

**ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS
EQUIPMENT & PROCUREMENT DIVISION**

Bid No. M-21-003H

BIDDER: _____

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ITEM NO.	DESCRIPTION	QUANTITY	UNIT	PRICE	AMOUNT
1.	UAV Airframe Package (all flight controllers, Tablets, hardware, and software for complete System integration)	1	EA	\$ _____	\$ _____
2.	UAV LiDAR system and accessories (all sensors IMU, digital cameras, antennas, power supplies, batteries, chargers, mounting brackets, hardware and software for complete system integration)	1	EA	\$ _____	\$ _____
3.	Additional UAV battery sets	3	EA	\$ _____	\$ _____
4.	Survey Equipment (all base stations, antennas, batteries, computers, tripods, cables, chargers, hardware and software for UAV LiDAR system operation)	1	EA	\$ _____	\$ _____
5.	Cables, chargers, and accessories for all components	1	EA	\$ _____	\$ _____
6.	Flight planning hardware and software	1	EA	\$ _____	\$ _____
7.	Post processing software	1	EA	\$ _____	\$ _____
8.	Protective case for all field equipment	1	EA	\$ _____	\$ _____
9.	Data storage devices (all necessary hard drives USB thumb drives, SD cards, etc.)	1	EA	\$ _____	\$ _____
10.	Training Session including all traveling Expenses	1	EA	\$ _____	\$ _____

BID TOTAL \$ _____

ARDOT - STANDARD BID CONDITIONS

1. **GENERAL:** Any special terms and conditions included in the invitation for bid override these standard terms and conditions. The standard terms and conditions and any special terms and conditions become part of any contract entered into if any or all parts of the bid are accepted by the Arkansas Department of Transportation (ARDOT).
2. **ACCEPTANCE AND REJECTION:** ARDOT reserves the right to reject any or all bids, to accept bids in whole or in part (unless otherwise indicated by bidder), to waive any informalities in bids received, to accept bids on materials or equipment with variations from specifications where efficiency of operation will not be impaired, and to award bids to best serve the interest of the State.
3. **PRICES:** Unless otherwise stated in the Bid Invitation, the following will apply: (1) unit prices shall be bid, (2) prices should be stated in units of quantity specified (feet, each, lbs., etc.), (3) prices must be F.O.B. destination specified in bid, (4) prices must be firm and not subject to escalation, (5) bid must be firm for acceptance for 30 days from bid opening date. In case of errors in extension, unit prices shall govern. Discounts from bid price will not be considered in making awards.
4. **BID BONDS AND PERFORMANCE BONDS:** If required, a **Bid Bond** in the form of a cashier's check, certified check, or surety bond issued by a surety company, in an amount stated in the Bid Invitation, must accompany bid. Personal and company checks are not acceptable as Bid Bonds. Failure to submit a Bid Bond as required will cause a bid to be rejected. The Bid Bond will be forfeited as liquidated damages if the successful bidder fails to provide a required Performance Bond within the period stipulated by ARDOT or fails to honor their bid. When a bidder claims and can show clear and convincing evidence that a material mistake was made in the bid and was not the bid intended, the bidder may be permitted to withdraw their bid prior to award without forfeiture of bid bond. Cashier's checks and certified checks submitted as Bid Bonds will be returned to unsuccessful bidders; surety bonds will be retained. The successful bidder will be required to furnish a **Performance Bond** in an amount stated in the Bid Invitation and in the form of a cashier's check, certified check, or surety bond issued by a surety company, unless otherwise stated in the Bid Invitation, as a guarantee of delivery of goods/services in accordance with the specifications and within the time established in the bid. Personal and company checks are not acceptable as Performance Bonds. In some cases, a cashier's check or certified check submitted as a Bid Bond will be held as the Performance Bond of the successful bidder. Cashier's checks or certified checks submitted as Performance Bonds will be refunded shortly after payment has been made to the successful bidder for completion of all terms of the bid; surety bonds will be retained. Surety bonds must be issued by a surety company that is authorized to do business in the State of Arkansas and that is listed on the current United States Department of the Treasury Listing of Approved Sureties. Surety bonds must be executed by a resident or non-resident agent who is licensed by the Arkansas State Insurance Commissioner to represent the surety company executing the bond, and the resident or non-resident agent shall file with the bond the power of attorney of the agent to act on behalf of the bonding company. Certain bids involving labor will require Performance Bonds in the form of surety bonds only (no checks of any kind allowed). These bonds shall not only serve to guarantee the completion of the work, but also to guarantee the excellence of both workmanship and material until the work is finally accepted and the provisions of the Plans, Specifications, and Special Provisions fulfilled. In such cases, the company issuing the surety bond must comply with all stipulations herein and must be named in the U. S. Treasury listing of companies holding Certificates of Authority as acceptable sureties on Federal Bonds and as acceptable reinsuring companies. Any excess between the face amount of the bond and the underwriting limitation of the bonding company shall be protected by reinsurance provided by an acceptable reinsuring company. Annual Bid and Performance Bonds on file with E & P Division must have sufficient unencumbered funds to meet current bonding requirements, or the bid will be rejected, unless the balance is submitted as set forth above, prior to bid opening.
5. **TAXES:** The ARDOT is not exempt from Arkansas State Sales and Use Taxes, or local option city/county sales taxes, when applicable, and bidders are responsible to the State Revenue Department for such taxes. These taxes should not be included in bid prices, but where required by law, will be paid by the ARDOT as an addition thereto, and should be added to the billing to the ARDOT. The ARDOT is exempt from Federal Excise Taxes on all commodities except motor fuels; and excise taxes should not be included in bid prices except for motor fuels. Where applicable, tax exemption certificates will be furnished by the ARDOT.
6. **"ALL OR NONE" BIDS:** Bidders who wish to bid "All or None" on two or more items shall so stipulate on the face of bid sheet; otherwise, bid may be awarded on an individual item basis.
7. **SPECIFICATIONS:** Complete specifications should be attached for any substitution or alternate offered, or where amplification is necessary. Bidder's name must be placed on all attachments to the bid.
8. **EXCEPTIONS TO SPECIFICATIONS:** Any exceptions to the bid specifications must be stated in the bid. Any exceptions to manufacturer's published literature must be stated in the bid, or it will be assumed that bidder is bidding exactly as stated in the literature.
9. **BRAND NAME REFERENCES:** All brand name references in bid specifications refer to that commodity or its equivalent, unless otherwise stated in Bid Invitation. Bidder should state brand or trade name of item being bid, if such name exists.
10. **FREIGHT:** All freight charges should be included in bid price. Any change in common carrier rates authorized by the Interstate Commerce Commission will be adjusted if such change occurs after the bid opening date. Receipted common carrier bills that reflect ICC authorized rate changes must be furnished.

