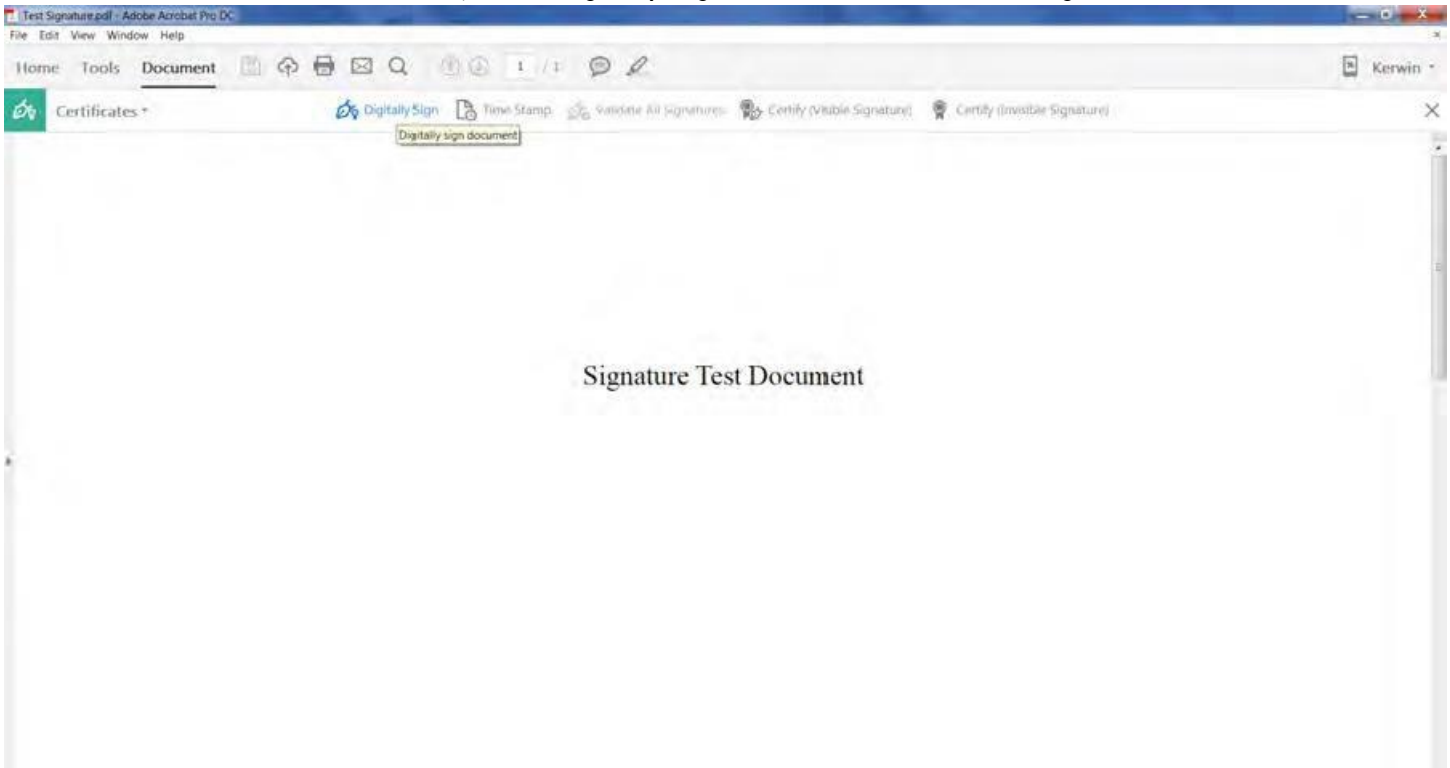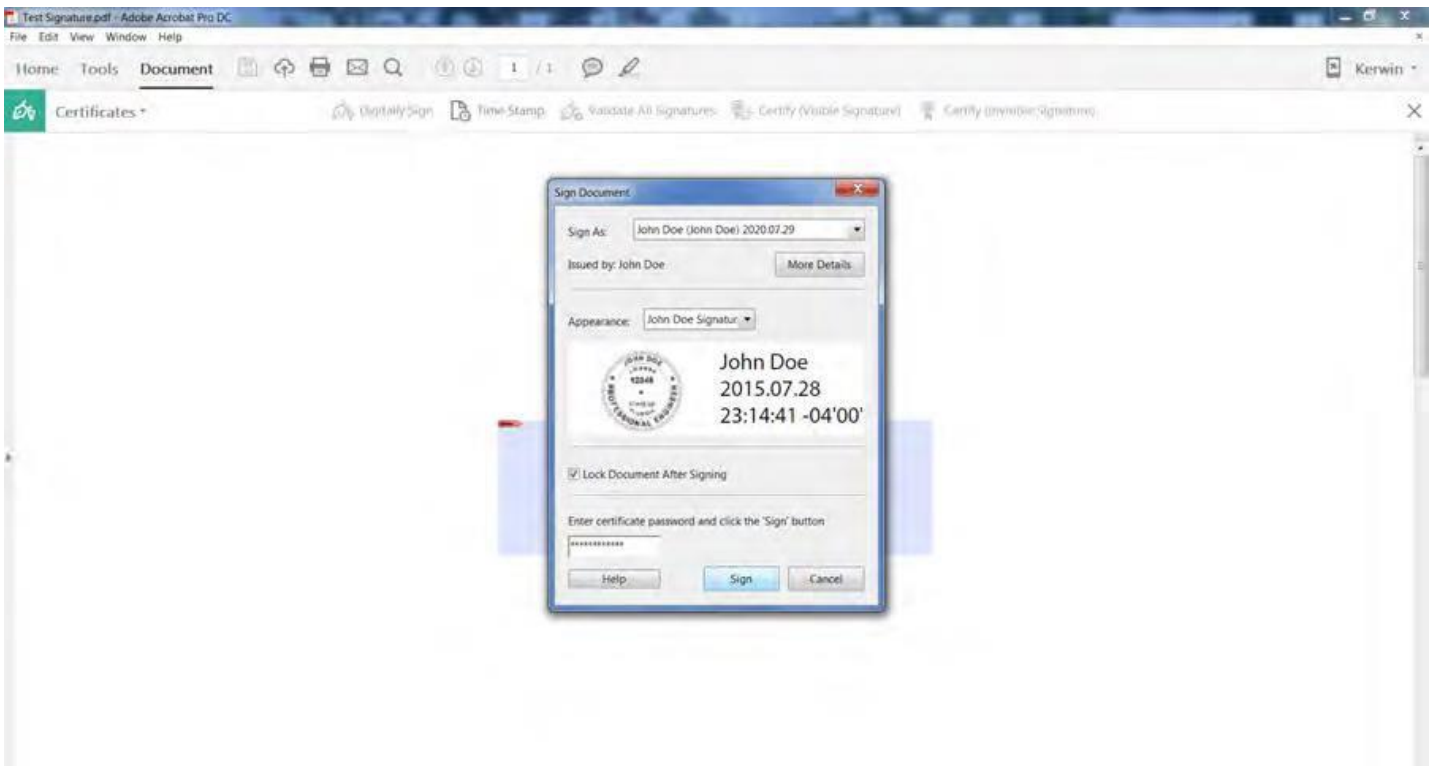

5) The draw textbox message will