

South Carolina
Department of Transportation

DIGITAL SIGNATURES MANUAL

May 2024

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Digital Signature Fundamentals

Overview

As design documents are now routinely submitted, reviewed, and stored in purely electronic form, allowing them to be easily reproduced and modified, the use of digital signatures provides improved security and convenience for engineers needing to sign and seal their work. Digital signatures allow viewers to confirm that the signature is valid, not copied or forged, and that no changes have been made to an electronic document since it was signed. As documents can be signed in electronic form without being printed and re-scanned, digital signatures also help prevent visual quality losses from scanning, eliminate paper waste, and speed up the process of revising and re-certifying plans.

Visual Seals and Signatures

Computer generated seals shall be identical in size, design, and content with the approved impression seals. Computer generated signature and date shall be affixed under or across the face and beyond the circumference of the seal. The licensee's license number, name, signature, and date shall be legible.

Digital Certificates

In order for a digital signature to be verifiable, it must incorporate a digital certificate that confirms the signatory's identity. SCDOT must be able to verify the authenticity of the certificate through a certification authority, independently of the submitter or signatory and without expense to SCDOT. Verification must also be possible independent of the continued future operation of that authority; all files and programs necessary for this purpose shall be provided and stored with the signed documents.

External consultants to SCDOT, it is required to send along the public certificate file (*.cer) along with files that are digitally signed if a self-signed digital ID was used in the digital signing process. External consultants may elect to use 3rd party public Certificate Authority in accordance to their firm's internal policies and practices.

Electronic Files

The design drawings, final construction plans, and plats prepared by or under the responsible charge of a licensee(s) shall consist of separate electronic files for each sheet and carry the required seal(s), date(s), signature(s), and digital signature certificate(s) on each sheet. The electronic sheet filename(s) shall include a prefix to clearly define the sheet sequence. Electronic files shall be created in or converted to the Adobe PDF format. All engineer plan submittals shall be "full-size" of either 22in. x 36in. or 22in. x 34in.

Only for specifications, documents, and reports, where more than one page is bound together in one volume, the licensee(s) or permit holder(s) may digitally seal, date, and sign only the Title Sheet, Table of Contents Sheet, or Index Sheet if the signed sheet clearly identifies all of the other sheets comprising the bound volume with responsibility clearly delineated.

SCDOT reserves the right to request one or more paper copies of any electronic document be submitted as part of the review or approval process. The use of electronic documents signed using digital signatures is permitted, not required, by SCDOT. Traditional paper documents signed and sealed by hand are still permitted under existing standards.

PDF File Configurations / Naming Conventions

Proper file naming is crucial for the efficient and knowledgeable transfer of data internally within core SCDOT systems, and externally between SCDOT and our business partners. Following a proper naming schema improves many factors such as following:

- Easy and efficient file searching.
- Correct display and interpretation within system and browsing windows.
- User ability to find proper files.

The following are the general rules which are to be followed when configuring and naming PDFs for submitting:

- Final submittals are to be Unlocked, Unprotected, Digitally Signed, and Single Page PDFs.
- Files flow in sequence the way they would be viewed in a physical plan set.
- File names are as short as possible but descriptive enough to mitigate confusion.
- File names are limited to 75 Characters.
- File names only have lowercase letters.
- File names do NOT contain any special characters such as \ / ; : ? * ' , . " [] { } () ! @ # \$ % ^ & .
- File names are to contain the Project ID, which makes the files unique enough in case of misplacement.

The following is the SCDOT preferred file pdf file naming convention for digital plan submittals:

[\\$####_##_Project ID_Description](#)

- \$ will designate a letter for either roadway or bridge construction plan set with cross sections separated:
 - R = Road
 - B = Bridge
 - X = Cross Sections
- #### will be numerical designation of the page in the plan set such as 0001, 0002, 0003, etc.
- ## is a modifier purely for the aid of adding sheets after the first submittal.
- Project ID is the project ID such as P012345. Old projects this could start with "O" instead of "P"
- Description can be anything deemed meaningful or reasonable. An example for the title sheet would be ts, t_sheet, or simply title_sheet. All of these options would be acceptable and will be determined by a firm's internal wants and needs.

The whole goal is to allow room for extra sheets to be added if need be and to have the file naming allow for the sorting of files to keep them in the proper order of which they appear in a plan set.

- Only Underscores are permitted to be used as separators.
- If a sheet is to be replaced, it must be named the same as the original sheet.
- If a sheet is to be added, it will be named with the same ##### numerical designation as the proceeding sheet in the plan set, but with the ## modifier changed to accordingly to 01, 02, 03, etc.
- Revised and/or additional plan sheets should be sent in separate folders to Plans Storage for processing and adding into the Plans Library.

Example of Replacement:

Original: 0005_00_P040990_Summary_of_Estimated_Quantities

Replacement: 0005_00_P040990_Summary_of_Estimated_Quantities

Example of addition:

Original: 0005_00_P040990_Summary_of_Estimated_Quantities

Additional: 0005_01_P040990_Summary_of_Estimated_Quantities

| Name | Date modified | Type | Size |
|---|-------------------|------------------------|----------|
| 000_00_P040990_title_sheet.pdf | 6/20/2025 3:53 PM | Adobe Acrobat Document | 820 KB |
| 001_00_P040990_title_sheet.pdf | 6/19/2025 5:07 PM | Adobe Acrobat Document | 715 KB |
| 002_00_P040990_row_title_sheet.pdf | 6/19/2025 5:07 PM | Adobe Acrobat Document | 573 KB |
| 003_00_P040990_summary_of_estimated_quantities.pdf | 6/19/2025 5:07 PM | Adobe Acrobat Document | 857 KB |
| 004_00_P040990_moving_items_sheet.pdf | 6/19/2025 5:07 PM | Adobe Acrobat Document | 463 KB |
| 005_00_P040990_typical_sections.pdf | 6/19/2025 5:07 PM | Adobe Acrobat Document | 310 KB |
| 006_00_P040990_typical_sections.pdf | 6/19/2025 5:07 PM | Adobe Acrobat Document | 316 KB |
| 007_00_P040990_typical_sections.pdf | 6/19/2025 5:07 PM | Adobe Acrobat Document | 310 KB |
| 008_00_P040990_rv_data.pdf | 6/19/2025 5:07 PM | Adobe Acrobat Document | 695 KB |
| 009_00_P040990_property_strip_map.pdf | 6/19/2025 5:07 PM | Adobe Acrobat Document | 274 KB |
| 010_00_P040990_general_construction_notes.pdf | 6/19/2025 5:07 PM | Adobe Acrobat Document | 866 KB |
| 011_00_P040990_survey_control_data.pdf | 6/19/2025 5:07 PM | Adobe Acrobat Document | 229 KB |
| 012_00_P040990_reference_data.pdf | 6/19/2025 5:07 PM | Adobe Acrobat Document | 276 KB |
| 013_00_P040990_reference_data.pdf | 6/19/2025 5:07 PM | Adobe Acrobat Document | 765 KB |
| 014_00_P040990_station_offset.pdf | 6/19/2025 5:08 PM | Adobe Acrobat Document | 799 KB |
| 015_00_P040990_plan_sheet.pdf | 6/19/2025 5:08 PM | Adobe Acrobat Document | 667 KB |
| 016_00_P040990_plan_sheet.pdf | 6/19/2025 5:08 PM | Adobe Acrobat Document | 362 KB |
| 017_00_P040990_plan_sheet.pdf | 6/19/2025 5:08 PM | Adobe Acrobat Document | 426 KB |
| 018_00_P040990_profile_sheet.pdf | 6/19/2025 5:08 PM | Adobe Acrobat Document | 498 KB |
| 019_00_P040990_top_of_curb_profile_sheet.pdf | 6/19/2025 5:08 PM | Adobe Acrobat Document | 472 KB |
| 020_00_P040990_profile_sheet.pdf | 6/19/2025 5:08 PM | Adobe Acrobat Document | 636 KB |
| 021_00_P040990_top_of_curb_profile_sheet.pdf | 6/19/2025 5:08 PM | Adobe Acrobat Document | 530 KB |
| 022_00_P040990_drainage_sheet.pdf | 6/19/2025 5:08 PM | Adobe Acrobat Document | 883 KB |
| 023_00_P040990_drainage_sheet.pdf | 6/19/2025 5:08 PM | Adobe Acrobat Document | 368 KB |
| 024_00_P040990_drainage_sheet.pdf | 6/19/2025 5:08 PM | Adobe Acrobat Document | 405 KB |
| 025_00_P040990_traffic_control_sheet.pdf | 6/19/2025 5:08 PM | Adobe Acrobat Document | 676 KB |
| 026_00_P040990_traffic_control_sheet.pdf | 6/19/2025 5:08 PM | Adobe Acrobat Document | 615 KB |
| 027_00_P040990_traffic_control_sheet.pdf | 6/19/2025 5:08 PM | Adobe Acrobat Document | 658 KB |
| 028_00_P040990_signing_and_pavement_marking.pdf | 6/19/2025 5:08 PM | Adobe Acrobat Document | 660 KB |
| 029_00_P040990_signing_and_pavement_marking.pdf | 6/19/2025 5:08 PM | Adobe Acrobat Document | 560 KB |
| 030_00_P040990_erosion_control_data_sheet.pdf | 6/19/2025 5:08 PM | Adobe Acrobat Document | 852 KB |
| 031_00_P040990_standard_notes_and_constr_sequence.pdf | 6/19/2025 5:08 PM | Adobe Acrobat Document | 2,378 KB |