11. **SAMPLES, LITERATURE, DEMONSTRATIONS:** Samples and technical literature must be provided free of any charge within 14 days of ARDOT request, and free demonstrations within 30 days, unless ARDOT extends time. Failure to provide as requested within this period may cause bid to be rejected. Samples, literature and demonstrations must be substantially the same as the item(s) being bid, unless otherwise agreed to by ARDOT. Samples that are not destroyed will be returned upon request at bidders expense. Samples from successful bidders may be retained for comparison with items actually furnished.
12. **GUARANTY:** Unless otherwise indicated in Bid Invitation, it is understood and agreed that any item offered or shipped on this bid shall be newly manufactured, latest model and design, and in first class condition; and that all containers shall be new, suitable for storage or shipment and in compliance with all applicable laws relating to construction, packaging, labeling and registration.
13. **BACKORDERS OR DELAY IN DELIVERY:** Backorders or failure to deliver within the time required may constitute default. Vendor must give written notice to the ARDOT, as soon as possible, of the reason for any delay and the expected delivery date. The ARDOT has the right to extend delivery if reasons appear valid. If reason or delivery date is not acceptable, vendor is in default.
14. **DEFAULT:** All commodities furnished will be subject to inspection and acceptance by ARDOT after delivery. Default in promised delivery or failure to meet specifications authorizes the ARDOT to cancel award or any portion of same, to reasonably purchase commodities or services elsewhere and to charge full increase, if any, in cost and handling to defaulting vendor. Applicable bonds may be forfeited.
15. **ETHICS:** *"It shall be a breach of ethical standards for a person to be retained, or to retain a person, to solicit or secure a State contract upon an agreement of understanding for a commission, percentage, brokerage, or contingent fee, except for retention of bona fide employees or bona fide established commercial selling agencies maintained by the contractor for the purpose of securing business."* (Arkansas Code, Annotated, Section 19-11-708).
16. **NOTICE OF NONDISCRIMINATION:** The Arkansas State Highway Commission, through ARDOT, complies with all civil rights provisions of federal statutes and related authorities that prohibit discrimination in programs and activities receiving federal financial assistance. Therefore, ARDOT does not discriminate on the basis of race, sex, color, age, national origin, religion (not applicable as a protected group under the Federal Motor Carrier Safety Administration Title VI Program), disability, Limited English Proficiency (LEP), or low-income status in the admission, access to and treatment in the ARDOT's programs and activities, as well as the ARDOT's hiring or employment practices. Complaints of alleged discrimination and inquiries regarding the ARDOT's nondiscrimination policies may be directed to Joanna P. McFadden Section Head – EEO/DBE (ADA/504/Title VI Coordinator), P. O. Box 2261, Little Rock, AR 72203, (501)569-2298, (Voice/TTY 711), or the following email address: joanna.mcfadden@ahtd.ar.gov. Free language assistance for Limited English Proficient individuals is available upon request. This notice is available from the ADA/504/Title VI Coordinator in large print, on audiotape and in Braille.
17. **PROHIBITION OF EMPLOYMENT OF ILLEGAL IMMIGRANTS:** Pursuant to Arkansas Code Annotated 19-11-105, all bidders must certify prior to award of a contract that they **do not** employ or contract with any illegal immigrant(s) in its contract with the state. Bidders shall certify online at <https://www.ark.org/dfa/immigrant/index.php>.
18. **DISCLOSURE:** Failure to make any disclosure required by Governor's Executive Order 98-04, or any violation of any rule, regulation, or policy adopted pursuant to that order, **shall** be a material breach of the terms of this contract. Any contractor, whether an individual or entity, who fails to make the required disclosure or who violates any rule, regulation, or policy **shall** be subject to all legal remedies available to the agency.

