

21 NCAC 56 .0501 is amended as published in 28:14 NCR 1624 – 1626 with changes as follows:

## **SECTION .0500 - PROFESSIONAL ENGINEER**

### **21 NCAC 56 .0501 REQUIREMENTS FOR LICENSING**

(a) Education. The education of an applicant shall be considered in determining eligibility for licensing as a Professional Engineer. The following terms used by the Board for the specific educational requirements to be eligible to be licensed as a Professional Engineer are defined by the Board as follows:

- (1) Engineering Curriculum of Four or More Years Approved by the Board “Engineering curriculum of four or more years approved by the Board” is defined as a program that has been accredited by the Engineering Accreditation Commission (EAC) of the Accreditation Board for Engineering and Technology (ABET). This program is incorporated by reference including subsequent amendments and editions. This material is available at [www.abet.org/accreditation-criteria-policies-documents/](http://www.abet.org/accreditation-criteria-policies-documents/) or for inspection at the office of the North Carolina Board of Examiners for Engineers and Surveyors. Copies may be obtained at the Board office at a cost of five dollars (\$5.00) per copy.
- (2) Engineering or Related Science Curriculum of Four or More Years Other than Ones Approved by the Board “Engineering or related science curriculum of four or more years other than ones approved by the Board” is defined as a curriculum, although not accredited by ABET, of technical courses which contains engineering or scientific principles.
- (3) Equivalent Education Satisfactory to the Board: “Equivalent education satisfactory to the board” is defined as:
  - (A) A graduate degree in Engineering from an institution in which the same discipline undergraduate engineering program has been accredited by ABET (EAC) is shall be considered equivalent to an engineering curriculum of four or more years approved by the Board.
  - (B) A bachelor's degree in Engineering Technology, whether or not accredited by the Technology Accreditation Commission (TAC) of ABET, is shall be considered equivalent to an engineering or related science curriculum of four or more years other than one approved by the Board.
  - (C) Until June 30, 2016, an associate degree in an engineering related curriculum with an additional two years of progressive engineering experience is shall be considered equivalent to an engineering or related science curriculum of four or more years other than one approved by the Board and may be used until that date as a basis for admission to the principles and practice of engineering examination. Once admitted to the examination examination, an applicant may continue to re-take the examination until required to submit a new application as set out in Rule .0503-.0503 of this Section. After

June 30, 2016 an associate degree shall no longer be used as a basis for admission to that ~~examination-examination, unless~~ the individual has passed the fundamentals of engineering examination prior to June 30, 2016, in which case the individual may continue the process to take the principles and practices exam based upon the associate degree and it will not be necessary to ~~[have-qualified]~~ qualify for admission to the principles and practice of engineering examination prior to June 30, 2016.

(D) Foreign degrees are considered equivalent only after receipt of an evaluation report that the degree is substantially equivalent to an EAC/ABET accredited engineering curriculum from the Center for Professional Engineering Education Services, an affiliate of the National Council of Examiners for Engineering and Surveying (NCEES), or from the American Association of Collegiate Registrars and Admissions Officers (AACRAO). The Board shall equate the degree to an EAC/ABET accredited engineering curriculum of four or more years approved by the Board in Subparagraph (a)(1) of this Rule if it receives a substantially equivalent evaluation.

(b) ~~Experience-Experience.~~ The experience of an applicant shall be considered in determining whether an applicant is eligible to be licensed as a Professional Engineer.

~~(1) General.~~ The experience of an applicant shall be considered in determining whether an applicant is eligible to be licensed as a Professional Engineer.

~~(2)~~ (1) Required Experience. In evaluating the work experience required, the Board shall consider the total experience record and the progressive nature of the record. Not less than half of required engineering experience shall be of a professional grade and character, and shall be performed under the responsible charge of a licensed Professional Engineer, or if not, a written explanation shall be submitted showing why the experience should be considered acceptable and the Board shall approve if satisfied of the grade and character of the progressive experience. Experience gained under the technical supervision of an unlicensed individual shall be considered if the appropriate credentials of the unlicensed supervisor are submitted to the Board. Experience gained in the armed services, usually while serving in an engineering or engineering related group, shall be considered if of a character equivalent to that which would have been gained in the civilian sector doing similar work.

~~(3)~~ (2) Definition. The terms "progressive nature of the record," "progressive engineering experience" or "progressive experience on engineering projects" mean that during the period of time ~~in which that~~ an applicant has made a practical utilization of acquired knowledge, continuous improvement, growth and development have been shown in the utilization of that knowledge as revealed in the complexity and technical detail of the work product or work record. The applicant ~~must~~ shall show continuous assumption of greater individual responsibility for the work product over that period of time. The progressive experience on engineering projects shall be of a grade and a character ~~which that~~ indicates to the Board that the applicant is competent to practice engineering.

(4)(3) Specific Credit for Experience. In evaluating progressive engineering experience, the Board shall give credit for experience in the following areas of work:

- (A) Graduate schooling or research in an engineering program resulting in award of a master's degree from an institution that offers EAC/ABET-accredited programs – one year;
- (B) Graduate schooling or research in an engineering program resulting in award of an earned doctoral degree in engineering from an institution that offers EAC/ABET-accredited programs – two years, with or without a master's degree, but includes the one year for the master's degree, if obtained;
- (C) Progressive land surveying - maximum two years; and
- (D) Teaching of engineering subjects at the university level in an engineering program offering a four year or more degree approved by the Board.

The Board, however, shall not accept combinations, in the categories in this Subparagraph, Board shall not accept combinations of the categories in this Subparagraph as fulfilling all the necessary statutory experience requirements. Every applicant for licensure as a Professional Engineer, as part of the total experience requirement, shall show a minimum of one year experience of a progressive engineering nature in industry, or government, or under a licensed Professional Engineer offering service to the public. Full-time engineering faculty members who teach in an engineering program offering a four year or more degree approved by the Board, may request and shall be granted waiver of the minimum one year experience in industry, government, or private practice if they demonstrate consulting or research work of at least one year's duration, which was pursued to fruition, and which is of a progressive engineering nature. The faculty applicant shall document the work and demonstrate that the work meets the Board's requirement.

(5) Other Experienceexperience is Consideredconsidered if it is:

- (A) Experience obtained prior to graduation as part of an ABET accredited engineering program which must be shown on the transcript, with a maximum credit of one year; or
- (B) Experience obtained in a foreign country that is performed under direct supervision of a Professional Engineer licensed with a member Board of the National Council of Examiners for Engineering and Surveying (NCEES).

*History Note: Authority G.S. 89C-10; 89C-13;*

*Eff. February 1, 1976;*

*Readopted Eff. September 29, 1977;*

*Amended Eff. [July 1, 2014;]August 1, 2014; August 1, 2011; May 1, 2009; August 1, 2002; August 1, 2000; August 1, 1998; November 2, 1992; April 1, 1989; January 1, 1982.*

21 NCAC 56 .0502 is amended as published in 28:14 NCR 1626 – 1627 with changes as follows:

**21 NCAC 56 .0502 APPLICATION PROCEDURE: INDIVIDUAL**

(a) General. A person desiring to become licensed as a Professional Engineer must make application to the Board on a form prescribed and furnished by the Board.

(b) Request. A request for an appropriate application form may be made to the Board office or obtained from the website.

(c) Applicable Forms:

(1) ~~Engineering~~ Engineer Intern Certification Form. ~~After passing the fundamentals of engineering examination an applicant may make application to the Board to become certified as an “Engineer Intern.” This form requires the applicant to set forth personal history, educational background, engineering experience, provide and character references, references. A passport-type photographic quality portrait that is adequate and furnish a photograph for current identification purposes. purposes is also required. The form is for use by those graduating, or those having graduated, from an engineering curriculum approved by the Board as follows:~~

~~(A) — Students graduating within two semesters, or the equivalent, of the semester in which the fundamentals of engineering examination is administered.~~

~~(B) — Graduates with less than two years since graduation.~~

(2) Professional Engineer Form:

(A) All persons, including comity applicants and ~~graduates of an engineering curriculum approved by the Board with more than two years progressive engineering experience, certified Engineer Interns,~~ shall apply for licensure by using the Professional Engineer form.

The submission of this form shall signify that the applicant seeks licensure, and shall result in seating for ~~each examination required, the principles and practice of engineering examination,~~ when the applicant is so qualified, has met the requirements as set out in Rule .0501 of this Section. This form requires the applicant to set forth personal and educational background, engineering experience and character references. A passport-type photographic quality portrait that is adequate for current identification purposes is required.

(B) Persons who have previously completed the fundamentals examination by use of the Engineering Intern [Application] Certification Form shall submit the Professional Engineer [Application] Certification Form to request licensure when qualified to take the ~~final eight-hour~~ examination.

(3) Supplemental Form. Persons who initially applied for the fundamentals of engineering exam using the Professional Engineer form ~~must~~ shall supplement the initial application with this form upon applying for the principles and practice examination. The supplemental form requires that engineering experience from the date of the initial application until the date of the supplemental application be

1 listed. Five references shall be submitted ~~which that~~ are current to within one year of the examination  
2 date.

3 (4) Reference Forms:

- 4 (A) Persons applying ~~to take the examination for fundamentals of engineering for certification as~~  
5 ~~an Engineer Intern~~ mustshall submit to the Board names of three individuals who are familiar  
6 with the applicant's work, character and ~~reputation, reputation, one of whom is a professional~~  
7 ~~engineer.~~ Persons applying to take the examination for principles and practice of engineering  
8 mustshall submit to the Board names of five individuals who are familiar with the applicant's  
9 work, character and reputation. ~~Two~~ Three of these individuals mustshall be Professional  
10 Engineers.
- 11 (B) In addition to the applicant submitting names to the Board of individuals familiar with the  
12 applicant's work, character and reputation, those individuals listed shall submit to the Board  
13 their evaluations of the applicant on forms supplied to them by the applicant.
- 14 (C) The reference form requires the individual evaluating the applicant to state the evaluating  
15 individual's profession, knowledge of the applicant and information concerning the  
16 applicant's engineering experience, character and reputation.
- 17 (D) The Board shall provide the reference forms to the applicant with the application. The  
18 reference forms shall then be distributed by the applicant to the persons listed on the  
19 application as references. The applicant shall seeensure that the individuals listed as  
20 references return the reference forms to the Board prior to the filing deadline for the  
21 examination.

22 (d) Fees:

- 23 (1) ~~Engineering~~ Engineer Intern Certification Form. ~~The examination fee for applicants applying for~~  
24 ~~examination on the fundamentals of engineering using the engineering intern form is payable with the~~  
25 ~~filing of the application. Once the applicant passes the examination on the fundamentals of~~  
26 ~~engineering, engineering and makes application to the Board to become certified as an "Engineer~~  
27 ~~Intern" the application fee of one hundred dollars (\$100.00) and the examination fee for the principles~~  
28 ~~and practice of engineering examination are payable is payable with the applicant's subsequent~~  
29 ~~application for licensure as a Professional Engineer using the Professional Engineer form.~~
- 30 (2) Professional Engineer Form. The application fee of one hundred dollars (\$100.00) and examination  
31 fee for applicants applying for the examination on the fundamentals of engineering or the principles  
32 and practice of engineering using the Professional Engineer form are is payable with the filing of the  
33 application.
- 34 (3) Comity. The licensure fee of one hundred dollars (\$100.00) is payable with the filing of the  
35 application.

(4) Examination. The examination fee for any applicant is payable ~~with the filing of the application~~ to the National Council of Examiners for Engineering and Surveying (NCEES) at the time of registering to take the exam in accordance with G.S. 89C-14.

(e) The Board shall accept the records maintained by the National Council of Examiners for Engineering and Surveying (NCEES) as evidence of licensure in another state. For comity ~~licensure~~ licensure, the NCEES record shall be accepted in lieu of completing the experience, education and references sections of the application. A comity application, with or without a NCEES record, shall be administratively approved by the Executive Director based upon evidence of current licensure in another jurisdiction based on comparable qualifications, required references and no record of disciplinary action, without waiting for the next regular meeting of the Board at which time the action shall be reported to the Board for final approval.

(f) Model Law Engineer. The term "Model Law Engineer" refers to a person who meets the requirements of ~~this section~~ Section .0500 by meeting the requirements of NCEES and has a current NCEES record on file and is designated as a "Model Law Engineer." A "Model Law Engineer" application shall be administratively approved by the Executive Director based upon the designation, without waiting for the next regular meeting of the Board at which time the action shall be reported to the Board for final approval.

(g) Personal interview. During the application process, the applicant may be interviewed by the Board ~~members~~ members if the members have questions regarding the applicant's education, experience or character, based upon the information submitted in the application.

*History Note: Authority G.S. 89C-10; 89C-13; 89C-14; 89C-15*

*Eff. February 1, 1976;*

*Readopted Eff. September 29, 1977;*

*Amended Eff. May 1, 1994; November 2, 1992; April 1, 1989; December 1, 1984;*

*RRC Objection due to lack of Statutory Authority Eff. November 17, 1994;*

*Amended Eff. ~~July 1, 2014;~~ August 1, 2014; May 1, 2009; August 1, 2002; August 1, 2000; August 1, 1998; January 1, 1995.*

21 NCAC 56 .0503 is amended as published in 28:14 NCR 1627 – 1628 with changes as follows:

## **21 NCAC 56 .0503 EXAMINATIONS**

(a) Fundamentals of Engineering. This ~~eight hour written~~ examination is designed primarily to test the applicant's proficiency and knowledge of the fundamentals of engineering.

(b) Principles and Practice of Engineering. This ~~eight hour written~~ examination is designed to test the applicant's proficiency and knowledge of engineering principles and practices.

(c) Examination Aids. Examinees may utilize examination aids as specified by the exam preparer.

(d) Preparation of Examination. The examinations in the fundamentals of engineering and in the principles and practice of engineering are national examinations provided by the National Council of Examiners for Engineering and Surveying ~~(NCEES)~~(NCEES), of which the Board is a member.

(e) Examination Sequence. Before the applicant ~~is~~shall be permitted to be examined on the principles and practice of engineering, the applicant ~~must~~shall pass the examination on the fundamentals of engineering, unless the applicant can evidence 20 years of progressive engineering ~~experience~~experience, or as a full-time engineering faculty member, or possesses an earned doctoral degree in engineering to be exempt from taking the fundamentals of engineering ~~exam~~exam. ~~In no event is an applicant allowed to take both examinations at the same time or at the same scheduled examination date. NCEES administers the fundamentals of engineering examination as a computer-based exam. Application [is]~~shall be made directly to NCEES to take the exam.

(f) Examination Filing Deadline. The applicant who wishes to take ~~an~~ the principles and practice of engineering examination ~~must have~~shall deliver the completed ~~application~~application, ~~(which includes~~including all necessary references, transcripts, and ~~verifications)~~verifications, ~~in to~~ the Board office prior to August 1 for Fall examinations and January 2 for Spring examinations.

(g) Seating Notice. After approval of an application ~~to take either the examination on the fundamentals of engineering or principles and practice~~, the applicant shall be sent a seating notice. This notice shall inform the applicant of the date, time and location of the examination and the seat number assigned.

(h) Unexcused Absences. After a seating notice has been issued for a scheduled examination by the Board, ~~and if~~ the applicant fails to appear, that applicant's record shall reflect ~~"unexcused absence"~~"unexcused absence," unless the absence was for official jury duty or the applicant was not physically able to be present, as indicated by a doctor's certificate. The examination fee ~~is~~shall be forfeited.

(i) Re-Examination. A person who ~~has~~ failed an examination may apply to take the examination again at the next regularly scheduled examination period by making written request and submitting the required exam fee. A person having a combined record of three failures or unexcused absences ~~is only~~shall be eligible only after submitting a new application with appropriate application fee, and shall be considered by the Board for reexamination at the end of 12 months. After the end of the 12-month period, the applicant may take the examination no more than once every calendar year. The applicant ~~must~~shall demonstrate to the Board that ~~actions~~actions, such as additional courses of study, have been taken to improve the applicant's chances for passing the exam.

(j) ~~Special~~Reasonable Accommodation. An applicant may make a written request, before the application deadline, for ~~special~~reasonable accommodation for the exam. Reasonable accommodation shall be granted based upon meeting the Guidelines for Requesting Religious and ADA Accommodations published by the National Council of Examiners for Engineering and Surveying (NCEES), which are hereby incorporated by reference, including subsequent amendments and editions. Copies are available at no cost at [www.ncees.org](http://www.ncees.org).

(k) Exam Results. Exam results shall be supplied in writing as pass or fail. No results will be given in any other manner.

(l) Review of Failed Exams. An applicant who fails to make a passing score on an exam shall receive an exam ~~analysis.~~analysis by NCEES.

