The Proper Use of North Carolina Professional Seals

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Introduction and Overview

In order to properly use professional seals in North Carolina, licensed professionals are required to be familiar with specific practice regulations. The technical professions are governed by General Statues and Administrative Codes. The Administrative Codes supplement and add detail to the content of the Statues; they are intended to be used jointly. The Statutes are also known as Acts; the Codes are often referred to as Rules. Additionally, the North Carolina Board of Examiners for Engineers and Surveyors, and the North Carolina Boards of Architecture and Landscape Architects provide interpretations, opinions, and guidance through periodic publication of practice newsletters via the internet. This course is not intended as a replacement or substitution for official information sources. Some of the applicable regulations are listed in the **Reference Section**; they supersede any information contained in this course.

North Carolina Legislative Building [1]

There exists major commonalities of acceptable seal use among all of the North Carolina licensed design professions. Specific differences also exist. The focus of the course content pertains primarily to the practice of Architecture and Engineering, and secondarily to the practice of Professional Land Surveying. The Landscape Architecture discipline is mentioned because it can closely interface with the other professions.

While every effort has been made to ensure the accuracy and completeness of the information presented in this course, the reader is reminded that Statutes and Rules are under continuing revision. Consequently, while the course's base content is relatively constant, specifics are subject to variation. The reader of this course is strongly encouraged to periodically review the various regulations in order to stay informed. This is easily accomplished because the required information and the regulating Boards are readily accessible on the World Wide Web; a listing, with URLs, is provided in the **Additional Resources** section. Nothing herein has the force of law or the intention to force any licensed professional to comply with the content.

History[2]

The word "seal" stems from the act of closing. Originally, this was the closing, or securing if you will, of a document for the purpose of security and privacy. While the original sealing methods of old could not prevent unauthorized access, an unbroken seal did at least give the intended recipient of the document an indication of its security. Over time, the seal evolved into a representation of indisputable authenticity, just as a signature is accepted in the world today.

The emperor of China used his thumb print when sealing documents in 3000 B.C. The use of seals is mentioned in the Old Testament, where Jezebel used Ahab's seal to counterfeit important documents. Royalty and governments used their own seal to affix to proclamations to give them their authoritative stamp of approval. The first Great Seal of England was that of Edward the Confessor, impressions of which can still be found. During this time, almost everyone had their own seal. While most people had just one, royalty would own several, including their "Great" seal, as well as seals for all their courts and officials. It was common practice to destroy the seal when the owner died, which is the reason so few original seals are still in existence today. Official seals of the Crown were often handed over with great ceremony, and in Medieval Times the size and motif of the seal conveyed an image of the status of its owner. Early motifs were equestrian or heraldic in nature, or showed the owner in various pursuits like hunting or doing battle. William the Conqueror used an equestrian seal showing him armed and ready for battle. In Medieval Times, betrothals were prearranged; therefore true words of love were secretly written and the envelope's contents secured by a wax seal, so that the recipient could be assured that their passion would be unknown to others.

Background of the Seal in the U.S.

The first Seal of the United States was created by Benjamin Franklin, John Adams and Thomas Jefferson in July 1776, shortly after the Declaration of Independence was signed. Congress realized the necessity of such a seal for the newly established nation. Seals were used less frequently as literacy increased. With the introduction of the gummed envelope in the 19th Century, the need for privacy was reduced. Seals became a more personal expression as well as a decorative embellishment. Today, seals serve functionally as well as symbolically. Seals represent the President, Federal agencies, States, State agencies, corporations, and notaries, to name barely a few.

The necessity for professional seals springs directly from laws regulating the practice of the various professions. The State of Wyoming was the first to enact an engineering registration law in 1907 and was ironically, the last State, in 1951, to enact a law regulating the practice of Architecture. By 1952 all the States and territories had adopted licensing laws of some description regarding the primary technical design professions. North Carolina's engineering law was enacted in 1921, and the architectural registration law dates back to 1913. Landscape Architecture law is relatively new, coming into existence in 1969.

Professional Practice Overlap

North Carolina building code officials and other regulatory agency personnel, as well as the licensees themselves, are often confused as to the differences between how and when, and in what manner, the professions are allowed to use their seals. By far the most frequent professional conduct violations are attributable to sealing improprieties. Many of the improprieties stem from the fact that there exists areas of overlap or common practice among the professions of Architecture, Engineering, Surveying, and Landscape Architecture. Setting aside any nefarious activity, one of the leading forms of impropriety occurs when the licensee incorrectly affixes a seal to work for which the licensee is not privileged to undertake. In order to appreciate the problems that sometimes arise from the use of the various professional seals, it is useful to study these areas of technical overlap or common practice.

Let's utilize set theory to diagrammatically examine the scope and purview of the professions. Look at the Venn diagram below. Each circle is intended to graphically represent the total practice scope of each profession. The overlapping areas of the four professional practices (sets) represent the legally implied, and generally accepted, common practice areas. You may recall that in set theory these common areas are known as *intersections.* We will address each one of these intersections individually as we progress through the course.

