Aerial Survey – Unmanned Aircraft System

Request For Proposal

Iowa Department of Transportation

Introduction

The Iowa Department of Transportation’s Office of Design is interested in entering into a professional services contract with one consulting firm to a) assist the Office of Design in evaluating use of UAS for large scale mapping and, b) provide aerial survey data collection using Unmanned Aircraft System (UAS) technology and preparation of derived digital data products such as orthorectified imagery and digital terrain surface. If your firm is interested in providing the described services, please submit a proposal stating your ability and availability to complete this work.

Project Background

The Department is interested in seeking services of a consultant to assist in evaluating the appropriate, safe and cost effective use of UAS for large scale mapping and LiDAR collection. The definition of a UAS for this project is a system that consists of an unmanned aerial vehicle (UAV) and the personnel, command, control and communications system necessary to fly autonomously or be remotely piloted. Subsequent to the evaluation, the Department may require the consultant to conduct an aerial survey using a UAS to acquire the data needed to meet Department requirements.

Project Scope

The services performed by the consulting firm shall include all work, materials, and equipment necessary to collect the aerial survey using a UAS and then prepare the collected data to meet the Department requirements for final deliverables. The deliverables are to focus on meeting the needs of a highway designer using MicroStation V8i and GEOPAK. The positional accuracy, relative to project control, of the data collected shall be a standard error of less than 0.06 ft. on hard surface topography and less than 0.15 ft. on soft surface topography. The initial project in consideration is a borrow location in Council Bluffs, Iowa presented in Figure 1. This site is approximately 365 acres located in SE Council Bluffs, as shown highlighted on the attached location map. This project will be used to evaluate the accuracy, timeframe, conditions and knowledge required for potential future projects using UAS technology for aerial survey data collection at Iowa DOT.

The expectations and deliverables include, but are not limited to, the following:

- Detailed recommendation of the best practices and required specifications for the entire UAS aerial data collection process from initial planning of field activities through extracting engineering data for use by highway designers in a MicroStation V8i environment.
Issues for consideration in the specifications:

- Compliance with Federal Aviation Administration (FAA) regulations for UAS operations, pilots, and aircraft
  - FAA rules under which UAS operations will occur
  - Pilot certification
  - Aircraft registration requirements
  - FAA waivers that may be required to operate at certain times, in different types of airspace, or outside of FAA regulations.

Figure 1: Project Location

- Property owner contact and agreement
- UAS requirements
  - Unmanned aerial vehicle (UAV) type and specifications
  - Camera type and calibration
  - Airborne GPS and IMU equipment
LiDAR Sensor

- Requirements to obtain desired 3d positional accuracy
  - Ground target size, material, and spacing
  - GPS and IMU collection and processing
  - Flight altitude, overlap, and configuration
  - Data collection process, data density, and extraction of bare ground
  - Planimetric feature collection
  - QA/QC of extracted data

- Perform setting ground control, flight planning, aerial survey data acquisition, data processing, data extraction and project documentation following the best practices and specifications developed per requirements in this Request for Proposal (RFP) and contract negotiations.

- Delivery of products in a format determined by the DOT project manager:
  - Imagery
  - LAS files with bare ground classified as Class 2
  - Ground target information report
  - Processed ABGPS and IMU data
  - MicroStation V8i CADD file in an approved seed file which contains elements defining the DTM surface and planimetric features.

- The Department will require the following detailed information for the site(s) flown for both image acquisition and processing and separately for LIDAR acquisition and processing:
  - The number of hours per work task for all field activities, from set up thru data acquisition
  - The amount of field control that is required to be set and why.
  - The number of hours per work task for all office activities to prepare the data for use by the highway designer.
  - A description of all of the tasks, step-by-step, that must be accomplished throughout the data collection and data preparation process.

Data collected for this project is the property of Iowa DOT.

Iowa DOT responsibilities:
- Provide specific project location
- Provide 2 primary ground control points within the project boundary

**Contract Information**

The Department anticipates that the selection process will be completed by the end of November 2016. Negotiation with the top selected consultant will commence upon notice that the selection process is completed. It is anticipated that a Cost plus Fixed Fee payment method will be used. It is anticipated that these services will be contracted as a two-phase series of contracts rather than
one all-encompassing contract. There is no specific allocated dollar amount dedicated or assigned to this work. The Department will not guarantee a set amount of work or contract value for these services.

**General Requirements**

All work associated with the data collection and preparation shall be performed by qualified consultants. Qualifications for performing data collection by means of UAS as well as the data preparation will be based on experience, typical licensure, certification or registration, or seals of approval from others as demonstrated in the consultant’s reply to the RFP. Any additions to, or replacement of, consultant team members during the contract period shall have the prior approval of the Department.

The consultant and their sub-consultants are required to meet the requirements of specified work categories as defined in the Department’s Policy and Procedure Manual, Policy No. 300.04, at the time of contract execution, and for the duration of the contract. Work under this contract will require the consultant team to meet the requirements of work categories 312 – Engineering Surveying, 314 – Aerial Photography and 315 – Photogrammetry.

It is the policy of the Department that Disadvantaged Business Enterprises (DBEs) and Targeted Small Businesses (TSBs) shall have the maximum practicable opportunity to participate in the performance of Department contracts. Funding of the work under this contract is not expected to involve federal-aid highway funds. Although a DBE/TSB goal is not established, the Department still encourages the spirit of the program to be incorporated in the proposed contract whenever possible. In the event DBE participation is required on a particular contract, the goal will be established as part of the negotiations. A list of certified DBE firms may be found at [http://www.dot.state.ia.us/contracts/contracts_eeoaa.htm](http://www.dot.state.ia.us/contracts/contracts_eeoaa.htm). A list of certified TSB firms may be found at [https://dia.iowa.gov//tsb/](https://dia.iowa.gov/tsb/).

