



**THIS IS NOT  
AN ORDER**

**REQUEST FOR BIDS/PROPOSALS COVERSHEET**  
**THE UNIVERSITY OF SOUTHERN MISSISSIPPI**

**Procurement and Contract Services**  
**118 College Drive #5003, Hattiesburg, Mississippi 39406-0001**

**Date:** March 27, 2025

**Name:** \_\_\_\_\_

**BID No. 25-43**

**Company:** \_\_\_\_\_

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

**City/State/Zip:** \_\_\_\_\_

THE UNIVERSITY OF SOUTHERN MISSISSIPPI is considering the purchase of the following item(s). We ask that you submit your bid and retain one copy for your files. Right is reserved to accept or reject any part of your bid. Your quotation will be given consideration if received in Bond Hall, Room 214 on or before:

2:00 p.m. CT

TERMS - Bidder should state terms of sale. Our terms are 2% ten days, net 45 days.

These terms will apply per Mississippi law.

AWARDING CONTRACT - Cash terms will not be used as a basis for awarding contracts; however, the University will accept cash discounts when earned.

April 15, 2025

**Buyer:** Amber Floyd

NOTE: If you cannot quote on the exact material shown, please indicate any exception giving brand name and complete specifications of any alternate. If additional space is required, use a separate sheet or letter of transmittal.

ITEM	QUANTITY	DESCRIPTION	UNIT PRICE	TOTAL NET PRICE
		<b>BID 25-43 USBL Tracking System</b>  <b>RFx # 3160007289</b>		
		PROPOSAL MUST BE RETURNED TO THE UNIVERSITY IN ACCORDANCE WITH THE SPECIFICATIONS. RFP NUMBER AND DATE OF BID OPENING MUST BE SHOWN ON THE OUTSIDE OF THE ENVELOPE IF USING THAT METHOD.		

We quote you as above - F.O.B. The University of Southern Mississippi.  
Shipment can be made in \_\_\_\_\_ days from receipt of order. DATE \_\_\_\_\_  
Return quotation to Procurement Services at above address.



THE UNIVERSITY OF  
**SOUTHERN**  
**MISSISSIPPI**®

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***Specifications For an Ultrashort Baseline (USBL) Mobile/Rapidly Relocatable  
Acoustic Tracking System (MRRATC)***

***The University of Southern Mississippi***

***Prepared by Steve Stanic and Landry Bernard***

***March 19/2025***

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## ***Specifications For an Ultrashort Baseline (USBL) Mobile/Rapidly Relocatable Acoustic Tracking System (MRRATC)***

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### **I. Purpose**

This RFP outlines the specifications for an ultrashort baseline (USBL) Mobile/Rapidly Relocatable Acoustic Tracking System (MRRATC). This MRRATC system will allow the University of Southern Mississippi's (USM) Roger F. Wicker Center for Ocean Enterprise (COE) to conduct research programs concentrating on determining the detectability of targets from known UUV track positions and standoff ranges.

### **II. Background**

The COE located at the Port of Gulfport, MS has been researching and testing advanced magnetic and hydrophone sensor designs, and the on-board processing needed to test agnostic magnetic, geophysical, and hydrophone sensors. This includes using these sensors for the detection, classification, and localization (DCL) of proud and buried targets.

This RFP defines the required components (hardware/software) for a COTS-based mobile, rapidly relocatable geophysical monitoring, and vehicle tracking system. It is comprised of an ultrashort baseline (USBL) Mobile/Rapidly Relocatable Acoustic Tracking System (MRRATC). The system will support a broad spectrum of in-water research programs in support of Naval Mine Countermeasures (MCM), Unmanned Underwater Vehicles, and Meteorological and Oceanographic (METOC) programs. COE has also developed and demonstrated underwater acoustic detection technologies to demonstrate the use of unmanned underwater vehicles (UUV) as potential force multipliers for detecting and tracking high speed surface marine threats. This includes the use of cooperative communication networks, and state of the art underwater capabilities integrated into hybrid (surface/underwater) systems.

The delivery arrangements and transportation costs shall be the vendor's responsibility. These systems, software packages, and support equipment shall be delivered to USM's Marine Research Center, 1030 30th Ave Gulfport, MS 39501.