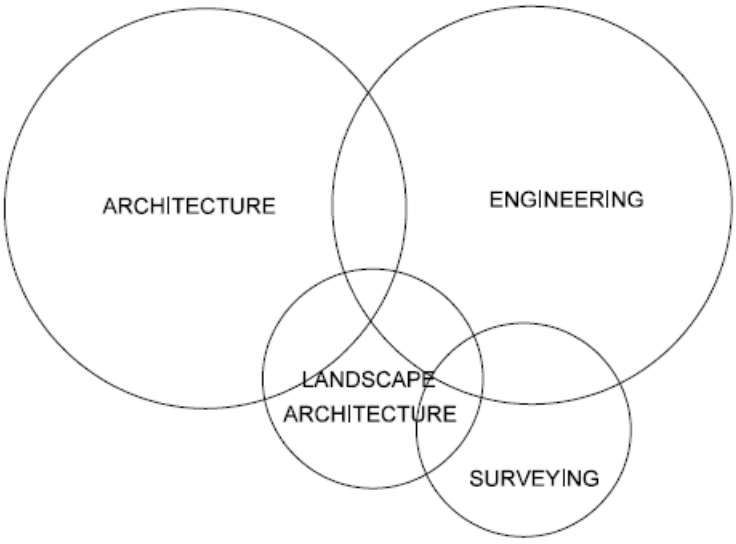


Figure 1 – Overlapping Professional Practice Areas

For now, let's begin with the examination of probably the most problematic intersection: Architecture and Engineering.

Comparing Apples to Oranges or Comparing Apples to Pears?

Everyone knows the difference between the practice of Architecture and the practice of Engineering, right? Well obviously not. A broad range of viewpoints exists among the various States and territorial jurisdictions with regard to this matter. Any analysis that examines the actions of various courts and code enforcement officials quickly reveals a difference in what is interpreted as allowable legal practice between the two. Individual State-to-State statutory definitions range, on one end, with little or no distinction between the two professions, to the extreme of an apparent monopoly of professional authority being granted to one or the other. North Carolina law falls in the middle of this range, setting out moderate legal specifics in defining the practice bounds of the two professions.

That a difference exists between Architecture and Engineering is not an issue; the precise difference is sometimes, however, nebulous. It is generally held that Architecture is the profession of designing buildings for human habitation and occupancy; Engineering, among many other things, is the profession of designing structures, to include buildings, and the various elements of utility that comprise the structure and make it functional. Although overly simplistic, Architecture is often discriminated from Engineering through the emphasis of interior and exterior aesthetics, and form and function with regards to occupancy and use. From the North Carolina Architecture Rules: *The profession of architecture calls for individuals of the highest . . .artistic and technical ability.*[3]

Although not universally accepted across the technical community, the National Council of Architectural Registration Boards (NCARB) holds that Architects, by their education and internship, are the only design professionals properly prepared to coordinate all the design disciplines and manage the typical inhabited building project.[4]

Incidental Practice Activities

Architecture Incidental to the Practice of Engineering

The Statutes for the technical professions sometimes contain language which, albeit brief, expressly sets out what is not considered within the realm of each respective profession. Each of these short declarations will be presented in this course because they are so explicit and therefore useful. Also, it is sometimes pointed out which potentially intersecting professions are not mutually excluded by the existence of an Act or law. Accordingly, let's look at the Architecture practice law to discover what the practice of Architecture does not preclude:

> [The practice of Architecture shall not] be construed to prevent the practice of general contracting . . . or the practice by any person who is qualified under law as a "registered professional engineer" of such architectural work as is incidental to engineering projects or utilities.[5]

The key word in the above passage is *incidental*. The legal intent here is clear. And because incidental means, *of a minor or subordinate nature*, there is limited ambiguity in its usage in this context.

Engineering Incidental to the Practice of Architecture

In a reciprocal fashion, a joint, non-binding interpretative committee, with representation from both the Architectural and the Engineering Boards, issued a very helpful publication that states,

> Although "incidental" engineering is allowed, architects generally should not seal electrical, mechanical, plumbing, civil or structural engineering drawings.[6]

And the Engineering law itself states that,

> [The practice of engineering] shall not prevent the following activities: the practice of architecture as defined in Chapter 83A of the General Statutes, landscape architecture as defined in Chapter 89A of the General Statutes, or contracting as defined in Articles 1, 2, 4 and 5 of Chapter 87 of the General Statutes. [7]

Surveying Incidental to the Practice of Engineering

The fact that certain non-cadastral surveying functions are critical components to engineering and construction endeavors is without question. None of the current civil engineering projects which are present today would be possible without the benefit of engineering surveys, this specific term being included in the statutory definition of Engineering. Some of these functions are horizontal and vertical control, construction layout, and earthwork quantity determination. The framers of the initial North Carolina Engineering and Surveying Act were obviously aware of this as evidenced by the mention of incidental surveying activities within the definition of the practice of Engineering. In order to qualify this important engineering function and to clearly differentiate it from cadastral (land) surveying, the Engineering and Surveying Act specifically states that,

> The term "practice of engineering" shall not be construed to permit the location, description, establishment or reestablishment of property lines or descriptions of land boundaries for conveyance. [7]

Published Board Policies [8] prohibit Professional Engineers from performing construction layout, volume computation (also known as quantity surveys) and wetlands mapping incidental to engineering projects. These official polices have essentially limited the term *engineering surveys* to mean topographic and hydrographic surveys incidental to an engineering project. Even these types of surveys must be developed from horizontal and vertical controls established by a Professional Land Surveyor.

Engineering Incidental to the Practice of Professional Land Surveying

Professional Land Surveyors in North Carolina are allowed reasonable latitude with regard to what could normally be considered engineering activities. From the Surveying law, Professional Land Surveyors are permitted to:

> . . . layout subdivisions [of land] including the . . . alignment and grades of streets and incidental drainage within the subdivision. The practice of surveying includes the locating, relocating, establishing, or laying out the alignment or elevation of any of the fixed works embraced within the practice of professional engineering. [7]

The general Statute goes on to say, however, that the term "practice of land surveying" shall not be construed to permit the design or preparation of specifications for streets or storm sewer systems except as incidental to a subdivision; major highways; wastewater systems; wastewater or industrial waste treatment works; pumping or lift stations; water supply, treatment, or distribution systems.

