

District-Wide Miscellaneous Construction Survey

EXHIBIT "A" SCOPE OF SERVICES

1. Objective

This scope of services describes and defines the survey services which are required for contract administration, inspection and verification for districtwide assignments.

LENGTH OF SERVICE:

The Consultant's services for each Task Work Order (TWO) shall begin upon written notification to proceed by Department. Provide full or part time personnel as specified in the TWOs.

While no personnel shall be assigned until written notification by the Department has been issued, the Consultant shall be ready to assign personnel within two (2) weeks of notification.

2. SURVEYOR'S RESPONSIBILITIES

Provide services as defined in this Scope of Services, the referenced Department manuals, and procedures.

This is a Task Work Orders (TWO) driven Contract. These services shall be performed by the appropriate project personnel, and the Consultant will be responsible to the extent of services specified in the Task Work Orders.

The Services required of the surveyor will consist of field surveys for Construction projects to be assigned by the Project Manager. The surveys will include, but not be limited to re-establishment of survey baselines, control points, bench marks, drainage surveys and bridge data, original and final cross-sections, mast arm bearings, etc.

- a) Prior to work commencing, the Consultant shall meet with the Project Manager and/or the Construction Project Administrator. The standard requirements as well as the sequence of survey operations will be reviewed and discussed. Survey work shall not begin until authorized by the Project Manager.
- b) All field survey data shall be delivered to the Department as directed by the Project manager in either electronic and/or paper format. Electronic documents shall be in format that can be directly input and used (without having to be edited) in the Department's Computer system. Minimum three (3) copies of hard copies will be required.

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- c) The Department, on an as needed basis, will furnish the Design and/or Construction Contract documents for each project. These documents may be provided in either paper or electronic format.

On a single Construction Contract, it is a conflict of interest for a professional firm to receive compensation from both the Department and the Contractor either directly or indirectly.

3. SPECIFICATIONS

Services provided by the Consultant shall comply with Department and industry manuals, procedures, and memorandums in effect as of the date of execution of a TWO, unless otherwise directed in writing by the Department.

All work will be accomplished in accordance with the criteria established by the Department's Highway Field Survey Specifications. Global Positioning Standards (GPS), D.O.T. Survey Safety Manual, D.O.T. Location and Right-of-Way Manual, FDOT current CADD Standards; Electronic P.E.D.D.'s; and must also comply with the Minimum Technical Standards for Land Surveyors Rule 61G17-6, Florida Statute 472.027 and any special instructions from the Department. All work will be coordinated with the Project Manager and Will be subject to his review.

All field survey data with the exception of electronic data will be recorded in field book. **No survey work will be accepted unless supported by copies of field notes certified by the Professional Surveyor and Mapper supervising the field crews.**

All electronic data supplied to the Department must be in MicroStation Format on CD ROM (unless otherwise directed by the location project manager) and accompanied by Surveyor's Report, attachments 10 and 11 (Location Survey Manual) signed and sealed by the Professional Surveyor and Mapper in charge of the work.

All Electronic Field Data will be submitted with E.F.B. (Electronic Field Book) or C.E.F.B. (Cadastral Electronic Field Book) program supplied by the Department.

DESIGN/ CONSTRUCTION SURVEYS

4. GENERAL:

The Consultant shall perform a complete English field survey necessary to prepare the Right of Way Control Survey, Right of Way Maps, and Legal Descriptions & Engineering Design Surveys. All the survey work must be accomplished in accordance with the Department's Location Survey Manual, Topic Numbers 550-030-000 through 550-030-012 (760-000/760-012) including Appendix B, "Highway Field Survey Specification" and Appendix C, "Procedures for Automated Survey Data Gathering."

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This work must comply with the "Minimum Technical Standards for Land Surveyors", Chapter 61G17-6, Florida Administrative Code, pursuant to Florida Statutes, Section 472.027; the Department of Environmental Protection requirements for State Jurisdiction Boundary Surveys, pursuant to Chapter 177.25 - 177.40, Florida Statutes; and any special instructions from the location project manager.

All survey work shall be made to conform to the Florida State Plane Coordinate System, using the North American Datum of 1983/90 for horizontal control. The use of any other horizontal datum must be pre-approved by the District Location Surveyor. The Vertical Datum's (NGVD 1929 or NAVD 1988) for vertical control must be pre-approved by the district Location Surveyor. **Both the Horizontal and vertical datum's must be shown on the Project Network Control Sheets.**

5. EQUIPMENT:

5.1 Vehicles:

Vehicles will be equipped with appropriate safety equipment and must be able to effectively carry out requirements of this Agreement. Vehicles shall have the name and phone number of the consulting firm visibly displayed on both sides of the vehicle.

