

# **DIGITAL SIGNATURES**

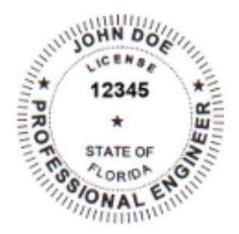
Building a Digital Signature to Meet State Statute Requirements Using a Certificate Authority and the FBPE update Nov. 2015

## Adobe Acrobat Pro

(Versions 10 Newer and 11)

### 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@winterspringsfl.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?

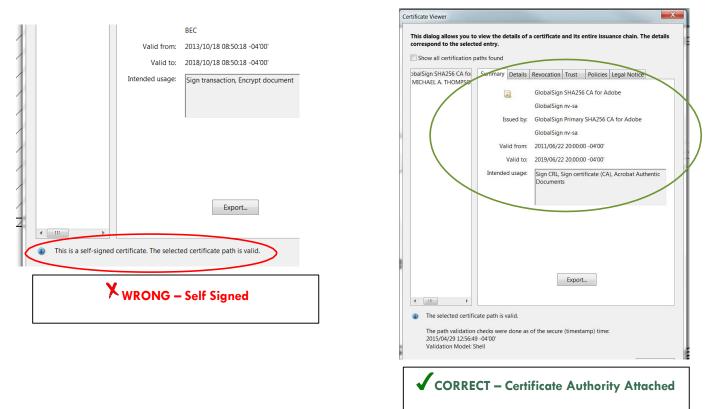
When you apply a digital signature on a drawing, a cryptographic operation binds the digital certificate and the data being signed such as a PDF or other drawing file into one unique descriptor. Any change to the drawing will remove your unique descriptor or break the hash and will be indicated when 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.



### Create a self-signed digital ID in Adobe Acrobat Standard or Pro

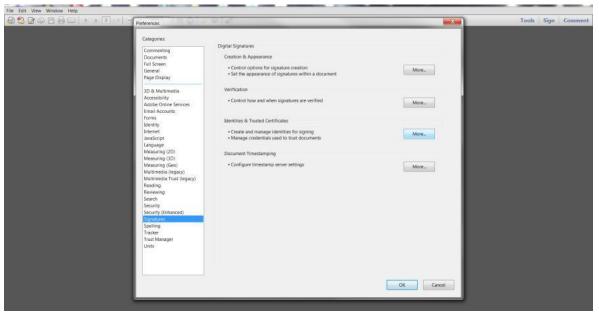
How to pdfs are also available for newer versions of Adobe including Reader DC (Free) just visit our website at ePlans Digital Signatures Guides Page

(Note: Every Adobe version may differ slighty. 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.

<ul> <li>Digital IDS Trutted Cettificate</li> <li>Manage My Digital IDs. Have base Storage Mechanism Express</li> <li>Manage My Digital IDs. This is a list of the digital Ds that are available for your use on this computer. Digital IDs are private and should not be shared. They are used when you create a digital signature or when you decrypt documents that are encrypted for you using <i>Certificate Security</i>. Each digital ID has a corresponding <i>public</i> certificate which contains identifying information about you and which you can share with others. This certificate is used by others to encrypt documents for your or to validate your going inspirators. Select one of the entries above and click <i>Certificate Details</i> to view information from your certificate. Use <i>Export</i> to share your certificate with others. This certificate is used by others to encrypt documents for your or to validate your digital againtures. Select one of the entries above and click <i>Certificate Details</i> to view information from your certificate. Use <i>Export</i> to share your certificate with others. Use Satt Default'to set or clear which digital ID is used by default when you sign or encrypt documents. Use <i>Add ID</i> to add a new digital ID or to find an existing digital ID and add it to this view. Use <i>Remove ID</i> to permanently remove a digital ID from this list and wherever it is stored.</li> </ul>	Co Digital ID and Trusted	Certificate Settings	Digital Signatures	848				
This is a list of the <b>digital ID</b> s that are available for your use on this computer. Digital IDs are <i>private</i> and should not be shared. They are used when you create a digital signature or when you decrypt documents that are encrypted for you using <i>Certificate Security</i> . Each digital ID has a corresponding <i>public</i> certificate which contains identifying information about you and which you can share with others. This certificate is used by others to encrypt documents for you, or to validate your digital and the shared. They are <i>Certificate Details</i> to view information for you, or to validate your digital guarters. Select one of the entries above and click <i>Certificate Details</i> to view information from your certificate. Use <i>Export</i> to share your certificate with others. Use <i>Set Default</i> to set or clear which digital ID is used by default when you sign or encrypt documents. Use <i>Add ID</i> to add a new digital ID or to find an existing digital ID and add it to this view. <i>Use Remove ID</i> to permanently remove a digital ID and the this list and wherever it is	* Digital IDs							
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#### 3) Select the option - <u>A new digital ID I want to create now</u>, and click Next.