Additional Guidance For Professional Engineers Performing Building Design

In order to get to the heart of the proper and allowed use of Architectural and Engineering seals, let's set aside a comparison of the statutory definitions of the practice of Architecture and Engineering and instead view the paraphrased (actually rearranged) passage below which is reproduced from a 1994 Engineering Board newsletter article dealing with sealing improprieties:

> Professional Engineers who are qualified by education or experience are authorized to provide the design for buildings. Professional Engineers who provide building designs are cautioned to ensure they practice only within their areas of expertise and do not employ or allow the use of terms and designations that imply otherwise; they are neither permitted to offer or provide architectural services nor may they imply such a capability through the use of words or letters that can be misconstrued by the general public. Historically, the construction industry has utilized designations for design drawings to include "A" for architecture, "S" for structural, "M" for mechanical, "E" for electrical,

> etc. Professional Engineers who affix their seal and signature to design drawings bearing the designation "A", or who list themselves as the designer of architectural services on a building code summary, are subject to disciplinary action by the Board for practicing outside their area of competence. [9]

The Boards joint interpretative committee publication cited before goes on to say, in more moderate language that,

> Although building design is allowed if within the competency of the Professional Engineer, Professional Engineers cannot represent the work as Architecture and should not seal drawings labeled as Architectural ("A Sheets"). [6]

Sealing and Certification

The purpose of certification of technical documents is to attest to the preparation of the documents by the licensee or under the licensee's direct control and personal supervision. A licensee cannot legally certify a document for which the licensee did not exercise, direct, guide, and restrain power over the design contained in the documents, as well as exercising professional judgment in all technical matters embodied in the documents. Merely reviewing the work prepared by another person does not constitute *direct control and personal supervision*.

Although often used interchangeably, the terms sealing and certification are not synonymous. A seal is only one component of a legitimate certification. Two additional components, a signature and a date, are also required.

Figure 2 on page 10 is an example of a typical, properly signed and dated, North Carolina professional seal. The signature must be placed across the face of each original seal imprint. Seal sizes are specified by the respective practice Boards.

Figure 2 – Proper Certification [10]

Architect or Architectural Firm

The practice of Architecture in North Carolina can be undertaken in various business forms:

1. Sole proprietorship;
2. Professional limted liability company;
3. Limited liability partnership;
4. Professional corporation; or
5. General partnership.

The individual Architect seal design is depicted in Figure 2 above. The inner and outer concentric circles are to be approximately one (1) inch and one and one half (1½) inches in diameter.

Firms must have and use a firm seal. The firm seal consists of two concentric circles of approximately one (1) inch and one and one half (1½) inches in diameter. The architectural firm's approved North Carolina name and place of business must be between the inner and outer circles. The firm's North Carolina registration number appears in the center of the seal. For a professional corporation the words "***Registered Architectural Corporation, North Carolina"*** must be along the inside perimeter of the smaller circle. The seal for a professional limited liability company is shown in Figure 3 on page 11.

Figure 3 – Professional Limited Liability Firm Seal [10]

The use of a firm seal does not replace the statutory requirement of an architect's individual seal.

Landscape Architect or Landscape Architectural Firm

The practice of Landscape Architecture can be undertaken by an individual or by a corporation. Samples of individual and firm professional seal designs must be filed with the Landscape Architecture Board. A legal stipulation for seal size is not offered.

Figure 4 – Landscape Architecture Seals [10]

Engineer and Land Surveyor

A common seal design exists for the Engineer and Surveyor, with only the text content differing. The outside diameter of the seal shall be from one and one-half (1½) to one and three-quarters (1¾) inches in diameter. The signature and date must be applied near or across the seal, but not in a manner that obscures the license number. The approved designs are:

Figure 5 – Engineer and Surveyor Seals [10]

The use of a seal by a firm is not required for certifications. A firm seal is not authorized for use in lieu of the required seal of the Professional Engineer or Professional Land Surveyor. If a corporate or otherwise customized firm seal is presented, it does not relieve the individual licensee of the requirements and responsibilities pertaining to the individual's seal.

Facsimile Signatures

Facsimile signatures placed on original documents are prohibited. *Original* means that version of a document from which all lawful copies are to be made. A facsimile signature is one graphically produced by computer, or by a stamp, or otherwise not directly by hand. The term facsimile signature should not be confused with the signature produced by the electronic transmission of a document containing an original signature. Understand also that this prohibited use of a facsimile signature does not preclude the reproduction of properly certified original documents. Such reproductions are simply copies of certified documents containing a seal, asignature, and the date the *original* signature was executed.

Firm Name and Identification

One of the most prevalent offenses associated with the certification process is the failure of the licensee to indicate, in addition to the seal, the licensee's firm name and full address on each sheet of engineering/architectural drawings and on the first sheet of the survey or title sheet. If applicable, the firm's license number must also be listed. See Figure 6 for correct treatment of firm identification.

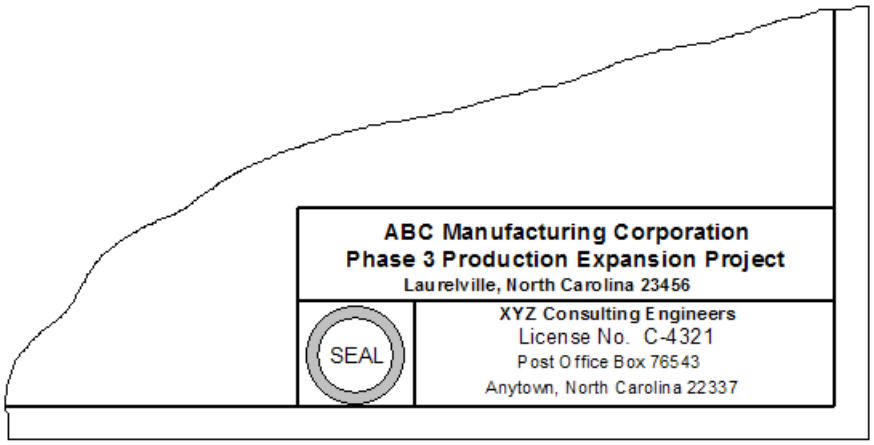


Figure 6 – Professional Firm Identification

Drawing Classifications

The design professions' drawings are broadly classified as: design drawings, shop drawings, and presentation documents. The certifying (sealing) of each is different and the requirements for each profession is unique.