| Name | Date modified | Type | Size |
|-------------------------|--------------------|--------------------|--------|
| x0001_00_P031968_xs.pdf | 3/27/2025 10:49 AM | Adobe Acrobat D... | 190 KB |
| x0002_00_P031968_xs.pdf | 3/27/2025 10:49 AM | Adobe Acrobat D... | 209 KB |
| x0003_00_P031968_xs.pdf | 3/27/2025 10:49 AM | Adobe Acrobat D... | 172 KB |
| x0004_00_P031968_xs.pdf | 3/27/2025 10:49 AM | Adobe Acrobat D... | 218 KB |
| x0005_00_P031968_xs.pdf | 3/27/2025 10:49 AM | Adobe Acrobat D... | 173 KB |
| x0006_00_P031968_xs.pdf | 3/27/2025 10:49 AM | Adobe Acrobat D... | 196 KB |
| x0007_00_P031968_xs.pdf | 3/27/2025 10:49 AM | Adobe Acrobat D... | 187 KB |
| x0008_00_P031968_xs.pdf | 3/27/2025 10:49 AM | Adobe Acrobat D... | 162 KB |
| x0009_00_P031968_xs.pdf | 3/27/2025 10:49 AM | Adobe Acrobat D... | 191 KB |
| x0010_00_P031968_xs.pdf | 3/27/2025 10:49 AM | Adobe Acrobat D... | 202 KB |

Creating Digital ID's, Signatures, and PE/PLS Seals in Adobe Acrobat

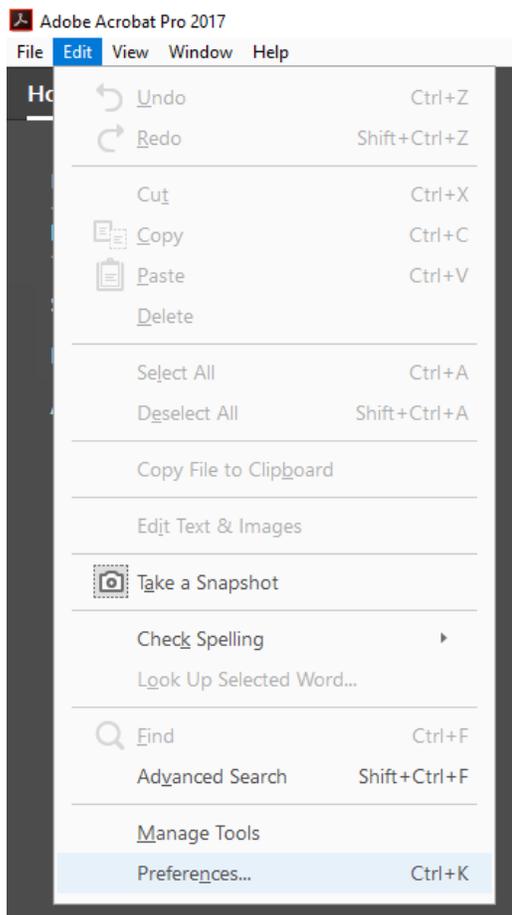
Digital ID's

The first step in starting the process of digitally signing and sealing plans starts with the creation of a digital ID.

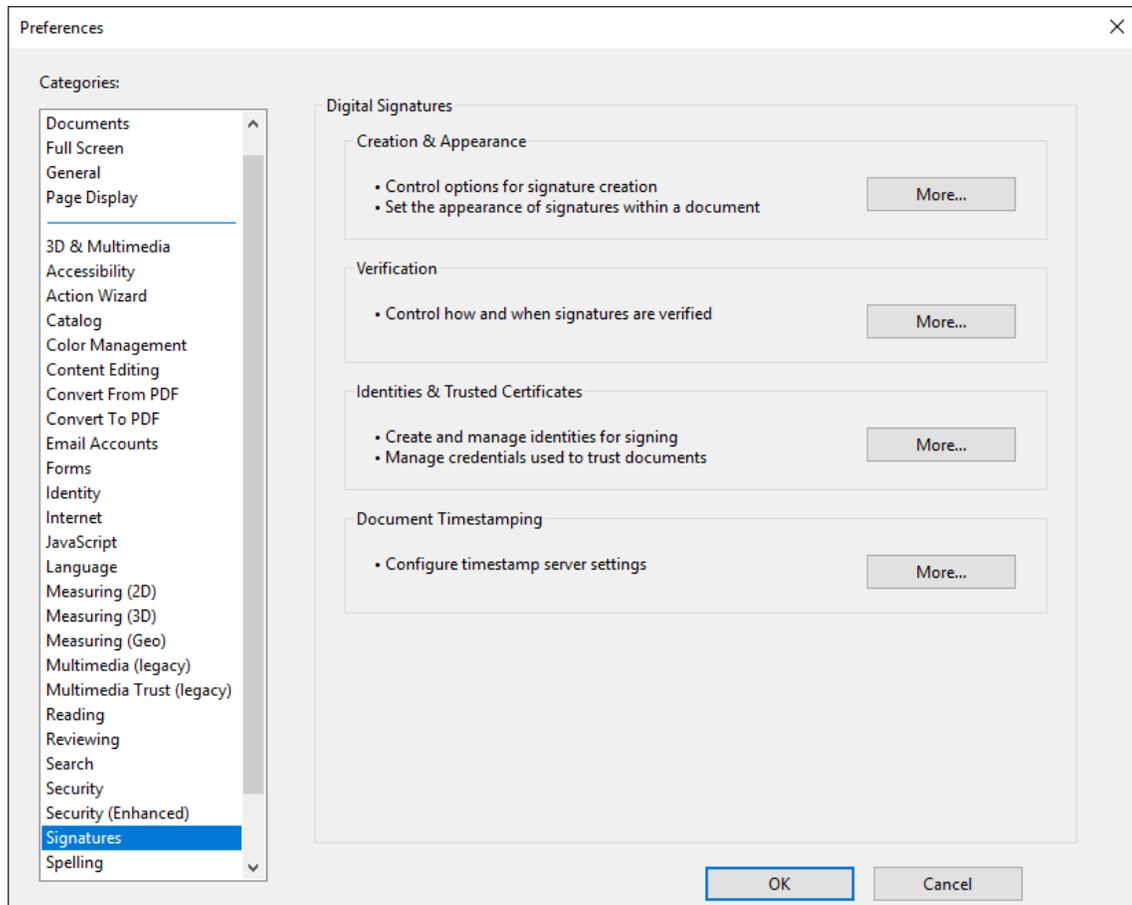
1. Open Adobe Acrobat 2017.



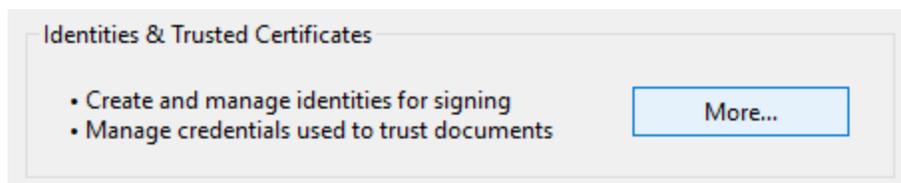
2. From the Menu Toolbar select Edit then Preferences.



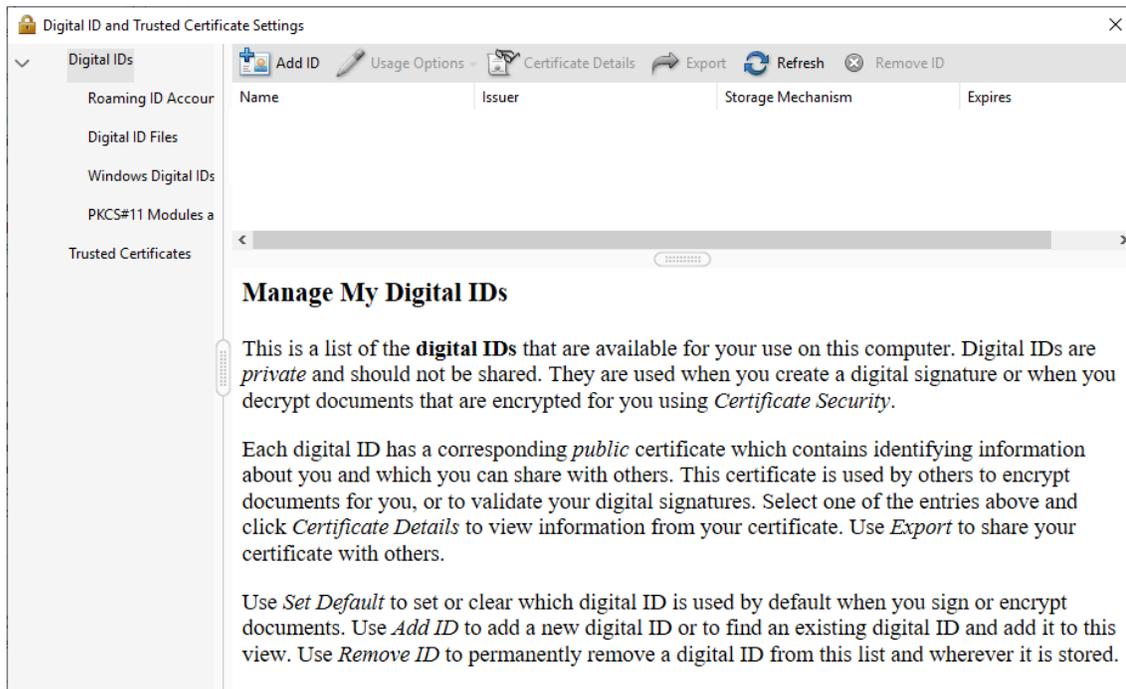
3. Select the Signatures Category from the left side menu.



