



Level One

MODULE 78101-04 – INTRODUCTION TO SITE LAYOUT

1. State the purpose of site layout and describe the role of a site layout technician in the construction industry.
2. Describe the different kinds of surveys related to a construction project.
3. Explain the relationship between Earth's latitude and longitude lines and how these lines are used.
4. Define the various survey control points used in the process of site layout.
5. Explain the meaning of terminology used in site layout.
6. Identify the career opportunities available to people in the site layout field.
7. State the rules for the professional and ethical conduct of a site layout person.
8. Set up a builder's level, shoot an elevation, and properly record the data.
9. Take an inverted rod reading.
10. Chain a distance on even terrain and correctly record the data.
11. Use a plumb bob correctly.
12. Set up a tripod correctly.

MODULE 78102-04 – SURVEYING MATH

1. Solve basic equations, including those involving squares and square roots.
2. Identify basic geometric shapes and angles.
3. Apply the Pythagorean theorem to solve math problems involving right triangles.
4. Perform decimal and metric conversions for linear measures, areas, and volumes.

MODULE 78103-04 – SURVEY EQUIPMENT USE AND CARE

1. Identify, safely use, and properly maintain the tools and instruments commonly used for site layout tasks.
2. Use a builder's level, transit, or theodolite and differential leveling procedures to determine site and building elevations.
3. Use accepted practices to record site layout data and information in field notes.
4. Check and/or establish 90° angles using the 3-4-5 rule.
5. Turn a 90° angle and double an angle.

MODULE 78104-04 – BLUEPRINT READING FOR SURVEYORS

1. Describe the types of drawings usually included in a set of plans and list the information found on each type.
2. Identify the different types of lines used on construction drawings.
3. Identify selected architectural symbols commonly used to represent materials on plans.
4. Identify selected electrical, mechanical, and plumbing symbols commonly used on plans.
5. Identify selected abbreviations commonly used on plans.
6. Read and interpret plans, elevations, schedules, sections, and details contained in basic construction drawings.
7. State the purpose of written specifications.
8. Identify and describe the parts of a specification.
9. Demonstrate or describe how to perform a quantity takeoff for materials.
10. Read and interpret orthographic projection and isometric drawings.
11. Perform a quantity takeoff to determine a concrete quantity.
12. Calculate rebar required for an identified segment of a drawing.
13. Identify the major power flow systems associated with transmitting power through mobile cranes.

Level Two

MODULE 78201-04 – ADVANCED SURVEYING MATH

1. Solve problems relating to areas of geometric planes and solid figures.
2. Solve problems relating to volumes of geometric solid figures.
3. Use the Pythagorean theorem to solve unknown lengths and distances in a right triangle.
4. Use right angle trigonometry to determine unknown values.
5. Convert angular measurements stated in decimal degrees to degrees, minutes, seconds and vice versa.
6. Convert azimuth to bearing and vice versa.
7. Convert polar coordinates to rectangular coordinates and vice versa.
8. Calculate parameters for basic horizontal and vertical curves.
9. Describe the common coordinate and grid systems used by surveyors and topographical mapmakers.

MODULE 78202-04 – SURVEY EQUIPMENT USE AND CARE TWO

1. Explain the evolution of electronic distance measurement instruments and total stations.
2. Describe the principles of operation for electronic distance measurement instruments used for construction layout work.
3. Identify, set up, safely use, and properly maintain a total station.
4. Field check the calibration of commonly used surveying and leveling instruments.
5. Use a transit, theodolite, or total station to determine site and building elevations.

MODULE 78203-04 – CONTROL SETUP

1. Set up, run, record, and close a horizontal traverse.
2. Set up, run, record, and close a level loop.
3. Review plans and establish primary and secondary control points.
4. Establish vertical control for multi-level structures.

MODULE 78204-04 – BOUNDARY AND TOPOGRAPHY SURVEYS

1. Gather, record, and plot profile leveling data.
2. Gather, record, and plot cross-section leveling data.
3. Interpret site/plot plans, including identifying rights-of-way, setbacks, boundaries, and building tie-in locations.
4. Locate and sketch existing utilities and conditions on site/plot plans.

MODULE 78205-04 – DATA COLLECTION AND BASIC COMPUTER SKILLS

1. Explain typical methods of data collection.
2. Explain the advantages, disadvantages, and capabilities of field software.
3. Describe some of the capabilities of integrated office software.
4. Briefly explain the origin of GPS surveying systems.
5. Describe the operation of GPS surveying systems and receivers.

MODULE 78206-04 – CONCRETE PROPERTIES AND QUALITY CONTROL

1. Identify various types of cement and describe their uses.
2. Identify types and sizes of concrete aggregates.
3. Identify types of concrete admixtures and describe their uses.
4. Identify special types of concrete and describe their uses.
5. Identify concrete curing methods and materials.
6. Identify and describe concrete testing methods.
7. Demonstrate sampling methods used for the testing of concrete.
8. Perform volume estimates for concrete quantity requirements.
9. Identify types of concrete reinforcement bars and describe their uses.
10. Identify types of reinforcement bar supports and describe their uses.
11. Identify types of welded-wire fabric reinforcement material and describe their uses.

MODULE 78207-04 – MEANS AND METHODS

1. Explain the various types of soils and how they are classified.
2. Interpret a soil survey.
3. Examine and classify soil samples.
4. Describe how various types of soils will behave in excavations.
5. State the safety precautions associated with working in or near trenches.
6. Describe how trenches are reinforced to prevent cave-ins.
7. Explain how footings and piers are laid out and formed.
8. Perform selected layout procedures:
 - Building corners
 - Columns
 - Walls
 - Embedments
 - Stairs