*History Note: Authority G.S. 89C-10; 89C-13; 89C-14; 89C-15;*

*Eff. February 1, 1976;*

*Readopted Eff. September 29, 1977;*

*Amended Eff. ~~July 1, 2014;~~August 1, 2014; September 1, 2009; May 1, 2009; April 1, 2001; August 1, 1998; November 2, 1992; April 1, 1989; January 1, 1982.*



21 NCAC 56 .0601 is amended as published in 28:14 NCR 1628 – 1629 with changes as follows:

## **SECTION .0600 - PROFESSIONAL LAND SURVEYOR**

### **21 NCAC 56 .0601 REQUIREMENTS FOR LICENSING**

(a) Education. The following terms used by the Board for the specific education requirements to be eligible to be licensed as a Professional Land Surveyor are defined by the Board as follows:

(1) B.S. in Surveying or Other Equivalent Curriculum. "B.S. in surveying or other equivalent curriculum."

These degrees mustshall contain a minimum of 45 semester hours, or their quarter-hour equivalents, of subjects directly related to the practice of surveying. Of the 45 semester hours, a minimum of 12 semester hours of surveying fundamentals, 12 semester hours of applied surveying practice and 12 semester hours of advanced or theoretical surveying courses are required. The remainder of the required surveying courses may be elective-type courses directly related to surveying; and

(2) Associate Degree in Surveying Technology. "Associate degree in surveying technology." This degree mustshall contain a minimum of 20 semester hours, or quarter-hour equivalents, of subjects directly related to the practice of surveying. Courses in surveying practices, subdivision design and planning, surface drainage and photogrammetry must be successfully completed-completed with a passing grade.

(b) Experience:

(1) Definition. As used in the North Carolina Engineering and Land Surveying Act, the term "progressive practical surveying experience" means that during the period of time in which an applicant has made a practical utilization of the knowledge of the principles of geometry and trigonometry in determining the shape, boundaries, position and extent of the earth's surface, continuous improvement, growth and development in the utilization of that knowledge have been shown. In addition, the applicant mustshall show the continuous assumption of greater individual responsibility for the work product over that period of time.

(2) Experience Accepted. In evaluating the work experience required, the Board mayshall consider the total experience record and the progressive nature of the record. (Not less than half of required land surveying experience shall be of a professional grade and character, and shall be performed under the responsible charge of a Professional Land Surveyor, or if not, a written explanation shall be submitted showing why the experience should be considered acceptable and the Board may Half or more of the required land surveying experience shall be of a professional grade and character, performed under the responsible charge of a Professional Land Surveyor. If the work was not under the responsible charge of a Professional Land Surveyor, the applicant shall submit a written explanation to the Board explaining why the experience should be considered acceptable and the Board shall approve if satisfied of the grade and character of the progressive experience.)experience.

(3) Other Experience. Work done in the following areas requires evidence to the Board of its equivalency to land surveying:

- (A) construction layout;
- (B) engineering surveying; or
- (C) part-time surveying work.

(c) Exhibits, Drawings, Plats:

~~(1)~~ Required Exhibit Before Fundamentals of Surveying Examination. The applicant must submit, along with the application, an actual plat or an example plat prepared by, or under the direct supervision of, the applicant which discloses that the applicant is knowledgeable in the elements of good mapping practices.

~~(2)~~(1) Required Exhibit Before Principles and Practice of Surveying Examination:

(A) General. The applicant ~~must~~shall submit, along with the application, an actual plat of a boundary survey of an actual project prepared by, or under the direct supervision of, the applicant ~~which discloses that~~ shows ~~the~~that applicant is knowledgeable of the contents of the Standards of Practice for Land Surveying in North Carolina ~~(Section .1600)~~as set forth in Section .1600 of this Chapter, and ~~also~~ is able to apply this knowledge by preparing a plat in accordance with the various legal and professional requirements of land surveying.

(B) Physical Requirement. The map submitted ~~must~~shall be a clean, clear, legible print of an original map in the file of a Professional Land Surveyor.

~~(3)~~(2) Specific Requirements. The specific details that shall be evaluated are those applicable to the particular project as described in the Standards of Practice for Land Surveying in North Carolina ~~(Section .1600)~~as set forth in Section .1600 of this Chapter, and as described in G.S. 47-30. In addition, the exhibit shall contain a statement that the field work, calculation and mapping were performed by the applicant under the supervision of a Professional Land Surveyor, attested to by ~~the~~that Professional Land Surveyor.

~~(4)~~(3) Requirements for Comity Applicant. The map submitted by an applicant under comity may be a sample plat of a project or work performed in the state of ~~licensure~~licensure. ~~which~~It shall be evaluated in accordance with legal requirements of North Carolina.

*History Note:* Authority G.S. 47-30; 89C-10; 89C-13;  
Eff. February 1, 1976;  
Readopted Eff. September 29, 1977;  
Amended Eff. [July 1, 2014;]August 1, 2014; July 1, 2009; August 1, 2000; August 1, 1998;  
November 2, 1992; April 1, 1989; December 1, 1984; January 1, 1982.

21 NCAC 56 .0602 is amended as published in 28:14 NCR 1629 – 1630 **with changes** as follows:

**21 NCAC 56 .0602 APPLICATION PROCEDURE: INDIVIDUAL**

(a) General. A person desiring to become a Professional Land Surveyor must make application to the Board on a form prescribed and furnished by the Board.

(b) Request. A request for the application form may be made to the Board office or obtained from the website.

~~(c) Application Form. Forms: All persons applying to be licensed as a Professional Land Surveyor shall apply using the standard application form. This form requires the applicant to set forth personal background, plus educational background, land surveying experience, and references. A passport type photographic quality portrait that shall be adequate for current clear identification purposes shall be required also.~~

(1) Surveyor Intern Certification Form. After passing the fundamentals of surveying examination an applicant may make application to the Board to become certified as a “Land Surveyor Intern.” This form requires the applicant to set forth personal history, educational background, surveying experience, character references and exhibit. A passport-type photographic quality portrait that is adequate for current identification purposes is **also** required.

(2) Professional Land Surveyor Form:

(A) All persons, including comity applicants and certified Land Surveyor Interns, shall apply for licensure **by** using the Professional Land Surveyor form. The submission of this form shall signify that the applicant seeks licensure, and shall result in seating for the principles and practice of surveying examination, when the applicant is **[so-qualified.] has met the requirements as set out in Rule .06i01 of this Section.** This form requires the applicant to set forth personal and educational background, surveying experience, character references and exhibit. A passport-type photographic quality portrait that is adequate for current identification purposes is **also** required.

(B) Persons who have previously completed the fundamentals examination by use of the Land Surveying Intern Application Form shall submit the Professional Land Surveyor Application Form to request licensure when qualified to take the examination.

(d) Supplemental Form. Persons who **initially** applied for licensure as a land surveyor, but were not eligible **initially** to be admitted to the examination for principles and practice of **surveying, must surveying shall** supplement their initial applications upon **ultimately** applying for the ~~second~~ examination. The applicant **must shall** supplement the initial application by using the supplemental form, which requires the listing of land surveying experience from the date of the initial application to the date of the supplemental application. Five references shall be submitted **which that** are current to within one year of the examination date.

(e) Reference Forms:

(1) Persons applying to ~~be certified as a Surveyor Intern or to take the examination for the fundamentals of surveying or the~~ examination for principles and practice **must shall** submit to the Board names of

- 1 individuals who are familiar with the applicant's work, character and reputation. The names ~~are~~ shall  
2 be submitted by the applicant on the application form.
- 3 (2) Persons applying for ~~the fundamentals of surveying examination~~ certification as a Surveyor Intern must  
4 submit three references, one of ~~which must~~ whom shall be a Professional Land Surveyor. Persons  
5 applying for the principles and practice examination ~~must~~ shall submit five references, ~~two~~ three of  
6 ~~which must~~ whom shall be Professional Land Surveyors.
- 7 (3) In addition to the applicant submitting names to the Board of such individuals, those individuals shall  
8 submit to the Board their evaluations of the applicant on reference forms supplied them by the  
9 applicant.
- 10 (4) The reference form requires the individual evaluating the applicant to state the evaluating individual's  
11 profession, knowledge of the applicant and information concerning the applicant's land surveying  
12 experience, character and reputation.
- 13 (5) The Board shall provide the reference forms to the applicant along with the application for licensure.  
14 The reference forms shall then be distributed by the applicant to the persons listed on the application  
15 as references. The applicant shall seeensure that the individuals listed as references return the forms to  
16 the Board prior to the filing deadline for the examination applied for by the applicant.
- 17 (f) Fees:
- 18 (1) Land Surveyor Intern Certification Form. Once the applicant passes the examination on the  
19 fundamentals of surveying and makes application to the Board to become certified as a "Land  
20 Surveyor Intern" the application fee of one hundred dollars (\$100.00) is payable.
- 21 ~~(1)(2)~~ Regular Professional Land Surveyor Form. The application fee of one hundred dollars (\$100.00) and  
22 ~~appropriate~~ examination fee for those applying for licensure based upon examination, experience,  
23 character and exhibit are payable with the filing of the application.
- 24 ~~(2)(3)~~ Comity. The licensure fee of one hundred dollars (\$100.00) and appropriate examination fee for those  
25 applying for licensure based upon comity are payable with the filing of the application.
- 26 ~~(3)(4)~~ Examination. The examination fee for any applicant shall be payable with the filing of the application  
27 to the National Council of Examiners for Engineering and Surveying (NCEES) at the time of  
28 registering to take the exam in accordance with G.S. 89C-14.
- 29 (g) The Board shall accept the records maintained by the National Council of Examiners for Engineering and Surveying  
30 (NCEES) as evidence of licensure ~~licensure~~, in another state. For comity licensure the NCEES record shall be accepted in  
31 lieu of completing the experience, education and references sections of the application. A comity application, with or  
32 without a NCEES record, shall be administratively approved by the Executive Director based upon evidence of current  
33 licensure in another jurisdiction based on comparable qualifications, required references, and having passed the two-hour  
34 North Carolina portion of the exam and no record of disciplinary action, without waiting for the next regular meeting of  
35 the ~~Board at which time~~ Board. At that time the action shall be reported to the Board for final approval.

1 (h) Personal Interview. During the application process, the applicant may be interviewed by Board ~~members~~ members if  
2 the members have questions regarding the applicant's education, experience or character, based upon the information  
3 submitted in the application.

4  
5 *History Note:* Authority G.S. 89C-10; 89C-13; 89C-14; G.S. 89C-15

6 *Eff. February 1, 1976;*

7 *Readopted Eff. September 29, 1977;*

8 *Amended Eff. ~~July 1, 2014;~~ August 1, 2014; May 1, 2009; August 1, 2002; August 1, 2000; August 1,*  
9 *1998; May 1, 1994; April 1, 1989; January 1, 1982.*

21 NCAC 56 .0603 is amended as published in 28:14 NCR 1630 with changes as follows:

### **21 NCAC 56 .0603 EXAMINATIONS**

(a) Fundamentals of Surveying. This ~~eight-hour written~~ examination is designed primarily to test the applicant's proficiency and knowledge of the fundamentals of surveying. Reference to Fundamentals of Surveying is the revised name of the national exam that is the Fundamentals of Land Surveying in G.S. 89C.

(b) Principles and Practice of Surveying. This ~~eight-hour written~~ examination is designed to test the applicant's proficiency and knowledge of land surveying practices and procedures generally and specifically within North Carolina.

(c) Examination Aids. Examinees may utilize examination aids as specified by the national exam preparer.

(d) Preparation of Examination. The examination in the fundamentals of surveying and ~~six hours~~ of the examination in the principles and practice of surveying are national examinations provided by the National Council of Examiners for Engineering and Surveying (NCEES)(NCEES), of which the Board is a membermember, or other examinations as adopted by the Board. The ~~two-hour~~ North Carolina portion of the principles and practice of surveying examination is shall be provided by the Board. NCEES administers the fundamentals of surveying examination as a computer-based exam. Application is made directly to NCEES to take the exam.

(e) Examination Filing Deadline. The applicant who wishes to take ~~at the principles and practice of surveying~~ examination ~~must have~~ shall deliver the completed application (which includes application, including all necessary references, transcripts, and ~~verifications) verifications~~, into the Board office prior to August 1 for Fall examinations and January 2 for Spring examinations.

(f) Seating Notice. After approval of an applicationapplication, the applicant shall be sent a seating notice notice by NCEES. This notice shall inform the applicant of the date, time and location of the examination and the seat number assigned.

(g) Unexcused Absences. After a seating notice for a scheduled examination has been issued, and theif applicant fails to appear, the applicant's record shall reflect "unexcused absence"absence." unless the absence was for official jury duty or the applicant was not physically able to be present, as indicated by a doctor's certificate. The examination fee is shall be forfeited.

(h) Re-Examination. A person who has failed an examination may apply to take the examination again at the next regularly scheduled examination ~~period~~ period by making written request and submitting the required exam fee. A person having a combined record of three failures or unexcused absences is only shall be eligible only after submitting a new application with appropriate application fee, and shall be considered by the Board for re-examination at the end of 12 months. After the end of the 12-month period, the applicant may take the examination no more than once every calendar year. The applicant must shall demonstrate to the Board that actionsactions, such as additional courses of study, have been taken to improve the applicant's chances for passing the exam.

(i) Special Reasonable Accommodation. An applicant may make a written request, before the application deadline, for special reasonable accommodation for the exam. Reasonable accommodation shall be granted based upon meeting the Guidelines for Requesting Religious and ADA Accommodations published by the National Council of Examiners for Engineering and Surveying (NCEES).

1 (j) Exam Results. Exam results shall be supplied in writing as pass or fail. No results shall be given in any other  
2 manner.

3 (k) Review of Failed Exams. An applicant who fails to make a passing score on an exam shall receive an exam analysis.

4 An applicant who fails to make a passing score on the two-hour North Carolina portion of the exam may request in  
5 writing within thirty days of receiving the result to have an opportunity to review that portion of the exam. The review  
6 shall be done in the Board Office under supervision of staff and is limited to one hour.

7  
8 *History Note: Authority G.S. 89C-10; 89C-15;*

9 *Eff. February 1, 1976;*

10 *Readopted Eff. September 29, 1977;*

11 *Amended Eff. July 1, 2014; August 1, 2014; May 1, 2009; April 1, 2001; August 1, 1998; November*  
12 *2, 1992; April 1, 1989; January 1, 1982.*

21 NCAC 56 .0802 Rule citation is amended without notice pursuant to G.S. 150B-21.5(a)(3).

## **21 NCAC 56 .0802 PROCEDURE**

### **(a) Professional Corporations and Limited Liability Companies:**

(1) Request. A request for an application for licensure as a professional corporation or professional limited liability company engaged in the practice of engineering or land surveying may be made at the Board office at 4601 Six Forks Road, Suite 310, Raleigh, NC 27609 or obtained from the website-website at www.ncbels.org.

(2) Applicable Form. All professional corporations and professional limited liability companies complying with the statutory requirements of G.S. 89C, G.S. 55B and G.S. 57C57D which that desire to practice engineering or land surveying shall apply by using a form prepared by the Board. This form requireshall require the applicant, by and through an officer, director and shareholder of the professional corporation or limited liability company who is licensed with the North Carolina Board of Examiners for Engineers and Surveyors in the field(s) of professional-a profession of the services to be offered, to certify that it and the stockholders of the corporation or members of the limited liability company have complied with the provisions of the applicable provisions of the General StatutesStatutes. and requiresThe form shall also require that the officers, directors, shareholders, members and professional employees be listed on that application.

### **(3) Certificate of Licensure:**

(A) Upon receiving the application with application fee of one hundred dollars (\$100.00), the Board, after determining that the firm has complied with the statutory requirements, shall issue a certificate of compliance.

(B) The firm mustshall forward the certificate of compliance to the Secretary of State along with its articles of incorporation or articles of organization.

(C) Upon approval by the Secretary of State, the firm mustshall forward to the Board a certified copy of its articles of incorporation or articles of organization.

(D) Upon receipt of the certified copy of the articles of the firm, if all statutory requirements have been met, the Board shall approve the application and issue the firm a certificate of licensure.

### **(b) Business Firms and Chapter 87 Corporations:**

(1) Request. A request for an application for licensure as a business firm or Chapter 87 corporation fascorporation, as defined in G.S. 55B-15(a)(2)G.S. 55B-15(a)(2). engaged in the practice of engineering or land surveying may be made at the Board office or obtained from the website. A sole proprietorship owned and operated by the individual licensee in the licensee's name as reflected in the Board's records is exempt from firm licensure.

(2) Applicable Form. All business firms or Chapter 87 corporations that desire to practice engineering or land surveying shall apply by using a form prepared by the Board. The form requireshall require the applicant, through a principal officer, partner or owner, to certify that the business firm will be



1 operated in compliance with the laws of the State of North Carolina and the rules of the North Carolina  
2 Board of Examiners for Engineers and Surveyors.

- 3 (3) Certificate of Licensure. Upon receiving the application with application fee of one hundred dollars  
4 (\$100.00), the Board, after determining that the firm has complied with the statutory requirements,  
5 shall issue a certificate of licensure.