### **III. General Specifications for an Ultrashort Baseline (USBL) Tracking system.**

1. The system shall include a surface Navigation Sensor Hub and Computer control system.
2. This system shall fit into a standard 19 instrumentation rack.
3. The system shall include a 17 in LCD monitor and keyboard.
4. The system shall provide and display simultaneous tracking of at least 4 transponders.
5. The system shall provide simultaneous position and telemetry while tracking.
6. There shall be array and electronic system health checks.
7. The system shall have high data rate telemetry for fast acquisition of data from other subsea instruments.
8. The system shall also measure the surrounding ocean ambient noise.
9. The system shall include all calibration software, manuals, cables, and installation kits.

#### **IV. Specific Specifications For Four Vector Seafloor USBL Position Reference Transponders**

The following minimum specifications shall ensure that each Position Vector Reference Transponder shall meet the specifications needed to support numerous USM project objectives.

<b>Vector Seafloor Position Reference Transponders</b>	
Operating depth	At least 3,000 m
Operating frequency bandwidth	20 to 34 kHz
Transducer beams	The beams shall be omni directional
Transducer source levels	At least 187 to 200 dB and shall be variable
Receive Sensitivity	At least -120 dB re 1V/ $\mu$ Pa
Range resolution	At least 15 mm
Power	24 Volts, Passive battery life shall be between; 800 and 1200 days
Operating temperature	The operating temperature shall range from -5 to 35°C
Dimensions	The dimensions shall be at least 1,018 $\times$ 200 mm including a sensor guard
Weight in air	The air weight shall not exceed 30 kg
<b>The Following Sensors Shall be Installed in Each Seafloor Transponder System</b>	
Temperature sensor	Shall have an accuracy of at least $\pm 0.1^{\circ}$ C
System tilt switch	Shall have a range of at least $\pm 40^{\circ}$
Pressure sensor	Shall have an accuracy of at least $\pm 0.01\%$
Inclinometer tilt sensor	Shall have a range of at least $\pm 90^{\circ}$ , with an accuracy of at least $\pm 1^{\circ}$
The unit shall also have a release mechanism, Gyro input, and external sensor power capabilities	

1. Transponders shall each be housed in a flotation collar and mounted on a tripod stand.
2. The collar shall be manufactured to form a syntactic foam collar with high visibility elastomer coating.
3. The system shall have lifting eyes for deployment and recovery.
4. The collars shall be designed to remain stable on a vessels deck.
5. The collars shall have a net buoyancy of at least 30 kg.

## V. Specific Specifications For Four Vehicle Mounted Acoustic Transponders

The following minimum specifications shall ensure that each acoustic transponder shall meet to support numerous USM project objectives.

Specifications For Four Vehicle Mounted Acoustic Transponders	
Operating range	Shall be no less than 955 m
Maximum depth	Shall be at least 450 m
Operating frequency	20-34 kHz
Transducer	The beam shall be omni directional
Source Level	The transducer source level shall be at least 180 dB
Range precision	Shall be at least 15 mm
Communication interface	USB
Battery life	Shall be at least 80 days in passive mode and 12 hrs. in active mode (1 Hz ping rate)
Battery charge time	Shall be no greater than 12 hrs.
Operating temperature	-10 to 45°C
Dimensions (length x diameter)	Shall be no greater than 200 x 55 mm
Weight in air/water	Shall be no greater than 500/150 g
Pinger addresses	Shall be at least 300 independent channels

VI. The USBL system shall include surface telemetry transceiver. This transceiver shall be deployable from the side of a small ship. This near surface transceiver will communicate with each of the four Seafloor Reference Transponders. This transducer shall have the ability to remotely turn off the Vehicle Mounted Acoustic Transponders. The minimum required specifications are given in the following table.

Specifications For a Surface Telemetry Transceiver	
Operating range	Shall have a maximum range of 7000 m
Operating frequency	20-34 kHz
Transducer	The beam width shall be at least $\pm 90^0$
Source level	At least 190 dB
Supply voltage	Supply voltage shall be 48 volts
Communications	Shall be RS484, with variable baud rates, Ethernet baud rates shall be at least 100 Mbps
Operating temperature	Shall be at least -5 to 35°C
Dimensions (length x diameter)	Shall be no greater than 350 x 250 mm
Weight in air/water	Shall be no greater than 27/16 kg

**VII.** The USBL system shall also include a passive subsurface transducer system as part of each of the four seafloor reference transponder configurations. These transducers shall acquire the position pings from the transponders mounted on each vehicle and shall transmit that data using the Seafloor Reference Transponders to the near surface deployed telemetry transceiver. The Navigation Sensor Hub shall use this data to obtain range and bearing information. The minimum specifications for the passive subsurface acoustic transducer is given in the following table.

