Rhode Island Society
of Professional Land Surveyors

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National Council of Examiners for Engineering and Surveying
NCEES
P.O. Box 1686
280 Seneca Creek Rd.
Clemson, SC 29633

ATTN: Jerry Carter, Executive Director

RE: **RISPLS Petition for the Removal of "Engineering Surveys" from the NCEES Model Law**

The Rhode Island Society of Professional Land Surveyors (RISPLS) petition the National Council of Examiners for Engineering and Surveying (NCEES) for the removal of the term "Engineering Surveys" and following definition from the NCEES Model Laws found at Chapter 110.20 Definitions, Section A, Paragraph 5: *"Engineering Surveys" to include all survey activities required to support the sound conception, planning, design, construction, maintenance, and operation of engineered projects but exclude the surveying of real property for the establishment of land boundaries, rights-of-way, easements, and the dependent or independent surveys or resurveys of the public land survey system."* .

The Term "Engineering Surveys" is the result of compromises made at a time when licensure for the two professions, Engineering and Surveying, were deemed to have a professional expertise in a body of knowledge so substantially different as to require separate licensure. A deal struck in the days of transit and tapes, before the onset of the modern technology and continuing education requirements. "Engineering Surveys" is a term that may have been appropriate at the time of its inception, but that no longer holds true. Surveying and Engineering share a common history of knowledge in physics, math, science and law, much the same as a Dentist shares a common history with the Barber, yet we would not consider going to a Barber Shop to get a filling repaired or a dental cleaning. The inclusion of "Engineering Surveys" in the NCEES Model Laws is tantamount to an acknowledgement that the unlicensed practice of surveying by engineers is acceptable to the NCEES.

Rhode Island Engineers have recently tried to add the NCEES Model Law definition of "Engineering Surveys" to the definition of engineering in the state statutes of Rhode Island. We were informed that the legislators, not knowing the intricacies of the two professions, look favorably upon Model Laws to guide them. RISPLS finds this unfortunate and believes the NCEES Model Law definition does not reflect the current state of affairs between the two distinct and different professions. The use of the term has become problematic. New Mexico has successfully had the term removed from their state statutes, and brought forth many arguments that we would like to echo.

Increasingly, it is recognized that surveying is a separate and distinct profession from engineering. Surveying is evolving into an increasingly complex body of knowledge the application of which requires ever

increasing levels of education and experience. Surveying curriculums at many, if not most educational institutions offering associate, bachelors, and advanced degrees are designed to address this increasing complexity not only in boundary considerations, but also in "non-boundary" definitions of surveying, including geodetic and plane surveying, topographic map preparation, project control and other components for survey construction staking.

Most of these courses are mandatory for surveying students. This curriculum is a recognition that it is necessary to rigorously prepare the surveying student for the demands that they will encounter in their professional life.

Conversely, many, if not most engineering curriculums, no longer require their students to immerse themselves in surveying subject matter, as was once the case. Yet, most civil engineers feel fully qualified to engage in surveying activities even though the components of experience, education, and examination are missing from their background. Courses that are mandatory for surveying majors are electives for engineering majors who often decline to avail themselves of the opportunity.

Surveying is a profession that requires a specialized body of knowledge to be competently executed. Competency is acquired by the three "E" tenets of professionalism: education, experience, and examination. It is only through the rigorous application of all of these three factors that one can be considered proficient enough to provide service to the public in their area of expertise. A forth "E" can be added to the list Enforcement of the three "E"s.

Rhode Island is a state where the Continuing Education is required for surveyors and the Engineers have no equivalent requirement. Most states have a "Minimum Survey Standards" that govern the performance of surveys. Because the definition of "Engineering Surveys" falls under the realm of the engineer's body of enforcement they are not subject to the states "Minimum Survey Standards", creating a quagmire of enforcements issues when "Engineering Surveys" are not performed and executed properly. "Engineering Surveys" may work in states where there are Combined Boards of Registration, but the judicial enforcement is severely hampered when the boards powers are politically skewed by having more Engineers than Surveyors for the enforcement of professional standards and regulations.

The NCEES Model Law, as stated in its introduction, is a guide designed to "provide greater uniformity of qualifications for licensure, to raise these qualifications to a higher level of accomplishment, and to simplify the interstate licensure of engineers and surveyors or land surveyors."

In doing so, a common set of standards is provided to NCEES Member Boards that represent "optimum, realistic levels of qualifications for initial and subsequent licensure to ensure protection of the public's interest." Yet the Model Law, as currently written, fails in this duty in one very important aspect, specifically, by inclusion of the term "engineering surveys" in the definition of the practice of engineering. In doing so, the Model Law provides for unlicensed practice of surveying by engineers thereby placing the very public which the NCEES and its member boards are charged to protect, at risk.

The NCEES Model Law "Engineering Surveys" is in direct conflict with the NCEES Model Rules[Sec-210-25] ***Inclusions and Exclusions to the Practice of Surveying.***

The Model Rules clearly and thoughtfully define Land Surveying activities and although generally applied to GIS, Photogrametery, LIDAR etc. [Sec-210-25] does not exclude Engineers or "Engineering Surveys" and should be equally applied to them also.