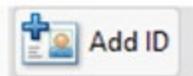
4. Select the 3rd "More..." button under the group for Identities & Trusted Certificates.



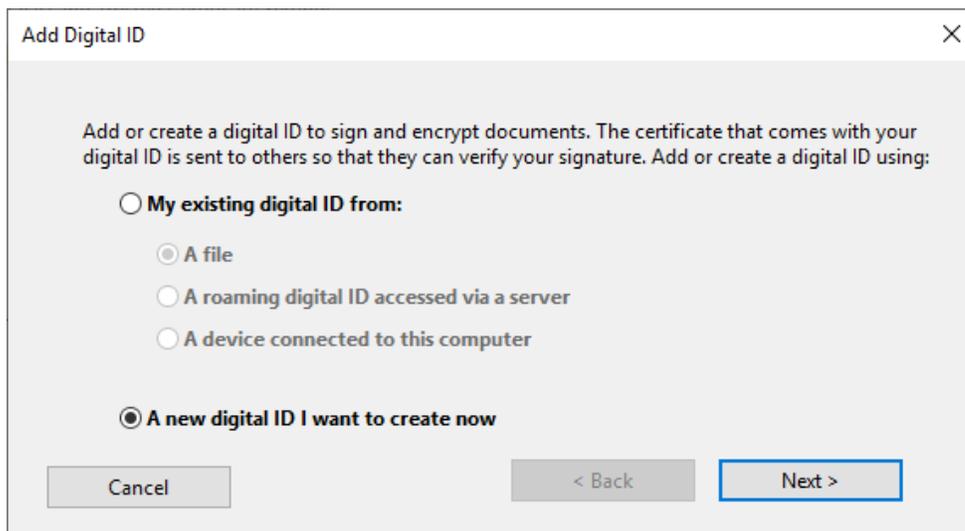
- The Digital ID and Trusted Certificate Settings window will appear.



- Click on the Add ID button from the ribbon bar.



- Select the bottom radio button for "A new digital ID I want to create now."



8. Select the bottom radio button for “Windows Certificate Store” (this is chosen to allow users to sign without having to type a password because the user’s windows login will serve to authenticate the user).

Add Digital ID

Where would you like to store your self-signed digital ID?

New PKCS#12 digital ID file

Creates a new password protected digital ID file that uses the standard PKCS#12 format. This common digital ID file format is supported by most security software applications, including major web browsers. PKCS#12 files have a .pfx or .p12 file extension.

Windows Certificate Store

Your digital ID will be stored in the Windows Certificate Store where it will also be available to other Windows applications. The digital ID will be protected by your Windows login.

Cancel < Back Next >

9. Fill in your information and select Finish.

Add Digital ID

Enter your identity information to be used when generating the self-signed certificate.

Name (e.g. John Smith): John K. Smith

Organizational Unit: RPG 5 - Structures

Organization Name: SCDOT

Email Address: SmithJK@scdot.org

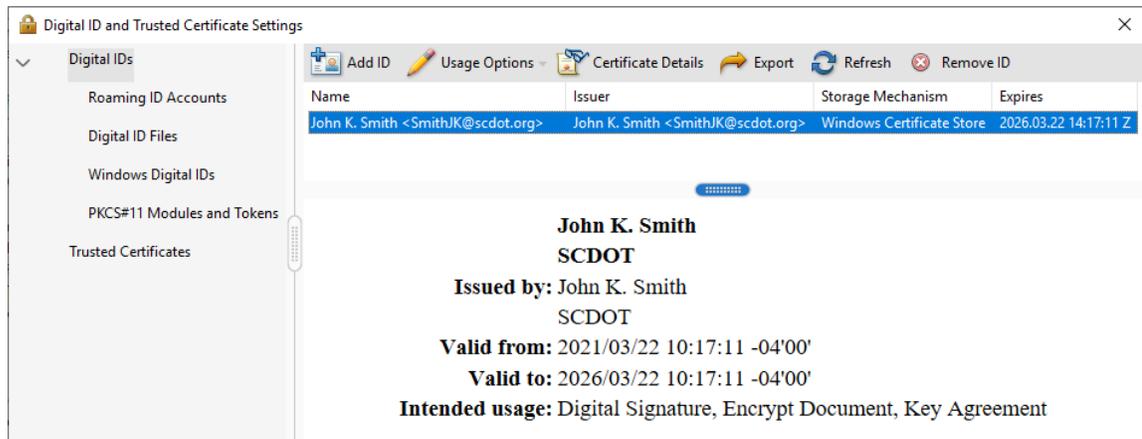
Country/Region: US - UNITED STATES

Key Algorithm: 2048-bit RSA

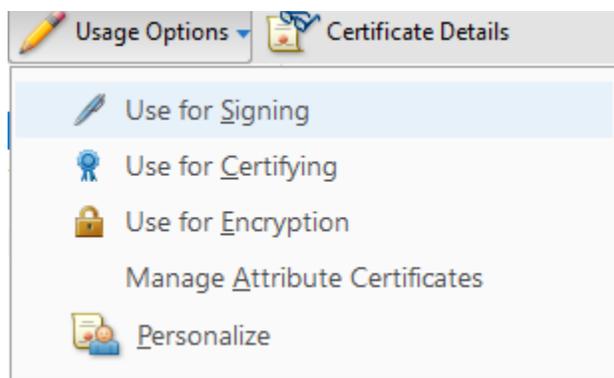
Use digital ID for: Digital Signatures and Data Encryption

Cancel < Back Finish

10. Click on your newly created Digital ID to highlight.



11. Select the Usage Options button and then select Use for Signing from the list of options.

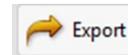


12. A new icon will appear in front of your name of your Digital ID. This sets this Digital ID to default for signing in adobe which is helpful if you use more than one software program is sign with.

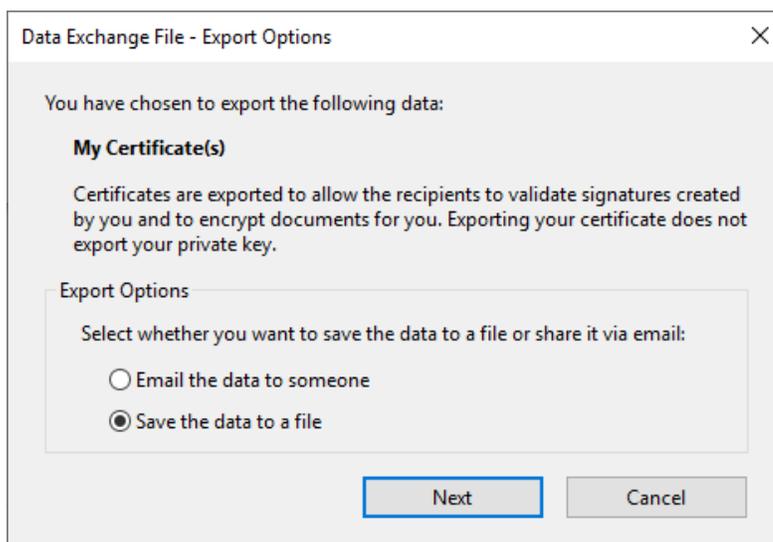


For External Customers only:

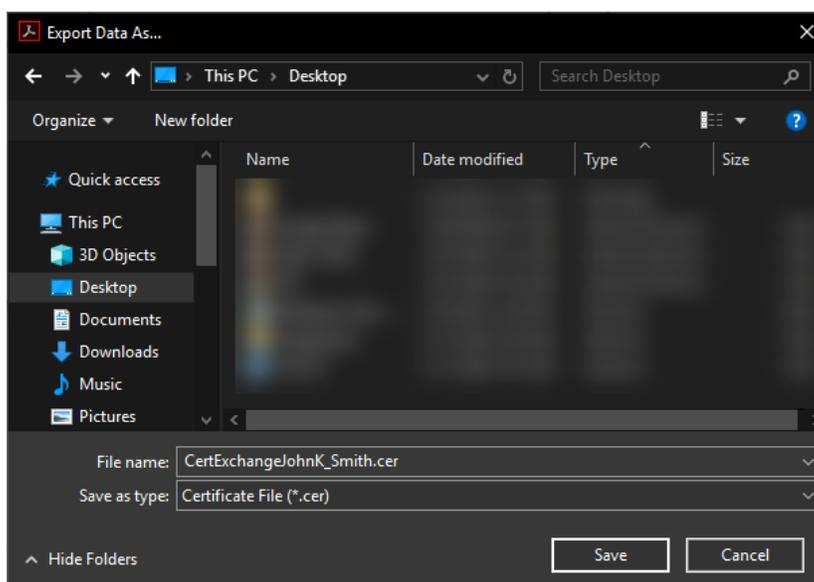
13. If you are an external customer to SCDOT, it is required that you send along your public certificate file along with files that you digitally sign. This is a quick process that only needs to be done once per each digital ID created, or when one is remade due to expiration. With your Digital ID highlighted, click on the Export button from the Ribbon Bar.