ATTACHMENT A

ELIGIBLE BIDDER CERTIFICATION

The Bidder represents and warrants for itself, its employees and its subcontractors and certifies they:

1. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
2. Have not within a three-year period preceding this Bid been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
3. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State, or local) with commission of any of the offenses enumerated in paragraph two (2) of this Certification;
4. Have not within a one-year period preceding this application/Bid had one or more public transactions (Federal, State, or local) terminated for cause or default; and

The Bidder represents, warrants and acknowledges the understanding that restrictions placed on the employment of labor or on the scale of pay for the work on a contract will be the requirements of the Fair Labor Standards Act (Federal Wage-Hour Law) of 1938, 28 USC §201 et seq., and other applicable labor laws.

The person executing this Certification further represents, warrants and affirms the truthfulness and accuracy of the contents of the statements submitted on or with this Certification and understands that the provisions of 31 USC §3801 et seq. are applicable thereto.

BIDDER NAME

BY: _____

Signature

TITLE: _____

CONTRACT AND GRANT DISCLOSURE AND CERTIFICATION FORM

Failure to complete all of the following information may result in a delay in obtaining a contract, lease, purchase agreement, or grant award with any Arkansas State Agency.

SUBCONTRACTOR: _____ SUBCONTRACTOR NAME: _____

Yes No

BIDDER INFORMATION:

IS THIS FOR:

Goods? Services? Both?

TAXPAYER ID NAME: _____

YOUR LAST NAME: _____

FIRST NAME: _____

M.I.: _____

ADDRESS: _____

CITY: _____ STATE: _____

ZIP CODE: _____

COUNTY: _____

AS A CONDITION OF OBTAINING, EXTENDING, AMENDING, OR RENEWING A CONTRACT, LEASE, PURCHASE AGREEMENT, OR GRANT AWARD WITH ANY ARKANSAS STATE AGENCY, THE FOLLOWING INFORMATION MUST BE DISCLOSED:

FOR INDIVIDUALS*

Indicate below if: you, your spouse or the brother, sister, parent, or child of you or your spouse is a current or former: member of the General Assembly, Constitutional Officer, State Board or Commission Member, or State Employee:

Position Held	Mark (✓)		Name of Position of Job Held <small>(senator, representative, name of board/ commission, data entry, etc.)</small>	For How Long?		What is the person(s) name and how are they related to you? <small>(i.e., Jane Q. Public, spouse, John Q. Public, Jr., child, etc.)</small>	Relation
	Current	Former		From MM/YY	To MM/YY		
General Assembly							
Constitutional Officer							
State Board or Commission Member							
State Employee							

None of the above applies

FOR AN ENTITY (BUSINESS)*

Indicate below if any of the following persons, current or former, hold any position of control or hold any ownership interest of 10% or greater in the entity: member of the General Assembly, Constitutional Officer, State Board or Commission Member, State Employee, or the spouse, brother, sister, parent, or child of a member of the General Assembly, Constitutional Officer, State Board or Commission Member, or State Employee. Position of control means the power to direct the purchasing policies or influence the management of the entity.