appear. Check Do not show this message again to save time signing, click OK.
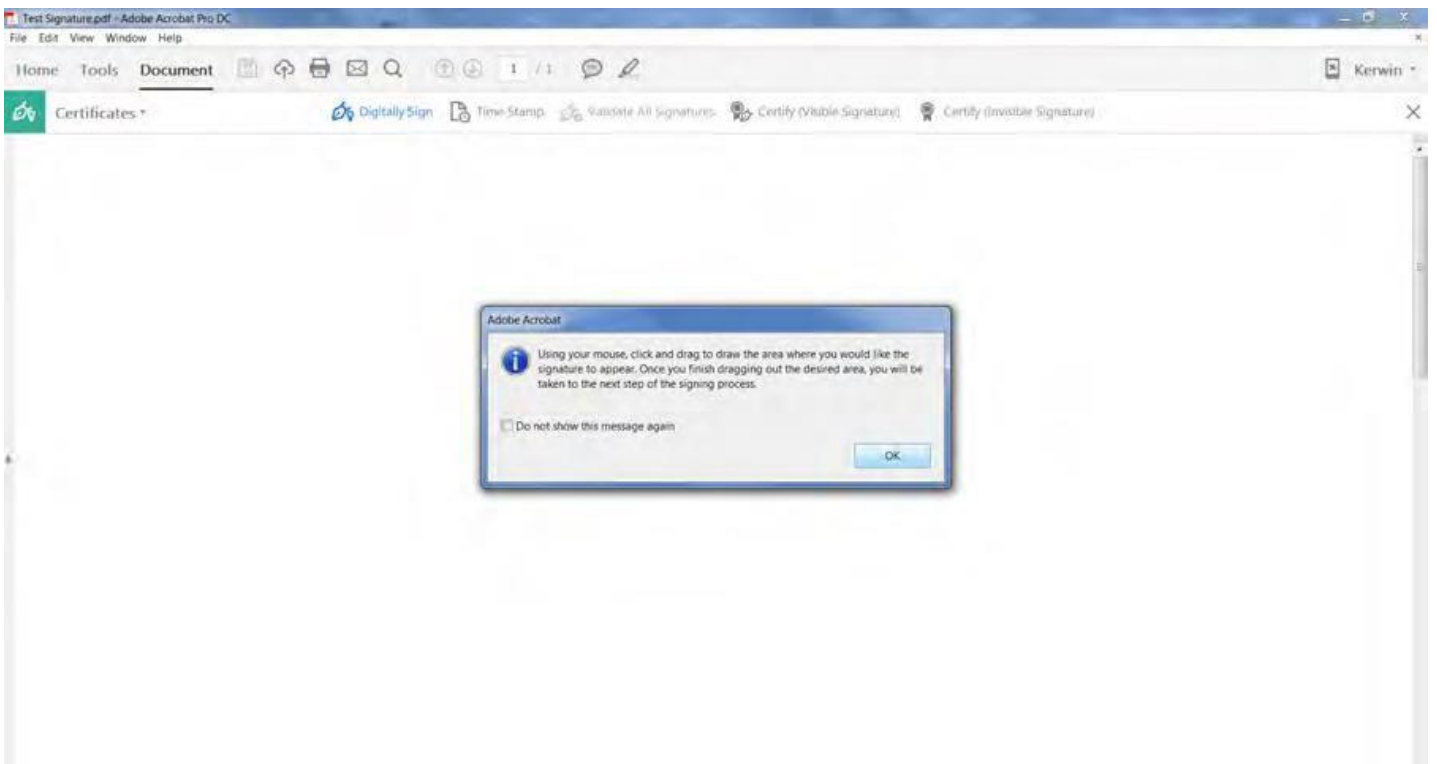