6  
7 *History Note:* Authority G.S. 55B-4; 55B-10; ~~55B-15~~ ~~57C-2.04~~; ~~57D-2-02~~; 89C-10; 89C-24;  
8 Eff. February 1, 1976;  
9 Readopted Eff. September 29, 1977;  
10 Amended Eff. ~~July 1, 2014~~; ~~August 1, 2014~~; Amended Eff. May 1, 2009; August 1, 2000; February 1,  
11 1996; May 1, 1994; April 1, 1989; January 1, 1982.

21 NCAC 56 .0901 is amended as published in 28:14 NCR 1630 – 1631 with changes as follows:

## **SECTION .0900 - BUSINESS ENTITIES: GENERAL**

### **21 NCAC 56 .0901 OFFICES**

(a) Professional Engineering Services. Every firm, partnership, corporation or limited liability company ~~which~~that performs or offers to perform engineering services in the State of North Carolina shall have a resident Professional Engineer in responsible charge in each separate office located in North Carolina ~~in which~~where professional engineering services are performed or offered to be performed. Out-of-state office locations ~~in which~~where engineering services are performed or offered to be performed for North Carolina projects ~~are only required to~~shall have Professional Engineers in responsible charge of only the specific projects in compliance with Rule ~~[-.0701(c)(3)-]~~ .0701(c)(3) of this Chapter.

(b) Land Surveying Services. Every firm, partnership, corporation or limited liability company ~~which~~that performs or offers to perform land surveying services in the State of North Carolina shall have a resident Professional Land Surveyor in responsible charge in each separate office located in North Carolina ~~in which~~where land surveying services are performed or offered to be performed. Out-of-state office locations ~~in which~~where surveying services are performed or offered to be performed for North Carolina projects are only required to have Professional Land Surveyors in responsible charge of the specific projects in compliance with Rule .0701(c)(3).

(c) Resident. ~~A~~The terms ~~resident~~“resident Professional ~~Engineer~~Engineer” or ~~“resident~~ Professional Land ~~Surveyor~~Surveyor” as used in this Rule, means a licensee who spends a majority of the licensee's normal working time in ~~said~~that ~~place of business office.~~ Such time shall not be less than a majority of the operating hours of the business. A Professional Engineer or Professional Land Surveyor shall be the resident licensee at only one place of business at one time unless each business is at least one-third owned by the resident ~~professional~~professional, and is This arrangement shall be specifically approved by the Board after a determination that the businesses are integrated in operation, ownership, office location and that the licensee will be in responsible charge of the professional services.

(d) No firm, partnership, corporation or limited liability company shall practice, ~~or~~ offer to practice, or market either land surveying or engineering unless there is a licensed resident for that service in responsible charge at that ~~said~~place of business office. Advertisements, signs, letterheads, business cards, directories, or any other form of representation shall avoid any reference to any service that cannot be provided under the responsible charge of a properly qualified resident professional. The licensed entity shall give notice to the Board of a change of resident professional within 30 days after the change and shall not practice, ~~or~~ offer to practice, or market the professional service during any period of time without a resident professional.

*History Note:* Authority G.S. ~~57C-2-01;~~57D-2-02; 89C-10; 89C-24;

*Eff. February 1, 1976;*

*Readopted Eff. September 29, 1977;*

*Amended Eff. ~~July 1, 2014;~~ August 1, 2014; August 1, 2002; April 1, 2001; August 1, 1998; May 1, 1994; January 1, 1992; April 1, 1989.*

21 NCAC 56 .1402 is amended as published in 28:14 NCR 1631 with changes as follows:

**21 NCAC 56 .1402            OPPORTUNITY FOR LICENSEE OR APPLICANT TO HAVE HEARING**

Every licensee or applicant for a license shall be afforded notice and an opportunity to be heard on any action, where the effect of which would be:

- (1) to deny permission to take an examination for licensing for which application has been duly made,made;
- (2) to deny a license based on comity,comity;
- (3) to deny a license after an applicant has taken and passed an examination,examination;
- (4) to require re-examination for licensing,licensing;
- (5) to withhold the renewal of a license for any cause other than failure to pay a statutory renewal fee,fee;
- (6) to suspend a license,license;
- (7) to revoke a license,license;
- (8) to impose a civil penalty, orpenalty;
- (9) to issue a reprimand-reprimand;
- (10) to refuse to renew,renew;
- (11) to refuse to reinstate,reinstate; or
- (12) to require additional education.

*History Note:*    *Authority G.S. 89C-10; 89C-21; 89C-22; 150B-38;*  
*Eff. February 1, 1976;*  
*Readopted Eff. September 29, 1977;*  
*Amended Eff. [July 1, 2014;]August 1, 2014; April 1, 1989; January 1, 1982.*

21 NCAC 56 .1602 is amended as published in 28:14 NCR 1631 – 1632 with changes as follows:

**21 NCAC 56 .1602 SURVEYING PROCEDURES**

(a) A Professional Land Surveyor shall spend the necessary time and effort to make investigation to determine if there are encroachments, gaps, lappages, or other irregularities along each line surveyed. Points may be placed on the line from closed or verified traverses and the necessary investigations made from these points. If these investigations are not made, then the surveyor shall not certify to an actual survey of that line and the plat mustshall contain the appropriate qualifications in accordance with the rules in this Section.

(b) Any and all visible or determined encroachments or easements on the property being surveyed shall be accurately located and indicated.

(c) With respect to investigation of property boundaries and recorded easements, the surveyor shall examine the most recent deeds and recorded plats adjacent to the subject property as well as all deeds and plats recorded after the date of the deed or plat upon which the survey is being based (the survey reference deed or plat).

(d) Except as provided in Paragraph (e) of the Rule, metal stakes or materials of comparable permanence shall be placed at all corners.

(e) Where a corner falls in a right-of-way, in-a tree, in-a stream, or on a fence post, boulder, stone, or similar object, one or more monuments or metal stakes shall be placed in the boundary so that the inaccessible point may be located accurately on the ground and the map.

(f) The results of a survey shall be reported to the user of that survey as a map or report of survey and, whether in written or graphic form, shall be prepared in a clear and factual manner. All reference sources shall be identified. Artificial monuments called for in such reports shall be described as found or set. When no monument is found or set for points described in Paragraph (e) of this Rule, that fact shall be noted.

(g) Tie lines defined. Where the results of a survey are reported in the form of a plat or a written description, one or more corners shall, by a system of azimuths or courses and distances, be accurately tied to and coordinated with a horizontal control monument of some United States or State Agency survey system, such as the North Carolina Geodetic Survey, where such monument is within 2000 feet of the subject property, right-of-way, easement or other surveyed entity. Where the North Carolina grid system coordinates of said monument are on file in the ~~Division of Energy, Mineral, and Land Resources of the Department of Environment and Natural Resources, Department of Public Safety/Emergency~~ Safety, Emergency Management, Geodetic Survey office, the coordinates of both the referenced corner or point and the monument(s) shall be shown in X (easting) and Y (northing) coordinates on the plat or in the written description or document. The coordinates shall be identified as based on NAD 83,"NAD 83," indicating North American Datum of 1983 or as NAD 27,"NAD 27," indicating North American Datum of 1927. The datums of the National Geodetic Survey (NGS) are incorporated by reference including subsequent amendments and editions, and may be accessed free of charge at [www.ngs.noaa.gov](http://www.ngs.noaa.gov). The tie lines to the monuments mustshall be sufficient to establish true north or grid north bearings for the plat or description if the monuments exist in pairs. Control monuments within a previously recorded subdivision may be used in lieu of grid control. In the interest of bearing consistency with previously recorded plats, existing bearing control may be used where practical.

1 In the absence of ~~Grid Control~~, grid control, other natural or artificial monuments or landmarks shall be used. In all  
2 cases, the tie lines shall be sufficient to accurately reproduce the subject lands from the control or reference points  
3 used.

4 (h) Area is to be computed by double meridian distance or equally accurate method and shown on the face of the  
5 plat, written ~~description~~ description, or other document. Area computations by estimation, by planimeter, by scale,  
6 or by copying from another source are not acceptable methods, except in the case of tracts containing inaccessible  
7 areas and in these areas the method of computation shall be stated.

8  
9 *History Note: Authority G.S. 89C-10; 89C-20;*

10 *Eff. July 1, 1989;*

11 *Amended Eff. ~~[July 1, 2014;]~~ August 1, 2014; August 1, 2012 (see S.L. 2012-143, s.1.(f));*  
12 *September 1, 2011; May 1, 2009; August 1, 2000; August 1, 1998; February 1, 1996.*

21 NCAC 56 .1603 is amended as published in 28:14 NCR 1632 with changes as follows:

### **21 NCAC 56 .1603 CLASSIFICATION OF BOUNDARY SURVEYS**

General. Boundary surveys "Boundary surveys" are defined as surveys made to establish or to retrace a boundary line on the ground, or to obtain data for constructing a map, map, or plat, plat, or report showing a boundary line. For the purpose of this Rule, the term refers to all surveys, including "loan" or "physical" surveys, which~~that~~ involve the determination or depiction of property lines. For the purpose of specifying minimum allowable surveying standards for boundary surveys, the following four general classifications of lands in North Carolina are established from the standpoint of their real value, tax value, or location. Each map shall contain a statement of the calculated ratio of precision before adjustments or a statement of positional accuracy.

- (1) Local Control Network Surveys (Class AA). Local control network surveys are traverse networks utilizing permanent points for the purpose of establishing local horizontal control networks for future use ~~of by~~ local surveyors. For Class AA boundary surveys in North Carolina, the angular error of closure shall not exceed ten seconds times the square root of the number of angles turned. The ratio of precision shall not exceed an error of closure of one foot per 20,000 feet of perimeter of the parcel of land (1:20,000). When using positional accuracy standards for Class AA control and boundary surveys, neither axis of the 95 percent confidence level error ellipse for any control point or property corner shall exceed 0.05 feet or 0.015 meters measured relative to the position(s) of the horizontal control points used and referenced on the survey.
- (2) Urban Land Surveys (Class A). Urban surveys include lands which~~that~~ normally lie within a town or city. For Class A boundary surveys in North Carolina, the angular error of closure shall not exceed 20 seconds times the square root of the number of angles turned. The ratio of precision shall not exceed an error of closure of one foot per 10,000 feet of perimeter of the parcel of land (1:10,000). When using positional accuracy standards for Class A control and boundary surveys, neither axis of the 95 percent confidence level error ellipse for any control point or property corner shall exceed 0.10 feet or 0.030 meters measured relative to the position(s) of the horizontal control points used and referenced on the survey.
- (3) Suburban Land Surveys (Class B). Suburban surveys include lands in or surrounding the urban properties of a town or city. For Class B boundary surveys in North Carolina, the angular error of closure shall not exceed 25 seconds times the square root of the number of angles turned. The ratio of precision shall not exceed an error of closure of one foot per 7,500 feet of perimeter of the parcel of land (1:7,500). When using positional accuracy standards for Class B control and boundary surveys, neither axis of the 95 percent confidence level error ellipse for any control point or property corner shall exceed 0.12 feet or 0.037 meters measured relative to the position(s) of the horizontal control points used and referenced on the survey.
- (4) Rural and Farmland Surveys (Class C). Rural and farmland surveys include lands located in rural areas of North Carolina and generally outside the suburban properties. For Class C boundary surveys

1 in North Carolina, the angular error of closure shall not exceed 30 seconds times the square root of the  
2 number of angles turned. The ratio of precision shall not exceed an error of closure of one foot per  
3 5,000 feet of perimeter of the parcel of land (1:5,000). When using positional accuracy standards for  
4 Class C control and boundary surveys, neither axis of the 95 percent confidence level error ellipse for  
5 any control point or property corner shall exceed 0.15 feet or 0.046 meters measured relative to the  
6 position(s) of the horizontal control points used and referenced on the survey.

7  
8 *History Note:* Authority G.S. 89C-10; 89C-20;

9 Eff. July 1, 1989;

10 Amended Eff. ~~July 1, 2014;~~ ~~August 1, 2014;~~ May 1, 2009; August 1, 2000; August 1, 1998;

11 November 2, 1992; January 1, 1992.

21 NCAC 56 .1604 is amended as published in 28:14 NCR 1632 – 1633 with changes as follows:

**21 NCAC 56 .1604            MAPPING REQUIREMENTS FOR BOUNDARY SURVEYS**

(a) The size of a map shall be such that all details are legible on a copy.

(b) Any lines that are not actually surveyed ~~must~~shall be indicated on the map and a statement included revealing the source of information from which the line is derived.

(c) All surveys based on the North Carolina grid system shall contain a statement identifying the coordinate system referenced datum used.

(d) All plats (maps), unless marked as "Preliminary Plat - Not for recordation, conveyances, or sales" shall be sealed, signed and dated by the Professional Land Surveyor and shall contain the following:

(1) An accurately positioned north arrow coordinated with any bearings shown on the plat. Indication shall be made as to whether the north index is true, magnetic, North Carolina grid ('NAD 83' and realization (date of adjustment of coordinate system) or 'NAD27'), or is referenced to old deed or plat bearings. If the north index is magnetic or referenced to old deed or plat bearings, the date and the source (if determined) shall be indicated.

(2) The azimuth or courses and distances of every property line surveyed shall be shown. Distances shall be in feet or meters and decimals thereof. The number of decimal places shall be appropriate to the class of survey ~~required~~required in Rule .1603 of this Section.

(3) All plat lines shall be horizontal or grid measurements. All lines shown on the plat shall be correctly plotted to the scale shown. Enlargements of portions of a plat are acceptable in the interest of clarity, where shown as inserts. Where the North Carolina grid system is used, the combined grid factor shall be shown on the face of the plat. If grid distances are used, ~~it must~~they shall be shown on the plat.

(4) Where a boundary is formed by a curved line, the following data must be given: actual survey data, or as a series of subchords with bearings and distances around the curve. If standard curve data is used, the bearing and distance of the long chord (from point of curvature to point of tangency) must be shown on the face of the plat.

(5) Where a subdivision of land is set out on the plat, all streets and lots shall be accurately plotted with dimension lines indicating widths and all other information pertinent to retracing all lines in the field. This shall include bearings and distances sufficient to form a continuous closure of the entire perimeter.

(6) Where control corners have been established in compliance with G.S. 39-32.1, 39-32.2, 39-32.3, and 39-32.4, as amended, the location and information as required in the referenced statute shall be shown on the plat. All other corners that are marked by monument or natural object shall be so identified on all plats, and where ~~practical~~practical, all corners of adjacent owners along the boundary lines of the subject tract that are marked by monument or natural object shall be shown.

(7) The surveyor shall show one of the following where they could be determined:

(A) The names of adjacent land owners; ~~or~~



- (B) The lot, block, parcel and subdivision designations; or
- (C) Other legal reference where applicable.
- (8) All visible and apparent rights-of-way, easements, watercourses, utilities, roadways, and other such improvements shall be accurately located where crossing or forming any boundary line of the property shown.
- (9) Tie lines as required and defined in Rule .1602(g) of this Section shall be accurately shown on the face of the plat, whether or not the plat is to be recorded.
- (10) A vicinity map (location map) shall appear on the face of the plat.
- (11) ~~Each map shall contain the property designation, name of owner or prospective owner, location (including township, county, and state), and the date or dates the survey was conducted. In addition each map shall contain a scale of the drawing listed in words or figures; a bargraph; the title source; and a legend depicting nomenclature or symbols not otherwise labeled.~~
- Each map shall contain:
- (A) the property designation;
- (B) the name of owner or prospective owner;
- (C) the location (including township, county, and state);
- (D) the date or dates the survey was conducted;
- (E) a scale of the drawing listed in words or figures;
- (F) a bargraph;
- (G) the title source; and
- (H) a legend depicting nomenclature or symbols not otherwise labeled.
- (12) ~~Each~~ Any map not certified for recording under G.S. 47-30, and all reports of survey, shall contain a this certificate signed by the Professional Land Surveyor in substantially the following form:
- "I certify that this map was drawn under my supervision from an actual survey made under my supervision (deed description recorded in Book \_\_\_\_\_, page \_\_\_\_\_ or other reference source \_\_\_\_\_); that the boundaries not surveyed are indicated as drawn from information in Book \_\_\_\_\_, page \_\_\_\_\_ or other reference source \_\_\_\_\_; that the ratio of precision or positional accuracy is \_\_\_\_\_; and that this map meets the requirements of The Standards of Practice for Land Surveying in North Carolina (21 NCAC 56. 1600)."
- This \_\_\_\_\_ day of \_\_\_\_\_, 2\_\_\_\_\_.

Seal

\_\_\_\_\_  
Professional Land Surveyor

*History Note:* Authority G.S. 89C-10; 89C-16; 89C-20;

Eff. July 1, 1989;

Amended Eff. [July 1, 2014;]August 1, 2014; May 1, 2009; August 1, 2000; August 1, 1998; February 1, 1996; November 2, 1992; January 1, 1992.

