

**ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT  
EQUIPMENT AND PROCUREMENT DIVISION  
BID INVITATION**

Bid Number: M-14-027P

**BID OPENING LOCATION:**  
AHTD Equipment and  
Procurement Division  
11302 W. Baseline Road  
Little Rock, AR 72209

**MAIL TO:**  
AHTD Equipment and  
Procurement Division  
P.O. Box 2261  
Little Rock, AR 72203

**DELIVER TO:**  
AHTD Equipment and  
Procurement Division  
11302 W. Baseline Road  
Little Rock, AR 72209

Bid Opening Date: February 19, 2014 Time: 11:00 a.m.

Sealed bids for furnishing the commodities and/or services described below, subject to the Conditions on Page 2 of this Bid Invitation will be received at the above-noted mail and delivery locations until the above-noted bid opening date and time, and then publicly opened at the above-noted bid opening location. **Bids must be submitted on this form, with attachments when appropriate, or bids will be rejected. Late bids and unsigned bids will not be considered.**

In compliance with this Bid Invitation and subject to all the Conditions thereof, the undersigned offers and agrees to furnish any and all items upon which prices are quoted, at the price set opposite each item.

Company Name: \_\_\_\_\_

Name (Type or Print): \_\_\_\_\_

Address: \_\_\_\_\_

Title: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

Federal Tax ID or Social Security No.: \_\_\_\_\_

E-mail Address: \_\_\_\_\_

**Signature:** \_\_\_\_\_

Signature must be legible, original (not photocopied) and in ink.  
Unsigned bids will be rejected.

Item No.	Description	Quantity	Unit	Unit Price	Amount
1.	<p>Multi-Beam Sonar Survey System consisting of Multi-Beam Echo Sounder, GPS Compass and Accessories – complete list attached to and made a part of this bid.</p> <p>To meet the requirements of Arkansas State Highway and Transportation Department Specifications attached to and made a part of this bid.</p> <p><b>NOTE:</b> Special Notes; Information that must be submitted with bid.</p> <p>FOB: AHTD – Surveys Division 10324 I-30, Little Rock, AR 72209</p> <p>Contact Person: Mike Kelly (501-569-2086)</p> <p><b>Bid Bond</b> in the amount of 5% of total bid price required of all bidders at time of bid opening or bid will be rejected. <b><u>Personal and company checks are not acceptable as Bid Bonds.</u></b> See Condition 3 on page 2 of Bid Invitation.</p> <p><b>Performance Bond</b> in the amount of 5% of total bid price will be required of successful bidder prior to providing goods/services. <b><u>Personal and company checks are not acceptable as Performance Bonds.</u></b> See Condition 3 on page 2 of Bid Invitation.</p> <p>The successful bidder will be required to complete delivery within 45 days after award.</p> <p>Bids and Specifications are available on-line by going to the AHTD Web Site – <a href="http://www.arkansashighways.com">www.arkansashighways.com</a> and clicking on “Commodities and Services Bids/Contracts Information”. Tabulations will also be available at this site within 72 hours after bid opening. If you have any questions, call this office at 501-569-2667.</p> <p>(69-0002)</p>	1	Ea.		
				TOTAL BID	

## STANDARD BID CONDITIONS

## M-14-027P

1. **ACCEPTANCE AND REJECTION:** The Arkansas State Highway and Transportation Department (AHTD) 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.
2. **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.
3. **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 AHTD or fails to honor their bid. 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 authorized to do business in Arkansas, and must be signed by a Resident Local Agent licensed by the Arkansas State Insurance Commissioner to represent that surety company. Resident Agent's Power-of-Attorney must accompany the surety bond. Certain bids involving labor will require Performance Bonds in the form of surety bonds only (no checks of any kind allowed). 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.
4. **TAXES:** The AHTD 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 AHTD as an addition thereto, and should be added to the billing to the AHTD. The AHTD 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 AHTD.
5. **"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.
6. **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.
7. **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.
8. **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.
9. **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.
10. **SAMPLES, LITERATURE, DEMONSTRATIONS:** Samples and technical literature must be provided free of any charge within 14 days of AHTD request, and free demonstrations within 30 days, unless AHTD 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 AHTD. 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.
11. **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.
12. **BACKORDERS OR DELAY IN DELIVERY:** Backorders or failure to deliver within the time required may constitute default. Vendor must give written notice to the AHTD, as soon as possible, of the reason for any delay and the expected delivery date. The AHTD has the right to extend delivery if reasons appear valid. If reason or delivery date is not acceptable, vendor is in default.
13. **DEFAULT:** All commodities furnished will be subject to inspection and acceptance by AHTD after delivery. Default in promised delivery or failure to meet specifications authorizes the AHTD 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.
14. **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).