A design drawing is characterized by the exhibition of a total result achieved by the integration of various elements and systems; they are prepared under the supervisory control of the licensed design professional. A shop drawing is more limited in scope and is characterized by the indication of fabrication and/or installation details of a larger system's components. Shop drawings derive their name from the fact that they were originally prepared by shop personnel in the employ of a contractor. Today, shop drawings are prepared by original equipment manufacturers, contractors or their subcontractors, or other specialists, such as fabricators, that are not under licensee supervisory control.

Shop Drawing Certification

The certification of incidental incorporated/integrated shop drawings into an Architect's technical submissions is permitted in the Architecture Rule so long as the Architect has coordinated and reviewed the content.[11] The certification of engineering shop drawings is a bit more complicated.

The mere preparation of structural shop drawings generated from and reflecting the design presented on certified (sealed) engineering design drawings does not constitute the statutory practice of engineering.[12] The Engineer can review and approve shop drawings that conform to the original certified design with appropriate disclaiming verbiage and sign and seal to that effect. Shop drawings that depict stand-alone structural components not derived from certified engineering documents must be themselves certified; the design professional responsible for their preparation must certify them. In this regard, a separate certification letter in lieu of sealed shop drawings is not a legal substitute.

Presentation Documents

Presentation documents are renderings and drawings used to communicate conceptual information only. Architects are directed not to seal and sign presentation documents.

Standard Design Plans

Standard Design Plans are those documents associated with buildings, structures, or electrical and mechanical installations that graphically depict items of a typical nature that do not require or represent special features unique to the design to which they will be incorporated or appended. Universally, standard design plans are not considered exempt from the design professions' sealing requirements and require special, differing certifying stipulations. The detail requirements for the specific professional cer-

tifications follow.

To authenticate authorship, architectural standard design plans must bear the seal of the preparer, who must be licensed in North Carolina or another jurisdiction. The originating Architect must place the words *Standard Design Document* on each sheet of the plans. Any modifications necessary to bring the plans into conformance with North Carolina design criteria must be clearly identified by the "adopting" North Carolina Architect whose affixed seal and signature must be accompanied by the declaration:

> These documents have been properly examined by the undersigned. I have determined that they comply with existing local North Carolina codes, and I assume responsibility for the adequacy of the design for the specific application in North Carolina.

Standard design plans for engineering projects have the same certification stipulations as those for architecture mentioned above; however, there is no requirement for each plan sheet to be labeled as a standard design document. The prescribed content of the Engineer's attestation statement differs only slightly from that of the Architect and is presented below:

> These plans have been properly examined by the undersigned. I have determined that they comply with existing local North Carolina codes, and have been properly site adapted for use in this area.

Record Drawing Certification

Record drawings are technical documents published post-construction that reflect the as-built or as-produced condition because of changes. Both the Architect and Engineer Boards hold that record drawings are issued by the design professional. The requirement for sealing record drawings differs between the two professions.

The Architect Rule states that record drawings shall not be sealed. [13] The rationale stems from the fact that by architectural definition, record drawings are not the Architect's original documents. That is to say, their origin is that of representations of contractors (field mark-ups of original documents). The Rule states that if the record drawings bear the name of the Architect then the following qualifying language must be included on the record drawing(s):

> These drawings are based in part upon the representations of others and are not for bidding, procurement, permit or construction purposes.

An Engineering Board article [14] provides guidance for the act of sealing engineering record drawings. The content of this article is summarized here:

1. *Record Drawing* must be clearly noted on the document;
2. Statements must be provided on the record drawings describing their true representation;
3. All sources for record conditions and information must be identified on the drawings;
4. Because the Engineer generally produces the record drawings, they should be certified;
5. Certification indicates that changes have been verified by the Engineer and are issuable;
6. Changes not verified by the Engineer should be so noted and disclaiming language provided.

Other Documents

Certification is required on original specifications, reports, or other documents, including letter reports and calculations.

Seal Placement on Documents

Each reproducible or original sheet of drawings and survey plats must be certified. *Original* means that version of a document from which all lawful copies are to be made. The certification must be placed on the title sheet of specifications and cover sheet of reports and surveyed descriptions of property. Sometimes the individual sections that comprise a project specification are authored by several licensees. In this case, each section's title sheet should be certified separately by the author of that section. Alternatively, a specification cover sheet can be created that allows for the placement of multiple certifications, each seal signifying the applicable specification or page(s). The professional's firm name requirement previously outlined is also applicable to these documents.

Assignment of Professional Responsibility

It is common for technical submissions and engineering documents to contain drawings prepared by several professionals. The drawings must be certified by all of the professionals responsible for the preparation of the documents. Therefore, one technical submissions package may contain drawings that bear the seal and certification of more than one licensed professional. Contributing professionals should place their respective certifications at appropriate locations. If necessary, notations can be used to describe the work done under each license holder's direct control and personal supervision.

Document Distribution and Control

Simple, straight forward, single-event sealing and certification is not always possible in real world business conditions. Special consideration must be given to these situations.

