

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

Bid Number: M-11-112P

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: April 12, 2011 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: _____

Phone: _____ Fax: _____

City: _____ State: _____ Zip: _____

E-mail Address: _____

Federal Tax ID or Social Security No.: _____

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>Field Survey System consisting of Five Electronic Total Stations, Prism Assemblies and Accessories – complete list attached to and made a part of this bid.</p> <p><u>Items must be priced individually on Page 16 of Specifications but bid will be awarded by the Lump Sum.</u></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>NOTE: 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>Bid Bond in the amount of 5% of total bid price required of all bidders at time of bid opening or bid will be rejected. <u>Personal and company checks are not acceptable as Bid Bonds.</u> See Condition 3 on page 2 of Bid Invitation.</p> <p>Performance Bond in the amount of 5% of total bid price will be required of successful bidder prior to providing goods/services. <u>Personal and company checks are not acceptable as Performance Bonds.</u> 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 – www.arkansashighways.com 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>	5	ea.		
	(69-0004) 08-00				TOTAL BID

STANDARD BID CONDITIONS

M-11-112P

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 James B. Moore, Jr., 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: james.moore@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

FIELD SURVEY SYSTEM

-- CONSISTING OF --

**FIVE ELECTRONIC TOTAL STATIONS,
PRISM ASSEMBLIES, AND ACCESSORIES**

March 23, 2011

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

The Department desires to procure a Field Survey System consisting of a combination theodolite and electronic distance measuring (EDM) device, hereinafter called Electronic Total Station, prism assembly and accessories. 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 Field Survey System shall comprise of hardware involved to allow for data acquisition. The Department's objective is to acquire hardware that will allow data collection with AASHTOWare® SDMS®. Our objective is for five (5) Field Survey Systems as described in this specification, which must meet or exceed the specifications. The Electronic Total Station, prism assembly and all of the accessories directly relating to the operation of these said items shall be manufactured by the same company and be compatible for use together. Tripods, Prism Poles, and Carrying Bags may be supplied from other manufacturers.

3.3. Needs

The Department has a need to collect data using positioning techniques as described under Section 4 for geodetic, engineering, land, and topographic surveys, as well as construction layout, mapping, and right-of-way staking. All Field Survey Systems bid shall be interchangeable with each other and capable to provide uninterrupted ease in data acquisition.

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 for geodetic, engineering, land, and topographic surveys, as well as construction layout, mapping, and right-of-way staking. Specifically, the bidder shall agree to provide the following:

- Five (5) Field Survey Systems that satisfy the specifications described under Section 4.0. and Section 5.0.
- Each Field 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. Field Survey System

The Field Survey System shall include the combination Electronic Distance Meter (EDM) and Theodolite as an Electronic Total Station, and other hardware and accessories.

4.1.1. Electronic Total Station

4.1.1.1. Dimension & Weight

- The unit must be portable and weigh no more than 15.2 pounds (6.9 kilograms) with battery and carrying handle.
- Overall dimensions of the system with carrying handle and battery shall be no more than 14.8 inches (375 millimeters) high by 8.0 inches (201 millimeters) wide by 8 inches (202 millimeters) deep.

4.1.1.2. Power Requirements

A cassette type removable Lithium-ion rechargeable battery shall power the instrument. A dependable method for charging the battery shall also be provided. Each Field Survey System shall satisfy the following requirements:

- The battery shall possess an adequate charge to obtain a minimum of fourteen (14) hours of data collection consisting of distance and angle readings, at a rate of 30 seconds per shot, from a full charge at 68°F.
- Four (4) standard Lithium-ion batteries to be supplied with each system.
- Two (2) battery chargers capable of charging the battery to full charge in four (4) hours at 25° C shall be included with each system. This charger should be standard 110 VAC.
- The display of the unit must show available power with low power messages.
- The electronic total station must contain a battery saving feature of power cut-off selectable after (30,15,10,5) minutes of non-operation.
- Batteries that function as carrying handles are not acceptable.

4.1.1.3. External Interface

Each Field Survey System shall satisfy the following requirements:

- Output shall be through a data port in the lower non-rotating portion of the instrument.
- The system shall include a cable that connects the Electronic Total Station through the data port to an external data collector as described in Section 4.1.2.9.
- The system shall be fully and completely compatible with the AASHTOWare[®] Survey Data Management System (SDMS[®]) Collector Version 3.5 software.
- The system shall be on the current published list of instruments certified and supported by AASHTOWare[®] SDMS[®] at the time the bid is submitted.
- The system shall be fully and completely compatible with all of the approved data collectors that are on the current published list of AASHTO-approved data collectors and used by the Arkansas Highway & Transportation Department. The Department currently uses desktop and laptop computers, Hewlett Packard 100LX, Hewlett Packard 200LX, Husky Hunter 16, and Husky MP2500 data collectors.
- The system shall have Class 1 Bluetooth wireless technology for license-free long range data communication.