Position Held	Mark (✓)		Name of Position of Job Held <small>(senator, representative, name of board/ commission, data entry, etc.)</small>	For How Long?		What is the person(s) name and what is his/her % of ownership interest and/or what is his/her position of control?		
	Current	Former		From MM/YY	To MM/YY	Person's Name(s)	Ownership Interest (%)	Position of Control
General Assembly								
Constitutional Officer								
State Board or Commission Member								
State Employee								

None of the above applies

Contract and Grant Disclosure and Certification Form

Failure to make any disclosure required by Governor's Executive Order 98-04, or any violation of any rule, regulation, or policy adopted pursuant to that Order, shall be a material breach of the terms of this contract. Any contractor, whether an individual or entity, who fails to make the required disclosure or who violates any rule, regulation, or policy shall be subject to all legal remedies available to the agency.

As an additional condition of obtaining, extending, amending, or renewing a contract with a state agency I agree as follows:

1. Prior to entering into any agreement with any subcontractor, prior or subsequent to the contract date, I will require the subcontractor to complete a **CONTRACT AND GRANT DISCLOSURE AND CERTIFICATION FORM**. Subcontractor shall mean any person or entity with whom I enter an agreement whereby I assign or otherwise delegate to the person or entity, for consideration, all, or any part, of the performance required of me under the terms of my contract with the state agency.
2. I will include the following language as a part of any agreement with a subcontractor:

Failure to make any disclosure required by Governor's Executive Order 98-04, or any violation of any rule, regulation, or policy adopted pursuant to that Order, shall be a material breach of the terms of this subcontract. The party who fails to make the required disclosure or who violates any rule, regulation, or policy shall be subject to all legal remedies available to the contractor.
3. No later than ten (10) days after entering into any agreement with a subcontractor, whether prior or subsequent to the contract date, I will mail a copy of the **CONTRACT AND GRANT DISCLOSURE AND CERTIFICATION FORM** completed by the subcontractor and a statement containing the dollar amount of the subcontract to the state agency.

Signature _____	Date _____
Vendor Contact Person _____	Phone No. _____
Title _____	Title _____

<small>Agency Use Only</small>			
Agency Number _____	Agency Name _____	Agency Contact Person _____	Contact Phone No. _____
			Contract or Grant No. _____

RESTRICTION OF BOYCOTT OF ISRAEL CERTIFICATION

Pursuant to Arkansas Code Annotated § 25-1-503, a public entity **shall not** enter into a contract valued at \$1,000 or greater with a company unless the contract includes a written certification that the person or company is not currently engaged in, and agrees for the duration of the contract not to engage in, a boycott of Israel.

By signing below, the Contractor agrees and certifies that they do not currently boycott Israel and will not boycott Israel during any time in which they are entering into, or while in contract, with any public entity as defined in § 25-1-503* If at any time after signing this certification the contractor decides to engage in a boycott of Israel, the contractor must notify the contracting public entity in writing.

If a company does boycott Israel, see Arkansas Code Annotated § 25-1-503.

Name of public entity	Arkansas Department of Transportation
Description of product or service	UAV LiDAR System
Contractor name	

Contractor Signature: _____

Date: _____

Signature must be hand written, in ink

“Public Entity” means the State of Arkansas, or a political subdivision of the state, including all boards, commissions, agencies, institutions, authorities, and bodies politic and corporate of the state, created by or in accordance with state law or regulations, and does include colleges, universities, a statewide public employee retirement system, and institutions in Arkansas as well as units of local and municipal government.

ILLEGAL IMMIGRANT CERTIFICATION

Pursuant to Arkansas Code Annotated § 19-11-105, Contractor(s) **shall** certify with OSP that they do not employ or contract with illegal immigrants.

By signing below, the Contractor agrees and certifies that they do not employ illegal immigrants and will not employ illegal immigrants during the remaining aggregate term of the contract.