**Selection Information**

The emphasis of a proposal should be placed upon providing information regarding: your firm’s project approach, similar projects your firm has recently performed, and the availability and qualifications of your key staff.

The selection committee will review and evaluate the responses submitted based on the following criteria and the weighted value assigned to each. Include a detailed statement for each evaluation criteria.

**A. Staff Experience-25%**

Describe the qualifications and experience of the project manager, key staff, and Sub-consultants related to the collection and preparation of engineering survey data with UAS technologies.

**B. UAS Data Collection Process-20%**

Describe your firm’s understanding, approach and best practices to the processes, from initial planning through field work and final deliverables, which need to be followed to
successfully collect all visible roadway and topographic features necessary to generate a UAS survey for use by highway designers in MicroStation V8i. Mapping will be in accordance with the IDOT design manual Chapter 40.

**C. Technology Resources-20%**
Describe the UAS equipment and associated computer software that your firm possesses and has extensive experience in using. The Department will require that files be submitted in a MicroStation V8i compatible format.

**D. Project Deliverables-15%**
Describe the project deliverables that will be submitted and the experience of your staff in generating those deliverables.

**E. Data Management-15%**
Describe how your firm will ensure accuracy of the completed product. Describe your experience with the software application that your firm uses to manage and extract engineering data.

**F. Responsiveness-5%**
Describe how your firm’s ability to meet concentrated timeframes for project delivery. Describe how your firm intends to maintain communication with the Department.

The Selection Team will review the proposals to ascertain that information requested in the RFP has been completely addressed.

The selection committee does not anticipate the need for oral interviews. However, as part of the final evaluation process, the Department may request presentations from the highest ranked consultants. Those selected will be provided with no less than one week’s notice for the presentation. Presenters must include the proposed project manager and other key members of the proposed project team. There shall be no cost to the Department for the presentations.

Contacting any selection team member other than the RFP contact person is inappropriate. Marketing meetings with the Department while this RFP is active is also considered inappropriate.

**Proposal Requirements**

Please provide the following information in the order listed:

1. All responders must provide adequate information on the response’s cover page to clearly identify the submittal is for the Aerial Survey – Unmanned Aircraft System along with the replying firm and a point of contact for the firm.
2. Include your firm’s approach to addressing the identified tasks, your eligibility to meet the requirements of the “Required Work Categories” for the work you intend to perform, your understanding of the project’s scope, and key issues. Briefly discuss similar projects
the members on your team have completed in the past five years. This listing should be limited to the three most applicable projects.

3. Include the name, qualifications, experience, office address and availability of the project manager. This information should include the identification of similar projects managed or participated in by this individual. The selection of a project manager by a firm will constitute a commitment by that firm and NO substitute managers will be allowed without prior written approval by the Department.

4. Include experience and qualifications as related to the “Required Work Categories” for any sub-consultants to be used and work they will perform.

5. Include a detailed resume, summary of current workload, and a time commitment for each professional or technical person to be assigned to the project. Identify the principal or manager who will serve as the project manager.

6. Inclusion of promotional literature of a general nature will not be considered in the selection process.

7. A project schedule outlining the timeline and estimated completion date of each major task identified in your scope of work. This should include a schedule with a description of all deliverable products throughout the period. A graphical representation of the proposed schedule should be included.

8. The location of the office where the majority of work will be performed.

9. A disclosure of all work for other clients that may be affected by work on the proposed contract to avoid a potential conflict of interest.

The proposal may include additional information, as deemed appropriate, subject to the overall length restriction established in Proposal Requirements.

Cost information should not be submitted as part of the proposal.

The proposal must be submitted as a single electronic PDF and be formatted to print on 8.5” x 11” pages. The proposal must be limited to 20 single-sided pages. All pages will be counted including: proposal covers, cover letter, dividers, appendices, etc. The maximum size limit of a proposal is 7.5 megabytes.

The Department will accept only one proposal (and appendices, if any) from each Consultant.

The electronic proposal must be submitted via email to Alice.Welch@dot.iowa.gov. An email will be sent confirming receipt of the proposal within 30 minutes or by 3:00 p.m. on the submittal deadline date, whichever is later.

For a company to be considered, their proposal must be received by 3:00 pm on October 24, 2016. Any technical questions or questions regarding this RFP shall be submitted via email to Alice.Welch@dot.iowa.gov. Any questions about this RFP must be received by noon on October 17, 2016. Questions and answers regarding this RFP will be posted with the RFP on the Consultant Utilization website, http://www.prof-tech-consultant.dot.state.ia.us.

Any proposal not complying with all requirements stated in the RFP may not be accepted.
**Public Records Law**

The Department will treat all information submitted by a consultant as open records following the conclusion of the selection process. Open records are public records that are open for public examination and copying. The Department's release of records is governed by Iowa Code Chapter 22 and 761 IAC Chapter 4. Consultants are encouraged to familiarize themselves with these laws before submitting a proposal.

**Statement of Non-Discrimination**

The selection and contract are subject to the provisions of Executive Order 11246 (Affirmative Action to Insure Equal Employment Opportunity). Federal and state laws prohibit employment and/or public accommodation discrimination on the basis of age, color, creed, disability, gender identity, national origin, pregnancy, race, religion, sex, sexual orientation or veteran’s status. If you believe you have been discriminated against, please contact the Iowa Civil Rights Commission at 800-457-4416 or Iowa Department of Transportation's affirmative action officer at 515-239-1693. If you need accommodations because of a disability to access the Iowa Department of Transportation’s services, contact the agency's affirmative action officer at 800-262-0003.

**References**
