

LEVEL III Qualifications

Field or Office Route:

3.5 years of progressive surveying experience or 65 transcribed semester hours, or quarterly equivalent, of which 18 semester hours are surveying/engineering related and 2.0 years of progressive surveying experience. Or any combination of education and work experience equivalent to related 3.5 years.

LEVEL III

CERTIFIED SURVEY TECHNICIAN

POSITION DESCRIPTION, WORK ELEMENTS AND NUMBER OF QUESTIONS

This is an open book exam.

POSITION DESCRIPTION

In addition to the Levels I and II knowledge and skills, **Level III Technicians** are required to demonstrate a thorough knowledge of survey computations, types of surveys and field operations. The individual in this position is well versed with field note reduction and in depth plan interpretation and preparation. The Level III technician possesses supervisory skills and a detailed working knowledge of standard field and office procedures. The technician had knowledge of the principles of the profession and various technical standards. Work Elements further describe the requirements related to this position.

Test problems will be taken from the following work elements: (# of questions from each Work Element) (B = Boundary Exam) (C = Construction Exam) (O = Office Exam)

- 1) *Survey Types and History*(B=5, C=5, O=5)
Knowledge of the different types of surveying and the basic differences between them.
Knowledge of the historical development of survey procedures and practices

2) *Field Equipment & Operations (B=38, C=49, O=20)*

Extensive knowledge of the principles and methods used in performing a variety of surveys such as: photo control surveys, state plane coordinate surveys, public land surveys, metes and bounds survey, GPS surveys, construction surveys, and as-built surveys

Extensive knowledge of proper field procedures, knowledge of the care, cleaning and use of a variety of surveying tools and equipment, including data collectors and field radios. Know how to operate, check, and perform basic field adjustments on rods, compass, transits, levels, tribrachs, theodolites, total stations, robotic total stations, data collectors, tripods, and GPS equipment.

Knowledge on newer technologies such as Scanning/LIDAR, UAV, Mobile Mapping, GIS and BIM is expected. Some historical knowledge is also required.

Be able to coordinate field work for a variety of standard types of surveys. Know basic sources of measurement errors. Know principles of staking and stake markings. Know procedures for GPS surveys.

Know how to create, reduce, and check orderly field notes and data collector files for standard surveying operations such as but not limited to: leveling, traversing, topographic mapping, construction layout, as-built surveys, boundary surveys, profile and cross section surveys.

3) *Survey Control (B=5, C=5, O=5)*

Know when to use, how to obtain, how to interpret control point records and data sheets, as well as create and locate points in the field.

4) *Survey Computations (B=16, C=16, O=16)*

Have extensive knowledge of trigonometry, geometry, and algebra as related to traverse, inverse and intersection computations. Be capable of performing horizontal and vertical traverse adjustments, area and quantity computations, and horizontal and vertical curve computations. An understanding of the State Plane Coordinate system and network adjustments is required. Knowledge of the reduction and checking of field notes for determination of positions and elevations. Have a knowledge of computer operating systems and GIS.

5) *Office Operations, Plan Reading and Preparation (B=11, C=11, O=40)*

Using hand calculations or computer software, be able to enter field data and produce positional information (i.e. leveling, traversing, as-built surveys, topographic mapping). Have a knowledge and understanding of plan reading and preparation (i.e. site plans, boundary plans, highway plans, profiles and cross sections, horizontal and vertical curves, pipeline plans, foundation plans, and developing existing and finish contours). Know how to use Map Accuracy Standards. Have a knowledge and familiarity with general applications of computer aided drafting (CAD). Have knowledge of computer operating system and hardware peripherals.

- 6) *First Aid & Safety (B=8, C=8, O=8)*
Know the fundamentals of establishment and retracement of property boundaries, land title issues and property ownership rights. Have a general familiarity with the legal principles of land ownership, land records and confliction title elements. General knowledge of easements, types of monuments and riparian rights is also expected
- 7) *Boundary Surveys (B=15, C=4, O=4)*
Knowledge of surveying ethics and technical standards. Show responsibility in the profession (i.e. attire, honesty, respect for personal property), awareness of related professional association.
- 8) *Principles of the Profession (B=5, C=5, O=5)*
Have a knowledge of ethics and the various technical standards of groups such as ALTA, NGS, NSPS, ACSM, BLM, and ACSE. Show responsibility in the profession (i.e. attire, honesty, respect for personal property) and awareness of related professional associations
- 9) *Supervisory Skills (B=7, C=7, O=7)*
Have a basic knowledge and familiarity with: client contacts, dealing with the public and governmental agencies, field crew management, scheduling, equipment and supplies management. Have a knowledge of general company policies as they relate to field and office operations, office work flow procedures, and field and office problem solving techniques. Also have a knowledge of proper record keeping, time keeping, and job charges. Be able to coordinate and supervise field work, staking and stake marking for a variety of standard types for survey. Have a general familiarity with local and state and federal land use regulations as they relate to lot site development.

TOTAL NUMBER OF QUESTIONS = 110, TIME = 4 hours