21 NCAC 56 .1606 is amended as published in 28:14 NCR 1633 – 1635 with changes as follows:

**21 NCAC 56 .1606            SPECIFICATIONS FOR TOPOGRAPHIC AND PLANIMETRIC MAPPING,  
INCLUDING GROUND, AIRBORNE, AND SPACEBORNE SURVEYS**

(a) General.

- (1) ~~Topographic surveys~~“Topographic surveys” are defined as surveys that have as their major purpose the determination of the configuration (relief) of the earth (ground) and the location of natural or artificial objects thereon.
- (2) ~~Planimetric mapping~~“Planimetric mapping” is defined as producing a map that presents the horizontal positions only for the features ~~represented~~represented. This is distinguished from a topographic map by the omission of relief in measurable form.
- (3) ~~Airborne and spaceborne surveys~~“Airborne and spaceborne surveys” are defined as the use of photogrammetry, LIDAR, IFSAR, or other similar measurement technologies for obtaining reliable information about physical objects and the environment, including terrain surface, through the process of recording, measuring, and interpreting images and patterns of electromagnetic radiant energy and other phenomena. This Rule establishes minimum allowable photogrammetric production procedures and standards for photogrammetric mapping and digital data production.

(b) Production procedures for topographic and planimetric mapping surveys shall be in accordance with the standards established by Part 3 of the Federal Geographic Data Committee (FGDC) Geospatial Positioning Accuracy Standard and applicable extensions and revisions. These standards are incorporated by reference including subsequent amendments and editions. The material is available ~~from the Board office at the cost of reproduction as a public record or~~ from the FGDC at [www.fgdc.gov](http://www.fgdc.gov) at no cost. Reporting accuracy shall be in accordance with Part 1 of the FGDC geospatial standards.

(c) Topographic or planimetric maps, orthophotos, and related electronic data, unless marked as "Preliminary Map," shall meet one of the below classes, as contractually specified to FGDC Standards, or National Agriculture Imagery Program of the US Department of Agriculture [NAIP](NAIP) Standards, or to State adopted base mapping standards for horizontal and vertical ~~accuracies (in the absence of specified standards, the National Map Accuracy Standards apply) and shall be certified by the licensee.~~ accuracies. The NAIP imagery standards are incorporated by reference including subsequent amendments and editions and may be accessed free of charge at [http://www.fsa.usda.gov/Internet/FSA\\_File/naip\\_info\\_sheet\\_2013.pdf](http://www.fsa.usda.gov/Internet/FSA_File/naip_info_sheet_2013.pdf). In the absence of a specified standard, the surveyor shall conform the survey to the requirements for a Class B survey.

(1) For horizontal ~~accuracy~~ accuracy, the five general classifications are:

- (A) Class AA surveys. For Class AA surveys in North Carolina, the relative accuracy shall be equal to or no less than 0.033 meter (0.10 feet);
- (B) Class A surveys. For Class A surveys in North Carolina, the relative accuracy shall be equal to or less than 0.5 meter (1.64 feet);

- (C) Class B surveys. For Class B surveys in North Carolina, the relative accuracy shall be equal to or less than 1.0 meter (3.28 feet);
- (D) Class C surveys. For Class C surveys in North Carolina, the relative accuracy shall be equal to or less than 2 meters (6.56 feet); and
- (E) Class D surveys. For Class D surveys in North Carolina, the relative accuracy shall be equal to or less than 5 meters (16.40 feet).
- (2) For vertical accuracy, the three general classifications are:
- (A) Urban and suburban vertical control ~~[surveys.]~~surveys (Class A). Urban and suburban vertical control surveys include lands ~~[which]that~~ lie within or ~~[adjoining]adjoin~~ a town or city. For Class A vertical control surveys in North Carolina, the vertical error in feet shall not exceed 0.10 times the square root of the number of miles run from the reference datum.
- (B) Other vertical control surveys (Class B). Other vertical control surveys include all lands which are not covered by Class A as described in ~~[Item (1) of this Rule.]~~Part (A) of this Subparagraph. For Class B vertical control surveys in North Carolina, the vertical error in feet shall not exceed 0.20 times the square root of the number of miles run from the reference datum.
- (C) Trigonometric vertical control surveys (Class C). Trigonometric vertical control surveys ~~[can]shall~~ be used for vertical control for aerial and topographic mapping. The vertical error in feet shall not exceed 0.3 times the square root of the number of miles run from the reference datum.
- (d) When the resulting product is a digital (electronic) data set, or a map or document ~~that~~ consists of more than one sheet or otherwise cannot be certified, a project report shall be certified. The report shall be marked "Preliminary" if applicable.
- (e) Ground control for topographic and planimetric mapping projects shall be in North Carolina State Plane Coordinate System grid coordinates and distances when the project is tied to ~~Grid-grid.~~ A minimum of one permanent project vertical control point shall be shown.
- (f) The project map or report shall contain the following information:
- (1) Date of original data acquisition;
  - (2) Altitude of sensor and sensor focal length, as applicable;
  - (3) Date of document or data set compilation;
  - (4) If hard copy product is produced, the maps shall contain a north arrow, map legend, final document scale, including bargraph, and contour interval, as applicable;
  - (5) Coordinate system for horizontal and vertical denoting SI or English units (i.e., NAD83, assumed, or other coordinate system);

(6) A list or note showing the control points used for the project. The minimum data shown for each point shall include: physical attributes ~~e.g., (e.g.,~~ iron rod, railroad spike), latitude and longitude (or X and Y Grid coordinates), and elevation, as applicable;

(7) If other data is included, the source and accuracy of those items ~~must~~shall be indicated;

~~(8) A statement of horizontal and vertical accuracy at the 95 percent confidence level (2 sigma) complying with contractually specified FGDC standards consistent with Paragraph (c) of this Rule;~~

~~(9)~~(8) For topographic maps or data sets, contours in areas obscured by man-made or natural features shall be uniquely identified or enclosed by a polygon identifying the obscured area. The accuracies of the contours or of features in this obscured area shall be noted "No reliance is to be placed on the accuracy of these contours;"

~~(10)~~(9) A vicinity map depicting the project location on the first sheet of all hard copy maps or in the report accompanying digital files; and

~~(11)~~(10) The name of the client for whom the project was conducted.

(g) Nothing in this ~~Section~~Rule shall be construed to negate or replace the relative accuracy standards found in Rules .1601 through ~~.1608.~~1608 of this Section.

(h) A certificate, substantially in the following form, shall be affixed to all maps or reports:

" I, \_\_\_\_\_, certify that this project was completed under my direct and responsible charge from an actual survey made under my supervision; that this \_\_\_\_\_ (insert as appropriate: ground, airborne or spaceborne) survey was performed at the 95 percent confidence level ~~(2 sigma)~~ to meet Federal Geographic Data Committee Standards; ~~that this survey was performed to meet the requirements for a topographic/planimetric survey to the accuracy of Class \_\_\_\_\_ and vertical accuracy when applicable to the Class \_\_\_\_\_ standard; that the horizontal accuracy is \_\_\_\_\_, that the vertical accuracy is \_\_\_\_\_~~ and that the original data was obtained on \_\_\_\_\_(date)\_\_\_\_\_; that the survey was completed on \_\_\_\_\_(date)\_\_\_\_\_; that contours shown as [broken lines] may not meet the stated standard; and all coordinates are based on \_\_\_\_\_~~(NAD 83 (NSRS 2007), NAD 83/2001, or other);~~[NAD 83' and realization (date of adjustment of coordinate system) or 'NAD 27'] and all elevations are based on \_\_\_\_\_~~(NGV 29, (NGVD 29,~~ NAVD 88, or other)."

(i) Documents transmitted electronically shall have the computer-generated seal removed from the original file and a copy of the project report shall be certified and sent to the client. The electronic data shall have the following inserted in lieu of the signature and date:

"This document originally issued and sealed by (name of sealer), (license number), on (date of sealing). This electronic media shall not be considered a certified document. See the project report for certificate and seal."

*History Note:* Authority G.S. 89C-10; G.S. 89C-16; 89C-20;  
Eff. November 2, 1992;  
Amended Eff. [July 1, 2014;]August 1, 2014: August 1, 2011; May 1, 2009; August 1, 2002;  
August 1, 2000.

21 NCAC 56 .1608 is amended as published in 28:14 NCR 1635 – 1636 with changes as follows:

**21 NCAC 56 .1608 CLASSIFICATION/LAND INFORMATION SYSTEM/GEOGRAPHIC  
INFORMATION SYSTEM SURVEYS**

(a) General: Land Information System/Geographic Information System (LIS/GIS) "Land Information System/Geographic Information System (LIS/GIS)" surveys are defined as the measurement of existing surface and subsurface features for the purpose of determining their accurate geospatial location for inclusion in an LIS/GIS database. All LIS/GIS surveys as they relate to property lines, rights-of-way, easements, subdivisions of land, the position for any survey monument or reference point, the determination of the configuration or contour of the earth's surface or the position of fixed objects thereon, and geodetic surveying which that includes surveying for determination of the size and shape of the earth both horizontally and vertically and the precise positioning of points on the earth utilizing angular and linear measurements through spatially oriented spherical geometry, shall be performed by a Land Surveyor who is a licensee of this Board unless exempt by G.S. 89C-25. For the purpose of specifying minimum allowable surveying standards, five general classifications of LIS/GIS surveys are established, any of which may be specified by the client. In the absence of a specified standard, the surveyor shall conform the survey to the requirements for a Class B survey. ~~The five classifications are:~~

(1) For horizontal ~~accuracy~~ accuracy, the five general classifications are:

- (A) Class AA LIS/GIS Surveys. For Class AA LIS/GIS surveys in North Carolina, the relative accuracy shall be equal to or no less than 0.033 meter (0.10 feet);
- (B) Class A LIS/GIS surveys. For Class A LIS/GIS surveys in North Carolina, the relative accuracy shall be equal to or less than 0.5 meter (1.64 feet);
- (C) Class B LIS/GIS surveys. For Class B LIS/GIS surveys in North Carolina, the relative accuracy shall be equal to or less than 1.0 meter (3.28 feet);
- (D) Class C LIS/GIS surveys. For Class C LIS/GIS surveys in North Carolina, the relative accuracy shall be equal to or less than 2 meters (6.56 feet); and
- (E) Class D LIS/GIS surveys. For Class D LIS/GIS surveys in North Carolina, the relative accuracy shall be equal to or less than 5 meters (16.40 feet).

(2) For vertical accuracy, the three general classifications are:

- (A) Urban and suburban vertical control ~~surveys~~ surveys (Class A). Urban and suburban vertical control surveys include lands ~~which that~~ lie within or ~~adjoining~~ adjoin a town or city. For Class A vertical control surveys in North Carolina, the vertical error in feet shall not exceed 0.10 times the square root of the number of miles run from the reference datum.
- (B) Other vertical control surveys (Class B). Other vertical control surveys include all lands which are not covered by Class A as described in ~~Item (1) of this Rule~~ Part (A) of this Subparagraph. For Class B vertical control surveys in

1 North Carolina, the vertical error in feet shall not exceed 0.20 times the square  
2 root of the number of miles run from the reference datum.

3 (C) Trigonometric vertical control surveys (Class C). Trigonometric vertical control  
4 surveys ~~can~~ shall be used for vertical control for aerial and topographic  
5 mapping. The vertical error in feet shall not exceed 0.3 times the square root of  
6 the number of miles run from the reference datum. The vertical error in Global  
7 Navigation Satellite System (GNSS) surveys shall not exceed five centimeters  
8 relative to the referenced benchmark(s) at the 95 percent confidence level (2  
9 sigma) accuracy as defined in Federal Geographic Data Committee Standards.

10 (b) Nothing in this Rule negates or replaces the relative accuracy standards found in Rules .1601 through .1607 of  
11 this Chapter. Section.

12 (c) The Professional Land Surveyor in responsible charge of the LIS/GIS boundary or geodetic control survey shall  
13 certify ~~to~~ all of the following in either written or digital form:

- 14 (1) Class of LIS/GIS survey. Method~~The method of measurement~~ used to evaluate the accuracy shall  
15 be described as either statistical testing or least squares adjustment results, comparison with values  
16 of higher accuracy, and repeat measurements. The reporting standard in the horizontal component  
17 is the radius of a circle of uncertainty, such that the true or theoretical location of the point falls  
18 within that circle 95 percent of the ~~time. For vertical accuracy requirements, see 21 NCAC 56~~  
19 ~~.1605; time;~~  
20 (2) Method of measurement (i.e. i.e.) global navigation satellite systems, electronic scanners,  
21 theodolite and electronic distance meter, transit and tape);  
22 (3) Date(s) of the survey; and  
23 (4) Datum used for the survey.

24 (d) A certificate, substantially in the following form, shall be affixed to all maps or reports:

25 "I, \_\_\_\_\_, certify that this project was completed under my direct and responsible charge from  
26 an actual survey made under my supervision; that this survey was performed to meet the requirements for an  
27 ~~LIS/GIS~~LIS/GIS survey [21 NCAC 56.1608] to the accuracy of Class \_\_\_\_ and vertical accuracy; when applicable  
28 to the Class \_\_\_\_ standard [~~21 NCAC 56.1605(a)~~]; method used to evaluate the accuracy was \_\_\_\_\_;  
29 method of measurement \_\_\_\_\_; date(s) of survey \_\_\_\_\_; datum used for survey \_\_\_\_\_; and  
30 all coordinates are based on \_\_\_\_\_ (~~NAD 83 (NSRS 2007), NAD 83/2001, or other~~); ['NAD 83' and  
31 realization (date of adjustment of coordinate system) or 'NAD 27'] and all elevations are based on  
32 \_\_\_\_\_ (~~NGV 29, (NGVD 29, NAVD 88, or other).~~"

34 *History Note:* Authority G.S. 89C-10; 89C-20;

35 Eff. February 1, 1996;

36 Amended Eff. [July 1, 2014;] August 1, 2014; August 1, 2011; July 1, 2009; May 1, 2009; August  
37 1, 2002; August 1, 2000.

21 NCAC 56 .1703 is amended as published in 28:14 NCR 1636 ~~with changes~~ as follows:

### **21 NCAC 56 .1703 REQUIREMENTS**

Every licensee shall obtain 15 PDH units during the renewal period. If a licensee exceeds the annual requirement in any renewal period, a maximum of 15 PDH units may be carried forward into the subsequent renewal period. Selection of courses and activities ~~which~~that meet the requirements of Rule .1702(4) of this Section is the responsibility of the licensee. Licensees may select courses other than those offered by sponsors. Post evaluation of the courses may result in ~~non acceptance.~~non-acceptance by the Board. PDH units may be earned as follows:

- (1) Completion of college courses;
- (2) Completion of continuing education courses, seminars, or workshops;
- (3) Completion of correspondence, televised, ~~internet,~~Internet, videotaped, audiotaped, and other courses or ~~tutorial~~tutorials, provided an exam is required for completion. No exam is required for attendance at a webinar presentation if attendance is documented;
- (4) Presenting or attending seminars, in-house courses, workshops, or professional or technical presentations made at meetings, conventions or conferences;
- (5) Teaching or instructing in Items (1) through (4) of this Rule;
- (6) Authoring published papers, articles, or books;
- (7) Active participation in professional or technical societies as defined in Rule .1705(f) of this Section;
- (8) Patents; ~~and~~
- (9) Authoring exam questions accepted for use in the engineering or land surveying ~~exams.~~exams; or
- (10) Active participation on boards, commissions, committees or councils of private, local, state or federal government entities as defined in Rule ~~[-.1705(f)].1705(g)~~ of this Section.