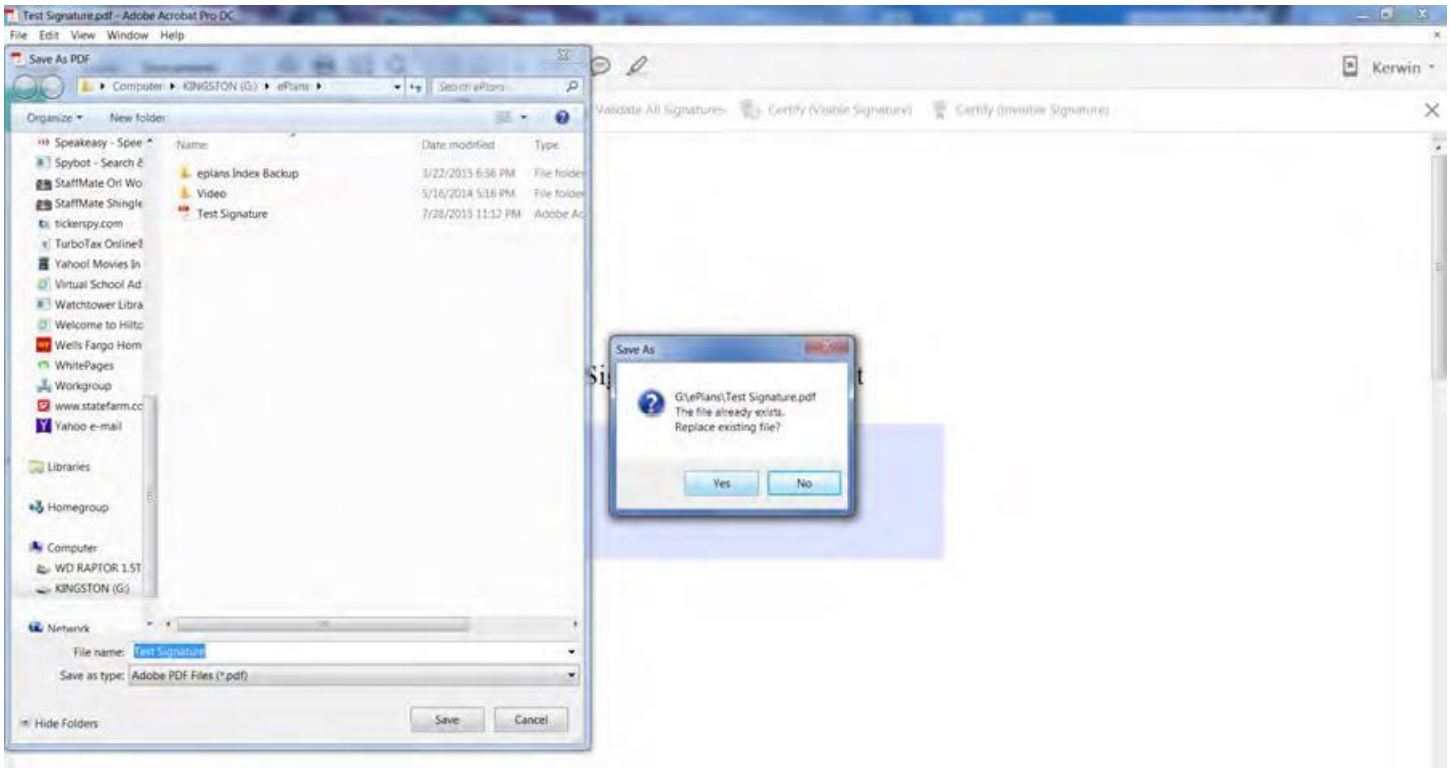
6) Use your mouse to draw a textbox about 2"x4", if it's too small nothing will appear.