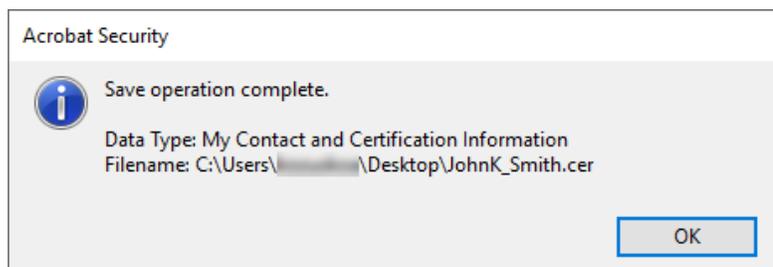
14. Select the radio button for “Save the data to a File” and click Next.



15. Choose the **.CER** format from the Save as type options and where you want to save the file in a memorable and quickly accessible location for emailing purposes.



16. You will get a message from Acrobat Security stating the export process is complete.



17. This ends the portion on creating a Digital ID in Adobe Acrobat 2017.

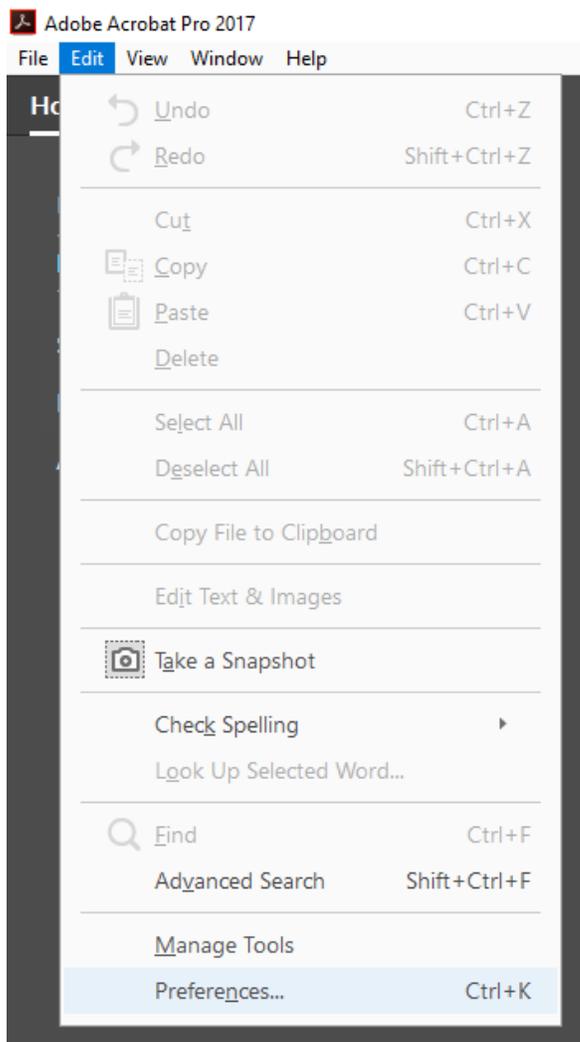
Digital Signature Appearances

The next step in the process of digitally signing and sealing plans starts with the creation of digital signature appearances. Multiple signature appearances can be utilized in different scenarios.

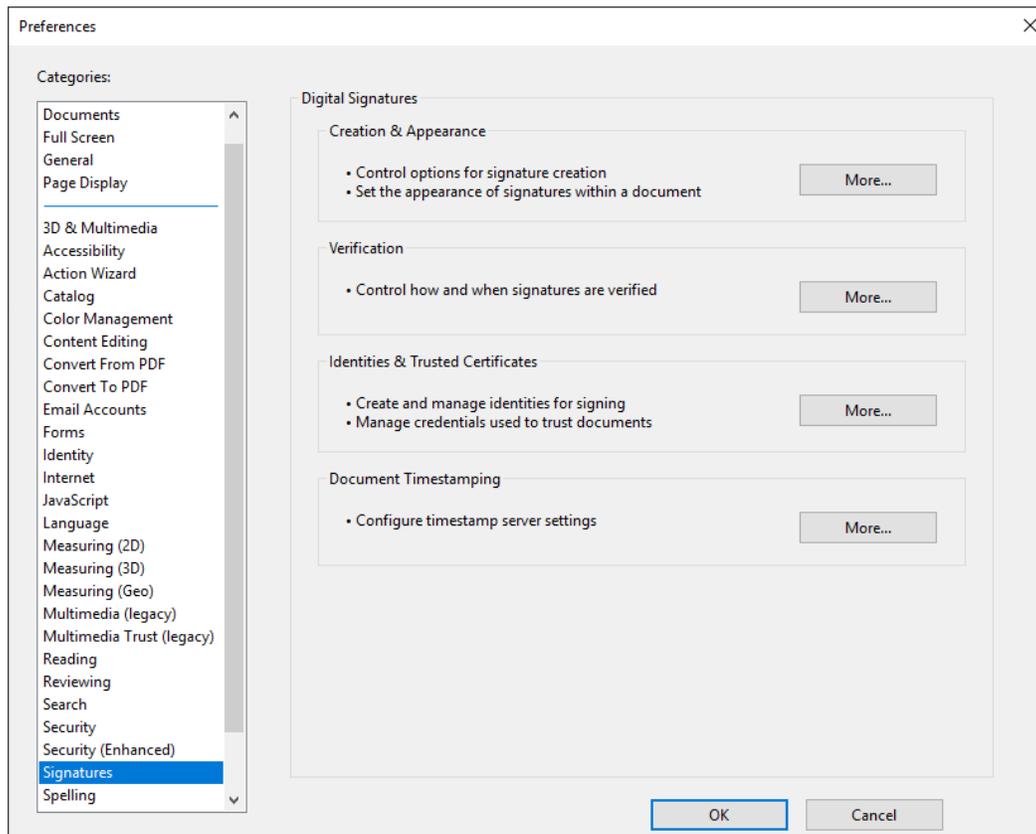
1. Open Adobe Acrobat 2017.



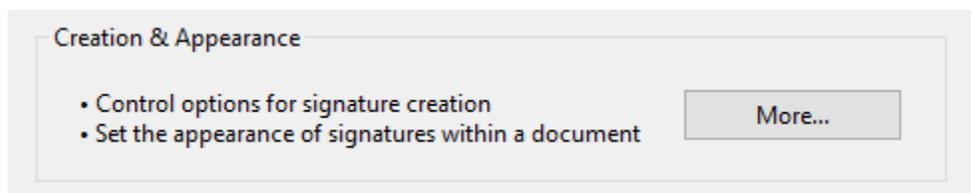
2. From the Menu Toolbar select Edit then Preferences.



3. Select the Signatures Category from the left side menu.



4. Select the 1st More... button under the group for Creation & Appearance.



5. From the Creation and Appearance Preferences window that appeared, match the preferences shown in the following picture then select the New button in the Appearances area on the lower half of the window.

Creation and Appearance Preferences

Creation

Default Signing Method:

Default Signing Format:

When Signing:

- Show reasons
- Show location and contact information
- Include signature's revocation status
- View documents in Preview Mode

Enable Review of Document Warnings:

Prevent Signing Until Warnings Are Reviewed:

- Use modern user interface for signing and Digital ID configuration
- Enable CryptoTokenKit framework support

Appearances

New...

Edit...

Duplicate

Delete

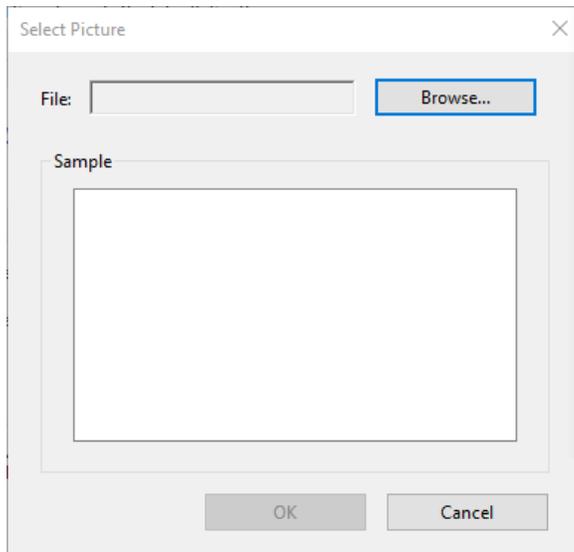
Help

OK

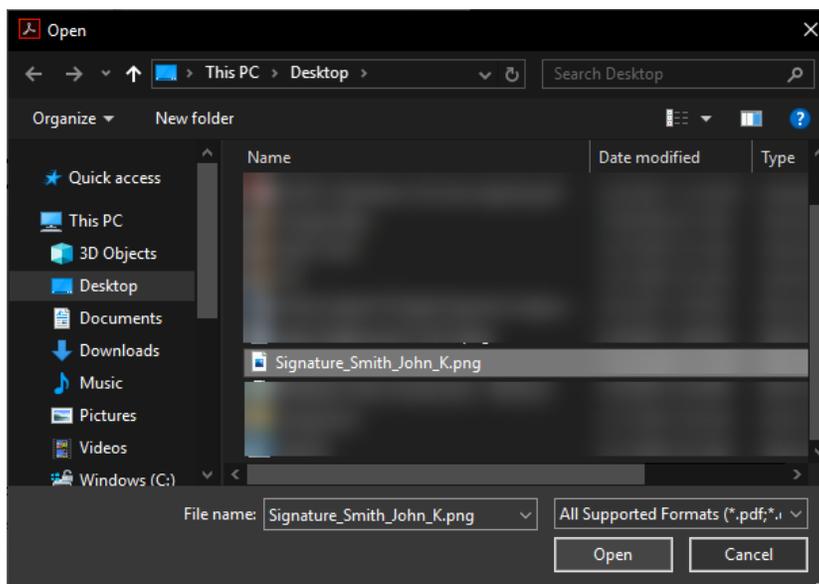
Cancel

6. In the Configure Signature Appearance window set the following options (see image below):
 - a. Title: enter in whatever you would like to call your signature appearance.
 - b. Configure Graphic: If you want to use an image of your real signature chose imported graphic.
 - c. *SCDOT employees contact Design Automation Office for assistance with creating a signature file with transparency saved and emailed to you as a .PNG file.
 - d. Otherwise you should just leave the radio button defaulted with Name.
 - e. Configure Text: Only Date is required.
 - f. Text Properties: It is recommended to not use the Auto feature (at least for signature with dates).