*History Note: Authority G.S. 89C-10(a); 89C-17;*

*Eff. December 1, 1994;*

*Amended Eff. ~~[July 1, 2014;]~~August 1, 2014; August 1, 2011; May 1, 2009; August 1, 2000; August 1, 1998.*

21 NCAC 56 .1704 is amended as published in 28:14 NCR 1636 – 1637 with changes as follows:

### **21 NCAC 56 .1704            UNITS**

The conversion of ~~other~~ units of credit set forth in Rule .1703 of this Section to PDH units is as follows:

- |      |   |        |
|------|---|--------|
| (1)  | 1 College or unit semester <del>hour</del> <u>hour.</u>   | 45 PDH |
| (2)  | 1 College or unit quarter <del>hour</del> <u>hour.</u>  | 30 PDH |
| (3)  | 1 Continuing Education <del>Unit</del> <u>Unit.</u>   | 10 PDH |
| (4)  | 1 Contact hour of professional development in course work, seminars, or professional or technical presentations made at meetings, conventions or <del>conferences.</del> <u>conferences, and for correspondence, televised, Internet, videotaped, audiotaped, and other courses or tutorials.</u> Contact hours equal the actual time of instruction and shall be credited to the nearest one-third of an hour. | 1 PDH  |
| (5)  | For teaching in Items (1) – (4) of this Rule, PDH credits are doubled. Teaching credit is valid for teaching a course or seminar for the first time only. Teaching credit does not apply to full-time faculty, as defined by the institution where a licensee is teaching.  |        |
| (6)  | Each published paper, article or book.  | 10 PDH |
| (7)  | Active participation in professional and technical society. (Each <del>organization.</del> <u>society</u> )   | 2 PDH  |
| (8)  | Each <del>patent</del> <u>patent.</u>   | 10 PDH |
| (9)  | Each question <del>used</del> <u>used.</u>  | 2 PDH  |
| (10) | <u>Active participation on boards, commissions, committees or councils of private, local, state or federal government <del>entities</del><u>entities.</u> (Each entity)</u>   | 2 PDH  |

*History Note: Authority G.S. 89C-10(a); 89C-17;*

*Eff. December 1, 1994;*

*Amended Eff. ~~[July 1, 2014;]~~August 1, 2014; May 1, 2009; August 1, 2000; August 1, 1998.*



21 NCAC 56 .1705 is amended as published in 28:14 NCR 1637 with changes as follows:

**21 NCAC 56 .1705            DETERMINATION OF CREDIT**

(a) The Board of Examiners has final authority with respect to approval of courses, sponsors, credit, PDH value for courses, and other methods of earning credit. Such determination shall meet Rule .1702(4) of this Section.

(b) Credit for college or community college courses shall be based upon course credit established by the college.

(c) Credit for continuing education courses, seminars and workshops shall be based on one PDH unit for each hour of attendance. Attendance at programs presented at professional and technical society meetings shall earn PDH units for the actual time of each program.

(d) Credit for correspondence, televised, ~~internet~~, Internet, videotaped, audiotaped, and other courses or tutorials, provided an exam is required for completion, shall be based upon one PDH unit for each hour assigned to the course, provided such hours are a reasonably estimated time for an average professional to complete the course.

(e) Credit ~~determination, as allowed in 21 NCAC 56 .1704(6), determination~~ for published papers, articles and books and obtaining patents is the responsibility of the licensee.

(f) Credit for active participation in professional and technical societies (limited to 2 PDH per ~~organization~~ society), requires that a licensee serve as an officer or participate in a committee of the ~~organization~~ society. PDH credits are not earned until the end of each year of service is completed.

(g) Credit for active participation on boards, commissions, committees or councils of private, local, state or federal government entities (limited to 2 PDH per entity) requires utilizing engineering or land surveying knowledge (as applicable) in the active participation. PDH credits are not earned until the end of each year of service is completed.

*History Note:     Authority G.S. 89C-10(a); 89C-17;*

*Eff. December 1, 1994;*

*Amended Eff. ~~July 1, 2014;~~ August 1, 2014; August 1, 2011; May 1, 2009; August 1, 2000; August 1, 1998.*



STATE OF NORTH CAROLINA  
**OFFICE OF ADMINISTRATIVE HEARINGS**

Mailing address:  
6714 Mail Service Center  
Raleigh, NC 27699-6714

Street address:  
1711 New Hope Church Rd  
Raleigh, NC 27609-6285

June 19, 2014

David S. Tuttle  
Board of Examiners for Engineers and Surveyors  
Sent via email to [dstuttle@ncbels.org](mailto:dstuttle@ncbels.org)

Re: Extension of the Period of Review for Rules 21 NCAC 56, all rules submitted for review

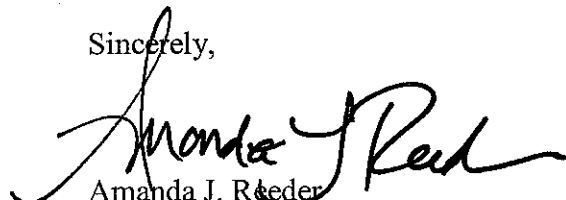
Dear Mr. Tuttle:

At its meeting yesterday, the Rules Review Commission extended the period of review for the above-captioned rules in accordance with G.S. 150B-21.10. They did so in response to a request from your agency to extend the period in order to allow the agency to make technical changes and submit the rewritten rules at a later meeting.

Pursuant to G.S. 150B-21.13, when the Commission extends the period of review, it is required to approve or object to rules or call a public hearing on the same within 70 days. The agency indicated it will submit the rewritten rules for Commission review at its July 2014 meeting.

Should you have any questions regarding the Commission's actions, please let me know.

Sincerely,



Amanda J. Reeder  
Commission Counsel

Administration  
919/431-3000  
fax: 919/431-3100

Rules Division  
919/431-3000  
fax: 919/431-3104

Judges and  
Assistants  
919/431-3000  
fax: 919/431-3100

Clerk's Office  
919/431-3000  
fax: 919/431-3100

Rules Review  
Commission  
919/431-3000  
fax: 919/431-3104

Civil Rights  
Division  
919/431-3036  
fax: 919/431-3103

21 NCAC 56 .0501 is amended as published in 28:14 NCR 1624 – 1626 as follows:

**SECTION .0500 - PROFESSIONAL ENGINEER**

**21 NCAC 56 .0501 REQUIREMENTS FOR LICENSING**

(a) Education. The education of an applicant shall be considered in determining eligibility for licensing as a Professional Engineer. The following terms used by the Board for the specific educational requirements to be eligible to be licensed as a Professional Engineer are defined by the Board as follows:

- (1) Engineering Curriculum of Four or More Years Approved by the Board is defined as a program that has been accredited by the Engineering Accreditation Commission (EAC) of the Accreditation Board for Engineering and Technology (ABET). This program is incorporated by reference including subsequent amendments and editions. This material is available for inspection at the office of the North Carolina Board of Examiners for Engineers and Surveyors. Copies may be obtained at the Board office at a cost of five dollars (\$5.00) per copy.
- (2) Engineering or Related Science Curriculum of Four or More Years Other than Ones Approved by the Board is defined as a curriculum, although not accredited by ABET, of technical courses which contains engineering or scientific principles.
- (3) Equivalent Education Satisfactory to the Board:
  - (A) A graduate degree in Engineering from an institution in which the same discipline undergraduate engineering program has been accredited by ABET (EAC) is considered equivalent to an engineering curriculum of four or more years approved by the Board.
  - (B) A bachelor's degree in Engineering Technology, whether or not accredited by the Technology Accreditation Commission (TAC) of ABET, is considered equivalent to an engineering or related science curriculum of four or more years other than one approved by the Board.
  - (C) Until June 30, 2016, an associate degree in an engineering related curriculum with an additional two years of progressive engineering experience is considered equivalent to an engineering or related science curriculum of four or more years other than one approved by the Board and may be used until that date as a basis for admission to the principles and practice of engineering examination. Once admitted to the examination an applicant may continue to re-take the examination until required to submit a new application as set out in Rule .0503. After June 30, 2016 an associate degree shall no longer be used as a basis for admission to that ~~examination-examination~~, unless the individual has passed the fundamentals of engineering examination prior to June 30, 2016, in which case the individual may continue the process to take the principles and practices exam based upon the associate degree and it will not be necessary to have qualified for admission to the principles and practice of engineering examination prior to June 30, 2016.

(D) Foreign degrees are considered equivalent only after receipt of an evaluation report that the degree is substantially equivalent to an EAC/ABET accredited engineering curriculum from the Center for Professional Engineering Education Services, an affiliate of the National Council of Examiners for Engineering and Surveying (NCEES), or from the American Association of Collegiate Registrars and Admissions Officers (AACRAO). The Board shall equate the degree to an EAC/ABET accredited engineering curriculum of four or more years approved by the Board in Subparagraph (a)(1) of this Rule if it receives a substantially equivalent evaluation.

(b) Experience:

(1) General. The experience of an applicant shall be considered in determining whether an applicant is eligible to be licensed as a Professional Engineer.

(2) Required Experience. In evaluating the work experience required, the Board shall consider the total experience record and the progressive nature of the record. Not less than half of required engineering experience shall be of a professional grade and character, and shall be performed under the responsible charge of a licensed Professional Engineer, or if not, a written explanation shall be submitted showing why the experience should be considered acceptable and the Board shall approve if satisfied of the grade and character of the progressive experience. Experience gained under the technical supervision of an unlicensed individual shall be considered if the appropriate credentials of the unlicensed supervisor are submitted to the Board. Experience gained in the armed services, usually while serving in an engineering or engineering related group, shall be considered if of a character equivalent to that which would have been gained in the civilian sector doing similar work.

(3) Definition. The terms "progressive engineering experience" or "progressive experience on engineering projects" mean that during the period of time in which an applicant has made a practical utilization of acquired knowledge, continuous improvement, growth and development have been shown in the utilization of that knowledge as revealed in the complexity and technical detail of the work product or work record. The applicant must show continuous assumption of greater individual responsibility for the work product over that period of time. The progressive experience on engineering projects shall be of a grade and a character which indicates to the Board that the applicant is competent to practice engineering.

(4) Specific Credit for Experience. In evaluating progressive engineering experience, the Board shall give credit for experience in the following areas of work:

(A) Graduate schooling or research in an engineering program resulting in award of a master's degree from an institution that offers EAC/ABET-accredited programs – one year;

(B) Graduate schooling or research in an engineering program resulting in award of an earned doctoral degree in engineering from an institution that offers EAC/ABET-accredited

1 programs – two years, with or without a master's degree, but includes the one year for the  
2 master's degree, if obtained;

3 (C) Progressive land surveying - maximum two years; and

4 (D) Teaching of engineering subjects at the university level in an engineering program  
5 offering a four year or more degree approved by the Board.

6 The Board, however, shall not accept combinations, in the categories in this Subparagraph, as fulfilling all  
7 the necessary statutory experience requirements. Every applicant for licensure as a Professional Engineer,  
8 as part of the total experience requirement, shall show a minimum of one year experience of a progressive  
9 engineering nature in industry, or government, or under a licensed Professional Engineer offering service to  
10 the public.

11 Full-time engineering faculty members who teach in an engineering program offering a four year or more  
12 degree approved by the Board, may request and shall be granted waiver of the minimum one year  
13 experience in industry, government, or private practice if they demonstrate consulting or research work of  
14 at least one year's duration, which was pursued to fruition, and which is of a progressive engineering  
15 nature. The faculty applicant shall document the work and demonstrate that the work meets the Board's  
16 requirement.

17 (5) Other Experience is Considered if it is:

18 (A) Experience obtained prior to graduation as part of an ABET accredited engineering  
19 program which must be shown on the transcript, with a maximum credit of one year; or

20 (B) Experience obtained in a foreign country that is performed under direct supervision of a  
21 Professional Engineer licensed with a member Board of the National Council of  
22 Examiners for Engineering and Surveying (NCEES).

23  
24 *History Note: Authority G.S. 89C-10; 89C-13;*

25 *Eff. February 1, 1976;*

26 *Readopted Eff. September 29, 1977;*

27 *Amended Eff. July 1, 2014; August 1, 2011; May 1, 2009; August 1, 2002; August 1, 2000; August*  
28 *1, 1998; November 2, 1992; April 1, 1989; January 1, 1982.*

21 NCAC 56 .0502 is amended as published in 28:14 NCR 1626 – 1627 as follows:

**21 NCAC 56 .0502 APPLICATION PROCEDURE: INDIVIDUAL**

(a) General. A person desiring to become licensed as a Professional Engineer must make application to the Board on a form prescribed and furnished by the Board.

(b) Request. A request for an appropriate application form may be made to the Board office or obtained from the website.

(c) Applicable Forms:

(1) ~~Engineering~~ Engineer Intern Certification Form. ~~After passing the fundamentals of engineering examination an applicant may make application to the Board to become certified as an “Engineer Intern.” This form requires the applicant to set forth personal history, educational background, engineering experience, provide and character references, references. A passport-type photographic quality portrait that is adequate and furnish a photograph for current identification purposes. purposes is required. The form is for use by those graduating, or those having graduated, from an engineering curriculum approved by the Board as follows:~~

~~(A) — Students graduating within two semesters, or the equivalent, of the semester in which the fundamentals of engineering examination is administered.~~

~~(B) — Graduates with less than two years since graduation.~~

(2) Professional Engineer Form:

(A) All persons, including comity applicants and ~~graduates of an engineering curriculum approved by the Board with more than two years progressive engineering experience, certified Engineer Interns,~~ shall apply for licensure by using the Professional Engineer form.

The submission of this form shall signify that the applicant seeks licensure, and shall result in seating for ~~each examination required,~~ the principles and practice of engineering examination, when the applicant is so qualified. This form requires the applicant to set forth personal and educational background, engineering experience and character references. A passport-type photographic quality portrait that is adequate for current identification purposes is required.

(B) Persons who have previously completed the fundamentals examination by use of the Engineering Intern Application Form shall submit the Professional Engineer Application Form to request licensure when qualified to take the ~~final eight hour~~ examination.

(3) Supplemental Form. Persons who initially applied for the fundamentals of engineering exam using the Professional Engineer form must supplement the initial application upon applying for the principles and practice examination. The supplemental form requires that engineering experience from the date of the initial application until the date of the supplemental application be listed. Five references shall be submitted which are current to within one year of the examination date.

(4) Reference Forms:

- (A) Persons applying ~~to take the examination for fundamentals of engineering for certification as an Engineer Intern~~ must submit to the Board names of three individuals who are familiar with the applicant's work, character and ~~reputation-reputation, one of whom is a professional engineer.~~ Persons applying to take the examination for principles and practice of engineering must submit to the Board names of five individuals who are familiar with the applicant's work, character and reputation. ~~Two~~Three of these individuals must be Professional Engineers.
- (B) In addition to the applicant submitting names to the Board of individuals familiar with the applicant's work, character and reputation, those individuals listed shall submit to the Board their evaluations of the applicant on forms supplied them by the applicant.
- (C) The reference form requires the individual evaluating the applicant to state the evaluating individual's profession, knowledge of the applicant and information concerning the applicant's engineering experience, character and reputation.
- (D) The Board shall provide the reference forms to the applicant with the application. The reference forms shall then be distributed by the applicant to the persons listed on the application as references. The applicant shall see that the individuals listed as references return the reference forms to the Board prior to the filing deadline for the examination.

(d) Fees:

- (1) ~~Engineering Engineer Intern Certification Form. The examination fee for applicants applying for examination on the fundamentals of engineering using the engineering intern form is payable with the filing of the application. Once the applicant passes the examination on the fundamentals of engineering-engineering and makes application to the Board to become certified as an "Engineer Intern" the application fee of one hundred dollars (\$100.00) and the examination fee for the principles and practice of engineering examination are payable is payable with the applicant's subsequent application for licensure as a Professional Engineer using the Professional Engineer form.~~
- (2) Professional Engineer Form. The application fee of one hundred dollars (\$100.00) and examination fee for applicants applying for the examination on ~~the fundamentals of engineering or~~ the principles and practice of engineering using the Professional Engineer form are payable with the filing of the application.
- (3) Comity. The licensure fee of one hundred dollars (\$100.00) is payable with the filing of the application.
- (4) Examination. The examination fee for any applicant is payable with the filing of the application in accordance with G.S. 89C-14.

(e) The Board shall accept the records maintained by the National Council of Examiners for Engineering and Surveying (NCEES) as evidence of licensure in another state. For comity licensure the NCEES record shall be accepted in lieu of completing the experience, education and references sections of the application. A comity application, with or without a NCEES record, shall be administratively approved by the Executive Director based upon evidence of current licensure in

1 another jurisdiction based on comparable qualifications, required references and no record of disciplinary action, without  
2 waiting for the next regular meeting of the Board at which time the action shall be reported to the Board for final  
3 approval.

4 (f) Model Law Engineer. The term "Model Law Engineer" refers to a person who meets the requirements of section  
5 .0500 by meeting the requirements of NCEES and has a current NCEES record on file and is designated as a "Model Law  
6 Engineer." A "Model Law Engineer" application shall be administratively approved by the Executive Director based  
7 upon the designation, without waiting for the next regular meeting of the Board at which time the action shall be reported  
8 to the Board for final approval.

9 (g) Personal interview. During the application process, the applicant may be interviewed by the Board members.

10  
11 *History Note: Authority G.S. 89C-10; 89C-13; 89C-14;*

12 *Eff. February 1, 1976;*

13 *Readopted Eff. September 29, 1977;*

14 *Amended Eff. May 1, 1994; November 2, 1992; April 1, 1989; December 1, 1984;*

15 *RRC Objection due to lack of Statutory Authority Eff. November 17, 1994;*

16 *Amended Eff. July 1, 2014; May 1, 2009; August 1, 2002; August 1, 2000; August 1, 1998; January 1,*  
17 *1995.*



21 NCAC 56 .0503 is amended as published in 28:14 NCR 1627 - 1628 as follows:

### **21 NCAC 56 .0503 EXAMINATIONS**

(a) Fundamentals of Engineering. This ~~eight hour written~~ examination is designed primarily to test the applicant's proficiency and knowledge of the fundamentals of engineering.