**ARKANSAS STATE HIGHWAY  
AND TRANSPORTATION DEPARTMENT**

**NOTICE OF NONDISCRIMINATION**

The Arkansas State Highway and Transportation (Department) complies with the Americans with Disabilities Act of 1990, Section 504 of the Rehabilitation Act of 1973, Title VI of the Civil Rights Act of 1964 and other federal equal opportunity laws and therefore does not discriminate on the basis of race, sex, color, age, national origin, religion or disability, in admission or access to and treatment in Department programs and activities, as well as the Department's hiring or employment practices. Complaints of alleged discrimination and inquiries regarding the Department'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@arkansashighways.com](mailto:Joanna.Mcfadden@arkansashighways.com).

This notice is available from the ADA/504/Title VI Coordinator in large print, on audiotape and in Braille.

ARKANSAS STATE HIGHWAY  
AND  
TRANSPORTATION DEPARTMENT



BID INVITATION

FOR

MULTIBEAM SONAR SURVEY SYSTEM

– CONSISTING OF –

MULTIBEAM ECHO SOUNDER, GPS COMPASS, AND  
ACCESSORIES

January 24, 2014

## Table of Contents

1.0.	GENERAL INFORMATION	2
1.1.	Introduction and Background	2
1.2.	General Instructions	2
2.0.	BID PROPOSAL ORGANIZATION AND FORMAT	2
2.1.	Multiple Bids	3
2.2.	Demonstrations	3
3.0.	GENERAL BID REQUIREMENTS	4
3.1.	Description of Equipment for Multibeam Sonar System	4
3.2.	Objectives	4
3.3.	Needs	4
3.4.	Organization Capabilities	4
3.5.	Staff Qualifications	4
3.6.	Bidder References	4
3.7.	Summary	5
4.0.	TECHNICAL REQUIREMENTS	5
4.1.	Multibeam Sonar Survey System	5
4.1.1.	Multibeam Echo Sounder	5
4.1.1.1.	Dimension & Weight	5
4.1.1.2.	Sonar Beam Requirements	5
4.1.1.3.	Range	5
4.1.1.4.	Environmental Requirements	5
4.1.2.	Motion Sensor	6
4.1.3.	Timing Device	6
4.1.4.	GPS Compass	6
4.1.5.	Sound Velocity Profiler	6
4.1.6.	Real Time Sound Velocity Probe	7
4.1.7.	Data Collection and Processing Software	7
4.1.8.	Miscellaneous Accessories and General Requirements	8
4.1.9.	Operating Manuals	8
4.2.	Standard of Performance	8
5.0.	PERFORMANCE REQUIREMENTS	8
5.1.	Multibeam Sonar Survey System Requirements	8
6.0.	SUPPORT REQUIREMENTS	9
6.1.	Training for Multibeam Sonar Survey System	9
6.2.	Warranty for Multibeam Sonar Survey System	10
6.3.	Maintenance Support for Multibeam Sonar Survey System	10
6.4.	Firmware and Software Upgrades	10
Attachment A	Reference Data Sheet	11
Attachment B	Summary Sheet	12

## 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 a Multibeam Sonar Survey System. The Arkansas State Highway and Transportation Department intends to award a contract for a Multibeam Sonar Survey System.