7. If setting your handwritten signature file (.PNG) click on the File... Button to get the following window:



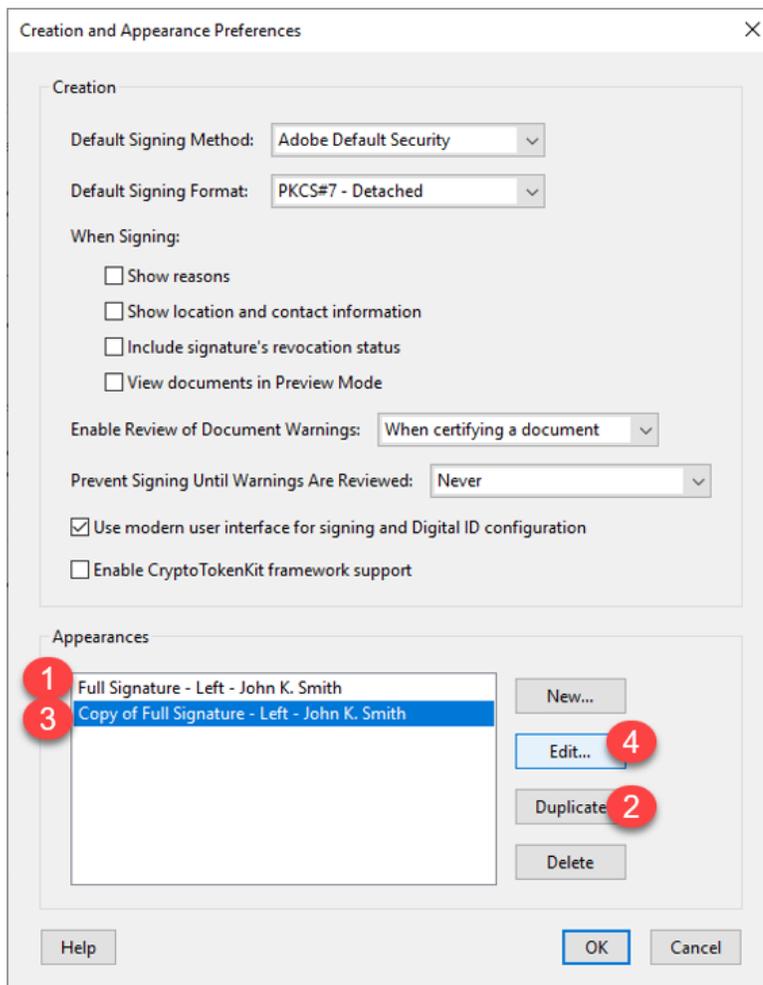
8. Click Browse and find your file.



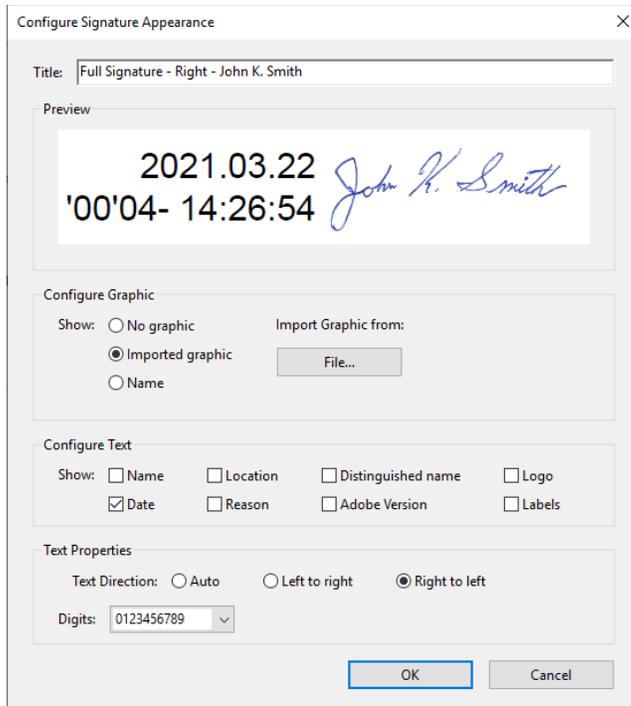
9. Click Open and you should see your signature appear in the preview window then click OK and OK.



10. Now back in the Creation and Appearance Preferences window, select your new appearance, click Duplicate, select your new appearance, click Edit.



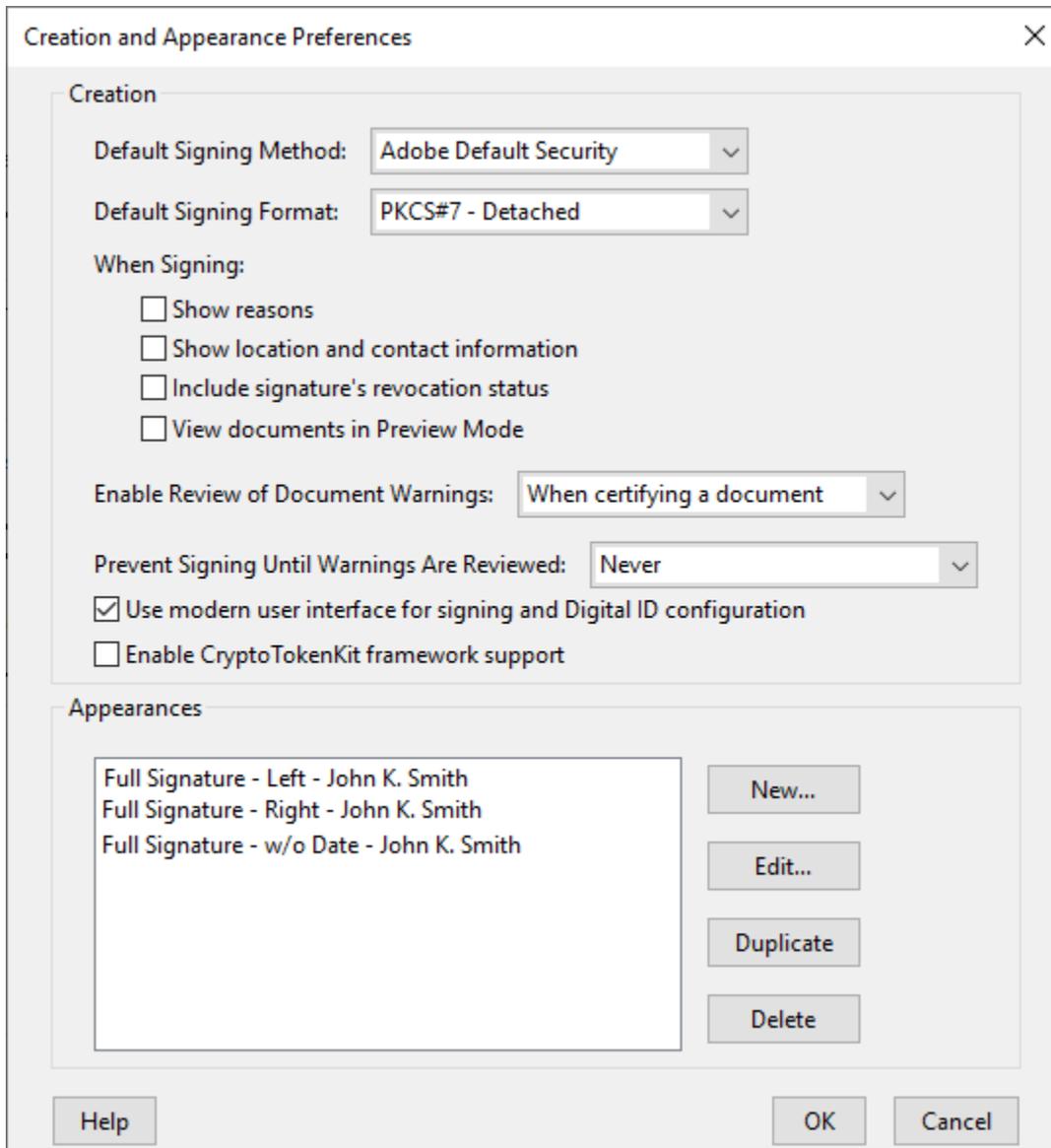
11. Change your title and switch the Text Properties to the other directional option.