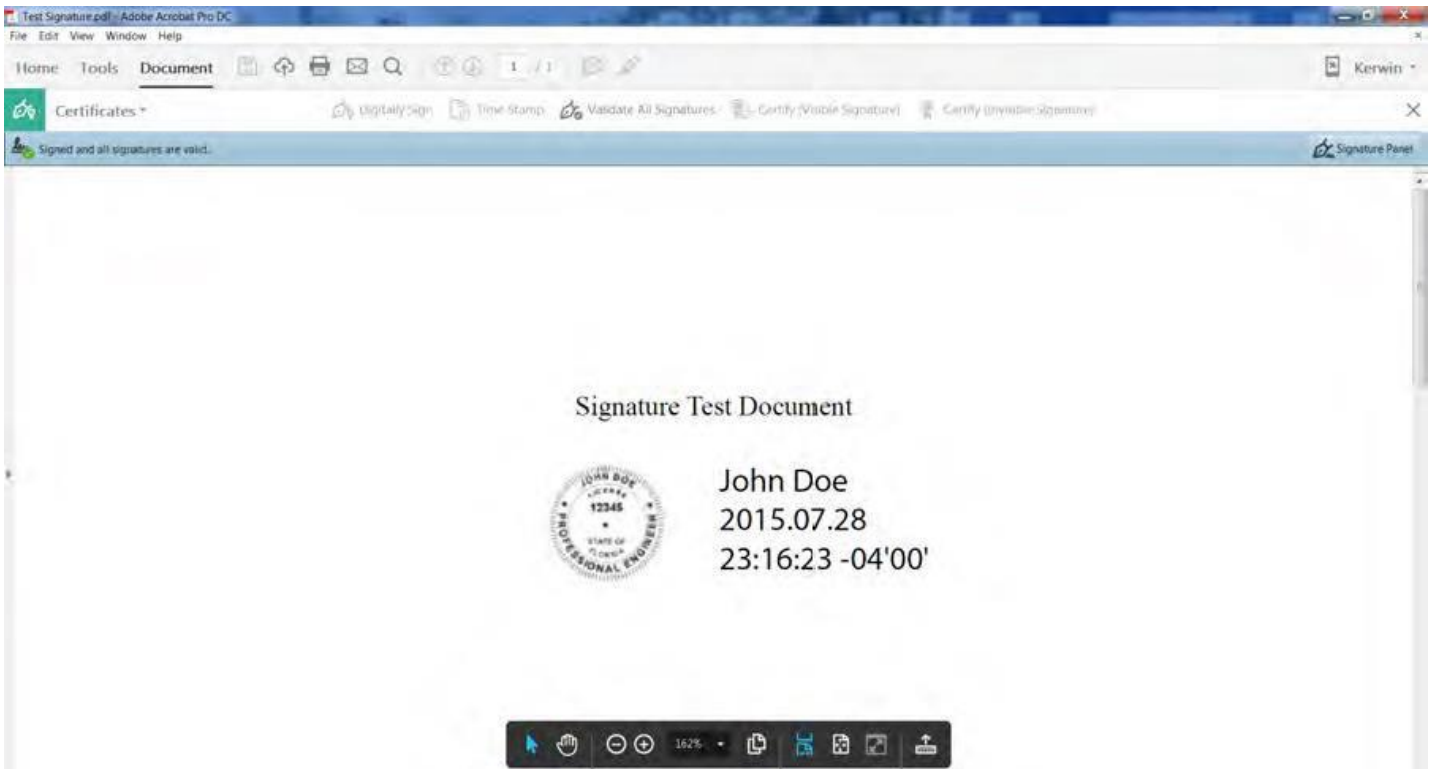**7)** Select the Sign As Name and the Appearance Name, enter your password, then click Sign.