### 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 Highway Department in order to verify similar situations of State Highway 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 must be in the same sequence and numbered as they appear in this BID INVITATION.
- Responses must 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 must 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 must be in the same sequence and numbered as they appear in this BID INVITATION.
- Responses must 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 must 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 must be in the same sequence and numbered as they appear in this BID INVITATION.
- Responses must 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 must 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 must be in the same sequence and numbered as they appear in this BID INVITATION.
- Responses must 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 must 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 must 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 must conform fully to the requirements for bid submission. Each such bid must 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 State Highway and Transportation Department site. Product(s) being demonstrated must 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 must 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 must 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 Multibeam Sonar Survey System

The Department desires to procure a Multibeam Sonar Survey System consisting of a Multibeam echo sounder, Motion Sensor, GPS compass, sound velocity profiler, software for data collection, patch test calibration, and data processing, hereinafter called Multibeam Sonar Survey System. The system must 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 Multibeam Sonar Survey System shall comprise of hardware and software in order to allow for data acquisition and underwater surveys. The Department's objective is to acquire more detailed data below the water surface in order to distribute more accurate and detailed subsurface surveys. Our objective is for one (1) Multibeam Sonar Survey System as described in this specification, which must meet or exceed the specifications. The Multibeam Sonar Survey 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 more accurate Sonar equipment to perform surveys, as well as detect channel scour at bridges; the deepest profile of stream channels; conduct river bottom and bank surveys for shipwrecks, submerged cultural features and remnants of historic river crossings; monitor stream channel changes over time at stream restoration and mitigation sites; and will increase diver safety and reduce project costs.

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 must 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 data below the water surface for engineering and topographic surveys. Specifically, the bidder shall agree to provide the following:

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

## 4.0. TECHNICAL REQUIREMENTS

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

### 4.1. Multibeam Sonar Survey System

The Multibeam Sonar Survey System shall include a Multibeam Echo Sounder, Motion Sensor, Timing device, GPS compass (heading and position device), sound velocity profiler, real time sound velocity probe, all accessories, and software for data collection, patch test calibration, and data processing.

#### 4.1.1. Multibeam Echo Sounder

##### 4.1.1.1. Dimension & Weight

- The unit must be portable and weigh no more than 30.0 pounds (13.6 kilograms) in order to be deployed by one person.
- The transducer shall be no larger than 11 inches (279 millimeters) length by 6 inches (152 millimeters) wide by 6 inches (152 millimeters) height.
- The echo sounder must be constructed of materials in order to keep the system free of rust and corrosion.

##### 4.1.1.2. Sonar Beam Requirements

- The system must be capable of collecting a minimum of 24-bit data.
- The frequency of the system must be user selectable up to at least 220 kHz.
- The nominal beam swath width shall be user selectable up to at least 120°.
- The number of beams shall be user selectable up to at least 512 beams.
- System must be capable of both amplitude and phase detection and be capable to select which has the least uncertainty.

##### 4.1.1.3. Range

- The echo sounder must be capable of working in water depths from 1.6 ft (0.5 m) to 600 ft (182 m).
- The echo sounder must be capable of obtaining a complete 120° swath at depths up to 325 ft (100 m)

##### 4.1.1.4. Environmental Requirements

- The echo sounder must have an operating water temperature range of at least 25° to 95° F (-3° to 35° C).
- The echo sounder must have a storage temperature range of at least 0° to 130° F (-17° to 54° C).

#### 4.1.2. Motion Sensor

- The Motion sensor shall be internally mounted or directly connected to the transducer.
- The Motion sensor shall contain a minimum of the following sensors and accuracies:
  - Dynamic Roll/Pitch – 0.25° RMS
  - Heave - +/- 0.16 ft (5cm) or 5%

#### 4.1.3. Timing Device

- The timing device shall receive the data stream from the echo sounder, motion sensor, GPS compass (heading and position device), and real time sound velocity probe.
- The device shall be capable of sending correct power to connected ancillary devices including the echo sounder, real time sound velocity probe, the motion sensor, and the GPS compass (heading and position device).
- The timing device must be capable of tagging all incoming data streams to 0.1 ms.
- The timing device shall send all data streams to the PC for data collection.
- The device shall be portable and easily deployed by one person.
- The timing device must have an operating temperature range of at least 25° to 120° F (-3° to 48° C).
- The timing device must have a Storage temperature range of at least 0° to 140° F (-17° to 60° C).