(b) Principles and Practice of Engineering. This ~~eight hour written~~ examination is designed to test the applicant's proficiency and knowledge of engineering principles and practices.

(c) Examination Aids. Examinees may utilize examination aids as specified by the exam preparer.

(d) Preparation of Examination. The examinations in the fundamentals of engineering and in the principles and practice of engineering are national examinations provided by the National Council of Examiners for Engineering and Surveying (NCEES) of which the Board is a member.

(e) Examination Sequence. Before the applicant is permitted to be examined on the principles and practice of engineering, the applicant must pass the examination on the fundamentals of engineering, unless the applicant can evidence 20 years of progressive engineering experience to be exempt from taking the fundamentals of engineering exam. ~~In no event is an applicant allowed to take both examinations at the same time or at the same scheduled examination date.~~ NCEES administers the fundamentals of engineering examination as a computer-based exam. Application is made directly to NCEES to take the exam.

(f) Examination Filing Deadline. The applicant who wishes to take ~~an~~ the principles and practice of engineering examination must have the completed application (which includes all necessary references, transcripts, and verifications) in the Board office prior to August 1 for Fall examinations and January 2 for Spring examinations.

(g) Seating Notice. After approval of an application ~~to take either the examination on the fundamentals of engineering or principles and practice,~~ the applicant shall be sent a seating notice. This notice shall inform the applicant of the date, time and location of the examination and the seat number assigned.

(h) Unexcused Absences. After a seating notice has been issued for a scheduled examination by the Board, and the applicant fails to appear, that applicant's record shall reflect "unexcused absence" unless the absence was for official jury duty or the applicant was not physically able to be present, as indicated by a doctor's certificate. The examination fee is forfeited.

(i) Re-Examination. A person who has failed an examination may apply to take the examination again at the next regularly scheduled examination period by making written request and submitting the required exam fee. A person having a combined record of three failures or unexcused absences is only eligible after submitting a new application with appropriate application fee, and shall be considered by the Board for reexamination at the end of 12 months. After the end of the 12-month period, the applicant may take the examination no more than once every calendar year. The applicant must demonstrate to the Board that actions have been taken to improve the applicant's chances for passing the exam.

(j) Special Accommodation. An applicant may make a written request, before the application deadline, for special accommodation for the exam. Reasonable accommodation shall be granted based upon meeting the Guidelines for Requesting Religious and ADA Accommodations published by the National Council of Examiners for Engineering and

1     Surveying (NCEES), which are hereby incorporated by reference, including subsequent amendments and editions.

2     Copies are available at no cost at [www.ncees.org](http://www.ncees.org).

3     (k) Exam Results. Exam results shall be supplied in writing as pass or fail. No results will be given in any other manner.

4     (l) Review of Failed Exams. An applicant who fails to make a passing score on an exam shall receive an exam analysis.

5  
6     *History Note:*     *Authority G.S. 89C-10; 89C-13; 89C-14; 89C-15;*

7                     *Eff. February 1, 1976;*

8                     *Readopted Eff. September 29, 1977;*

9                     *Amended Eff. July 1, 2014; September 1, 2009; May 1, 2009; April 1, 2001; August 1, 1998;*

10                    *November 2, 1992; April 1, 1989; January 1, 1982.*

21 NCAC 56 .0601 is amended as published in 28:14 NCR 1628 – 1629 as follows:

## **SECTION .0600 - PROFESSIONAL LAND SURVEYOR**

### **21 NCAC 56 .0601        REQUIREMENTS FOR LICENSING**

(a) Education. The following terms used by the Board for the specific education requirements to be eligible to be licensed as a Professional Land Surveyor are defined by the Board as follows:

(1) B.S. in Surveying or Other Equivalent Curriculum. These degrees must contain a minimum of 45 semester hours, or their quarter-hour equivalents, of subjects directly related to the practice of surveying. Of the 45 semester hours, a minimum of 12 semester hours of surveying fundamentals, 12 semester hours of applied surveying practice and 12 semester hours of advanced or theoretical surveying courses are required. The remainder of the required surveying courses may be elective-type courses directly related to surveying; and

(2) Associate Degree in Surveying Technology. This degree must contain a minimum of 20 semester hours, or quarter-hour equivalents, of subjects directly related to the practice of surveying. Courses in surveying practices, subdivision design and planning, surface drainage and photogrammetry must be successfully completed.

(b) Experience:

(1) Definition. As used in the North Carolina Engineering and Land Surveying Act, the term "progressive practical surveying experience" means that during the period of time in which an applicant has made a practical utilization of the knowledge of the principles of geometry and trigonometry in determining the shape, boundaries, position and extent of the earth's surface, continuous improvement, growth and development in the utilization of that knowledge have been shown. In addition, the applicant must show the continuous assumption of greater individual responsibility for the work product over that period of time.

(2) Experience Accepted. In evaluating the work experience required, the Board may consider the total experience record and the progressive nature of the record. (Not less than half of required land surveying experience shall be of a professional grade and character, and shall be performed under the responsible charge of a Professional Land Surveyor, or if not, a written explanation shall be submitted showing why the experience should be considered acceptable and the Board may approve if satisfied of the grade and character of the progressive experience.)

(3) Other Experience. Work done in the following areas requires evidence to the Board of its equivalency to land surveying:

- (A) construction layout;
- (B) engineering surveying; or
- (C) part-time surveying work.

(c) Exhibits, Drawings, Plats:

1 ~~(1) Required Exhibit Before Fundamentals of Surveying Examination. The applicant must submit, along~~  
2 ~~with the application, an actual plat or an example plat prepared by, or under the direct supervision of,~~  
3 ~~the applicant which discloses that the applicant is knowledgeable in the elements of good mapping~~  
4 ~~practices.~~

5 ~~(2)~~(1) Required Exhibit Before Principles and Practice of Surveying Examination:

6 (A) General. The applicant must submit, along with the application, an actual plat of a boundary  
7 survey of an actual project prepared by, or under the direct supervision of, the applicant  
8 which discloses that the applicant is knowledgeable of the contents of the Standards of  
9 Practice for Land Surveying in North Carolina (Section .1600) and also is able to apply this  
10 knowledge by preparing a plat in accordance with the various legal and professional  
11 requirements of land surveying.

12 (B) Physical Requirement. The map submitted must be a clean, clear, legible print of an original  
13 map in the file of a Professional Land Surveyor.

14 ~~(3)~~(2) Specific Requirements. The specific details that shall be evaluated are those applicable to the  
15 particular project as described in the Standards of Practice for Land Surveying in North Carolina  
16 (Section .1600) and as described in G.S. 47-30. In addition, the exhibit shall contain a statement that  
17 the field work, calculation and mapping were performed by the applicant under the supervision of a  
18 Professional Land Surveyor, attested to by the Professional Land Surveyor.

19 ~~(4)~~(3) Requirements for Comity Applicant. The map submitted by an applicant under comity may be a  
20 sample plat of a project or work performed in the state of licensure which shall be evaluated in  
21 accordance with legal requirements of North Carolina.

22  
23 *History Note: Authority G.S. 47-30; 89C-10; 89C-13;*

24 *Eff. February 1, 1976;*

25 *Readopted Eff. September 29, 1977;*

26 *Amended Eff. July 1, 2014; July 1, 2009; August 1, 2000; August 1, 1998; November 2, 1992; April 1,*  
27 *1989; December 1, 1984; January 1, 1982.*

21 NCAC 56 .0602 is amended as published in 28:14 NCR 1629 – 1630 with changes as follows:

**21 NCAC 56 .0602 APPLICATION PROCEDURE: INDIVIDUAL**

(a) General. A person desiring to become a Professional Land Surveyor must make application to the Board on a form prescribed and furnished by the Board.

(b) Request. A request for the application form may be made to the Board office or obtained from the website.

~~(c) Application Form-Forms: All persons applying to be licensed as a Professional Land Surveyor shall apply using the standard application form. This form requires the applicant to set forth personal background, plus educational background, land surveying experience, and references. A passport-type photographic quality portrait that shall be adequate for current clear identification purposes shall be required also.~~

(1) Surveyor Intern Certification Form. After passing the fundamentals of surveying examination an applicant may make application to the Board to become certified as a “Land Surveyor Intern.” This form requires the applicant to set forth personal history, educational background, surveying experience, character references and exhibit. A passport-type photographic quality portrait that is adequate for current identification purposes is required.

(2) Professional Land Surveyor Form:

(A) All persons, including comity applicants and certified Land Surveyor Interns, shall apply for licensure by using the Professional Land Surveyor form. The submission of this form shall signify that the applicant seeks licensure, and shall result in seating for the principles and practice of surveying examination, when the applicant is so qualified. This form requires the applicant to set forth personal and educational background, surveying experience, character references and exhibit. A passport-type photographic quality portrait that is adequate for current identification purposes is required.

(B) Persons who have previously completed the fundamentals examination by use of the Land Surveying Intern Application Form shall submit the Professional Land Surveyor Application Form to request licensure when qualified to take the examination.

(d) Supplemental Form. Persons who initially applied for licensure as a land surveyor, but were not eligible initially to be admitted to the examination for principles and practice of surveying, must supplement their initial applications upon ultimately applying for the ~~second~~ examination. The applicant must supplement the initial application by using the supplemental form, which requires the listing of land surveying experience from the date of the initial application to the date of the supplemental application. Five references shall be submitted which are current to within one year of the examination date.

(e) Reference Forms:

(1) Persons applying to be certified as a Surveyor Intern or to take the examination for the fundamentals of surveying or the examination for principles and practice must submit to the Board names of individuals who are familiar with the applicant's work, character and reputation. The names are submitted by the applicant on the application form.

(2) Persons applying for ~~the fundamentals of surveying examination~~ certification as a Surveyor Intern must submit three references, one of which must be a Professional Land Surveyor. Persons applying for the principles and practice examination must submit five references, ~~two~~ **three** of which must be Professional Land Surveyors.

(3) In addition to the applicant submitting names to the Board of such individuals, those individuals shall submit to the Board their evaluations of the applicant on reference forms supplied them by the applicant.

(4) The reference form requires the individual evaluating the applicant to state the evaluating individual's profession, knowledge of the applicant and information concerning the applicant's land surveying experience, character and reputation.

(5) The Board shall provide the reference forms to the applicant along with the application for licensure. The reference forms shall then be distributed by the applicant to the persons listed on the application as references. The applicant shall see that the individuals listed as references return the forms to the Board prior to the filing deadline for the examination applied for by the applicant.

(f) Fees:

(1) Land Surveyor Intern Certification Form. Once the applicant passes the examination on the fundamentals of surveying and makes application to the Board to become certified as a "Land Surveyor Intern" the application fee of one hundred dollars (\$100.00) is payable.

~~(1)(2)~~ Regular Professional Land Surveyor Form. The application fee of one hundred dollars (\$100.00) and appropriate examination fee for those applying for licensure based upon examination, experience, character and exhibit are payable with the filing of the application.

~~(2)(3)~~ Comity. The licensure fee of one hundred dollars (\$100.00) and appropriate examination fee for those applying for licensure based upon comity are payable with the filing of the application.

~~(3)(4)~~ Examination. The examination fee for any applicant shall be payable with the filing of the application in accordance with G.S. 89C-14.

(g) The Board shall accept the records maintained by the National Council of Examiners for Engineering and Surveying (NCEES) as evidence of licensure in another state. For comity licensure the NCEES record shall be accepted in lieu of completing the experience, education and references sections of the application. A comity application, with or without a NCEES record, shall be administratively approved by the Executive Director based upon evidence of current licensure in another jurisdiction based on comparable qualifications, required references, and having passed the two-hour North Carolina portion of the exam and no record of disciplinary action, without waiting for the next regular meeting of the Board at which time the action shall be reported to the Board for final approval.

(h) Personal Interview. During the application process, the applicant may be interviewed by Board members.

*History Note: Authority G.S. 89C-10; 89C-13; 89C-14;  
Eff. February 1, 1976;  
Readopted Eff. September 29, 1977;*

1                    *Amended Eff. July 1, 2014; May 1, 2009; August 1, 2002; August 1, 2000; August 1, 1998; May 1,*  
2                    *1994; April 1, 1989; January 1, 1982.*

21 NCAC 56 .0603 is amended as published in 28:14 NCR 1630 as follows:

### **21 NCAC 56 .0603            EXAMINATIONS**

(a) Fundamentals of Surveying. This ~~eight-hour written~~ examination is designed primarily to test the applicant's proficiency and knowledge of the fundamentals of surveying. Reference to Fundamentals of Surveying is the revised name of the national exam that is the Fundamentals of Land Surveying in G.S. 89C.

(b) Principles and Practice of Surveying. This ~~eight-hour written~~ examination is designed to test the applicant's proficiency and knowledge of land surveying practices and procedures generally and specifically within North Carolina.

(c) Examination Aids. Examinees may utilize examination aids as specified by the national exam preparer.

(d) Preparation of Examination. The examination in the fundamentals of surveying and ~~six hours~~ of the examination in the principles and practice of surveying are national examinations provided by the National Council of Examiners for Engineering and Surveying (NCEES) of which the Board is a member or other examinations as adopted by the Board. The ~~two-hour~~ North Carolina portion of the principles and practice of surveying examination is provided by the Board. NCEES administers the fundamentals of surveying examination as a computer-based exam. Application is made directly to NCEES to take the exam.

(e) Examination Filing Deadline. The applicant who wishes to take ~~at the principles and practice of surveying~~ examination must have the completed application (which includes all necessary references, transcripts, and verifications) in the Board office prior to August 1 for Fall examinations and January 2 for Spring examinations.

(f) Seating Notice. After approval of an application the applicant shall be sent a seating notice. This notice shall inform the applicant of the date, time and location of the examination and the seat number assigned.

(g) Unexcused Absences. After a seating notice for a scheduled examination has been issued, and the applicant fails to appear, the applicant's record shall reflect "unexcused absence" unless the absence was for official jury duty or the applicant was not physically able to be present, as indicated by a doctor's certificate. The examination fee is forfeited.

(h) Re-Examination. A person who has failed an examination may apply to take the examination again at the next regularly scheduled examination ~~period~~ period by making written request and submitting the required exam fee. A person having a combined record of three failures or unexcused absences is only eligible after submitting a new application with appropriate application fee, and shall be considered by the Board for re-examination at the end of 12 months. After the end of the 12-month period, the applicant may take the examination no more than once every calendar year. The applicant must demonstrate to the Board that actions have been taken to improve the applicant's chances for passing the exam.

(i) Special Accommodation. An applicant may make a written request, before the application deadline, for special accommodation for the exam. Reasonable accommodation shall be granted based upon meeting the Guidelines for Requesting Religious and ADA Accommodations published by the National Council of Examiners for Engineering and Surveying (NCEES).

(j) Exam Results. Exam results shall be supplied in writing as pass or fail. No results shall be given in any other manner.



1 (k) Review of Failed Exams. An applicant who fails to make a passing score on the two-hour North Carolina portion of  
2 the exam may request in writing within thirty days of receiving the result to have an opportunity to review that portion of  
3 the exam. The review shall be done in the Board Office under supervision of staff and is limited to one hour.  
4

5 *History Note:* Authority G.S. 89C-10; 89C-15;

6 *Eff. February 1, 1976;*

7 *Readopted Eff. September 29, 1977;*

8 *Amended Eff. July 1, 2014; May 1, 2009; April 1, 2001; August 1, 1998; November 2, 1992; April 1,*  
9 *1989; January 1, 1982.*

21 NCAC 56 .0802 Rule citation is amended without notice pursuant to G.S. 150B-21.5(a)(3).

**21 NCAC 56 .0802 PROCEDURE**

(a) Professional Corporations and Limited Liability Companies:

(1) Request. A request for an application for licensure as a professional corporation or professional limited liability company engaged in the practice of engineering or land surveying may be made at the Board office or obtained from the website.

(2) Applicable Form. All professional corporations and professional limited liability companies complying with the statutory requirements of G.S. 89C, G.S. 55B and G.S. ~~57C~~**57D** which desire to practice engineering or land surveying shall apply by using a form prepared by the Board. This form requires the applicant, by and through an officer, director and shareholder of the professional corporation or limited liability company who is licensed with the North Carolina Board of Examiners for Engineers and Surveyors in the field(s) of professional services to be offered, to certify that it and the stockholders of the corporation or members of the limited liability company have complied with the provisions of the applicable provisions of the General Statutes and requires that the officers, directors, shareholders, members and professional employees be listed on that application.

(3) Certificate of Licensure:

(A) Upon receiving the application with application fee of one hundred dollars (\$100.00), the Board, after determining that the firm has complied with the statutory requirements, shall issue a certificate of compliance.