Interim or Preliminary Documents

Documents or copies of documents that are beyond the confines of a design professional's office, or, otherwise out of his possession and control, are defined as *released*. Released documents can only fall into two categories: (1) Preliminary (or incomplete), and (2) Final. Work that is preliminary or incomplete must be designated as such. This makes sense when one contemplates the following logic:

> The technical professions are licensed to protect the public. The sole purpose of the sealing exercise is to certify that plans and technical documents have been prepared by, or with the oversight of, a licensed professional. However, the general public cannot, and should not, be expected to apprise itself of the legal nuances associated with sealing requirements. Consequently, it logically follows that preliminary or incomplete documents should be clearly and conspicuously so noted to remove any chance of misunderstanding.

The presence of professional seals on interim documents is completely optional; at the licensee's sole discretion, preliminary or incomplete documents may or may not bear a seal. Under no circumstance should preliminary or incomplete documents containing a seal, be signed and dated. This is reasoned from the fact that by definition, a certified document must contain three elements: (1) seal, (2) signature, and (3) date. The absence of any one of these components results in an uncertified, *i.e.*, incomplete document. Therefore, the release of a document containing only a professional seal without the accompaniment of signature and date, is inconsequential. By law, interim, preliminary, or otherwise incomplete documents which are released must contain one of the qualifying affirmations shown in Figure 7. Special statements for final drawings which are not intended for final implementation at the time of release are also shown.

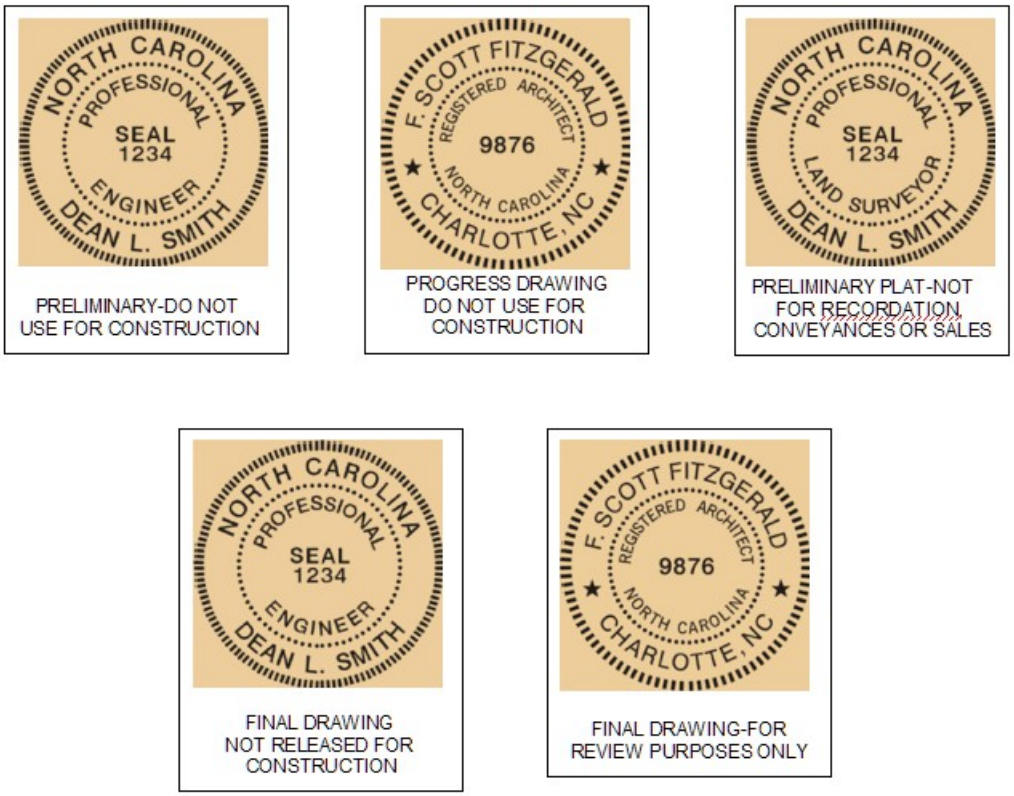


Figure 7 - Special Qualification Statements for Preliminary and Final Drawings [10]

Change Orders, Field Changes and Addenda

Design and scope changes are inevitable during the normal course of a project's development. Change orders, field change requests, responses to requests for information (RFIs), and other addenda may be considered as technical documents. As such, they should receive the same sealing treatment. It stands to reason that technical documents that have been issued as a *final* product may not be issued at a later date as a *preliminary* work product. Consequently, developments that result in massive revisions which require re-review, would probably be better handled through the issuance of a completely new preliminary document with the qualifications noted previously.

Assuming the Role of Successor or Adopting Professional

In some instances it is desirable or necessary to issue drawings, for informational purposes only, where a signed original or reproducible document is no longer available or the original licensee is no longer available to provide a signature. In this special case, the certification qualification shown in Figure 8 should be used.

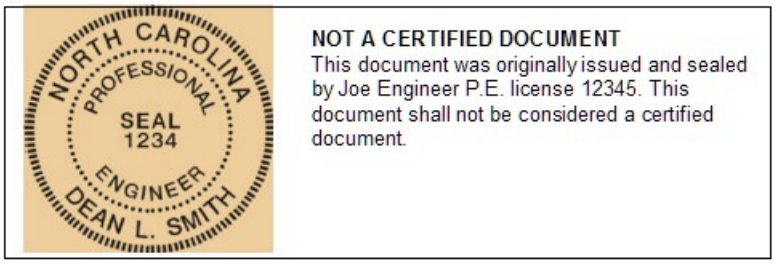


Figure 8 [10]

In some situations an originating professional in responsible charge is unavailable to complete a work. In other cases a design plan may be certified by an out-of-jurisdiction professional. When an adopting North Carolina licensed professional assumes the role of a successor professional and takes direct control and responsible charge of such work, certain stipulations apply. Documentation of all professional services to include developing a design file that includes work or design criteria, calculations, code research and necessary and appropriate changes to the original work must be undertaken. When changes are required to a document previously signed and sealed by a predecessor who is no longer available, the adopting professional may take responsbile charge of all of the work or assume responsiblity for the changes made. In the latter case the specific changes must be clearly delineated through their certification (see figure 9).