- User selectable options:
 - Baud rate up to 38,400 bps
 - Data bits 7 or 8
 - Parity: Not Set/Odd/Even
 - Stop bit 1 or 2

4.1.1.4. Display

Each Field Survey System shall be capable of the following:

- The display, including 32 Key alphanumeric keyboard with backlight.
- Displays the horizontal and vertical angles in an upright digital read-out, continuously, in Face I (normal) and Face II (inverted).
- All functions of the instrument shall be displayed at the option of the user.

4.1.1.5. Environmental

Each Field Survey System shall operate within the following environmental extremes without sustaining damage and interruption of data collection.

- Operating Temperature Range: -4° F. to +122° F. (-20° C to + 50° C).
- Storage Temperature Range: -30° C to + 70° C
- Must have IP rating of IP65 or better.

4.1.1.6. Telescope

Each Field Survey System shall have the following in regards to the telescope of the instrument.

- Must be fully 360 degree transiting with coaxial sighting and distance measuring.
- Minimum magnification of 30X.
- Focusing shall be two speeds for fast and precise focusing.
- Minimum telescope focusing distance shall be 4.3 feet (1.3 meters).
- Minimum diameter of objective aperture shall be 1.8 inches (45 millimeters).
- Field of view: 1 degree 30 minutes (at 26 meters/1000 meters).
- Erect image.

4.1.1.7. General Operation

The Field Survey System must be able to perform all of the items that follow:

- Shall have, as part of this instrument, an electronic theodolite that electronically measures horizontal and vertical angles.
- Electronic distance meter shall be an integral part of the instrument.
- Equipped with an optical plummet with an erect image, minimum magnification of 3X, and a minimum focus of 0.3 meters
- Equipped with a plate level bubble of 30 seconds /2 millimeters.
- Equipped with a circular level of 10 minutes /2 millimeters.
- Equipped with a graphical tilt and digital (bull's-eye) tilt angle display for instrument leveling.
- Unit of angle must be selectable between Degree, Gon, and Mil
- Unit of Angle Measure: 360 degrees divided sexagesimally (selected by keyboard).

- Units of Distance shall be feet, US survey feet, or meters (user selectable).
- Capable of outputting vertical angle type (selectable zenith 0°, horizontal 0° or horizontal 0°±90°), angle unit (degrees), whether the tilt sensor is active or inactive, and whether atmospheric and prism constant corrections are applied.
- Capable of outputting the values generated by the theodolite and distance meter, to an external data collector, for eventual transfer to a microcomputer or other data processing instrument.
- Performs automatic self-diagnostic function at power up with messages/codes displayed.
- Perform self-checks to determine if the instrument is working properly and display diagnostic error codes if not.
- Perform slope distance measurements utilizing a minimum of three (5) modulation frequencies and display full measurement in an unambiguous display up to 32,808.333 feet .
- Horizontal and Vertical fine motion screws and clamps shall be coaxial, with two speed tangents. These knobs are coated with durable non-slip rubber.
- Measure slope distances to a retro prism with the telescope in both the direct and reverse position and is capable of automatically converting this slope distance into correct horizontal or vertical distances.
- Atmospheric correction shall be accomplished by user entry of temperature and pressure, temperature, pressure and relative humidity or ppm value. User can choose no correction if desired. The following items for atmospheric correction should be allowed for input by the user:
 - Temperature input range: -22° to +140°F in 1° increments.
 - Pressure input range: 375 millimeters Hg to 1050 millimeters Hg in 1 millimeters Hg increments, 14.8 inch Hg to 41.3 inch Hg in 0.1 inch Hg increments, or 500 hPA to 1400 hPA in 1 hPA increments.
 - PPM input range: -499 ppm to +499 ppm in increments of 1 ppm.
 - Humidity input range: 0% to 100% in increments of 1%.
- The following items for correction should be allowed for input by the user:
 - Refraction & earth-curvature correction: ON (K=0.14 or K=0.20) or OFF selectable.
 - Prism constant correction range: -99 millimeters to +99 millimeters in one millimeter increments.
- There shall be a user selectable graphic display of the compensator output in a “bull’s eye” or circular level vial format to aid the user in leveling the Electronic Total Stations.
- Must have six measuring modes (Fine Single, Fine Avg, Fine Repeat, Rapid Single, Rapid Repeat, and Tracking)
- Must be capable of displaying a distance resolution that is user selectable via the keyboard of the following:
 - During Fine measurement: 0.001 feet (0.0001 meters);
 - During Coarse measurement: 0.01 feet (0.001 meters);
 - During Tracking measurement: 0.1 feet (0.01 meters).
- Horizontal and vertical angles measurement accuracy to within 2 seconds.
- Must be capable of displaying an angle resolution of 1 second and be user selectable via the keyboard.
- Keyboard must be able to be customized to allow the operator to assign the most used functions to a user specified.