Bid Number/Contract Number	M-21-003H
AASIS Number	N/A
Description	UAV LiDAR System
Contractor name	

Contractor Signature: _____

Date: _____

Signature must be hand written, in ink

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1.0 GENERAL INFORMATION

1.1. Introduction and Background

The purpose of this document is to provide interested parties with information to enable them to prepare and submit a bid for an Unmanned Aerial Vehicle (UAV) Based LiDAR System. The Arkansas Department of Transportation intends to purchase a UAV Based LiDAR System for collecting topographic and terrain survey data.

1.2 General Instructions

The evaluation and selection of a vendor will be based on the information submitted in the bid plus references and any required site visits. Bidders should respond clearly and completely to all requirements.

Note: Bids will be rejected for failure to respond completely and as specified in the sections that follow.

2.0 BID PROPOSAL ORGANIZATION AND FORMAT

Bids shall be submitted and bound with the following sections.

(a) Section A - VENDOR DATA SHEET/REFERENCE DATA SHEET.

Include here Attachment A - Reference Data Sheet that has been requested in Section 3.6 in this BID INVITATION.

Each vendor shall furnish a list of a minimum of four (4) references that will be capable of verifying information supplied by the vendor in their bid. Vendors shall submit additional Reference Data Sheet forms if they have more than four (4) references. It is preferable that at least one of the references be a State Department of Transportation in order to verify similar situations of State DOT UAV LiDAR Surveys with the use of the product requested in this bid invitation.

(b) Section B - RESPONSE TO GENERAL REQUIREMENTS.

- Provide a point-by-point response to each and every general requirement specified in Section 3.0 in this BID INVITATION.
- Responses to general requirements shall be in the same sequence and numbered as they appear in this BID INVITATION.
- Responses shall indicate that either vendor's bid "complies or exceeds" with specifications or that it "does not comply".
- A succinct explanation of how each requirement can be met or cannot be met shall be included.

(c) Section C - RESPONSE TO TECHNICAL REQUIREMENTS.

- Provide a point-by-point response to each and every technical requirement specified in Section 4.0 in this BID INVITATION.
- Responses to technical requirements shall be in the same sequence and numbered as they appear in this BID INVITATION.
- Responses shall indicate that either vendor's bid "complies or exceeds" with specifications or that it "does not comply."
- A succinct explanation of how each requirement can be met or cannot be met shall be included.

(d) Section D - RESPONSE TO PERFORMANCE REQUIREMENTS.

- Provide a point-by-point response to each and every performance requirement specified in Section 5.0 in this BID INVITATION.
- Responses to performance requirements shall be in the same sequence and numbered as they appear in this BID INVITATION.
- Responses shall indicate that either vendor's bid "complies or exceeds" with specifications or that it "does not comply."

- A succinct explanation of how each requirement can be met or cannot be met shall be included.
- (e) Section E - RESPONSE TO SUPPORT REQUIREMENTS.
- Provide a point-by-point response to each and every support requirement specified in Section 6.0 in this BID INVITATION.
 - Responses to support requirements shall be in the same sequence and numbered as they appear in this BID INVITATION.
 - Responses shall indicate that either vendor's bid "complies or exceeds" with specifications or that it "does not comply".
 - A succinct explanation of how each requirement can be met or cannot be met shall be included.

(f) Section F - ADDITIONAL INFORMATION.

Include additional information that will be essential to an understanding of the bid. This might include diagrams, excerpts from manuals, or other explanatory documentation that would clarify and/or substantiate the bid. Any material included here should be specifically referenced elsewhere in the bid.

(g) Section G - GLOSSARY.

Provide a glossary of any abbreviations, acronyms, and technical terms used to describe the services or products proposed which is not industry standard. This glossary should be provided even if these terms are described or defined at their first use in the bid.

(h) Section H – SUMMARY.

Include here Attachment B – Summary Sheet. Provide a summary with each item being provided by the Vendor including model number, manufacturer name, and quantities. *This summary sheet shall be attached to or included with the bid sheet.* Vendors shall submit additional Summary Sheet forms if necessary.

2.1 Multiple Bids

Multiple bids from a vendor will be permissible. However, each bid shall conform fully to the requirements for bid submission. Each such bid shall be separately submitted and labeled as Bid #1, Bid #2, etc., on each page included in the response. Alternate plans do not constitute multiple bids.