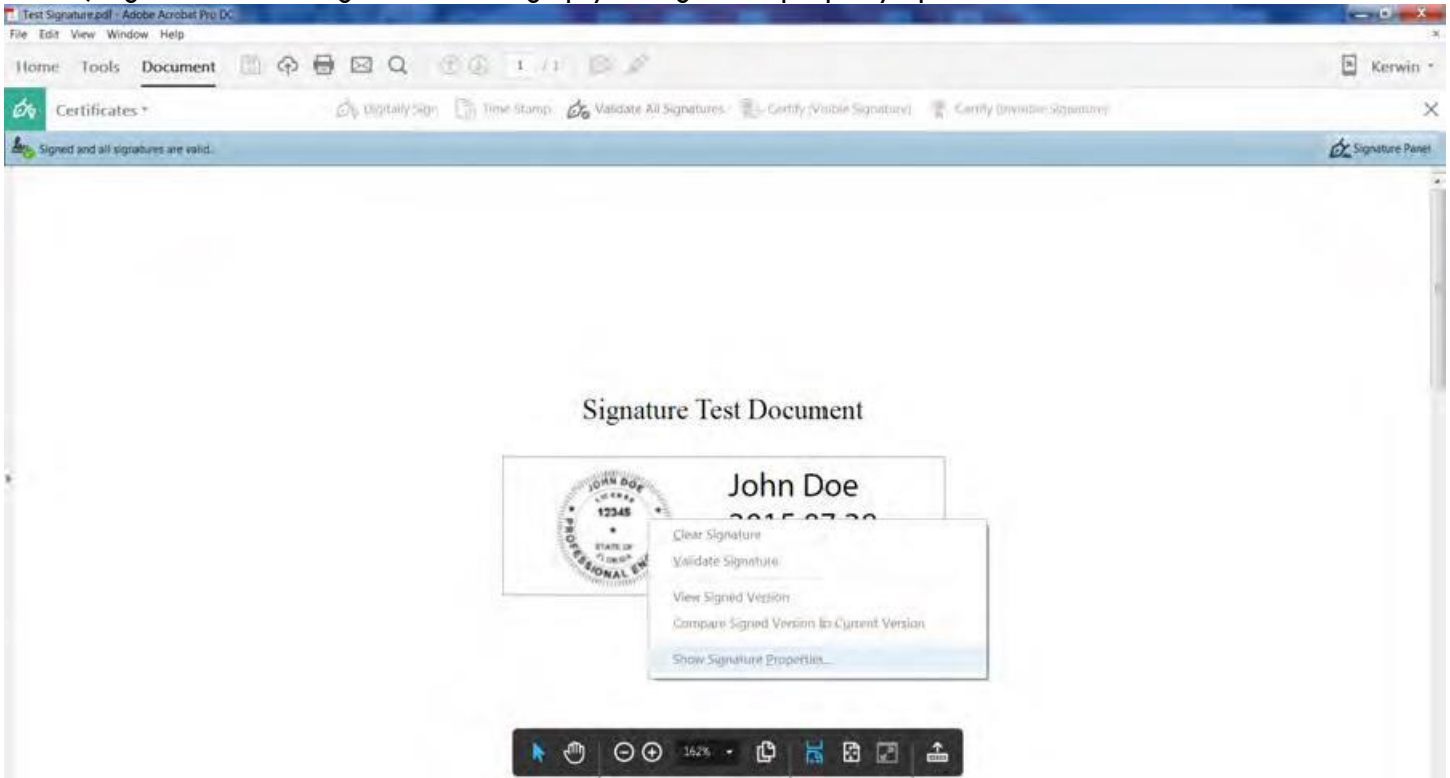
8) Select the Save As Name and accept the Replace Existing PDF file. The new one is digitally signed.

