

SECTION 01 71 00 01050

SURVEYING AND FIELD ENGINEERING

Notes: This Section is intended to include requirements for Builder provision of survey and field engineering services for all projects.

Delete items not required.

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

- A. [Surveying] [Field Engineering] services
- B. [Surveys for Measurement and Payment.]
- C. Owner will arrange for site survey which will identify control points (monuments and bench marks noted on the Plans). Builder must confirm and accept.
- D. Builder to provide all other surveys.

1.02 RELATED REQUIREMENTS

- A. Bidding and Contract Requirements.
- B. General Terms and Conditions.
- C. Section 01 11 00 - Summary of Work.
- D. Section 01 77 00 - Contract Closeout Procedures.

1.03 QUALITY CONTROL

- A. Land Surveyor: Registered in the State of Florida, and acceptable to the Owner.
- B. Professional Engineer: Registered Professional Engineer of the discipline required for specific service on Project, licensed in the State of Florida.

1.04 SUBMITTALS

- A. Submit name, address and telephone number of [Surveyor] [and] [Engineer] before starting survey work.
- B. 1st Floor Finished Floor Elevation Certificate signed and sealed by (Surveyor) shall be submitted to the FIU Building Official. Shall be submitted as a condition precedent to the issuance of a C.O.
- C. Upon request, submit documentation verifying accuracy of survey work.
- D. Submit certificate signed by [Surveyor,] [Engineer] certifying that all elevations and locations of improvements are in conformance, or non-conformance, with Contract Documents.

1.05 PROJECT RECORD DOCUMENTS

- A. Maintain complete, accurate log of control and survey work as it progresses.
- B. On completion of foundation walls and major site improvements, prepare a certified survey showing dimensions, locations, angles and elevations of construction including main electrical feeds, sanitary sewer, chilled water lines, telecommunications water lines and natural gas lines.
- C. Submit Record Documents under provisions of Section 01 77 00.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

3.01 SURVEY REFERENCE POINTS

- A. Establish, maintain and protect survey control points prior to starting work, using base reference points as shown on Plans. Promptly notify Field Representative and FIU's Project Manager of any discrepancies discovered.
- B. Promptly report to Field Representative and FIU's Project Manager the loss or destruction of any reference point or relocation required because of changes in grades or other reasons. Replace dislocated survey control points based on original survey control.
- C. Provide a survey of existing conditions for the area within "boundaries of survey" as a marked on plans supplied by Architect (attach copy to proposal). Locate all above ground improvements within boundaries relative to Florida State Plane Coordinates System Grid. Provide heading and distances of all property lines within the survey boundaries.
- D. Provide location of all walls, fences and foundations inclusive of, adjacent to, and within five feet outside of, the defined boundaries.
- E. Provide one suitable permanent reference monument, near the southwest or northeast corner of the survey area. Reference monuments shall be identified by X, Y coordinates related to Florida State Plane Coordinates System Grid.
- F. Provide elevations for the area within "boundaries" of survey as marked on plan. Said elevations shall be on a 50" (ft) grid.
- G. Locate all existing trees six inches or larger trunk diameter, for the area within "boundaries of survey" as marked on plans, said the project landscape architect should identify trees. Identification shall be done in English and Latin to identify the trees/palms. Approximate foliage of the canopy will be also noted.
- H. Turn in two (2) signed and sealed copies of survey and digital media of survey data in AutoCAD Release 2000 or higher. Survey shall include Florida State Plane Coordinates System Grid.
- I. All survey copies will be signed and sealed by a Professional Land Surveyor, in the State of Florida.

- J. Show information required establishing curb and building lines, street alley, sidewalk and curb grades and lines at or adjacent to the site and a description of the materials of which they are constructed.
- K. All known and visible utility services, including pipe size, the locations, invert elevations and directions of flow of all piping, mains, sewers, poles, wires, hydrants, catch basins and manholes upon, over or under the site, or adjacent to the site within the approved scope of survey, including but not limited to buried tanks and septic fields, including the name of the operating authority of each utility.
- L. Official data upon which the elevations are based and the bench mark established on or adjacent to the site shall be clearly indicated. Only one such data point or benchmark shall be used on any one site for establishing the grades for a project.

3.02 PREPARATION

Edit paragraph "A" below when acceptable control points or bench marks are not located on site.

- A. Establish a minimum of [two] [_____] permanent bench marks on site, referenced to established control points. Record locations, with horizontal and vertical data, on Project Record Documents.
- B. Verify the accuracy of all lines and grades given on the Plans with existing lines and grades and immediately call all discrepancies to FIU's Project Manager and its Field Representative's attention, in writing, requesting determination before proceeding with the work. Perform all work in accordance with the lines and grades thus established and make good any work performed not in accordance therewith at no cost to the Owner.
- C. Establish lines and levels, locate and lay out by instrumentation and similar appropriate means:
 - 1. Site improvements, including pavements; stakes for grading, fill and topsoil placement; [_____] and utility locations, slopes and invert elevations.
 - 2. Grid or axis for structures.
 - 3. Building foundation, column locations, [_____.] and ground floor elevations.
 - 4. Rim Elevations of the Site Drainage and Structures to ensure positive drainage.
- D. Periodically verify layouts by same means.

Retain below for work when payments are based on quantities of completed work which required field survey determination.

3.03 SURVEYS FOR MEASUREMENT AND PAYMENT

- A. When required in the Technical Specifications, perform surveys to determine quantities of [unit cost] [cost plus] [_____] work, including control surveys to establish measurement reference lines. Notify Field Representative prior to starting work.

- B. Builder's engineer shall sign surveyor's field notes or keep duplicate field notes and shall calculate and certify quantities for payment purposes.

END OF SECTION