(B) The firm must forward the certificate of compliance to the Secretary of State along with its articles of incorporation or articles of organization.

(C) Upon approval by the Secretary of State, the firm must forward to the Board a certified copy of its articles of incorporation or articles of organization.

(D) Upon receipt of the certified copy of the articles of the firm, if all statutory requirements have been met, the Board shall approve the application and issue the firm a certificate of licensure.

(b) Business Firms and Chapter 87 Corporations:

(1) Request. A request for an application for licensure as a business firm or Chapter 87 corporation [as defined in G.S. 55B-15(a)(2)] engaged in the practice of engineering or land surveying may be made at the Board office or obtained from the website. A sole proprietorship owned and operated by the individual licensee in the licensee's name as reflected in the Board's records is exempt from firm licensure.

(2) Applicable Form. All business firms or Chapter 87 corporations that desire to practice engineering or land surveying shall apply by using a form prepared by the Board. The form requires the applicant, through a principal officer, partner or owner, to certify that the business firm will be operated in compliance with the laws of the State of North Carolina and the rules of the North Carolina Board of Examiners for Engineers and Surveyors.

1           (3)     Certificate of Licensure. Upon receiving the application with application fee of one hundred dollars  
2                   (\$100.00), the Board, after determining that the firm has complied with the statutory requirements,  
3                   shall issue a certificate of licensure.

4  
5     *History Note:*     Authority G.S. 55B-4; 55B-10; ~~57C-2.01~~; 89C-10; 89C-24; ~~57D-2.02~~  
6                   Eff. February 1, 1976;  
7                   Readopted Eff. September 29, 1977;  
8                   Amended Eff. ~~July 1, 2014~~; Amended Eff. May 1, 2009; August 1, 2000; February 1, 1996; May 1,  
9                   1994; April 1, 1989; January 1, 1982.

21 NCAC 56 .0901 is amended as published in 28:14 NCR 1630 – 1631 as follows:

## **SECTION .0900 - BUSINESS ENTITIES: GENERAL**

### **21 NCAC 56 .0901        OFFICES**

(a) Professional Engineering Services. Every firm, partnership, corporation or limited liability company which performs or offers to perform engineering services in the State of North Carolina shall have a resident Professional Engineer in responsible charge in each separate office located in North Carolina in which professional engineering services are performed or offered to be performed. Out-of-state office locations in which engineering services are performed or offered to be performed for North Carolina projects are only required to have Professional Engineers in responsible charge of the specific projects in compliance with Rule .0701(c)(3).

(b) Land Surveying Services. Every firm, partnership, corporation or limited liability company which performs or offers to perform land surveying services in the State of North Carolina shall have a resident Professional Land Surveyor in responsible charge in each separate office located in North Carolina in which land surveying services are performed or offered to be performed. Out-of-state office locations in which surveying services are performed or offered to be performed for North Carolina projects are only required to have Professional Land Surveyors in responsible charge of the specific projects in compliance with Rule .0701(c)(3).

(c) Resident. A resident Professional Engineer or Professional Land Surveyor as used in this Rule, means a licensee who spends a majority of the licensee's normal working time in said place of business. Such time shall not be less than a majority of the operating hours of the business. A Professional Engineer or Professional Land Surveyor shall be the resident licensee at only one place of business at one time unless each business is at least one-third owned by the resident professional and is specifically approved by the Board after a determination that the businesses are integrated in operation, ownership, office location and that the licensee will be in responsible charge of the professional services.

(d) No firm, partnership, corporation or limited liability company shall practice, or offer to practice, or market either land surveying or engineering unless there is a licensed resident for that service in responsible charge at that said place of business. Advertisements, signs, letterheads, business cards, directories, or any other form of representation shall avoid any reference to any service that cannot be provided under the responsible charge of a properly qualified resident professional. The licensed entity shall give notice to the Board of a change of resident professional within 30 days after the change and shall not practice, or offer to practice, or market the professional service during any period of time without a resident professional.

*History Note: Authority G.S. 57C-2-01; 89C-10; 89C-24;*

*Eff. February 1, 1976;*

*Readopted Eff. September 29, 1977;*

*Amended Eff. July 1, 2014; August 1, 2002; April 1, 2001; August 1, 1998; May 1, 1994; January 1, 1992; April 1, 1989.*

21 NCAC 56 .1402 is amended as published in 28:14 NCR 1631 as follows:

**21 NCAC 56 .1402            OPPORTUNITY FOR LICENSEE OR APPLICANT TO HAVE HEARING**

Every licensee or applicant for a license shall be afforded notice and an opportunity to be heard on any action, the effect of which would be:

- (1) to deny permission to take an examination for licensing for which application has been duly made,
- (2) to deny a license based on comity,
- (3) to deny a license after an applicant has taken and passed an examination,
- (4) to require re-examination for licensing,
- (5) to withhold the renewal of a license for any cause other than failure to pay a statutory renewal fee,
- (6) to suspend a license,
- (7) to revoke a license,
- (8) to impose a civil penalty, or
- (9) to issue a reprimand.
- (10) to refuse to renew.
- (11) to refuse to reinstate.
- (12) require additional education.

*History Note: Authority G.S. 89C-10; 89C-21; 89C-22; 150B-38;  
Eff. February 1, 1976;  
Readopted Eff. September 29, 1977;  
Amended Eff. July 1, 2014; April 1, 1989; January 1, 1982.*

21 NCAC 56 .1602 is amended as published in 28:14 NCR 1631 – 1632 as follows:

**21 NCAC 56 .1602            SURVEYING PROCEDURES**

(a) A Professional Land Surveyor shall spend the necessary time and effort to make investigation to determine if there are encroachments, gaps, lappages, or other irregularities along each line surveyed. Points may be placed on the line from closed or verified traverses and the necessary investigations made from these points. If these investigations are not made, then the surveyor shall not certify to an actual survey of that line and the plat must contain the appropriate qualifications in accordance with the rules in this Section.

(b) Any and all visible or determined encroachments or easements on the property being surveyed shall be accurately located and indicated.

(c) With respect to investigation of property boundaries and recorded easements, the surveyor shall examine the most recent deeds and recorded plats adjacent to the subject property as well as all deeds and plats recorded after the date of the deed or plat upon which the survey is being based (the survey reference deed or plat).

(d) Except as provided in Paragraph (e) of the Rule, metal stakes or materials of comparable permanence shall be placed at all corners.

(e) Where a corner falls in a right-of-way, in a tree, in a stream, or on a fence post, boulder, stone, or similar object, one or more monuments or metal stakes shall be placed in the boundary so that the inaccessible point may be located accurately on the ground and the map.

(f) The results of a survey shall be reported to the user of that survey as a map or report of survey and, whether in written or graphic form, shall be prepared in a clear and factual manner. All reference sources shall be identified. Artificial monuments called for in such reports shall be described as found or set. When no monument is found or set for points described in Paragraph (e) of this Rule, that fact shall be noted.

(g) Where the results of a survey are reported in the form of a plat or a written description, one or more corners shall, by a system of azimuths or courses and distances, be accurately tied to and coordinated with a horizontal control monument of some United States or State Agency survey system, such as the North Carolina Geodetic Survey, where such monument is within 2000 feet of the subject property, right-of-way, easement or other surveyed entity. Where the North Carolina grid system coordinates of said monument are on file in the ~~Division of Energy, Mineral, and Land Resources of the Department of Environment and Natural Resources, Department of Public Safety/Emergency Management, Geodetic Survey office,~~ the coordinates of both the referenced corner or point and the monument(s) shall be shown in X (easting) and Y (northing) coordinates on the plat or in the written description or document. The coordinates shall be identified as based on 'NAD 83', indicating North American Datum of 1983 or as 'NAD 27' indicating North American Datum of 1927. The tie lines to the monuments must be sufficient to establish true north or grid north bearings for the plat or description if the monuments exist in pairs. Control monuments within a previously recorded subdivision may be used in lieu of grid control. In the interest of bearing consistency with previously recorded plats, existing bearing control may be used where practical. In the absence of Grid Control, other natural or artificial monuments or landmarks shall be used. In all cases, the tie lines shall be sufficient to accurately reproduce the subject lands from the control or reference points used.

(h) Area is to be computed by double meridian distance or equally accurate method and shown on the face of the plat, written description or other document. Area computations by estimation, by planimeter, by scale, or by copying from another source are not acceptable methods, except in the case of tracts containing inaccessible areas and in these areas the method of computation shall be stated.

*History Note: Authority G.S. 89C-10; 89C-20;*

*Eff. July 1, 1989;*

*Amended Eff. July 1, 2014; August 1, 2012 (see S.L. 2012-143, s.1.(f)); September 1, 2011; May 1, 2009; August 1, 2000; August 1, 1998; February 1, 1996.*

21 NCAC 56 .1603 is amended as published in 28:14 NCR 1632 as follows:

**21 NCAC 56 .1603 CLASSIFICATION OF BOUNDARY SURVEYS**

General. Boundary surveys are defined as surveys made to establish or to retrace a boundary line on the ground, or to obtain data for constructing a map, ~~or~~ plat, or report showing a boundary line. For the purpose of this Rule, the term refers to all surveys, including "loan" or "physical" surveys, which involve the determination or depiction of property lines. For the purpose of specifying minimum allowable surveying standards for boundary surveys, the following four general classifications of lands in North Carolina are established from the standpoint of their real value, tax value, or location. Each map shall contain a statement of the calculated ratio of precision before adjustments or a statement of positional accuracy.

- (1) Local Control Network Surveys (Class AA). Local control network surveys are traverse networks utilizing permanent points for the purpose of establishing local horizontal control networks for future use of local surveyors. For Class AA boundary surveys in North Carolina, the angular error of closure shall not exceed ten seconds times the square root of the number of angles turned. The ratio of precision shall not exceed an error of closure of one foot per 20,000 feet of perimeter of the parcel of land (1:20,000). When using positional accuracy standards for Class AA control and boundary surveys, neither axis of the 95 percent confidence level error ellipse for any control point or property corner shall exceed 0.05 feet or 0.015 meters measured relative to the position(s) of the horizontal control points used and referenced on the survey.
- (2) Urban Land Surveys (Class A). Urban surveys include lands which normally lie within a town or city. For Class A boundary surveys in North Carolina, the angular error of closure shall not exceed 20 seconds times the square root of the number of angles turned. The ratio of precision shall not exceed an error of closure of one foot per 10,000 feet of perimeter of the parcel of land (1:10,000). When using positional accuracy standards for Class A control and boundary surveys, neither axis of the 95 percent confidence level error ellipse for any control point or property corner shall exceed 0.10 feet or 0.030 meters measured relative to the position(s) of the horizontal control points used and referenced on the survey.
- (3) Suburban Land Surveys (Class B). Suburban surveys include lands in or surrounding the urban properties of a town or city. For Class B boundary surveys in North Carolina, the angular error of closure shall not exceed 25 seconds times the square root of the number of angles turned. The ratio of precision shall not exceed an error of closure of one foot per 7,500 feet of perimeter of the parcel of land (1:7,500). When using positional accuracy standards for Class B control and boundary surveys, neither axis of the 95 percent confidence level error ellipse for any control point or property corner shall exceed 0.12 feet or 0.037 meters measured relative to the position(s) of the horizontal control points used and referenced on the survey.
- (4) Rural and Farmland Surveys (Class C). Rural and farmland surveys include lands located in rural areas of North Carolina and generally outside the suburban properties. For Class C boundary surveys



1 in North Carolina, the angular error of closure shall not exceed 30 seconds times the square root of the  
2 number of angles turned. The ratio of precision shall not exceed an error of closure of one foot per  
3 5,000 feet of perimeter of the parcel of land (1:5,000). When using positional accuracy standards for  
4 Class C control and boundary surveys, neither axis of the 95 percent confidence level error ellipse for  
5 any control point or property corner shall exceed 0.15 feet or 0.046 meters measured relative to the  
6 position(s) of the horizontal control points used and referenced on the survey.  
7

8 *History Note: Authority G.S. 89C-10; 89C-20;*

9 *Eff. July 1, 1989;*

10 *Amended Eff. July 1, 2014; May 1, 2009; August 1, 2000; August 1, 1998; November 2, 1992;*

11 *January 1, 1992.*

21 NCAC 56 .1604 is amended as published in 28:14 NCR 1632 – 1633 as follows:

**21 NCAC 56 .1604            MAPPING REQUIREMENTS FOR BOUNDARY SURVEYS**

(a) The size of a map shall be such that all details are legible on a copy.

(b) Any lines that are not actually surveyed must be indicated on the map and a statement included revealing the source of information from which the line is derived.

(c) All surveys based on the North Carolina grid system shall contain a statement identifying the coordinate system referenced datum used.

(d) All plats (maps), unless marked as "Preliminary Plat - Not for recordation, conveyances, or sales" shall be sealed, signed and dated by the Professional Land Surveyor and shall contain the following:

(1) An accurately positioned north arrow coordinated with any bearings shown on the plat. Indication shall be made as to whether the north index is true, magnetic, North Carolina grid ('NAD 83' and realization (date of adjustment of coordinate system) or 'NAD27'), or is referenced to old deed or plat bearings. If the north index is magnetic or referenced to old deed or plat bearings, the date and the source (if determined) shall be indicated.

(2) The azimuth or courses and distances of every property line surveyed shall be shown. Distances shall be in feet or meters and decimals thereof. The number of decimal places shall be appropriate to the class of survey required.

(3) All plat lines shall be horizontal or grid measurements. All lines shown on the plat shall be correctly plotted to the scale shown. Enlargements of portions of a plat are acceptable in the interest of clarity, where shown as inserts. Where the North Carolina grid system is used, the combined grid factor shall be shown on the face of the plat. If grid distances are used, it must be shown on the plat.

(4) Where a boundary is formed by a curved line, the following data must be given: actual survey data, or as a series of subchords with bearings and distances around the curve. If standard curve data is used, the bearing and distance of the long chord (from point of curvature to point of tangency) must be shown on the face of the plat.

(5) Where a subdivision of land is set out on the plat, all streets and lots shall be accurately plotted with dimension lines indicating widths and all other information pertinent to retracing all lines in the field. This shall include bearings and distances sufficient to form a continuous closure of the entire perimeter.

(6) Where control corners have been established in compliance with G.S. 39-32.1, 39-32.2, 39-32.3, and 39-32.4, as amended, the location and information as required in the referenced statute shall be shown on the plat. All other corners that are marked by monument or natural object shall be so identified on all plats, and where practical all corners of adjacent owners along the boundary lines of the subject tract that are marked by monument or natural object shall be shown.

(7) The surveyor shall show one of the following where they could be determined:

(A) The names of adjacent land owners; or

(B) The lot, block, parcel and subdivision designations; or

(C) Other legal reference where applicable.

(8) All visible and apparent rights-of-way, easements, watercourses, utilities, roadways, and other such improvements shall be accurately located where crossing or forming any boundary line of the property shown.

(9) Tie lines as required and defined in Rule .1602(g) of this Section shall be accurately shown on the face of the plat, whether or not the plat is to be recorded.

(10) A vicinity map (location map) shall appear on the face of the plat.

(11) Each map shall contain the property designation, name of owner or prospective owner, location (including township, county, and state), and the date or dates the survey was conducted. In addition each map shall contain a scale of the drawing listed in words or figures; a bargraph; the title source; and a legend depicting nomenclature or symbols not otherwise labeled.

(12) ~~Each~~ Any map not certified for recording under G.S. 47-30, and all reports of survey, shall contain a this certificate signed by the Professional Land Surveyor in substantially the following form:

"I certify that this map was drawn under my supervision from an actual survey made under my supervision (deed description recorded in Book \_\_\_\_\_, page \_\_\_\_\_ or other reference source \_\_\_\_\_); that the boundaries not surveyed are indicated as drawn from information in Book \_\_\_\_\_, page \_\_\_\_\_ or other reference source \_\_\_\_\_; that the ratio of precision or positional accuracy is \_\_\_\_\_; and that this map meets the requirements of The Standards of Practice for Land Surveying in North Carolina (21 NCAC 56. 1600)."

This \_\_\_\_\_ day of \_\_\_\_\_, 2\_\_\_\_\_.

Seal

\_\_\_\_\_  
Professional Land Surveyor

*History Note: Authority G.S. 89C-10; 89C-20;*

*Eff. July 1, 1989;*

*Amended Eff. July 1, 2014; May 1, 2009; August 1, 2000; August 1, 1998; February 1, 1996; November 2, 1992; January 1, 1992.*

21 NCAC 56 .1606 is amended as published in 28:14 NCR 1633 – 1635 with changes as follows:

**21 NCAC 56 .1606            SPECIFICATIONS FOR TOPOGRAPHIC AND PLANIMETRIC MAPPING,  
INCLUDING GROUND, AIRBORNE, AND SPACEBORNE SURVEYS**

(a) General.

(1) Topographic surveys are defined as surveys that have as their major purpose the determination of the configuration (relief) of the earth (ground) and the location of natural or artificial objects thereon.