2.2 Demonstrations

Bidders may be required to install and demonstrate their product(s) and/or service(s) at an Arkansas Department of Transportation site. Product(s) being demonstrated shall be delivered to the Department site. Any demonstration shall be done prior to the bid opening date as shown on the bid invitation. The Department will furnish detailed specifications concerning the demonstration site and particular tests it will use to exercise the bidder's product(s) and/or service(s) no later than the date of notification of product demonstration.

Bidders who demonstrate a product(s) and/or service(s) shall also comply with all other requirements as specified in this document.

Failure of a bidder to furnish the product(s) and/or service(s) it has proposed for demonstration within the time constraints of the preceding paragraph will result in rejection of the bid. Failure of any product(s) and/or service(s) furnished by the bidder for the purposes of this demonstration shall be identical in every respect to those that will be furnished for acceptance testing under the terms of the Department contract.

3.0 GENERAL BID REQUIREMENTS

Vendors shall respond to the general requirements in this selection in accordance with the instruction given in Section 2.0 (b) above.

3.1. Description of Equipment for UAV LiDAR System

The Department desires to procure a UAV LiDAR System consisting of a UAV Airframe, LiDAR System, Mounting Hardware, Survey Equipment, Batteries, Post Processing Software, and accessories, hereinafter called UAV LiDAR System. The system shall be the latest model in current production as offered to commercial trade. The vendor represents that all equipment furnished shall be new. Demonstrator, prototype, and discontinued models or releases will not be accepted.

The successful bidder shall furnish all parts not specifically mentioned which are necessary for the unit to be complete and ready for operation or which are normally furnished as standard equipment. All parts shall conform in strength, quality and workmanship to the accepted standards of the industry.

3.2. Objectives

The UAV LiDAR System shall comprise of hardware and software in order to allow for data acquisition and UAV LiDAR surveys. The Department's objective is to acquire detailed LiDAR datasets in order to produce accurate and detailed topographic and terrain surveys. Our objective is for one (1) UAV LiDAR System as described in this specification, which shall meet or exceed the specifications. The UAV LiDAR System and all of the accessories directly relating to the operation of these said items shall be compatible for use together.

3.3. Needs

The Department has a need for an accurate UAV LiDAR System to perform LiDAR surveys for roadway design and area planning studies, as well as orthophoto production, asset management, and environmental classification.

The Department has a need to have the latest technology that provides the most cost effective and productive system for the applications and minimum requirements specified.

3.4. Organization Capabilities

Describe the firm's experience and capabilities in providing similar services to those required. Be specific and identify projects, dates, and results.

3.5. Staff Qualifications

Provide resumes describing the educational and work experiences for each of the key staff that would be assigned to the project for training and support.

3.6. Bidder References

Bidders shall include in their proposals, a list of organizations, including points of contact (name, address, and telephone number), that can be used as references for work performed in the area of service required. Selected organizations may be contacted to determine the quality of work performed, product provided, and personnel assigned to the project. The results of the reference check will be provided to reviewers and used in scoring the written bid. Attachment A - Reference Data Sheet as described in 2.0(a) will be considered your response to this section.

3.7. Summary

The Department has a need to collect aerial LiDAR for topographic and terrain surveys. Specifically, the bidder shall agree to provide the following:

- One (1) UAV LiDAR System that satisfies the specifications described under Section 4.0. and Section 5.0.
- The UAV LiDAR System shall include all components listed in Section 4.1.

4.0. TECHNICAL REQUIREMENTS

Vendors shall respond to the technical requirements in this section in accordance with the instructions given in Section 2.0(c) above.

4.1. UAV LiDAR System

The UAV LiDAR System shall include a UAV Airframe, LiDAR System, Mounting Hardware, Survey Equipment, Batteries, Flight Planning and Post Processing Software, and all accessories, and software for LiDAR acquisition, calibration, and data processing.

4.1.1. UAV Airframe

4.1.1.1. Performance

- The Airframe shall be capable of carrying a payload greater than that of the UAV LiDAR system and all onboard components.
- The Airframe shall be capable of hovering in place for a period of time up to 10 minutes.
- The Airframe shall be capable of operation in wind speeds up to 5m/s.
- The Airframe shall be capable of operating at altitudes up to 120m.
- The Aircraft shall be capable of maintaining flight operation with a full payload for a minimum of 18 minutes.

4.1.1.2. Environmental Requirements

- The UAV Airframe shall be capable of operation in the humidity range of 5% to 95%.
- The UAV Airframe shall be capable of operation in the temperature range of 0°C to + 40°C.