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#### 4) Check - <u>New PKCS#12 digital ID file</u>

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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.

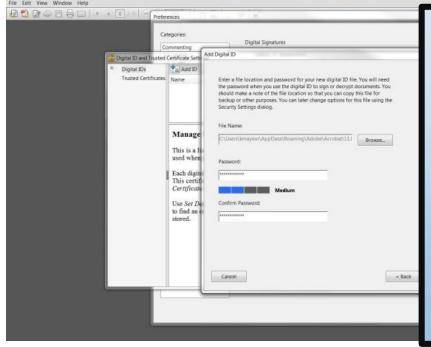
You MUST enter your name in the following manner to add the two new sentences that the Florida Board of Professional Engineers (FBPE) requires in their January 2016 Newsletter.

#### 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.

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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 both to use for both Signatures and Data encryption.

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8) Your Digital ID certificate is complete, close screens and return to main menu.

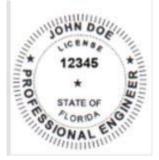
### Prepare Your Seal for Import

- 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.

### Return back to Adobe Acrobat to begin building your Digital Seal and Signature Combo.

#### 1) Main Menu>Choose Edit > Preferences > Signatures>Creation & Appearance

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### 2) Adobe Default Security, PKCS#7 Deatched, for Appearances click NEW.

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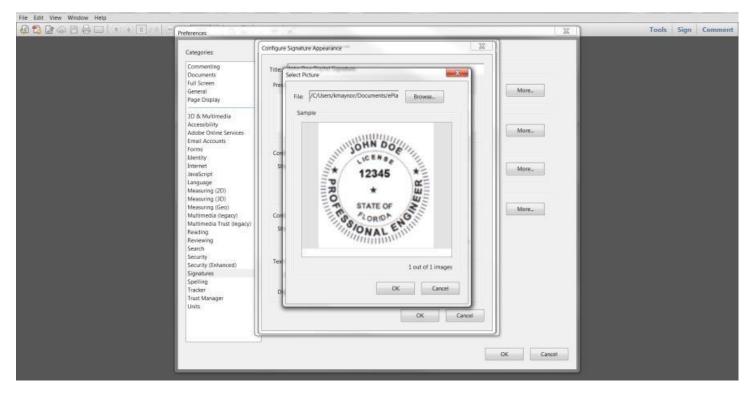
3) Type Title or Name of your new Signature, choose Imported Graphic, click File

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4) Select the file location where you saved the scanned .jpg of your seal, change Files of Type selector under the File Name to .jpg or .pdf depending on your scanned PE Seal file type.



5) Seal will appear ready for import into the digital signature



6) Verify your seal, Check only Name, Date, and Distinguished Name then uncheck the other five checkboxes.

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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/

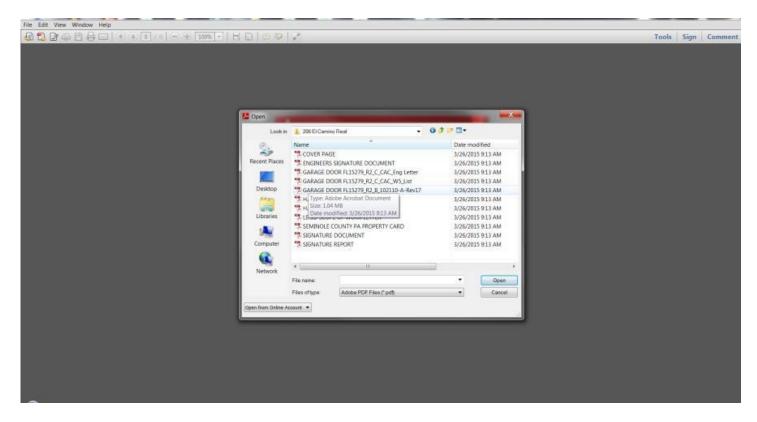
DocuSign - https://www.docusign.com/products/electronic-signature