(2) Planimetric mapping is defined as producing a map that presents the horizontal positions only for the features represented; distinguished from a topographic map by the omission of relief in measurable form.

(3) Airborne and spaceborne surveys are defined as the use of photogrammetry, LIDAR, IFSAR, or other similar measurement technologies for obtaining reliable information about physical objects and the environment, including terrain surface, through the process of recording, measuring, and interpreting images and patterns of electromagnetic radiant energy and other phenomena. This Rule establishes minimum allowable photogrammetric production procedures and standards for photogrammetric mapping and digital data production.

(b) Production procedures for topographic and planimetric mapping surveys shall be in accordance with the standards established by Part 3 of the Federal Geographic Data Committee (FGDC) Geospatial Positioning Accuracy Standard and applicable extensions and revisions. These standards are incorporated by reference including subsequent amendments and editions. The material is available from the Board office at the cost of reproduction as a public record or from the FGDC at [www.fgdc.gov](http://www.fgdc.gov) at no cost. Reporting accuracy shall be in accordance with Part 1 of the FGDC geospatial standards.

(c) Topographic or planimetric maps, orthophotos, and related electronic data, unless marked as "Preliminary Map," shall meet one of the below classes, as contractually specified to FGDC Standards, or NAIP Standards, or to State adopted base mapping standards for horizontal and vertical accuracies ~~(in the absence of specified standards, the National Map Accuracy Standards apply)~~ and shall be certified by the licensee accuracies. In the absence of a specified standard, the surveyor shall conform the survey to the requirements for a Class B survey.

(1) For horizontal accuracy five general classifications are:

(A) Class AA surveys. For Class AA surveys in North Carolina, the relative accuracy shall be equal to or no less than 0.033 meter (0.10 feet);

(B) Class A surveys. For Class A surveys in North Carolina, the relative accuracy shall be equal to or less than 0.5 meter (1.64 feet);

(C) Class B surveys. For Class B surveys in North Carolina, the relative accuracy shall be equal to or less than 1.0 meter (3.28 feet);

(D) Class C surveys. For Class C surveys in North Carolina, the relative accuracy shall be equal to or less than 2 meters (6.56 feet); and

- (E) Class D surveys. For Class D surveys in North Carolina, the relative accuracy shall be equal to or less than 5 meters (16.40 feet).
- (2) For vertical accuracy, three general classifications are:
- (A) Urban and suburban vertical control surveys. (Class A). Urban and suburban vertical control surveys include lands which lie within or adjoining a town or city. For Class A vertical control surveys in North Carolina, the vertical error in feet shall not exceed 0.10 times the square root of the number of miles run from the reference datum.
- (B) Other vertical control surveys (Class B). Other vertical control surveys include all lands which are not covered by Class A as described in Item (1) of this Rule. For Class B vertical control surveys in North Carolina, the vertical error in feet shall not exceed 0.20 times the square root of the number of miles run from the reference datum.
- (C) Trigonometric vertical control surveys (Class C). Trigonometric vertical control surveys can be used for vertical control for aerial and topographic mapping. The vertical error in feet shall not exceed 0.3 times the square root of the number of miles run from the reference datum.
- (d) When the resulting product is a digital (electronic) data set, or a map or document consists of more than one sheet or otherwise cannot be certified, a project report shall be certified. The report shall be marked "Preliminary" if applicable.
- (e) Ground control for topographic and planimetric mapping projects shall be in North Carolina State Plane Coordinate System grid coordinates and distances when the project is tied to Grid. A minimum of one permanent project vertical control point shall be shown.
- (f) The project map or report shall contain the following information:
- (1) Date of original data acquisition;
  - (2) Altitude of sensor and sensor focal length, as applicable;
  - (3) Date of document or data set compilation;
  - (4) If hard copy product is produced, the maps shall contain a north arrow, map legend, final document scale, including bargraph, and contour interval, as applicable;
  - (5) Coordinate system for horizontal and vertical denoting SI or English units (i.e., NAD83, assumed, or other coordinate system);
  - (6) A list or note showing the control points used for the project. The minimum data shown for each point shall include: physical attributes e.g. iron rod, railroad spike), latitude and longitude (or X and Y Grid coordinates), and elevation, as applicable;
  - (7) If other data is included, the source and accuracy of those items must be indicated;
  - ~~(8) A statement of horizontal and vertical accuracy at the 95 percent confidence level (2 sigma) complying with contractually specified FGDC standards consistent with Paragraph (e) of this Rule;~~

~~(9)~~(8) For topographic maps or data sets, contours in areas obscured by man-made or natural features shall be uniquely identified or enclosed by a polygon identifying the obscured area. The accuracies of the contours or of features in this obscured area shall be noted "No reliance is to be placed on the accuracy of these contours;"

~~(10)~~(9) A vicinity map depicting the project location on the first sheet of all hard copy maps or in the report accompanying digital files; and

~~(11)~~(10) The name of the client for whom the project was conducted.

(g) Nothing in this Section shall be construed to negate or replace the relative accuracy standards found in Rules .1601 through .1608.

(h) A certificate, substantially in the following form, shall be affixed to all maps or reports:

" I, \_\_\_\_\_, certify that this project was completed under my direct and responsible charge from an actual survey made under my supervision; that this \_\_\_\_\_ (insert as appropriate: ground, airborne or spaceborne) survey was performed at the 95 percent confidence level (2-sigma) to meet Federal Geographic Data Committee Standards; that this survey was performed to meet the requirements for a topographic/planimetric survey to the accuracy of Class \_\_\_\_\_ and vertical accuracy when applicable to the Class \_\_\_\_\_ standard; that the horizontal accuracy is \_\_\_\_\_, that the vertical accuracy is \_\_\_\_\_ and that the original data was obtained on \_\_\_\_\_(date)\_\_\_\_\_; that the survey was completed on \_\_\_\_\_(date)\_\_\_\_\_; that contours shown as [broken lines] may not meet the stated standard; and all coordinates are based on \_\_\_\_\_~~(NAD 83 (NSRS 2007), NAD 83/2001, or other);~~['NAD 83' and realization (date of adjustment of coordinate system) or 'NAD 27'] and all elevations are based on \_\_\_\_\_~~(NGV 29, NGVD 29, NAVD 88, or other).~~"

(i) Documents transmitted electronically shall have the computer-generated seal removed from the original file and a copy of the project report shall be certified and sent to the client. The electronic data shall have the following inserted in lieu of the signature and date:

"This document originally issued and sealed by (name of sealer), (license number), on (date of sealing). This electronic media shall not be considered a certified document. See the project report for certificate and seal."

*History Note: Authority G.S. 89C-10; 89C-20;*

*Eff. November 2, 1992;*

*Amended Eff. July 1, 2014; August 1, 2011; May 1, 2009; August 1, 2002; August 1, 2000.*

21 NCAC 56 .1608 is amended as published in 28:14 NCR 1635 – 1636 as follows:

**21 NCAC 56 .1608            CLASSIFICATION/LAND INFORMATION SYSTEM/GEOGRAPHIC  
INFORMATION SYSTEM SURVEYS**

(a) General: Land Information System/Geographic Information System (LIS/GIS) surveys are defined as the measurement of existing surface and subsurface features for the purpose of determining their accurate geospatial location for inclusion in an LIS/GIS database. All LIS/GIS surveys as they relate to property lines, rights-of-way, easements, subdivisions of land, the position for any survey monument or reference point, the determination of the configuration or contour of the earth's surface or the position of fixed objects thereon, and geodetic surveying which includes surveying for determination of the size and shape of the earth both horizontally and vertically and the precise positioning of points on the earth utilizing angular and linear measurements through spatially oriented spherical geometry, shall be performed by a Land Surveyor who is a licensee of this Board unless exempt by G.S. 89C-25. For the purpose of specifying minimum allowable surveying standards, five general classifications of LIS/GIS surveys are established, any of which may be specified by the client. In the absence of a specified standard, the surveyor shall conform the survey to the requirements for a Class B survey. ~~The five classifications are:~~

(1) For horizontal accuracy five general classifications are:

(A) Class AA LIS/GIS Surveys. For Class AA LIS/GIS surveys in North Carolina, the relative accuracy shall be equal to or no less than 0.033 meter (0.10 feet);

(B) Class A LIS/GIS surveys. For Class A LIS/GIS surveys in North Carolina, the relative accuracy shall be equal to or less than 0.5 meter (1.64 feet);

(C) Class B LIS/GIS surveys. For Class B LIS/GIS surveys in North Carolina, the relative accuracy shall be equal to or less than 1.0 meter (3.28 feet);

(D) Class C LIS/GIS surveys. For Class C LIS/GIS surveys in North Carolina, the relative accuracy shall be equal to or less than 2 meters (6.56 feet); and

(E) Class D LIS/GIS surveys. For Class D LIS/GIS surveys in North Carolina, the relative accuracy shall be equal to or less than 5 meters (16.40 feet).

(2) For vertical accuracy, three general classifications are:

(A) Urban and suburban vertical control surveys. (Class A). Urban and suburban vertical control surveys include lands which lie within or adjoining a town or city. For Class A vertical control surveys in North Carolina, the vertical error in feet shall not exceed 0.10 times the square root of the number of miles run from the reference datum.

(B) Other vertical control surveys (Class B). Other vertical control surveys include all lands which are not covered by Class A as described in Item (1) of this Rule. For Class B vertical control surveys in North Carolina, the vertical error in feet

1 shall not exceed 0.20 times the square root of the number of miles run from the  
2 reference datum.

3 (C) Trigonometric vertical control surveys (Class C). Trigonometric vertical control  
4 surveys can be used for vertical control for aerial and topographic mapping. The  
5 vertical error in feet shall not exceed 0.3 times the square root of the number of  
6 miles run from the reference datum. The vertical error in Global Navigation  
7 Satellite System (GNSS) surveys shall not exceed five centimeters relative to the  
8 referenced benchmark(s) at the 95 percent confidence level (2 sigma) accuracy  
9 as defined in Federal Geographic Data Committee Standards.

10 (b) Nothing in this Rule negates or replaces the relative accuracy standards found in Rules .1601 through .1607 of  
11 this Chapter.

12 (c) The Professional Land Surveyor in responsible charge of the LIS/GIS boundary or geodetic control survey shall  
13 certify to all of the following in either written or digital form:

- 14 (1) Class of LIS/GIS survey. Method used to evaluate the accuracy shall be described as either  
15 statistical testing or least squares adjustment results, comparison with values of higher accuracy,  
16 and repeat measurements. The reporting standard in the horizontal component is the radius of a  
17 circle of uncertainty, such that the true or theoretical location of the point falls within that circle 95  
18 percent of the time. ~~For vertical accuracy requirements, see 21 NCAC 56.1605; time;~~  
19 (2) Method of measurement (i.e. global navigation satellite systems, electronic scanners, theodolite  
20 and electronic distance meter, transit and tape);  
21 (3) Date(s) of the survey; and  
22 (4) Datum used for the survey.

23 (d) A certificate, substantially in the following form, shall be affixed to all maps or reports:

24 "I, \_\_\_\_\_, certify that this project was completed under my direct and responsible charge from  
25 an actual survey made under my supervision; that this survey was performed to meet the requirements for an  
26 ~~LIS/GIS~~ LIS/GIS survey [21 NCAC 56.1608] to the accuracy of Class \_\_\_\_ and vertical accuracy; when applicable  
27 to the Class \_\_\_\_ standard ~~[(21 NCAC 56.1605(a))];~~ method used to evaluate the accuracy was \_\_\_\_\_;  
28 method of measurement \_\_\_\_\_; date(s) of survey \_\_\_\_\_; datum used for survey \_\_\_\_\_; and  
29 all coordinates are based on \_\_\_\_\_ ~~(NAD 83 (NSRS 2007), NAD 83/2001, or other);~~ ['NAD 83' and  
30 realization (date of adjustment of coordinate system) or 'NAD 27'] and all elevations are based on  
31 \_\_\_\_\_ ~~(NGV 29, (NGVD 29, NAVD 88, or other))."~~

32  
33 *History Note: Authority G.S. 89C-10; 89C-20;*

34 *Eff. February 1, 1996;*

35 *Amended Eff. July 1, 2014; August 1, 2011; July 1, 2009; May 1, 2009; August 1, 2002; August 1,*  
36 *2000.*



21 NCAC 56 .1703 is amended as published in 28:14 NCR 1636 as follows:

**21 NCAC 56 .1703            REQUIREMENTS**

Every licensee shall obtain 15 PDH units during the renewal period. If a licensee exceeds the annual requirement in any renewal period, a maximum of 15 PDH units may be carried forward into the subsequent renewal period. Selection of courses and activities which meet the requirements of Rule .1702(4) of this Section is the responsibility of the licensee. Licensees may select courses other than those offered by sponsors. Post evaluation of courses may result in non-acceptance. PDH units may be earned as follows:

- (1) Completion of college courses;
- (2) Completion of continuing education courses, seminars, or workshops;
- (3) Completion of correspondence, televised, internet, videotaped, audiotaped, and other courses or tutorials provided an exam is required for completion. No exam is required for attendance at a webinar presentation if attendance is documented;
- (4) Presenting or attending seminars, in-house courses, workshops, or professional or technical presentations made at meetings, conventions or conferences;
- (5) Teaching or instructing in Items (1) through (4) of this Rule;
- (6) Authoring published papers, articles, or books;
- (7) Active participation in professional or technical societies as defined in Rule .1705(f) of this Section;
- (8) Patents; and
- (9) Authoring exam questions accepted for use in the engineering or land surveying exams.
- (10) Active participation on boards, commissions, committees or councils of private, local, state or federal government entities as defined in Rule .1705(f) of this Section.

*History Note: Authority G.S. 89C-10(a); 89C-17;*

*Eff. December 1, 1994;*

*Amended Eff. July 1, 2014; August 1, 2011; May 1, 2009; August 1, 2000; August 1, 1998.*

21 NCAC 56 .1704 is amended as published in 28:14 NCR 1636 – 1637 as follows:

**21 NCAC 56 .1704            UNITS**

The conversion of other units of credit to PDH units is as follows:

(1)	1 College or unit semester hour	45 PDH
(2)	1 College or unit quarter hour	30 PDH
(3)	1 Continuing Education Unit	10 PDH
(4)	1 Contact hour of professional development in course work, seminars, or professional or technical presentations made at meetings, conventions or conferences. Contact hours equal the actual time of instruction and shall be credited to the nearest one-third of an hour.	1 PDH
(5)	For teaching in Items (1) – (4) of this Rule, PDH credits are doubled. Teaching credit is valid for teaching a course or seminar for the first time only. Teaching credit does not apply to full-time faculty, as defined by the institution where a licensee is teaching.	
(6)	Each published paper, article or book.	10 PDH
(7)	Active participation in professional and technical society. (Each organization.)	2 PDH
(8)	Each patent	10 PDH
(9)	Each question used	2 PDH
(10)	<u>Active participation on boards, commissions, committees or councils</u> <u>of private, local, state or federal government entities (Each entity)</u>	<u>2 PDH</u>

*History Note: Authority G.S. 89C-10(a); 89C-17;*  
*Eff. December 1, 1994;*  
*Amended Eff. July 1, 2014; May 1, 2009; August 1, 2000; August 1, 1998.*

21 NCAC 56 .1705 is amended as published in 28:14 NCR 1637 as follows:

**21 NCAC 56 .1705            DETERMINATION OF CREDIT**

(a) The Board of Examiners has final authority with respect to approval of courses, sponsors, credit, PDH value for courses, and other methods of earning credit.

(b) Credit for college or community college courses shall be based upon course credit established by the college.

(c) Credit for continuing education courses, seminars and workshops shall be based on one PDH unit for each hour of attendance. Attendance at programs presented at professional and technical society meetings shall earn PDH units for the actual time of each program.

(d) Credit for correspondence, televised, internet, videotaped, audiotaped, and other courses or tutorials, provided an exam is required for completion, shall be based upon one PDH unit for each hour assigned to the course, provided such hours are a reasonably estimated time for an average professional to complete the course.

(e) Credit determination, as allowed in 21 NCAC 56 .1704(6), for published papers, articles and books and obtaining patents is the responsibility of the licensee.

(f) Credit for active participation in professional and technical societies (limited to 2 PDH per organization), requires that a licensee serve as an officer or participate in a committee of the organization. PDH credits are not earned until the end of each year of service is completed.

(g) Credit for active participation on boards, commissions, committees or councils of private, local, state or federal government entities (limited to 2 PDH per entity) requires utilizing engineering or land surveying knowledge (as applicable) in the active participation. PDH credits are not earned until the end of each year of service is completed.

*History Note:     Authority G.S. 89C-10(a); 89C-17;*

*Eff. December 1, 1994;*

*Amended Eff. July 1, 2014; August 1, 2011; May 1, 2009; August 1, 2000; August 1, 1998.*