9) Your new Digital Signature will now appear on the PDF document.

10) Right click on the signature to bring up your signature property options.

11) Click Show Signature Properties...
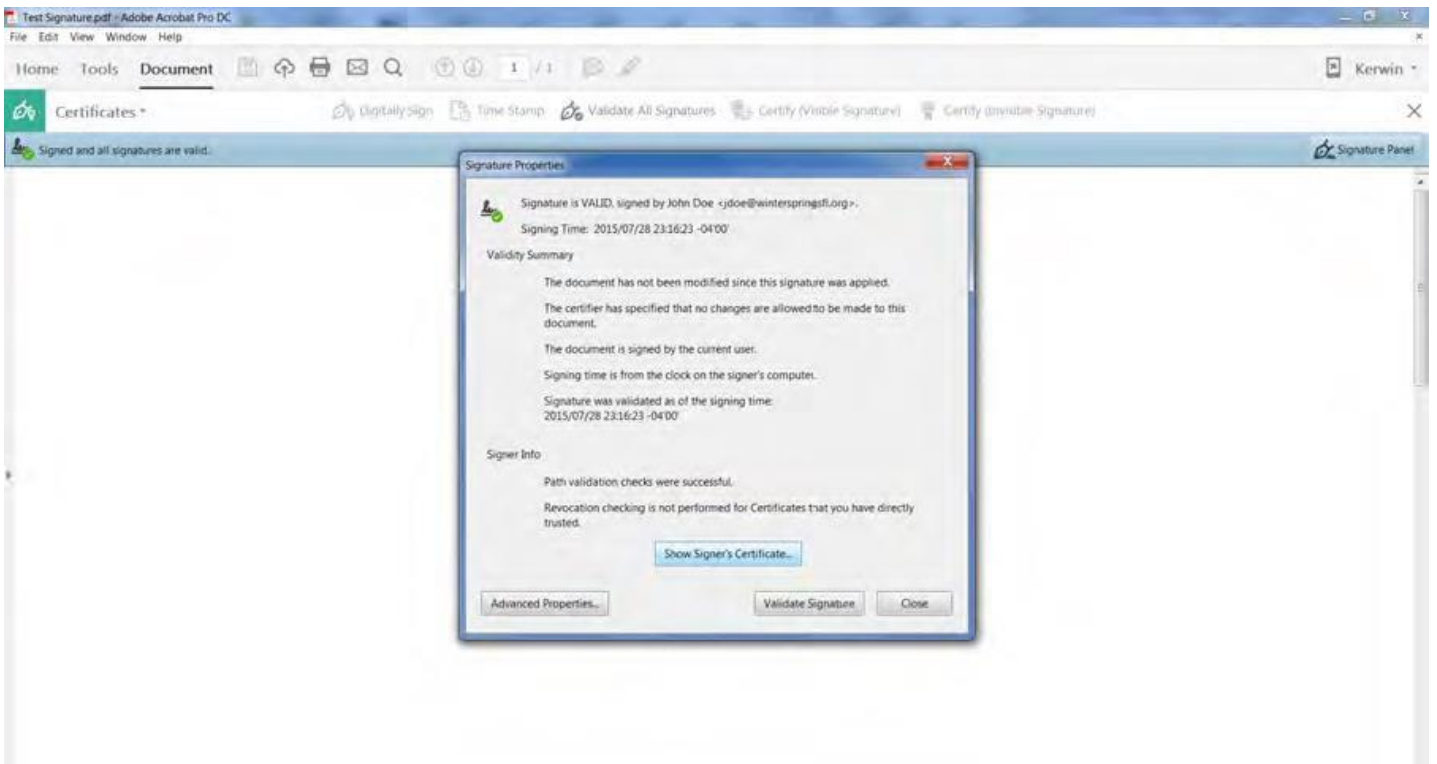
12) This particular John Doe example is Self-Signed without the Certificate Authority. You must add the Certificate Authority.
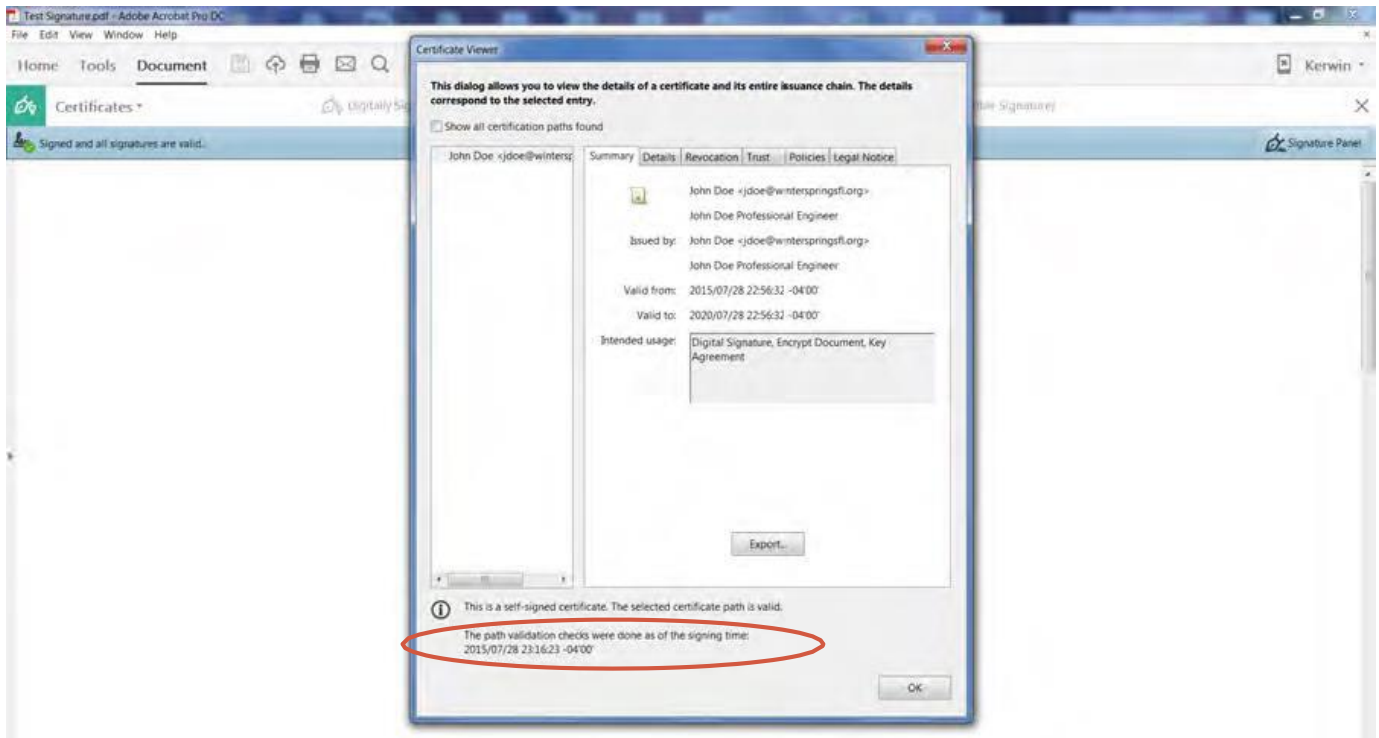