5.2 Field Equipment:

Supply survey equipment essential to perform services under this Agreement; such equipment includes non-consumable and non-expendable items. Use automated survey equipment that is compatible with the Department's Electronic Field Book Processing Standards to perform the survey.

Hard hats shall have the name of the consulting firm visibly displayed.

Equipment described herein and expendable materials under this Agreement will remain the property of the Consultant and shall be removed at completion of the work.

Retain responsibility for risk of loss or damage to said equipment during performance of this Agreement. Field office equipment shall be maintained and in operational condition at all times.

5.3 Licensing for Equipment Operations:

Obtain proper licenses for equipment and personnel operating equipment when licenses are required. The license and supporting documents shall be available for verification by the Department, upon request. Radioactive Materials License for use of Surface Moisture Density Gauges shall be obtained through the State of Florida Department of Health.

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6.0 LIASON RESPONSIBTLITY OF THE CONSULTANT:

For the duration of the Agreement, keep the Department's Construction Project Manager in Responsible Charge informed of all significant activities, decisions, correspondence, reports, and other communications related to its responsibilities under this Agreement.

Facilitate communications between all parties; (i.e. construction administration, district office, contractors, etc.) ensuring responses and resolutions are provided in a timely manner. Maintain accurate records to document the communication process.

Submit all administrative items relating to Invoice Approval, Personnel Approval, User IDs, Time Extensions, and Supplemental Amendments to the Project Manager for review and approval.

7.0 PERFORMANCE OF THE CONSULTANT:

During the term of this Agreement and all Supplemental Amendments thereof, the Department will review various phases of Consultant operations, to determine compliance with this Agreement. Cooperate and assist Department representatives in conducting the reviews. If deficiencies are indicated, remedial action shall be implemented immediately. Department recommendations and Consultant responses/actions are to be properly documented by the Consultant. No additional compensation shall be allowed for remedial action taken by the Consultant to correct deficiencies. Remedial actions and required response times may include but are not necessarily limited to the following:

- A. Further subdivide assigned inspection responsibilities, reassign inspection personnel, or assign additional inspection personnel, within one week of notification.
- B. Immediately replace personnel whose performance has been determined by the Consultant and/or the Department to be inadequate.
- C. Immediately increase the frequency of monitoring activities that are the Consultant's responsibility.
- D. Increase the scope and frequency of training of the Consultant personnel.

8.0 DESIGN SURVEY:

Design survey services shall be performed in a manner that will perpetrate the control and reference system through the construction and final activities. These activities may include, but not be limited to, the following:

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- a) Geodetic Control PNC - Perform a geodetic baseline control survey for the purpose of establishing the alignment of the project and providing an adjusted network of control meeting the Department's specifications.
- b) Complete a Project Network Control (PNC) sheet graphically depicting the baseline, the benchmarks and the Primary control points indicating the type of material used for each point. Also, a table must be shown listing all control points, their XYZ coordinates, scale factors, convergence angles and a description of the type of survey markers set.
- c) The consultant shall meet with location surveyor on current PNC sheets details to submit as there is a constant improvement to the construction plans submittals. The horizontal and vertical datum must be stated on the Project Network Control Sheet.
- d) **Alignments** - Sufficient field control will be located to determine the alignments of dedicated Right of Ways according to recorded instruments of conveyance, Right of Way Maps, and subdivision plats. If a "Historical" baseline exists, it must be recovered and staked as the current Baseline of Survey. In hazardous situations, an offset reference line may be established and stationed, but the control points on the "Historical" baseline must be set. Prior to staking either line in the field, the alignment must be reviewed and approved by the Location Department.
- e) **Reference Points** - Reference all survey control points, in accordance with procedures.
- 1) **Bench Levels** - Establish a level loop using (N.G.V.D. 1929 or NAVD 1988), as instructed by the location project manager. For each bench mark set or used, a bench mark description form will be filled out and submitted along with a copy of the field notes signed and sealed by the Professional Surveyor & Mapper in charge of the project.
- g) **Topography** - Make a complete topographic survey within the limits of the project Topography will be collected by automated means using an electronic field book (EFB) or other compatible software, unless otherwise instructed in writing, by the Location project manager.
- h) **Roadway DTM and Tin Models** - Gather data for digital terrain model (DTM) and create a TIN model for the entire limits of the project, as required. The consultant shall be responsible for the accuracy of both.
- i) **Side Street Survey.** - Make complete side streets surveys in accordance with the Location Survey Manual.
- j) **Underground Utilities** - Locate underground utilities both vertically and horizontally in accordance with the Plan Preparation Manual and the Location Survey Manual, Topic Numbers 550-030-001 and 004.