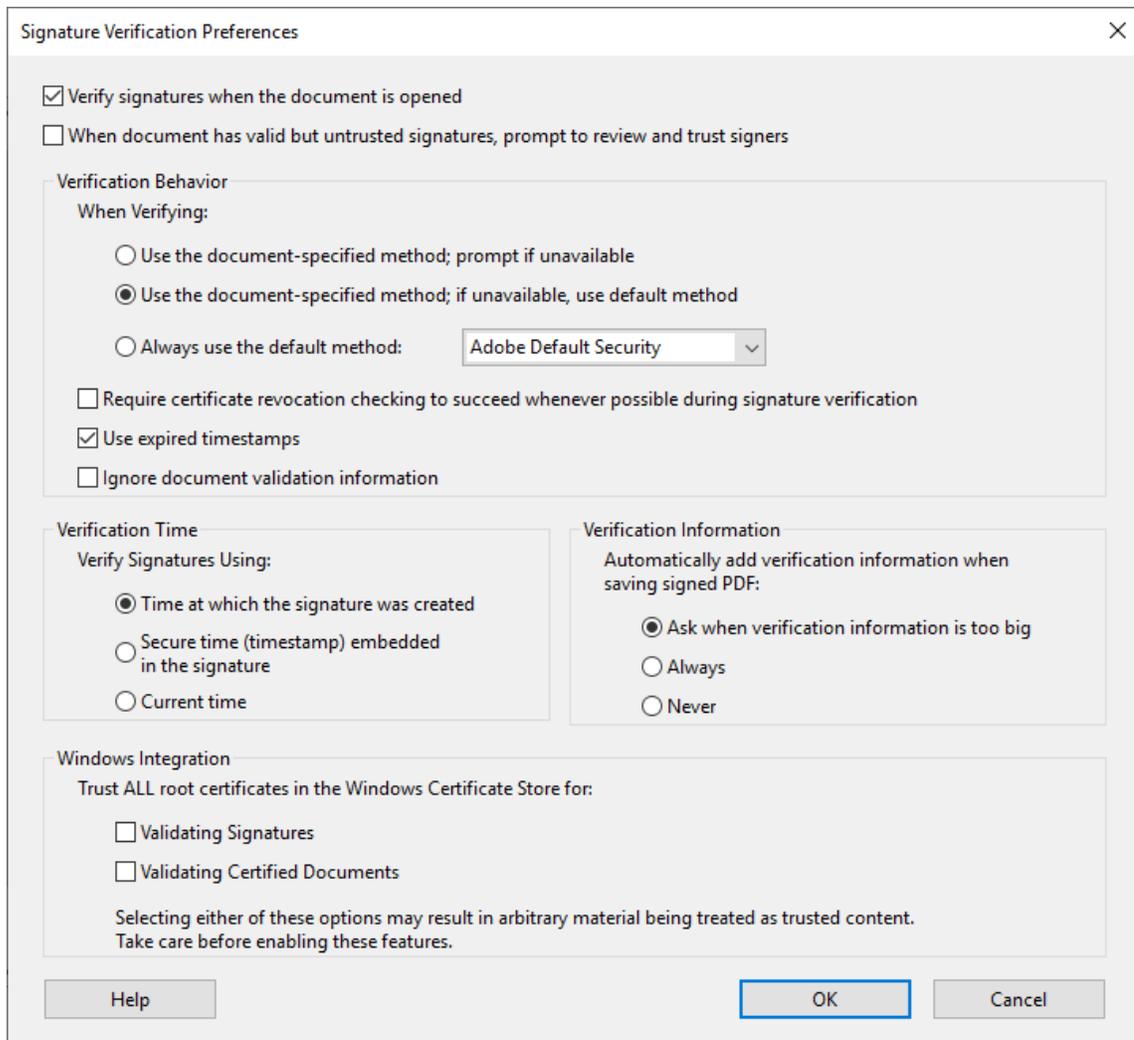
- Repeat this process again and create an appearance without a date checkbox and the text direction set to Auto.



13. Your Creation and Appearance window should look like this giving you two signature options with dates and one without the date for a total of 3 signature appearances. Users can go even further by repeating these steps with their initials and/or blue vs black ink etc.



14. Click Ok then Select the 2nd More... button under the group for Verification then match the following settings:



15. Click OK then OK.

You have now finished the process of creating your digital signature appearance.

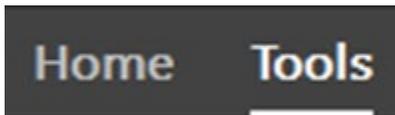
Digital PE/PLS Seal as a Stamp

The last step in the configuration for the process of digitally signing and sealing plans is importing a digital PE/PLS seal into Adobe Acrobat as a stamp.

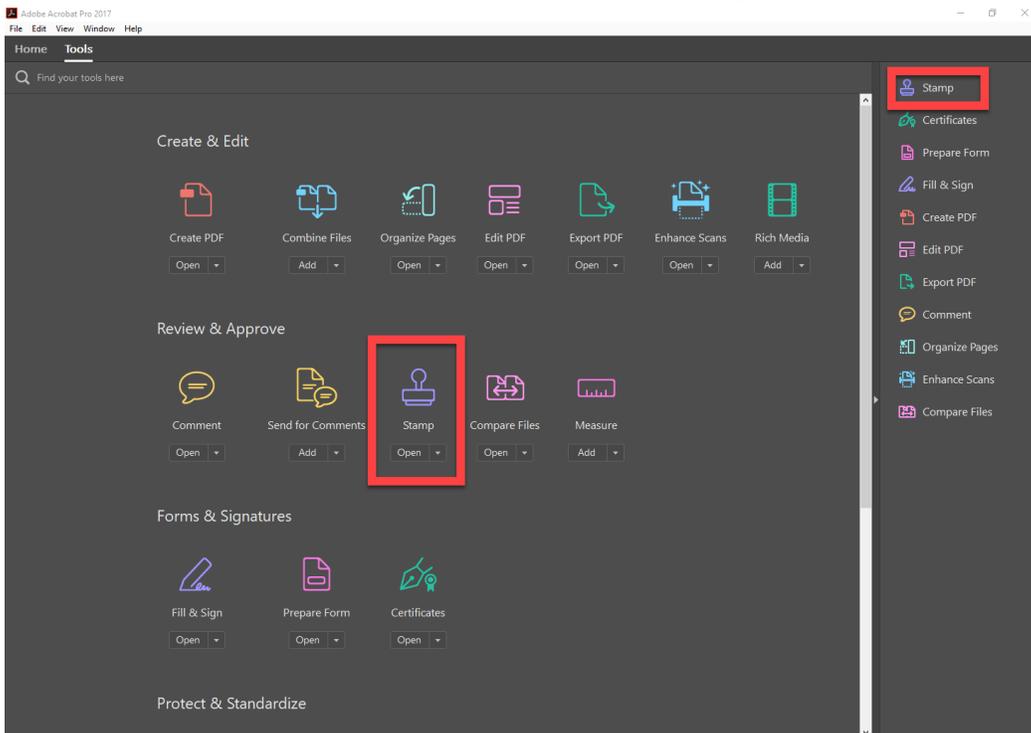
1. Open Adobe Acrobat 2017.



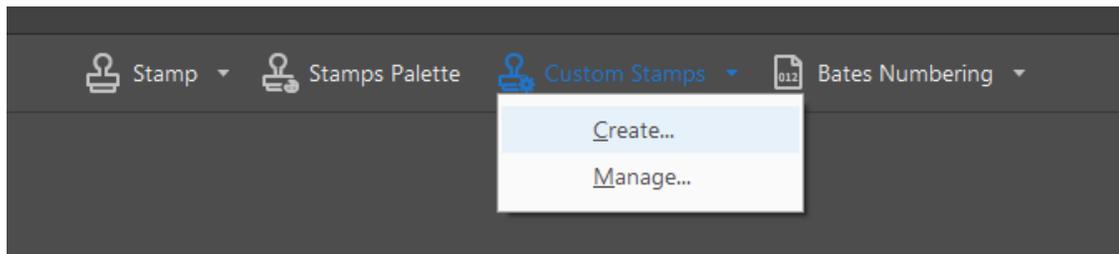
2. Select Tools from your main adobe ribbon bar.



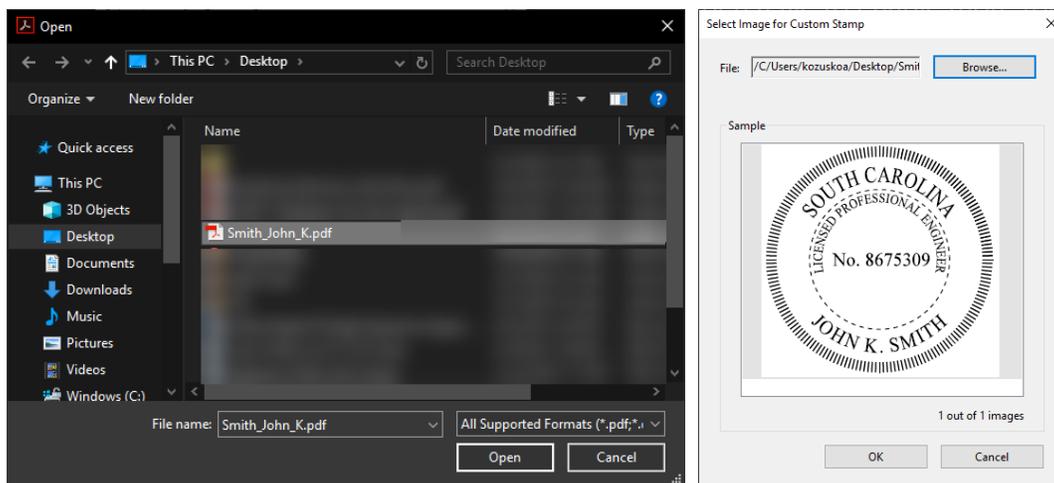
3. Select Stamp from either the main window or the categories on the right hand side of your screen.
*Tip: if you want items to appear on the right hand side of your screen, click the Add from the dropdown under each tool.
*Tip: you must be on this screen to reorder the tools on the right hand side of your screen.