The Model Rules NCEES [Sec-210-25] ***Inclusions and Exclusions to the Practice of Land Surveying*** is the combined wisdom of the document created by the NCEES Task Force Committee comprised of members ASPRS, MAPPS, ASCE, ASPRS, URISA, NSGIC, and UCGIS, that met some 32 times by teleconference and devoted some 650 Professional hours into its creation. The section is broad enough to allow engineers to

do what they want and need to do, until a survey activity becomes **"Authoritative"** in nature. The Surveyor has purview over the "Authoritative" jurisdiction.

Activities that **must be accomplished under the responsible charge of a Professional Surveyor** or Land Surveyor (unless specifically exempted in Section B. below) include, but are not limited to, the following:

1. The creation of maps and geo-referenced databases representing **authoritative** locations for boundaries, the location of fixed works, or topography, by either terrestrial surveying methods, photogrammetric or GPS locations. This includes maps and georeferenced databases prepared by any person, firm, or government agency where that data is provided to the public as a survey product.
2. Original data acquisition, or the resolution of conflicts between multiple data sources, when used for the **authoritative** location of features within the following data themes: geodetic control, orthoimagery, elevation and bathymetry, fixed works, government boundaries, and cadastral information.
3. **Certification** of positional accuracy of maps or measured survey data,
4. Measurement, adjustment, and **authoritative** interpretation of raw survey data,
5. GIS-based parcel or cadastral mapping used for **authoritative** boundary definition purposes wherein land title or development rights for individual parcels are, or may be affected.
6. Interpretation of maps, deeds, or other land title documents to resolve conflicting data elements within cadastral documents of record.
7. Acquisition of field data required to **authoritatively** position fixed works or cadastral data to geodetic control.
8. Adjustment or transformation of cadastral data to improve the positional accuracy of the parcel layer(s) with respect to the geodetic control layer within a GIS for purposes of affirming positional accuracy.

The Model Law's "Engineering Surveys" undermines the above section [Sec-210-25] by not being an exempted practice and by allowing Engineers to do anything on the above list that ***MUST be accomplished under the responsible charge of a Professional Surveyor.***

The NCEES Model Rules [Sec-210-25] ***Inclusions and Exclusions to the Practice of Surveying*** is the bellwether test as to the dividing line between when Surveying and other activities that appear to be crossovers; whether they be of an Engineering or GIS nature.

If the "inspections of construction for the purpose of determining in general if the work is proceeding in compliance with drawings and specifications" is *"incidental"* and therefore not **"Authoritative"** then there is not a problem with engineers doing these activities by definition.

One only need look at some of the aspects of the American Society of Civil Engineers' (ASCE) definition of engineering surveys to note how encompassing the subject activities are:

- *The preparation of survey and related mapping specifications;*
- *Execution of photogrammetric and field surveys for the collection of required data, including topographic and hydrographic data;*
- *Calculation, reduction and plotting of survey data for use in engineering design;*
- *Design and provision of horizontal and vertical control survey networks;*
- *Provision of line and grade and other layout work for construction and mining activities;*
- *Execution and certification of quality control spatial measurements during construction;*
- *Monitoring of ground and structural stability, including alignment observations, settlement levels, and related reports and certifications;*
- *Measurement of material and other quantities for inventory, economic assessment and cost accounting purposes;*

- *Execution of as-built surveys and preparation of related maps and plans and profiles upon completion of construction; and*

Analysis of errors and tolerances associated with the measurement, field layout and mapping or other plots of survey measurement required in support of engineering projects.

While some parts relate specifically to civil engineering, the majority of the above activities are surveying functions found in traditional definitions of surveying in many states. In reality, when an engineer performs any of the above activities they are engaged in the unlicensed practice of surveying.
It is widely acknowledged that engineering disciplines continue to splinter with at least 16 sub disciplines. Specialization within each sub-discipline requires specific education and experience. Why then should all aspects of surveying with the exception of boundary, be considered as part of the purview of engineering including civil engineering?

This issue is articulated in an ACSE policy statement number 333 that states in part:

A number of recent developments have created some confusion with respect to the role of civil engineers in the practice of surveying. These developments have included:

- *The development of land surveying as a profession separate and distinct from civil engineering;*
- *The development of separate curricula and degrees at certain universities in support of land surveying as a separate profession;*
- *The reduced number of courses in surveying within civil engineering curricula; and,*
- *The development of disputes before state registration boards concerning the right of civil engineers to practice surveying, given separate registration for the practice of land surveying.*

Engineering surveying may be regarded as a specialty within the broader professional practice of engineering and, with the exception of boundary, right of way, or other cadastral surveying, includes all surveying and mapping activities required to support the sound conception, planning, design, construction, maintenance and operation of engineered projects. Engineering surveying does not include surveys for the retracement of existing land ownership boundaries or the creation of new boundaries.

Engineering surveying or the engineering surveyor needs to be recognized as a as a specialty requiring specific education, experience, and examination. Simply claiming to be able to perform such activities by virtue of being a civil engineer does not recognize the reality of the situation. The NCEES Model Law makes no provision for this distinction and must be changed to reflect the current professional environment.

Therefore for all of the above reasons given, Rhode Island Society of Professional Land Surveyors (RISPLS) formally petition the National Council of Examiners for Engineering and Surveying (NCEES) for the removal of the term “Engineering Surveys” and the definition that follows it from the NCEES Model Laws found at Chapter 110.20 Definitions, Section A, Paragraph 5.

Respectfully Submitted,
Rhode Island Society of Professional Land Surveyors (RISPLS)

RISPLS President
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