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- k) Drainage Survey** - Perform a drainage survey. Locate and measure all structures and get internal details such as elevations of pipe inverts and bottom. Size and type of pipes and directions location. Perform DTM elevations of drainage areas as required.
- l) Bridge Data Survey** - Make a complete structural control survey of the bridge site.
- m) Outfall, Detention and Mitigation Survey** - Conduct any necessary outfall, detention pond, and mitigation area surveys.
- n) Stakeout for Borings** - Provide alignments stake out for subsoil investigation, as directed.

9.0 RIGHT OF WAY SURVEYS:

Right of Way Surveys may be required and will include all of the elements previously outlined under Design Surveys, plus the following:

- a) Section Ties** - Tie section lines, quarter section lines, (and quarter-quarter section lines when pertinent) to the project control by closed traverse or redundant measurement with O.P.S. All corners found in the field will be properly identified and recorded on forms to be completed and filed with the Department of Environmental Protection, in accordance with Florida Statutes. Furnish the District Office of Surveying and Mapping with a copy of the certified corner record which depicts the land corner references.
- b) Subdivision Ties** - Tie all subdivisions, including block lines and street Right of Way lines, to the project control. All necessary block corners must be found or calculated. Any survey corners that are found must be tied to the Baseline of Survey by closed traverse or through redundant measurements taken from at least two different traverse points.
- c) Maintained Right of Way Survey** -The necessary research will be performed and a decision will be made early in the project by the District Administrator of Surveying and Mapping to determine the need for a maintained Right of Way Survey. If a maintained Right of Way Survey is necessary, the limits of maintenance must be tied to Baseline of Survey wherever the Maintenance Engineer identifies it.
- d) Building Ties** - All buildings and improvements within the required Right of Way shall be accurately measured and field tied. Also, major buildings and improvements that are within 25 feet of the required Right of Way must be located in the field.
- e) Jurisdictional Line Survey** - Make tide line (MHW) surveys where necessary to determine the jurisdictional limits of the Department of Environmental Protection and tie lines to the Baseline of Survey.

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10.0 CONSTRUCTION SURVEY

Construction related surveys will be the prime purpose of this Contract.

- a) Prior to work commencing, the Department will provide the consultant with a set of cross sections plans, along with the primary network control (PNC) and bench marks. The Project Manager will give the interval at which the check sections will be taken.
- b) The Consultant will provide a cost estimate for the survey work to be performed in accordance with pre-negotiated unit prices.
- c) The Consultant shall perform the survey within allowed time. Upon completion of the assignment a set of cross-sections plotted/redlined on the project design drawings with a survey report from the Professional Land Surveyor (PLS) shall be submitted to the Project Manager.

These surveys may include, but not be limited to, the following:

10.1 PRE-CONSTRUCTION SURVEY

The survey will include, but not limited to verifying and restoring Primary Network Control (PNC). The Consultant will verify check sections at the intervals requested by the Department.

10.2 CONSTRUCTION SURVEY

Check or establish the survey control baseline(s) along with sufficient baseline control points and bench marks at appropriate intervals along the project in order to: (1) make and record measurements necessary to calculate and document quantities for pay items, (2) make and record pre-construction and final cross section surveys of the project site in those areas where earthwork (i.e., embankment, excavation, subsoil excavation, etc.) is part of the construction project, and (3) perform incidental engineering surveys.

10.3 POST CONSTRUCTION SURVEY

The Consultant will verify check sections at the intervals requested by the Department

11.0 PERSONNEL:

11.1 General Requirements

Provide qualified personnel necessary to efficiently and effectively carry out its responsibilities under this Agreement.

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11.2 Professional Endorsement

The Consultant shall have a Professional Surveyor and Mapper in the State of Florida (Florida P.S.M.). sign and seal all reports, documents; and plans as required by Department standards and this Scope of Services. All activities required to supervise and coordinate work must be performed by the supervisor, a Florida F.S.M. or their delegate as approved by the Department.