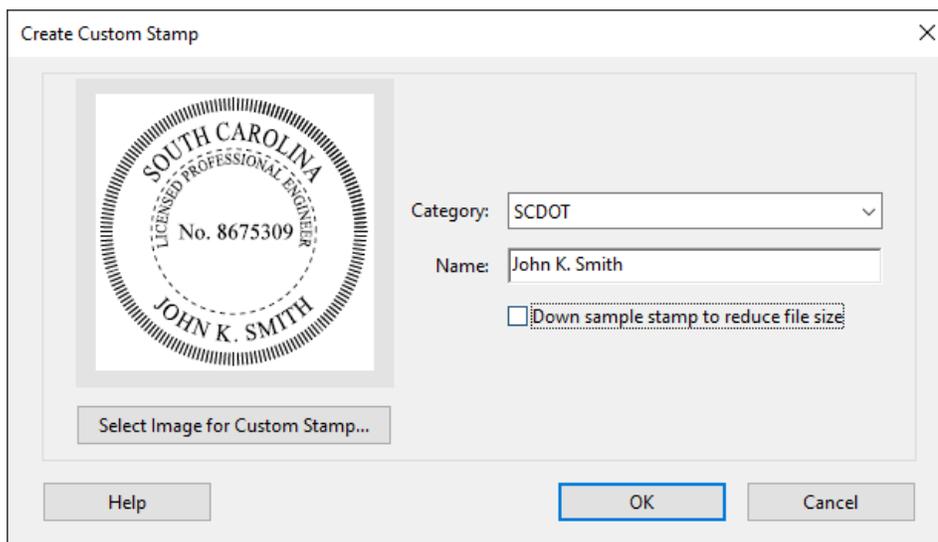
4. Select Custom Stamps then Create... from the newly opened toolbar.



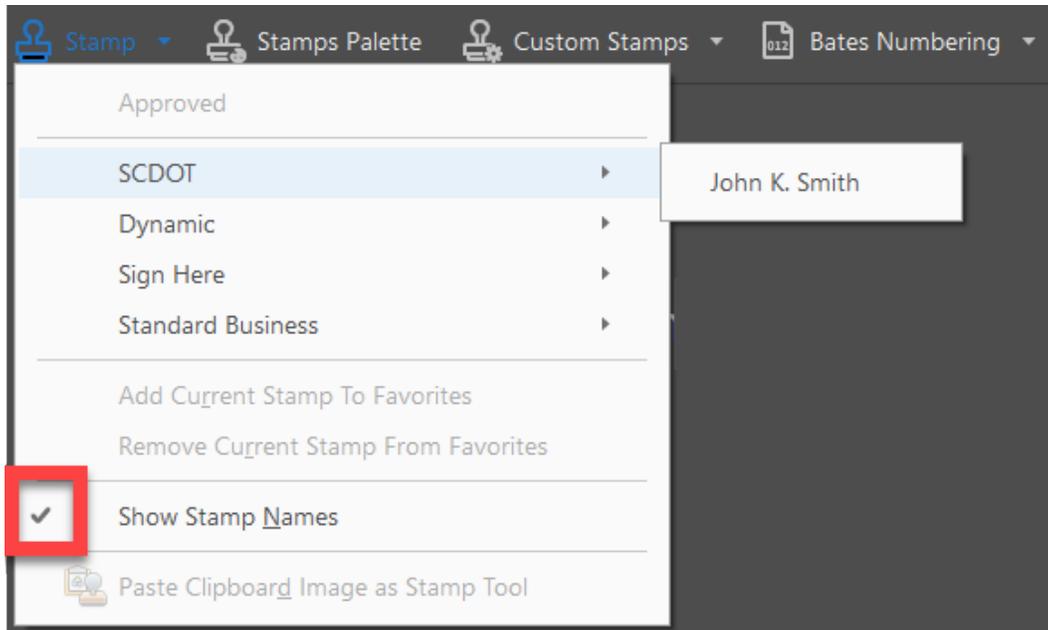
5. Browse for your PE or PLS seal and click Open then OK.
*Tip: The Design Automation office can create and email you a .pdf format of your seal.



6. Enter the Category (SCDOT for Internal Customers) followed by your name and uncheck the checkbox to down the sample stamp to reduce file size option. Then click OK.



7. Click on the Stamp button from the toolbar and select the category you created to view the stamp.
*Tip: Click on the show stamp names to view by name vs. the small thumbnail of the seal where it is impossible to read the information on the seals (helpful if you are placing multiple seals).

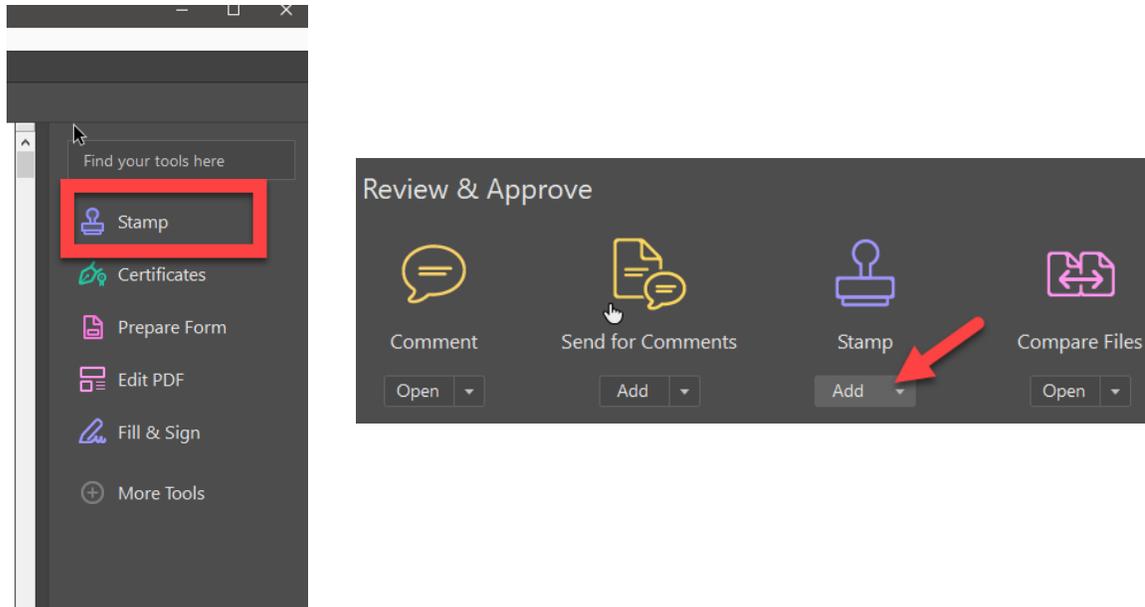


You have now completed the process of making an Adobe Stamp from a .pdf formatted seal.

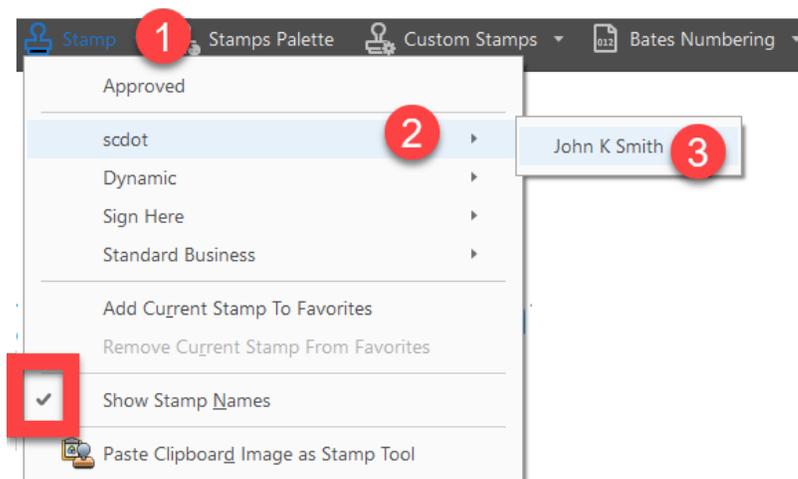
Digitally Signing and Sealing Documents in Adobe Acrobat