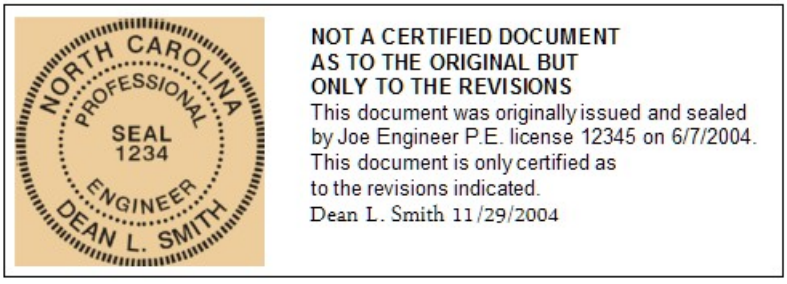


Figure 9 [10]

In guiding the reader of this course with regards to professional successorship and document adoption, relevant areas of various generally accepted nationally recognized rules of professional conduct [15, 16] have been paraphrased and assembled below with pertinent underscored emphasis added by this author.

1. Design professionals shall not misrepresent or exaggerate their responsibility in subject matter.
2. Design professionals shall not imply credit to themselves for work performed by others.
3. Design professionals shall not review the work of another professional except with the knowledge of such professional.
4. Design professionals shall give credit for technical work to those to whom credit is due and will recognize the proprietary interests of others.
5. Design professionals shall name the person or persons who are individually responsible for designs, writings, or other accomplishments.

Unique Certifications

As previously noted, in a complex world, simple sealing and certification is not always possible. Unique or profession specific certifications exist in order to make allowances for these situations.

Professional Land Surveyor Certifications

None of the regulated professions has specific minimum practice standards and guidelines legally set forth to the extent as land surveying. Minimum acceptable standards are included directly in the Administrative Code. [17] Additionally, the North Carolina Professional Land Surveyor must comply with the technical stipulations of Section 30 of the Probate and Registration Law G.S. 47. A typical hypothetical additional certification required from a Professional Land Surveyor might look something like:

I, John Forrest, PLS, certify that this plat was drawn under my supervision from an actual survey made under my supervision (deed description recorded in Book 263, page 57); that the boundaries not surveyed are clearly indicated as drawn from information found in Book 158, page 203; that the ratio of precision as calculated is 1: 7,500; that this plat was prepared in accordance with G.S. 47-30 as amended. Witness my original signature, registration number and seal this 29th day of November, A.D., 2015.

Professional Land Surveyors performing land information system and geographic information system survey are also required to provide a statement certifying to several separate aspects of survey methods and accuracy as well as coordinate basis.

North Carolina counties and municipalities may, and often do, impose special certification requirements. Professional Land Surveyors should periodically review these local laws carefully for possible changing certification requirements for recordation plats. These certifications can require statements regarding the adherence to a specific subdivision ordinance, or to the existence of encroachments or easements, and additional statements regarding the accuracy of the survey, the resulting plat, or both.

Special Certifications Required from the Engineer

State agencies can require specialized certifications in conjunction with projects which potentially impact the public's safety, health, welfare, and property. An example of such a specialized certification is shown as Figure 10 on page 22. This particular certification is one required by the Division of Water Resources (DWR) of the North Carolina Department of the Environmental Qaulity (NCDEQ), in conjunction with Authorizations to Construct (ATCs) wastewater treatment facilities.

Engineer's Certification

I, Bill Wastewater , as a duly licensed Professional Engineer in the State of North Carolina, having been authorized to observe (~~periodically~~, ~~weekly~~, full time) the construction of the project, Mechanical Surface Aerators & Belt Filter Press. Acme Manufacturing Co. for the
Project Name *Location*
Permittee hereby state that, to the best of my abilities, due care and diligence was used in the observation of the following installations:

- a 1.5 meter Belt Filter Press
- associated piping and appurtenances
- eight mechanical surface aerators

for the above referenced project such that the construction was observed to be built within substantial compliance and intent of the approved plans and specifications.

Signature Bill Wastewater Registration No. 000000

Date November 30, 2004

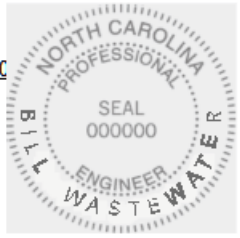


Figure 10 – Example of special NCDEQ/DWR certification

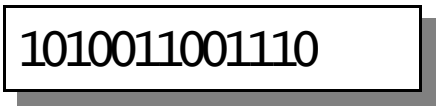
Seal Forms

History

Professional seals have undergone quite an evolutionary development. The first professional seals were devices which deformed the paper of the document through impression of the seal by embossing. The positive tactile response generated by the raised embossment provides the indisputable verification of certification authenticity. Unfortunately they are not highly visible and are difficult to reproduce photostatically. The very construction of most embossing seals limit the placement of the seal near the edges of a given document.

Embossing seals are still used and available today although their use was significantly diminished by the rise in popularity of the rubber stamp and ink pad in the 1960s. The stamp affords ease of use, portability, and placement of the seal anywhere on the document. For a period, nationally at least, the use of appliqué ("stick-on" or "sticky-back") seals became popular but these were deemed impermanent by the Boards in 1985. Seals should be a permanent and archival addition to the technical document; therefore, application of superficial media is not recommended. Today, of course, seals graphically generated via computer software are the norm.