13) The Trust Tab displays the Trust Settings.
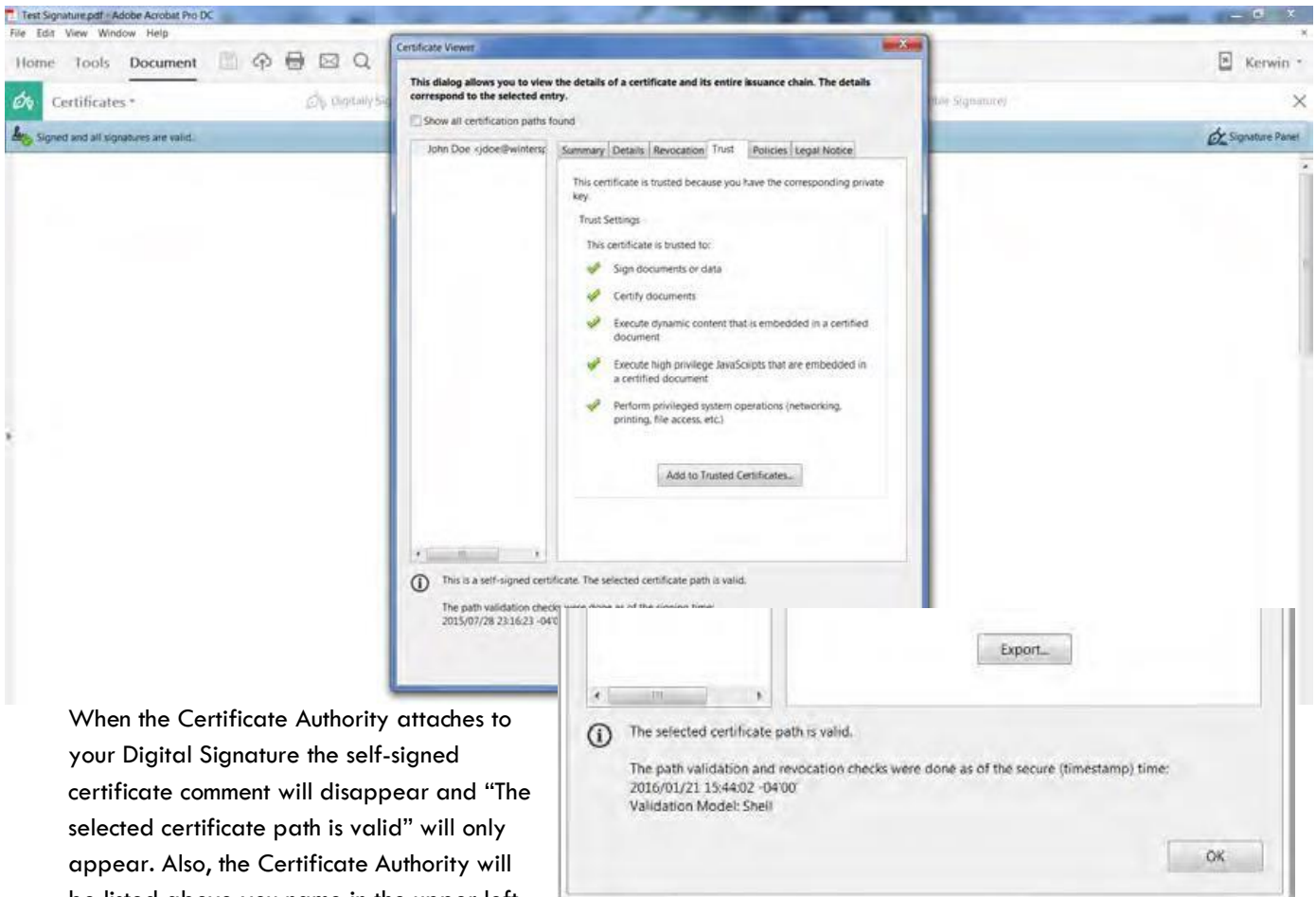
When the Certificate Authority attaches to your Digital Signature the self-signed certificate comment will disappear and "The selected certificate path is valid" will only appear. Also, the Certificate Authority will be listed above you name in the upper left column.