4.1.1.3 Additional Components

- The bid shall include the Airframe flight controller.
- The bid shall include necessary hardware and software for flight planning, flight visualization, and stats monitoring. This may include tablets, laptops, and necessary software.
- The bid shall include additional hardware and software necessary to perform UAV LiDAR surveys.
- The bid shall include an additional set of Airframe propellers.
- The bid shall include a minimum of three additional sets of batteries for the UAV Airframe. (4 total sets)
- All chargers, cables, antennas, and other accessories necessary for operation.

4.1.2. LiDAR System and IMU

4.1.2.1. System Specifications

- The overall weight and size of the LiDAR System shall not exceed the UAV Airframes manufacture specified payload.
- The LiDAR system shall be capable of obtaining an absolute vertical accuracy of 3cm at an altitude no less than 60m.
- The LiDAR system shall be capable of obtaining a minimum of 5 laser returns per pulse.
- The LiDAR system shall be capable of obtaining a point density of no less than 50pt/m² at a range of no less than 60m and a speed of no less than 3m/s.
- The system shall have the capability to collect color photography for use in producing colorized point clouds, orthomosaics, and other photogrammetric products.

4.1.2.2. Environmental Requirements

- The LiDAR System shall be capable of operation in the humidity range of 5% to 95%.

- The LiDAR System shall be capable of operation in the temperature range of 0°C to + 40°C.

4.1.2.3 GNSS/IMU

- The LiDAR system should include a GNSS/IMU System capable of obtaining LiDAR with an accuracy of 3cm at an altitude no less than 60m.

4.1.3. Survey Equipment

- The bid shall include all Surveying equipment necessary for obtaining the level of accuracy required by this specification. This shall include all relevant GNSS base stations, antennas, batteries, hardware, and software needed for successful mission operation.

4.1.4 Batteries

- The bid shall include batteries for all included components.
- Enough batteries shall be supplied to allow for more than 1 hour of full operation on any given project day.
- The bid shall include all charging components necessary for in office battery management and in field charging with the use of a generator or inverter.

4.1.5 Flight Planning, Data Collection and processing software

- The bid shall include necessary hardware (tablets, computers) and software for infield flight operation including pre planned missions.
- The bid shall include accessory hardware and software licenses capable of being moved to different computers.
- The software shall be compatible with current Microsoft Windows operating systems including but not limited to Microsoft Windows 10.
- The system shall be able to collect data, process files, and output point clouds and position data for use with third party point cloud software to allow compilation of mapping features.
- The software shall be able to handle all calibrations relevant to the accuracy of the data.
- The software shall be able to perform statistical and performance reports.
- The bid shall include software for post processing data for output in standard formats.
- The bid shall include software for post processing position data including IMU misalignment calculations.
- The Department currently has software licenses for MicroStation V8i SS2, as well as NovAtel Inertial Explorer version 8.70.6404. Additional Licensing for these products is not necessary to satisfy this bid specification.

4.1.6 Miscellaneous Accessories and General Requirements

The accessories that follow shall be included with the system:

- All relevant mounting hardware
- All necessary storage devices for data storage and operation including hard drives, USB, etc.
- Protective case for all infield equipment
- All equipment must adhere to FAA guidelines.

Operating Manuals

- The UAV LiDAR System shall include one (1) set of operation manual in print or electronic form. The manual(s) are to include, stated in easily understood English; a logically sequenced step-by-

step description of the total system in general and they shall include specific sections devoted to the detailed operation of each system component.

4.2. Standard of Performance

If requested, the apparent successful vendor meeting all requirements shall demonstrate the use of the proposed hardware and software as a condition of accepting the bid. A standard of performance shall also be met for all equipment by performing the function for which it is intended for a period of ninety (90) consecutive calendar days, beginning at the conclusion of the initial training period.

In the event the equipment does not meet the standard of performance during the initial ninety (90) consecutive calendar days, the standard of performance test shall continue on a day-by-day basis until the standard of performance is met for a total of ninety (90) consecutive days. The UAV LiDAR System will not be fully accepted until the performance requirements have been maintained for a period of ninety (90) consecutive days. If the UAV LiDAR System fails to meet the standard of performance after one hundred eighty (180) calendar days from commencement of the performance period, the Arkansas Department of Transportation may require a replacement system or terminate the contract and receive a refund of all equipment cost.

5.0. PERFORMANCE REQUIREMENTS

Vendors shall respond to the performance requirements in this section in accordance with the instructions given in Section 2.0(d) above.

