



Policy Statement 333 - Engineering Surveying Definition

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Policy

The American Society of Civil Engineers (ASCE) defines engineering surveying as those activities involved in the planning and execution of surveys for the location, design, construction, operation, and maintenance of civil and other engineered projects. Such activities include:

- The preparation of survey and related mapping specifications;
- Execution of photogrammetric and field surveys for the collection of required data, including topographic, LiDar (Light Detection And Ranging), and hydrographic data;
- Calculation, reduction and plotting of survey data for use in engineering design including use for geographic information systems (GIS);
- 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, 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.

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.

Issue

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 sometimes designated as geomatics engineering;
- 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.

This confusion is further marked by a lack of understanding on the part of certain engineering disciplines, other than civil, of the importance of surveying to the practice of civil, aeronautical, mechanical, and mining engineering, among others.

Rationale

Engineering surveying is one of the necessary skills of a civil engineer. A civil engineer may specialize in engineering surveying, thereby developing the necessary expertise in the execution and analysis of measurements to the highest level practicable. The engineering surveyor, as a specialist, supports and serves other civil engineers in their task of designing and constructing manmade works for the benefit of mankind. While a civil engineer may not engage full-time in engineering surveying and may not be considered an expert on all aspects of engineering surveying, they must be well qualified to perform those aspects of surveying relevant to their professional activities.

*ASCE Policy Statement 333
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