

**SECTION 017123**  
**FIELD ENGINEERING**

**PART 1 - GENERAL**

**1.01 RESPONSIBILITIES**

- A. To perform any Land Surveying required for the Project, the General Construction Contractor shall engage a Professional Land Surveyor registered in the Commonwealth of Pennsylvania. If there is no General Construction Contractor, the Lead Prime Contractor shall have the responsibility.
- B. To perform any Engineering Land Surveys required for the Project, the General Construction Contractor shall engage either a Professional Land Surveyor registered in the Commonwealth of Pennsylvania, or a Professional Engineer registered in the Commonwealth of Pennsylvania. If a Professional Engineer is to be used, he shall be competent in Engineering Land Surveys, and the Contractor shall provide to the University evidence of that competence. If there is no General Construction Contractor, the Lead Prime Contractor shall have the responsibility.
- C. To perform other field engineering services as required or specified, each Separate Prime Contractor shall engage a Professional Engineer registered in the Commonwealth of Pennsylvania. The Professional Engineer shall be of the discipline required or specified, and shall be competent in the services required or specified. The Contractor shall provide to the University evidence of the Professional Engineer's competence.

**1.02 SURVEY CONTROL DATA**

- A. The Contract Documents will identify existing reference points, such as benchmarks, control points, and property line corner stakes. If it is missing, the University will provide this data.
- B. Before proceeding to layout the work, the Contractor shall verify layout information shown on the drawings in relation to the property survey and existing reference points. The Contractor shall locate and protect existing reference points.
- C. Permanent reference points shall be preserved during construction. If necessary in the prosecution of the work, relocations and replacements shall be executed in accordance with the following requirements.
  - 1. Permanent reference points shall not be changed or relocated without prior written approval from the University.
  - 2. Requests to relocate reference points because of necessary changes in grades or locations shall be made in a timely manner so as not to impact the Work.
  - 3. Lost or destroyed permanent reference points shall be promptly reported. Replacements shall be based on the original survey reference points.
- D. The Contractor shall establish and maintain a minimum of two permanent reference points on the site, referenced to data established by original survey reference points. Record of the reference points shall be established and recorded on project record documents with horizontal and vertical data.

### 1.03 SURVEY PROCEDURES

- A. Working from lines and levels established by the property survey, the Contractor shall 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.
  - 1. For site improvements, including pavements, stakes for grading, fill, and topsoil placement, and utility slopes and invert elevations, the Contractor shall locate and lay out the Work by instrumentation and similar appropriate means.
  - 2. For building work, the Contractor shall locate and lay out, by instrumentation and similar appropriate means, building foundations, column grids and locations, floor levels, control lines, and any reference points required for mechanical, plumbing, and electrical work.
  - 3. Required dimensions shall be calculated and measured within indicated or recognized tolerances. Scaled drawings should not be measured to determine dimensions.
  - 4. As construction proceeds, every major element shall be checked for line, level, and plumb.
  - 5. Other Separate Prime Contractors and entities engaged in the Work shall be advised of reference points and marked lines and levels provided.
- B. The Contractor shall maintain a surveyor's log of control and other field survey work. The log shall be made available for reference to the University and other Separate Prime Contractors and appropriate entities.
- C. The University shall be advised when deviations that exceed indicated or recognized tolerances are detected. The surveyor's log shall record deviations from required lines and levels. Project record drawings shall indicate record deviations that are accepted and not corrected.

### 1.04 CERTIFICATION OF SURVEY

At the completion of the Project, the Contractor shall submit to the University the following items:

- A. A certificate signed by the Land Surveyor or Professional Engineer certifying that the location and elevation of the Work complies with the Contract Documents
- B. A record of work performed and record survey data

### 1.05 UTILITIES

- A. The existence and location of underground and other utilities and construction indicated on the Contract Documents as existing are not guaranteed. Before beginning sitework, the Contractor shall investigate and verify the existence and location of underground utilities and other construction, and the locations and invert elevations at points of connection of sanitary sewer, storm sewer, and water service piping.
- B. The Contractor shall furnish all information necessary to adjust, move, or relocate existing structures, utility poles, lines, services, or other appurtenances located in or affected by the Work. The Contractor shall coordinate with local authorities having jurisdiction.

## PART 2 – PRODUCTS

(Not Used)

PART 3 – EXECUTION

(Not Used)

END OF SECTION 017123