5.1. UAV LiDAR System Accuracy

The system shall be capable of meeting the following minimum accuracy standards.

- 3cm vertical accuracy at a elevation no less than 60m
- minimum of 5 laser returns
- Point density of no less than 50pt/m² at a range of no less than 60m and a speed of no less than 3m/s.
- Adheres to all FAA requirements.

6.0 SUPPORT REQUIREMENTS

Vendors shall respond to the support requirements in this section in accordance with the instructions given in Section 2.0(e) above.

6.1. Training for UAV LiDAR System

A qualified representative of the manufacturer shall provide instruction in the operation, calibration, and maintenance of the UAV LiDAR System. The training shall include instruction for system integration and operation, mission planning, data transfer, post processing, and system calibration. This instruction shall be provided to at least two (2) operators. The purpose of the instruction shall be to train two (2) operators with the features, operation, calibration and maintenance of the UAV LiDAR System. Considering current travel-related challenges and social distancing guidelines, on-site training is not being requested at this time. The vendor is asked to provide web based training.

The training is to be scheduled no later than thirty (30) calendar days after delivery of the UAV LiDAR System. The training will consist of an initial training session lasting at least 2 days or longer if necessary. At the conclusion of training, all trainees should be able to operate the UAV LiDAR System in all normal production modes.

The vendor shall provide a proposal on the training and include, but not necessarily limited to, the following:

- Topics of instruction.

- Format of training (i.e. how will the training be presented).
- Number of days of training

6.2. Warranty for UAV LiDAR System

The successful bidder shall warranty the UAV LiDAR System against defective workmanship or materials for a period of twelve (12) months of actual field services, commencing with the successful completion of the standards of performance. Any defect of workmanship, material, or software failure, which develops during the first 12 months of field operation, shall be replaced, repaired or corrected at no expense to the Department.

If the vendor's standard warranty is for a period in excess of twelve (12) months the standard warranty shall apply. If the vendor's standard warranty is for a period less than twelve (12) months the bid shall include an extended warranty to cover this period.

During the warranty period all repairs shall be completed within 14 days in order to limit down time of the UAV LiDAR System.

NOTE: The successful bidder shall have a certified in-house repair facility capable of doing all authorized manufacturer in-house warranty work and repairs, with minimal delay, and at no cost to the Department during the warranty period. A letter of certification from the manufacturer as an authorized repair facility to perform warranty services, maintenance, and repair work shall accompany the bid.

6.3. Maintenance Support for UAV LiDAR System

The manufacturer of the UAV LiDAR System shall provide maintenance support. Indicate your maintenance policies with regard to hardware and software problem diagnosis, error resolution and charging policies. The bid response shall include the cost of hardware and software maintenance for a period of twelve (12) months. The bid response shall include option for hardware and software maintenance after the initial twelve (12) month period is expired. The bid response shall state in detail the terms and conditions of the maintenance agreement for the proposed UAV LiDAR System. Such statements shall include but not be limited to the following:

- The location and staffing of the closest service point;
- How preventive maintenance is scheduled;
- The nature and frequency of preventive maintenance;
- The total size of your maintenance organization and response time for maintenance.

Response time on maintenance calls shall be the time between the receipt of a call by the vendor's representative including any answering services, and the arrival, ready for repair work, of the maintenance personnel at the customer's site. The vendor shall state the response time for remedial service.

6.4. Firmware and Software Upgrades

Within the warranty period, the vendor shall provide at no extra cost any and all released firmware and software upgrades to the UAV LiDAR System. The vendor shall indicate in the bid their method and procedure of supplying and installing firmware and software. Any cost associated with these upgrades shall be included in the bid.

ATTACHMENT A – REFERENCE DATA SHEET

FOR VENDER: _____

Provide company name, address, contact person, telephone number, and appropriate information of contracted services that are similar to this solicitation document. (Any subcontractor arrangements for the completion of this work shall be listed on a separate bid page.)

Company Name: _____

Address: _____

Contact Person: _____

Phone Number: _____ Services Provided: _____

Company Name: _____

Address: _____

Contact Person: _____

Phone Number: _____ Services Provided: _____

Company Name: _____

Address: _____

Contact Person: _____

Phone Number: _____ Services Provided: _____

Company Name: _____

Address: _____

Contact Person: _____

Phone Number: _____ Services Provided: _____