#### 4.1.4 GPS Compass (Heading and Positioning Device)

- The system shall receive L1/L2 GPS and GLONASS signals.
- The receiver shall be built into the timing device in order to reduce connections.
- For situations of satellite signal loss due to canopy coverage, the system shall have a typical reacquisition time of 15 seconds or less.
- The heading accuracy of the system shall be equal to or greater than 0.09° RMS at a 1.0 m antenna separation and 0.04° RMS at a 2.0 m antenna separation.
- The system shall have integrated gyro and tilt sensors in order to provide heading updates during temporary loss of satellite signal.
- The system must have a horizontal positional accuracy of 0.065 ft (2.0 cm) + 2ppm with 95% confidence.
- The system must have a heave (vertical) accuracy of 0.16 ft (5.0 cm) RMS.
- The system shall be capable of receiving RTK position and obtain heading through two included antennas.
- The system shall be capable of communication with the Trimble R8 RTK system, which the Department currently utilizes.

#### 4.1.5. Sound Velocity Profiler

- The Sound Velocity Profiler shall have a sound velocity range of at least 4600 – 5500 ft/sec (1400 – 1700 m/sec).
- The Sound Velocity Profiler shall have an accuracy of +/- 0.16 ft/sec (0.05 m/s) RMS.
- The Sound Velocity Profiler shall be constructed of material in order to remain rust and corrosion free.
- The Sound Velocity Profiler shall be powered by rechargeable batteries and have at least a 10 hr continuous run time on a charge.

- The Sound Velocity Profiler must have an operating temperature of at least 29° to 100° F (-2° to 40° C).
- The Sound Velocity Profiler shall have an internal memory capable of storing multiple casts.
- The Sound Velocity Profiler must be capable of being submersed to a depth of at least 150 ft (45 m).
- The Sound Velocity Profiler must be capable of obtaining temperature readings accurate to 0.1° F (0.05° C) RMS

#### 4.1.6 Real Time Sound Velocity Probe

- The Real Time Sound Velocity Probe shall have an Accuracy of +/- 0.65 ft/sec (0.2 m/sec).
- The Real Time Sound Velocity Probe shall be capable of receiving power and communication with a single connection to the timing device.
- The Real Time Sound Velocity Probe shall be constructed of material in order to remain rust and corrosion free.
- The Real Time Sound Velocity Probe shall have a sound velocity range of at least 4600 – 5250 ft/sec (1400 – 1600 m/sec).
- The Real Time Sound Velocity Probe must be capable of being submersed to a depth of at least 150 ft (45 m).
- The Real Time Sound Velocity Probe must be capable of outputting a reading at a rate of 10 Hz.
- The Real Time Sound Velocity Probe must have an operating temperature of at least 34° to 100° F (1° to 40° C)

#### 4.1.7 Data Collection and Processing software

- All software shall be capable of running/logging on a maximum of two computers supplied by AHTD.
- 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 7.
- The system must be able to collect data, process files, and output a final product of an X, Y, and Z coordinate system in a text file format.
- The software must be able to handle all calibrations relevant to the accuracy of the data.
- The software must be capable of display a real-time 3D Model of the data and display real-time current depth for clearance.
- The software shall be able to perform statistical and performance reports.
- The software shall be capable of applying Arkansas State Plane Projections and applying specific geoids.

#### 4.1.8 Miscellaneous Accessories and General Requirements

The accessories that follow shall be included with the system

- A fairing designed to protect the underwater components and reduce drag.
- Chargers for any internal batteries.
- All cables for connection of system components.
- A carrying case(s) for all applicable components made of rigid, yet flexible material that provides superior protection, as well as being lightweight and waterproof.

- The system shall be capable of running for up to 10 hour days utilizing a battery array with inverter or small generator.

4.1.9 Operating Manuals

The Multibeam Sonar Survey 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 must 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 Multibeam Sonar Survey System will not be fully accepted until the performance requirements have been maintained for a period of ninety (90) consecutive days. If the Multibeam Sonar System fails to meet the standard of performance after one hundred eighty (180) calendar days from commencement of the performance period, the Arkansas State Highway and Transportation Department may require a replacement system or terminate the contract and receive a refund of all equipment cost.