- User shall be able to disable, through the menu functions, the keyboard function of measuring horizontal angle left.
- Equipped with a dual axis compensator that will automatically eliminate the influence of vertical axis inclination on the accuracy of vertical and horizontal angles. The compensator shall be able to output the X & Y tilt of the vertical axis in minutes and seconds to the display to level the instrument using this facility. Must be able to display the tilt sensor resolution to 1 second.

4.1.1.8. Survey Techniques

- The user must be able to set the horizontal angle to any desired value between 0 and 360 degrees.
- Updates angle readings continuously during rotation of horizontal and vertical motions.
- Measures and displays angles in the vertical plane as zenith angles (0° along the upward vertical) or vertical angles (0°, at horizontal), or vertical ± 90 (0°, at horizontal + above horizontal and – below horizontal).
- Compute and display horizontal and vertical projections of a line with automatic corrections for earth curvature, refraction, and atmospheric pressure.
- Perform distance measurements in a keyboard selectable fine, coarse, or track reading mode.
- Initiate slope, horizontal or vertical distance reading, by pressing a single key to start a measurement and reduce it as required.

4.1.1.9 Special Requirements

- The electronic Total Station shall be fully and completely compatible with the AASHTOWare[®] Survey Data Management System (SDMS[®]) software and shall be on the current published list of instruments certified and supported by AASHTOWare[®] SDMS[®] Collector Version 3.5 at the time the bid is submitted. This list may be found at <http://sdms.aashtoware.org/sdms/sdmssite.nsf> or www.aashtoware.org/sdms.
- The electronic Total Station must be fully and completely compatible with AASHTO-approved data collectors used by the Arkansas Highway & Transportation Department.
- The electronic Total Station, in conjunction with AASHTOWare[®] SDMS[®] software, must be able to measure and record, in the direct and reverse telescope positions, horizontal angles, vertical angles, and distances following the Department's current procedures, as outlined in *Requirements and Procedures for Design Surveys and Parcel Surveys* as published by the Arkansas Highway & Transportation Department.

This document may be found at <ftp://www.arkansashighways.com/outgoing/surveys/contents.htm>

4.1.2. Other Hardware

Each Field Survey System shall include all of the items that follow.

4.1.2.1. Tripod

- two (2) Wide Frame Wood Tripods with self-adjusting hinges. The tripod shoes shall have large spurs with hardened steel replaceable tips. When the tripod is collapsed, the legs shall have a slot on each leg that serves as a carrying handle for ease of carrying. The tripod shall have a 5/8-inch x 11 flat head capable of supporting the Electronic Total Station.

4.1.2.2. Single Prism and Mount

- Two (2) Single Prisms with 40 millimeters offset with single tilting mount. Prisms shall be easily mounted or removed from mount by means of a threaded stud.

NOTE: The prism must be from the same manufacturer as the total station to ensure compatibility between equipment.

Recent studies have shown that over varied surveying conditions, 40 mm offset prism produce more accurate results versus 30 mm and 0 mm offset prisms. If a 40 mm prism is not provided then sufficient documentation must be included with this bid to justify why the bidder is not supplying a 40 mm prism. This documentation must include comparison of bidder's prism and a 40 mm prism.

4.1.2.3. Prism Carrying Bag

- Two (2) Single Prism Carrying Bags sized to hold the prism as described above in Section 4.1.2.2.

4.1.2.4. Prism Pole

- Two (2) Prism Poles, Metric and Feet Graduation, aluminum tubing with brass fittings with male 5/8 x 11 prism mounting stud and adjustable height 4.5 to 8.3 feet. The prism pole must have a level bubble attached to the pole and must be capable of supporting the prism described in Section 4.1.2.2.

4.1.2.5. Triple Prism Mount

- ~~One (1) Triple Stationary Mount that holds three prisms of the type mentioned above in Section 4.1.2.2. The mount should have a fourth mounting hole in the center of the mount so that it may be accurately used with a single prism.~~ This item is not required for this bid invitation.

