

## DIVISION 1 - GENERAL REQUIREMENTS

### SECTION 01050 - FIELD ENGINEERING

#### I. GENERAL

##### A. STIPULATIONS

The "Special Requirements" and "General Conditions" to the contract form a part of this section by this reference thereto and shall have the same force and effect as if printed herewith in full.

##### B. RELATED DOCUMENTS

The Contract Drawings and the Standard Form of Agreement apply to this Section.

##### C. SUMMARY

1. General: This section specifies administrative and procedural requirements for field-engineering services, including, but not necessarily limited to, the following:

- a. Land survey work
- b. Civil engineering services
- c. Structural engineering services

##### D. SUBMITTALS

1. Certificates: Submit a certificate signed by the land surveyor or professional engineer certifying that the location and elevation of improvements comply with the contract documents.

2. Project Record Documents: Submit a record of work performed and record survey data as required under provisions of sections "Submittals" and "Project Closeout."

##### E. QUALITY ASSURANCE

1. Surveyor: Engage a registered land surveyor registered in the state where the project is located, to perform land-surveying services required.

2. Engineer: Engage a professional engineer of the discipline required, registered in the state in which the project is located, to perform required engineering services.

#### II. PRODUCTS (NOT APPLICABLE)

#### III. EXECUTION

##### A. EXAMINATION

1. The System will identify existing control points and property line corner stakes.
2. Verify layout information shown on the drawings, in relation to the property survey and existing benchmarks before proceeding to layout the work. Locate and protect existing benchmarks and control points. Preserve permanent reference points during construction.
  - a. Do not change or relocate benchmarks or control points without prior written approval. Promptly report lost or destroyed reference points, or requirements to relocate reference points because of necessary changes in grades or locations.
  - b. Promptly replace lost or destroyed project control points. Base replacements on the original survey control points.
3. Establish and maintain a minimum of two permanent benchmarks on the site, referenced to data established by survey control points.

Record benchmark locations, with horizontal and vertical data, on project record documents.

4. Existing utilities and equipment: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities and other construction.

Prior to construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer and water serve piping.

#### B. PERFORMANCE

1. Working from lines and levels established by the property survey, establish benchmarks and markers to set lines and levels at each story of construction and elsewhere as needed to properly locate each element of the project. Calculate and measure required dimensions within indicated or recognized tolerances. Do not scale drawings to determine dimensions.
  - a. Advise entities engaged in construction activities, of marked lines and levels provided for their use.
  - b. As construction proceeds, check every major element for line, level and plumb.
2. Surveyor's Log: Maintain a surveyor's log of control and other survey work. Make this log available for reference.
  - a. Record deviations from required lines and levels, and advise the professional when deviations that exceed indicated or recognized tolerances are detected. On project record drawings, record deviations that are accepted and not corrected.

- b. On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles and elevations of construction and sitework.
3. Site Improvements: Locate and lay out site improvements, including pavements, stakes for grading, fill and topsoil placement, utility slopes and invert elevations by instrumentation and similar appropriate means.
4. Building Lines and Levels: Locate and lay out batter boards for structures, building foundations, column grids and locations, floor levels and control lines and levels required for mechanical and electrical work.
5. Existing Utilities: Furnish information necessary to adjust, move or relocate existing structures, utility poles, lines, services or other appurtenances located in, or affected by construction. Coordinate with local authorities that have jurisdiction.