Globalsign - https://www.globalsign.com/en/digital-signatures/

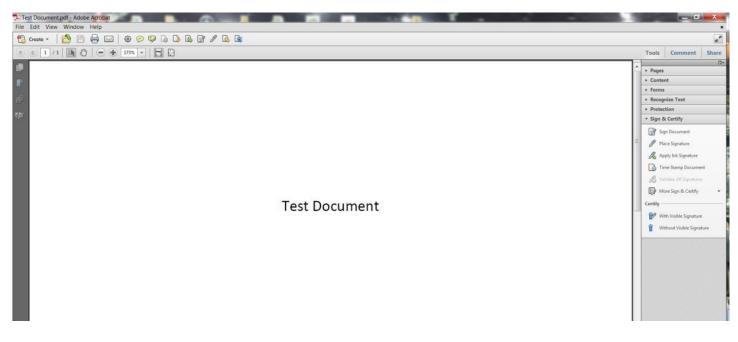
VeriSign - https://www.symantec.com/products/information-protection/eca-certificates/pricing

### Test your new Digital Signature

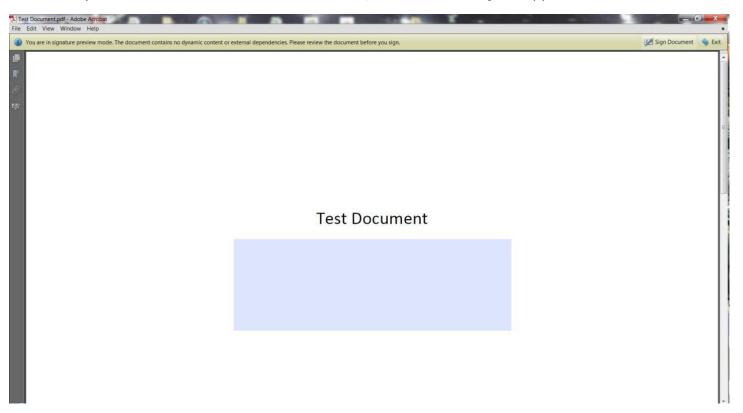
1) Open an old scrap PDF drawing or blank PDF paper to test on.



2) Select Tools>Sign & Certify>Place Signature Dropdown arrow> Place Signature



3) Use your mouse to draw a textbox about 2"x 4", if too small nothing will appear.

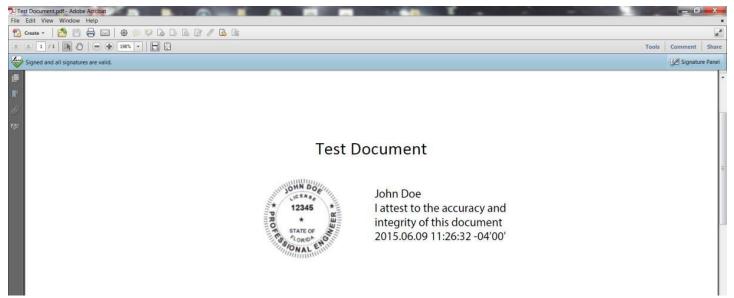


- 4) Click the Sign Document button on the upper right of the Adobe screen.
- 5) Select the "Sign As" signature, enter password, Select the "Appearance" signature, check the "Lock" checkbox, then click sign.

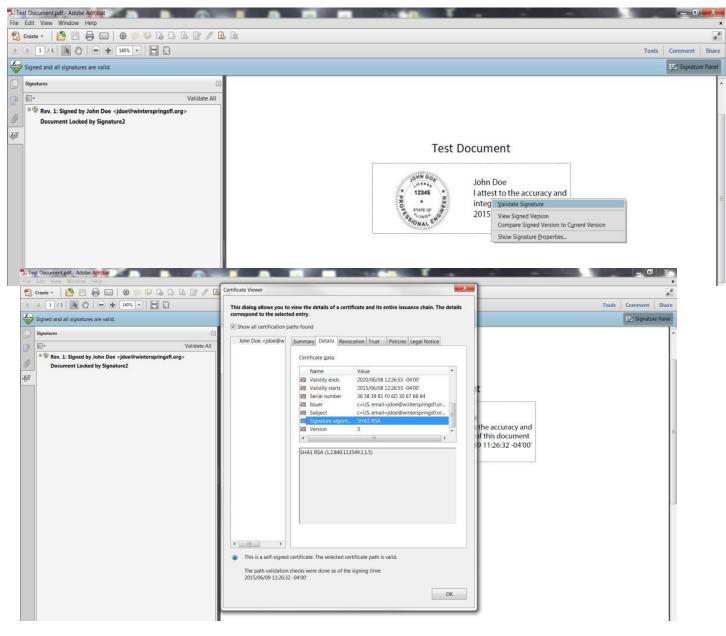
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6) Save the newly signed document or drawing on your computer.

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



7) Validate your signature with a right click on your mouse.



### 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, 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 -** <u>https://www.flrules.org/gateway/reference.asp?No=Ref-00790</u>



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