Your new digital Seal and Signature Combo with CA is now complete.

APPENDIX A - DIGITAL SEAL AND SIGNATURE REGULATIONS

2015 Florida Statutes

Title XXXII REGULATION OF PROFESSIONS AND OCCUPATIONS
Chapter 471 ENGINEERING - SECTION 025 Seals
471.025 Seals.—
(1) The board shall prescribe, by rule, one or more forms of seal to be used by licensees. Each licensee shall obtain at least one seal in the form approved by rule of the board and may, in addition, register his or her seal electronically in accordance with ss. 668.001-668.006. All final drawings, specifications, plans, reports, or documents prepared or issued by the licensee and being filed for public record and all final documents provided to the owner or the owner's representative shall be signed by the licensee, dated, and sealed with said seal. Such signature, date, and seal shall be evidence of the authenticity of that to which they are affixed. Drawings, specifications, plans, reports, final documents, or documents prepared or issued by a licensee may be transmitted electronically and may be signed by the licensee, dated, and sealed electronically with said seal in accordance with ss. 668.001-668.006.

Chapter 668 ELECTRONIC COMMERCE – PART 1 ELECTRONIC SIGNATURES (ss.668.001-668.006)
668.003 Definitions.—As used in this act:
(1) "Certificate" means a computer-based record which:
(a) Identifies the certification authority.
(b) Identifies the subscriber.
(c) Contains the subscriber's public key.
(d) Is digitally signed by the certification authority.
(2) "Certification authority" means a person who issues a certificate.
(3) "Digital signature" means a type of electronic signature that transforms a message using an asymmetric cryptosystem such that a person having the initial message and the signer's public key can accurately determine:
(a) Whether the transformation was created using the private key that corresponds to the signer's public key.
(b) Whether the initial message has been altered since the transformation was made.

A "key pair" is a private key and its corresponding public key in an asymmetric cryptosystem, under which the public key verifies a digital signature the private key creates. An "asymmetric cryptosystem" is an algorithm or series of algorithms which provide a secure key pair.

(4) "Electronic signature" means any letters, characters, or symbols, manifested by electronic or similar means, executed or adopted by a party with an intent to authenticate a writing. A writing is electronically signed if an electronic signature is logically associated with such writing
Reference: http://www.flsenate.gov/Laws/Statutes/2015/471.025
Reference(2): http://www.flsenate.gov/Laws/Statutes/2015/668.003

Florida Administrative Code 61G15-23.003 - https://www.flrules.org/gateway/reference.asp?No=Ref-00790

61G15-23.003 Procedures for Signing and Sealing Electronically Transmitted Plans, Specifications, Reports or Other Documents.
(1) Engineering work which must be sealed under the provisions of Section 471.025, F.S., may be signed electronically or digitally as provided herein by the professional engineer in responsible charge. As used herein, the terms "certification authority," "digital signature" and "electronic signature" shall have the meanings ascribed to them in Sections 668.003(2), (3) and (4), F.S. The affixing of a digital or electronic signature to engineering work as provided herein shall constitute the sealing of such work.
(a) A scanned image of an original signature shall not be used in lieu of a digital or electronic signature.
(b) The date that the electronic signature file was created or the digital signature was placed into the document must appear on the document in the same manner as date is required to be applied when a licensee uses the manual sealing procedure set out in Rule 61G15-23.002, F.A.C.
(2) A professional engineer utilizing a digital signature to seal engineering work shall have their identity authenticated by a certification authority and shall assure that the digital signature is:
(a) Unique to the person using it;
(b) Capable of verification;
(c) Under the sole control of the person using it;
(d) Linked to a document in such a manner that the electronic signature is invalidated if any data in the document are changed
Secure Hash Standard - https://www.flrules.org/gateway/reference.asp?No=Ref-00790

Need Assistance – ePlan Support is available Monday – Friday 8am to 5pm
Contact: Building Inspection (863) 834-6012 or email: eplanhelp@lakelandgov.net View our
ePlan Help Online at: https://eplan.lakelandgov.net/help/