4.1.2.6. Miscellaneous Accessories

- One (1) tool kit for performing field adjustments
- One (1) tubular compass
- One (1) tribrach
- One (1) sunshade
- One (1) plumb bob

4.1.2.7. Carrying Cases

Each Field Survey System must include all of the following items:

- A carrying case made of rigid, yet flexible, material that provides superior protection, as well as, being lightweight.
- A vinyl rain cover for the instrument should be included in the carrying case.
- A padded shoulder strap(s) that allows carrying the case as a backpack.

4.1.2.8. Operating Manuals

Each Field Survey System shall include one (1) set of operation manual(s). 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.

4.1.2.9. External Data Collector Cable

The system shall include two (2) cables capable of connecting the Electronic Total Station to a Husky (iTroniX) MP2500 Data Collector. The Husky MP2500 has a male DB9 Connection.

Pin-out configurations are available by contacting the Surveys Division of the Arkansas Highway & Transportation Department.

The cable must have a connection capable of securely connecting to the Electronic Total Station on one end. The other end shall have either a molded female DB9 Connection or, as an alternate, the end may be high quality metal connection. The female DB9 connection end must have screws to secure the

connector to the Husky MP2500. The user must be able to tighten or loosen the screws by hand without the aid of any other devices.

4.2. Standard of Performance

If requested, the apparent successful vendor meeting all requirements shall demonstrate the use of the proposed hardware 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 forty-five (45) 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 forty-five (45) 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 forty-five (45) consecutive days. The Field Survey System will not be accepted and no charges shall be paid until the performance requirements have been maintained for a period of forty-five (45) consecutive days. If the Field Survey System fails to meet the standard of performance after one hundred twenty (120) calendar days from commencement of the performance period, the Arkansas State Highway and Transportation Department may require a replacement system or terminate the contract.

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. Field Survey System Requirements

System accuracy is specified under Table "Field Survey System Accuracy".

- Accuracy to within 2 seconds on horizontal and vertical angles measurement.
- Perform distance and angle measurements as required, in both normal and inverted modes, under average and good atmospheric conditions.

Average atmospheric conditions are slight haze, visibility about 12 miles, sunny periods, weak scintillation (heat waves). Good atmospheric conditions are no haze, visibility about 25 miles, overcast, no scintillation.

- Maximum Range: Not less than 16,400 feet using one (1) reflector prism and not less than 26,240 feet using three (3) reflector prisms under average atmospheric conditions. Not less than 19,680 feet using one (1) reflector prism and not less than 32,800 feet using three (3) reflector prisms under good atmospheric conditions.

Field Survey System Accuracy				
Measurement Mode	Minimum Measuring Time		Display	Distance Accuracy (where D = Measurement)
	First Shot	Subsequent Repeated		
Fine	1.5	0.9	0.001 feet or 0.0001 meters (0.01 feet or 0.001 meters) selectable	$\pm(2 + 2 \text{ ppm} \times D) \text{ mm}$
Coarse	1.3	0.6	0.01 feet or 0.001 meters	$\pm(5 + 5 \text{ ppm} \times D) \text{ mm}$
Track	1.3	0.4	0.1 feet or 0.01 meter	

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 Field Survey System

If requested, a qualified representative of the manufacturer shall provide instruction in the operation, calibration, and maintenance of the Field Survey System at no extra cost. This instruction shall be provided to at least five (5) operators, engineers, and engineering specialists who have previous Survey 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 Field Survey System.

The training is to be scheduled no later than ten (10) calendar days after delivery and installation of the Field Survey System. The training will typically consist of a one (1) day session, or longer if necessary. At the conclusion of training, all trainees should be able to operate the Field 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 Field Survey System

The successful bidder shall warranty the Field 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 year 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 Field Survey System will be checked by the successful bidder's service personnel 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.

During the warranty period, the successful bidder shall also provide the loan of an equal total station instrument free of charge, for repairs that will require more than 24 hours. The loan equipment shall be furnished within 24 hours of notification of need of repair.

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 Field Survey System

The manufacturer of the Field Survey System must provide maintenance support. Indicate your maintenance policies with regard to hardware and software problem diagnosis, error resolution and charging policies. The bid response must state in detail the terms and conditions of the monthly maintenance agreement for the proposed Field Survey System. Such statements must 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 size and location of your spare parts inventory;
- 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 to remedial service that your company is willing to commit to.

6.4. Firmware Upgrades

Within the warranty period, the vendor shall provide any and all released firmware upgrades to the Field Survey System at no extra cost. The vendor shall indicate in the bid their method and procedure of supplying and installing firmware.

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: _____

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