Digital Signatures



It is beyond the scope of this course to provide an exhaustive treatment of digital signatures. Suffice it to say that it is a complex subject. There are a few important points that should be known by those who are not currently using this technology. Firstly, a digital signature should not be confused with an electronic signature. An electronic signature is merely an electronic facsimile of a handwritten signature which is appended to a document or e-mail. Secondly, electronically transmitted documents which do not utilize digitally produced signatures which comply with published Board stipulations, must have the professional seals removed prior to being electronically transmitted.

Digital signatures are created by special software which uses a combination of a pair of keys called the public key and the private key. In essence, the sender encrypts the original document intended for electronic transmission using special software and digitally signs the document using the private key. The receiver of the electronically transmitted document must use the public key to first decrypt

the digital signature in order to gain access to the encrypted document. He then uses the same special software owned by the sender, to decrypt the document itself. The special software insures that unauthorized recipients do not have the capability to decrypt the encrypted digital signature, the encrypted document, nor can they back-convert the encrypted document to its original form.It is beyond the scope of this course to provide an exhaustive treatment of digital signatures.

Exemptions from Sealing

Exemptions are specific situations that are granted relief from established law. While it may be important for licensed design professionals to have a clear understanding of the legal capabilities of unlicensed individuals with regard to these activities, professionals are nevertheless required to apply their seals to any of their work products that would otherwise be considered exempt.

Exemptions to the Practice of Architecture

It is important to have a clear understanding of the boundaries of the professions. In this section we will deal with the more or less straightforward, well defined, exemptions from sealing and certification.

The following construction activities and associated documents are usually (more on this later) exempt from the Architecture licensing law in North Carolina and therefore sealing of these technical documents is optional: [5]

1. Stand alone or single presentation documents for exempt or non-exempt structures, to include renderings and drawings to communicate conceptual information only.
2. Any single residential structure or any multiple unit residential structure consisting of less than eight units, with each unit having its own exit at grade level.
3. Farm buildings which are not intended for public use.
4. Commercial structures with gross, *i.e.*, heated plus unheated, floor areas under 2,500 square feet.
5. Commercial structures whose probable completed construction cost, including change orders, but exclusive of land value, is less than $90,000 in value.
6. Personal use buildings for which plans and data have been prepared by the individual user.
7. Alterations or changes to an existing non-exempt structure so long as the alterations or

changes do not effect the structural system, change the access or exit patterns, or change live or dead loads.

The Industrial Exemption

Technical employees of private manufacturing concerns who conduct their own internal activities have enjoyed an exemption from the Architectural, Engineering, and Surveying laws since the very inception of their enactments. This exemption was granted based on the proposition of limited exposure and risk to the general public generated by these private activities. The Boards reserve the right to require professional certification of designs of certain manufactured products if necessary to protect the public health, safety, and welfare.

The stance of limited external impact by private operations changed with heightened emphasis and interest in environmental issues in the early 1970s. It is obvious now that emissions and discharges of pollutants to air, surface and ground water, can potentially impact the life, health, safety, and property of the public. Since these emissions are not limited to the boundaries of the industrial property, industrial facilities no longer enjoy omnibus exemption. The internal activities of private industry which may potentially impact the public are regulated by the current practice laws. Since these emissions are not limited to the boundaries of the industrial property, industrial facilities are no longer exempt on the basis of the traditional definition of *a developed or manufactured product.* Currently, the North Carolina Department of Environmental Quality (NCDEQ) requires that the design, permitting, and construction of private industry wastewater treatment facilities and air pollution control measures be carried out under the responsible charge of a Professional Engineer. Federally mandated oil spill control and countermeasure plans for private industrial facilities must be sealed by a Professional Engineer.

There is no specific reference to an industrial exemption in the Architecture law. This exemption can be liberally interpreted to exist by the clauses which permit the preparation of plans *for one's self*, and the specific mention that *plans and specifications prepared by persons or corporations* [emphasis added by this author] *under these exemptions shall bear the signature and address of such*

person or corporate officer. [5]

Sealing Exemptions Can Be Superseded

It is an oversimplification to assume that the sealing exemptions are without occasional enforced variation. As it turns out, the applicability of local ordinances, regulations, or building codes may invoke more stringent certification requirements. A perfect example is one in which certain North Carolina localities, who wish to participate in the Federally subsidized National Flood Insurance Program (NFIP), must incorporate into their building code ordinance, phraseology mandated by the Federal Emergency Management Agency. Because of this Federal regulation, the building plans for some residential structures situated in flood prone areas, which would otherwise be exempt, may fall under the North Carolina statutes.

Summary

1. The use of seals to indicate authenticity dates back to antiquity B.C. in the Old World and back to the colonial period in the United States. The use of technical professional seals in North Carolina for document certification began in the first quarter of the twentieth century.
2. Document sealing and certification in North Carolina is strictly controlled through laws and Rules which are dynamic. It is incumbent upon licensed professionals to be knowledgeable of these regulations.
3. Practice overlap exists among the registered design professions; this fact can contribute to sealing improprieties. Registered Architects should not seal "E", "M", or "S" drawing sheets; Engineers should not seal "A" sheets.
4. Final documents should receive certification consisting of sealing, signing, and dating. Interim documents preliminarily released should be clearly labeled as such.
5. Acceptable seal forms are embossments, stamps, computer generations, and electronic seals and signatures. Regardless of form, the seal should be clearly and legibly visible when copied or reproduced.
6. Exemptions to the practice Chapters currently exist, are dynamic, and can vary and/or can be superseded by local jurisdictions. For this reason, licensed technical professionals must stay abreast of changes to the numerous governing regulations.