Digitally Sealing

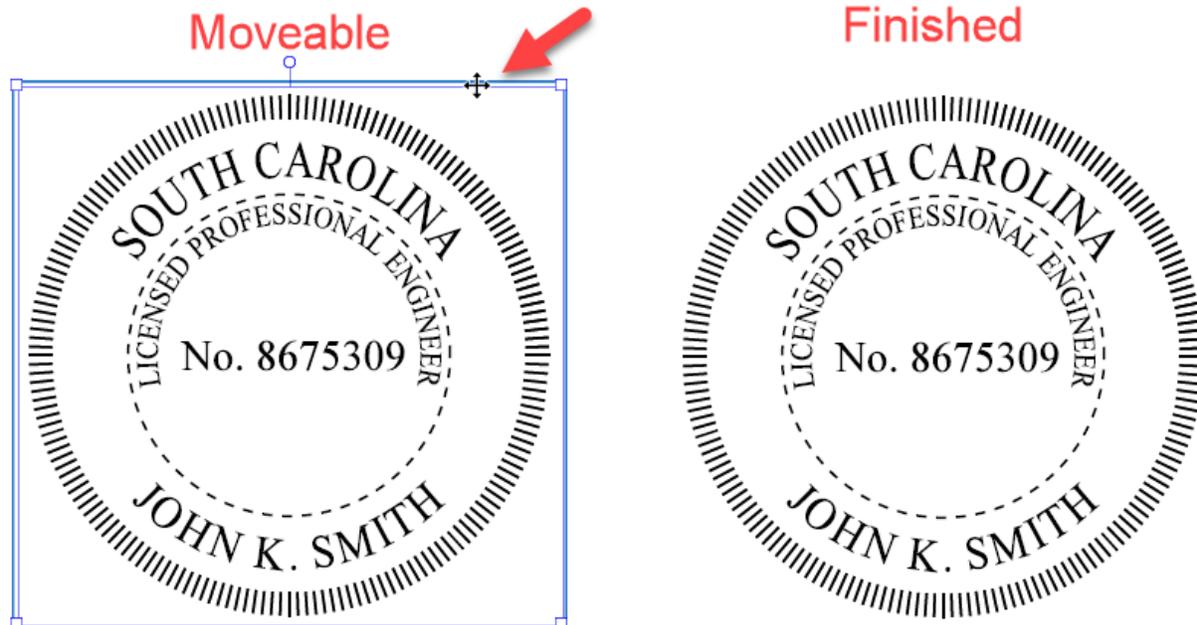
1. Open the file to be signed and sealed in Adobe Reader or Adobe Acrobat.
2. Open the “Stamp” tool from the side menu of the program. If not shown, click on the “More Tools” at the bottom of the list to find and add it.



3. Click on the “Stamp” button from the “Stamp” toolbar, followed by your group, finally the seal you wish to place on the plan sheet. *Tip: have the “Show Stamp Names” Checked to easily identify the seal.

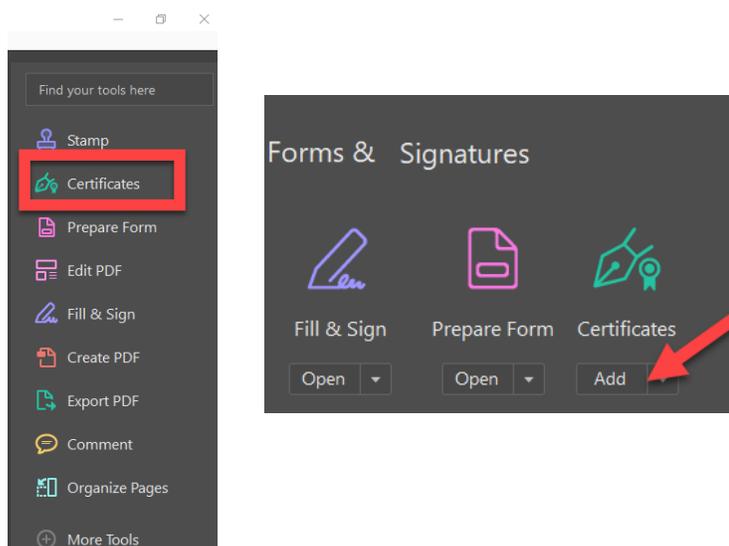


4. Move the stamp to the proper location on the plan sheet and click to place. The stamp is able to be clicked on and moved again if placement needs adjusted. Do not resize the seal. If resized by accidently grabbing one of the handles, right-click, delete the stamp, and place again from scratch.



Digitally Signing

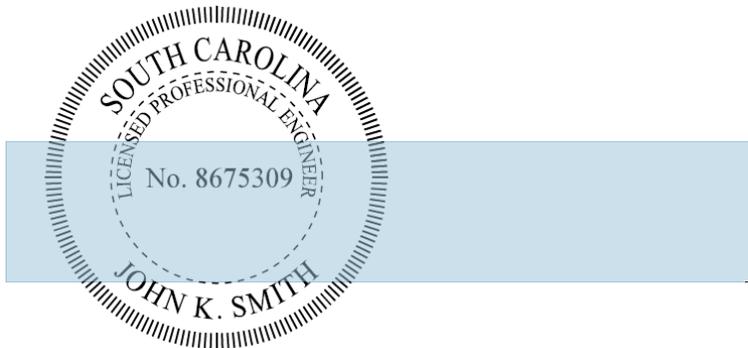
1. Open the file to be signed in Adobe Reader or Adobe Acrobat.
2. Open the “Certificates” tool from the side menu of the program. If not shown, click on the “More Tools” at the bottom of the list to find and add it.



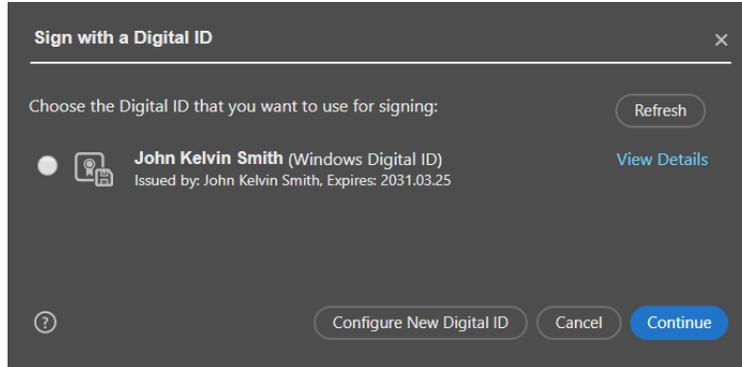
3. Click on the “Digitally Sign” button from the “Certificates” toolbar.



4. Click and drag on the pdf to create the signature field. If a PE Seal was placed, the form should begin on the left side of the seal three-quarters of the way up, extending three-quarters of the way down the seal and right to the edge of the white space of the stamp. If a PE seal was not placed, the signature field needs to be large enough for the signature and all accompanying text to be legible. It can be adjusted later if it is too large or small.



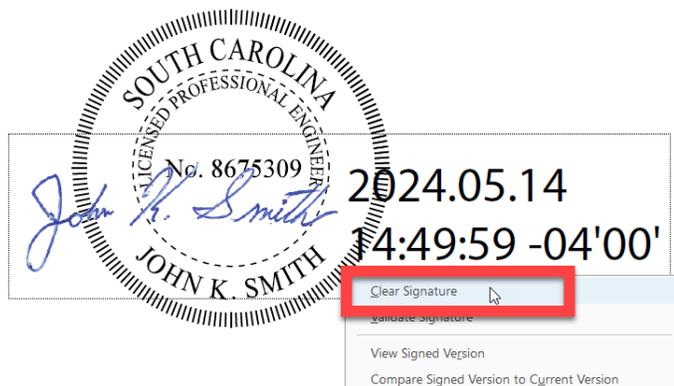
5. The Sign with a Digital ID popup should appear. Choose your Digital ID and click the “Continue” button.



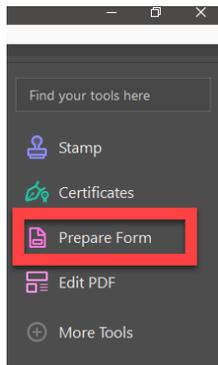
6. Select your Appearance from the dropdown box. DO NOT click on the checkbox to “Lock document after signing” as this limits the ability for slip-sheeting and commenting. Click the “Sign” button to continue.



7. Adobe will ask you to save the file. You can overwrite the unsigned version of the document or save it as a new document with a revised name (recommended).
*Tip: it is highly recommended to have two separate folders, one for original documents and one for the signed copies.
8. If necessary, reposition and resize the signature field to line up with the seal without obscuring your name or PE number. Before the field can be altered, the signature must be cleared. Right-click on the signature and select “Clear Signature” from the menu.



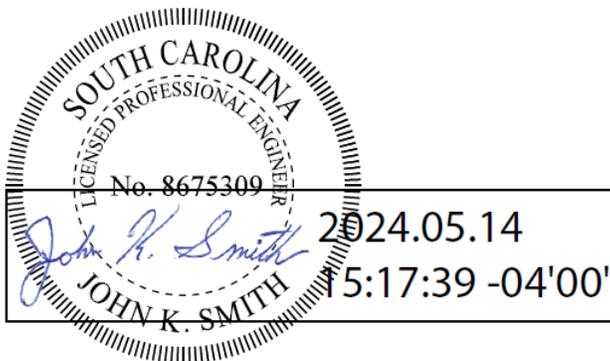
- Open the “Prepare Form” tool from the side menu of the program.



- Select the signature field and drag it to reposition it. Use the grips on the sides and corners, marked with boxes, to resize it. The signature box also can be deleted if no longer necessary. Click the “Esc” button on your keyboard to exit the “Prepare Form” function.



- Left-click on the signature field to open the “Sign with a Digital ID” window again and follow steps #5-7 to re-sign the document.



- Any changes to the document, including adjustment of stamps, will invalidate the signature requiring the signatures to be cleared and reapplied.

If multiple signatures are required on a document, the signatures must be applied after ALL stamps have been added. Engineers may be required to each apply their PE Seal stamp in turn, then recirculate the document to each sign it.