5.0. PERFORMANCE REQUIREMENTS

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

5.1. Multibeam Sonar Survey System Requirements

System component accuracy is specified in the following Tables.

Table 1. Motion Sensor Accuracy

Dynamic Heave	0.16 ft (5.0 cm) or 5% whichever is greater
Dynamic Roll and Pitch	0.25° RMS

Table 2. GPS Compass (Heading and Position Device)

Horizontal Accuracy	2D RMS (95%)
RTK	2.0 cm+ 2 ppm
Heading Accuracy	<0.09° RMS @ 3.28 ft (1.0 m) antenna separation <0.04° RMS @ 6.56 ft (2.0 m) antenna separation <0.02° RMS @ 16.4 ft (5.0) m antenna separation
Roll and Pitch Accuracy	<1.0° RMS
Heave(Vertical) Accuracy (RTK)	0.16 ft (5.0 cm) RMS

Table 3. Multibeam Sonar Survey System Accuracy

Resultant Elev./ Depth Accuracy	Depth	Bottom Material Classification	
		Hard	Soft
	d < 15 ft (d<4.6 m)	+/- 0.5 ft (15 cm)	+/- 0.5 ft (15 cm)
	15 - 40 ft (4.6-12.2 m)	+/- 1.0 ft (30 cm)	+/- 1.0 ft (30 cm)
	d>40 ft (d>12.2 m)	+/- 1.0 ft (30 cm)	+/- 2.0 ft (60 cm)

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 Multibeam Sonar Survey System

A qualified representative of the manufacturer shall provide instruction in the operation, calibration, and maintenance of the Multibeam Sonar Survey System at no extra cost. This instruction shall be provided to at least five (5) operators, engineers, and engineering specialists who have previous surveying experience but no hydrographic experience. The purpose of the instruction shall be to train five (5) operators, engineers, and engineering specialists with the features, operation, calibration and maintenance of the Multibeam Sonar Survey System. This training will be conducted at the AHTD Central Office in Little Rock, AR. The bid shall include all travel expenses for the training

The training is to be scheduled no later than thirty (30) calendar days after delivery of the Multibeam Sonar Survey 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 Multibeam Sonar Survey 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 Multibeam Sonar Survey System

The successful bidder shall warranty the Multibeam Sonar Survey System against defective workmanship or materials for a period of thirty-six (36) 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 36 months of field operation, shall be replaced, repaired or corrected at no expense to the Department.

During the last thirty (30) days of the warranty period, the Multibeam Sonar System will be checked by the successful bidder’s service personnel and will make any necessary adjustments.

If the vendor’s standard warranty is for a period in excess of thirty-six (36) months the standard warranty shall apply. If the vendor’s standard warranty is for a period less than thirty-six (36) 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 Multibeam Sonar 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 Multibeam Sonar Survey System

The manufacturer of the Multibeam Sonar Survey 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 state in detail the terms and conditions of the monthly maintenance agreement for the proposed Multibeam Sonar 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. 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 Multibeam Sonar Survey 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: \_\_\_\_\_

ATTACHMENT B – SUMMARY SHEET

FOR VENDER \_\_\_\_\_

PRODUCT(S) SUPPLIED:

LIST ALL ITEMS AS REQUIRED BY THIS BID INVITATION  
(Use as many sheets as necessary)

<u>Item</u>	<u>Components</u>	<u>Quantity</u>	<u>Component Make and Model</u>
a.	Multibeam Echo Sounder	1	
b.	Motion Sensor	1	
c.	Timing Device	1	
d.	GPS Compass Module	1	
e.	GPS Antenna	2	
f.	Software for Collection	1	
g.	Software for Processing	1	
h.	Fairing	1	
i.	Complete Cable Set	1	
j.	Carrying Case	2	
k.	Extended Warranties	1	
l.	Extended Software Maintenance	1	
m.	Training Session including all travel expenses	1	