Design professionals play a critical role in the public building process. The quality of their service is certainly one of the most important factors in ensuring the safety, health, and protection to the natural and built environment. As the first steps in the construction process, a design, and the authenticity of the resulting technical submissions and engineering documents, is intuitively obvious. It is believed that most North Carolina licensed technical professionals intend to conduct their practice in compliance with the applicable laws of their respective professions and that they are respectful of the laws of professions who may have overlapping, common practice. Infractions or violations of seal use among the regulated professions often occur simply because the licensee is not aware of the various Board's Rules and the North Carolina statues.

Additional Resources

The list that follows contains the names, addresses, telephone numbers, and e-mail addresses of organizations and agencies which play an important role in regulatory affairs of North Carolina registered and licensed technical professionals. They can be contacted directly regarding any additional information or for clarifications needed on acceptable sealing and certification practices.

1. North Carolina Board of Architecture, 127 West Hargett Street, Suite 304, Raleigh, North Carolina 27601, (919) 733-9544, e-mail: ncba@ncbarch.org.
2. North Carolina Board of Examiners for Engineers and Surveyors, 4601Six Forks Road, Suite 310, Raleigh, North Carolina 27609, (919) 791-2000, Facsimile (919) 791-2012.
3. North Carolina Board of Landscape Architects, 3733 Benson Drive, Raleigh, North Carolina 27609, Post Office Box 41225, Raleigh, North Carolina 27629, (919) 850-9088, Facsimile (919) 872-1598, e-mail: contact@ncbola.org.
4. National Council of Architectural Registration Boards, 1801 K Street NW, Suite 700-K, Washington, DC 20006, (202) 879-0520, Facsimile (202) 783-0290.
5. North Carolina Department of the Environmental Quality, 217 West Jones Street, Raleigh, North Carolina 27603, (877) 623-6748.
6. North Carolina State Board of Examiners for Plumbing, Heating, and Fire Sprinkler Contractors, 1109 Dresser Court, Raleigh, North Carolina 27609, (919) 875-3612, Facsimile (919) 875-3616, e-mail: info@nclicensing.org.
7. National Institute for Certification in Engineering Technologies, 1420 King Street, Alexandria, Virginia 22314-2794, (888) 476-4238, www.nicet.org.
8. Federal Emergency Management Agency, 500 C Street, Washington, DC 20472, (202) 646-2500, www.fema.gov.
9. National Society of Professional Engineers, 1420 King Street, Alexandria, Virginia 22314-2794, (703) 684-2800, Facsimile (703) 836-4875, www.nspe.org.
10. American Institute of Architects, 1735 New York Avenue NW, Washington, D.C. 20006-5292, (800) 242-3837.

References

1. dreamstime® royalty-free stock photographs website, URL: http://www.dreamstime.com/royalty-free-stock-photos-legislative-building-raleigh-north-carolina-image14980408.
2. Nostalgic Impressions Incorporated, Post Office Box 1309, Selden, New York 11784, ©2003, www.nostalgicimpressions.com.
3. North Carolina Office of Administrative Hearings, Rules Division, Administrative Code, Title 21, Occupational Licensing Boards and Commissions, Chapter 2, Architecture.
4. *Architecture As It Differs From Engineering,* National Council of Architectural Registration Boards, Washington, D.C., August 2004.
5. North Carolina General Assembly, General Statues, Chapter 83A, Architects.
6. *Requirements Regarding the Use of Professional Seals and the Practice of Architecture and Engineering in the State of North Carolina*, North Carolina Board of Architecture and North Carolina Board of Examiners for Engineers and Surveyors, Raleigh, North Carolina, August, 2003.
7. North Carolina General Assembly, General Statues, Chapter 89C, Engineering and Land Surveying.
8. North Carolina Board of Examiners for Engineers and Surveyors Policy No. BP-1003-1 *Construction Staking*, March 11, 2010; Policy No. BP-1005-3 *Engineering Surveys*, July 15, 2010; Policy No. BP-1005-4 *Wetlands Mapping*, July 15, 2010; Policy No. BP-1007-2 *Volume Computation Surveys*, July 15, 2010.
9. North Carolina State Board of Examiners for Engineers and Surveyors, News Bulletin No. 43, Page 1, Raleigh, N.C., May 1994.
10. Private use of any North Carolina State seal is restricted by law. North Carolina State seals may not be used for commercial purposes by unauthorized individuals. It is held that the consequential commercial use of the hypothetical facsimile seals displayed in this course is subordinate to the primary purpose of education. Therefore, their use herein is believed to be consistent with the intent of the law.
11. North Carolina Office of Administrative Hearings, Rules Division, Administrative Code, Title 21, Occupational Licensing Boards and Commissions, Chapter 2, Architecture, Subsection .0206(d)(7).
12. North Carolina Board of Examiners for Engineers and Surveyors Policy No. BP-1005-1 S*tair Design and Structural Shop Drawings*, May 13, 2010

13. North Carolina Office of Administrative Hearings, Rules Division, Administrative Code, Title 21, Occupational Licensing Boards and Commissions, Chapter 2, Architecture, Subsection .0206(c).
14. North Carolina Board of Examiners for Engineeres and Surveyors website search results: *Article on Certifying Record Drawings*, David S. Tuttle, Board Counsel, undated. URL: www.ncbels.org/forms/certifyingrecorddrawings.pdf.
15. *NSPE Code of Ethics for Engineers*, National Society of Professional Engineers, Alexandria, Virginia.
16. Code of Ethics, American Society of Civil Engineers, Reston, Virginia.
17. North Carolina Office of Administrative Hearings, Rules Division, Administrative Code, Title 21, Occupational Licensing Boards and Commissions, Chapter 56, Engineers and Surveyors, Subsections .1602 through .1608 inclusive.