<b>Specifications For a Bottom Mounted Passive Transducer</b>	
Operating range	Shall have a maximum range of 7000 m
Operating depth	The operating depth shall be at least 2500 m
Operating frequency	20-34 kHz
Transducer	The beam width shall be at least $\pm 90^\circ$
Supply voltage	Supply voltage shall range from 9-30 volts
Communications	Shall be RS232, baud rate shall range from 9600 to 115,200 baud
Operating temperature	Shall be at least -5 to 35°C
Dimensions (length x diameter)	Shall be no greater than 150 x 150 mm
Weight in air/water	Shall be no greater than 5.0/4.0 kg

**VIII. Specific Specifications for a Long Base Line (LBL) Telemetry Transceiver.**

1. The Telemetry Transceiver shall be deployable from a surface ship.
2. The transceiver shall come with a 40 m cable and winch assembly.
3. The housing shall be stainless steel.
4. The system shall have a robust construction for use in shallow water.
5. The inside electronics shall shock and vibration isolated.
6. A surface interface unit which provides command and control shall be provided.
7. The minimum specifications for the LBL Telemetry Transceiver are given in the following table.

<b>Specifications For a LBL Telemetry Transceiver</b>	
Operating depth	The operating depth shall be at least 1,000 m
Operating frequency	21-33 kHz
Transducer	The beam width shall be omni directional
Source level	At least 180-195 dB
Receiver sensitivity	Sensitivity shall be between -90 and -120 dB re 1V/ $\mu$ Pa and shall be selectable
Range resolution	At least 15 mm
Supply voltage	Supply voltage shall be 24 volts
Battery life	Passive battery life shall be at least 2.5 days
External power requirements	In passive mode the power consumption shall not exceed 3 W In active mode the power consumption shall be less than 90 w
Communications	Shall be RS232 and RS485 and shall be software controlled
Dimensions (length x diameter)	Shall be no greater than 700 x 200 mm
Weight in air/water	Shall be no greater than 25/17 kg

## IX. Options

1. A subsurface modem to wirelessly transmit data from subsurface sensors to the the (LBL)Telemetry Transceiver. The minimum specifications for this modem are given in the following table.

Specifications For a Subsurface Modem	
Operating depth	The operating depth shall be at least 3,000 m
Operating frequency	20-34 kHz
Transducer	The beam width shall be omni directional
Source level	At least 188- 195 dB
Receiver sensitivity	Sensitivity shall be between -90 and -120 dB re 1V/ $\mu$ Pa.
Range resolution	At least 15 mm
Supply voltage	Supply voltage shall be 24 volts
Communications	Shall be RS232, with baud rates between 2,400- 115,200
Operating temperature	Shall be at least -10 to 35°C
Dimensions (length x diameter)	Shall be no greater than 1000 x 200 mm
Weight in air/water	Shall be no greater that 25/17 kg

2. Two additional small vehicle mounted transceivers
  - The transceiver shall combine transponder, transceiver, and telemetry links for subsea operations.
  - Shall provide for comms between the UUV and sub surface modems (sensor packages), and also comms (telemetry and data) to the Position Seafloor USBL Reference Transponders.
  - Shall support AUV to AUV ranging and telemetry.
  - Shall have an emergency relocation mode.

Specifications For Two Additional Small High Performance Vehicle Mounted Transceivers	
Operation range	At least 3000 m dependent on the environment
Operating depth	The operating depth shall be at least 500 m
Operating frequency	20-34 kHz
Transducer	The beam width shall be omni directional at least $\pm 125^\circ$
Source level	At least 174 dB
Range resolution	At least 15 mm
Supply voltage	Supply voltage shall be 12-24 volts
Battery life	Passive battery life shall be at least 80 days, active mode at 1 Hz ping rate shall be at least 10 hrs.
Communications	Shall be RS232
Operating temperature	Shall be at least -10 to 35°C
Dimensions (length x diameter)	Shall be no greater than 200 x 55mm
Weight in air/water	Shall be no greater that 600/200 g

3. Two omni directional hydrophones
  - The outputs shall be configured for RS232 output
  - The hydrophone frequency band shall be from 500 Hz to at least 75 kHz.
  - The sensitivity shall be at least -165 dB re 1µPa.

#### **X. Software**

The vendor shall provide complete system, software packages, and product documentation.

#### **XI. Training**

The vendor shall provide training on the operation, software, maintenance, troubleshooting, and integration of all systems. A product integration service shall be provided. The onsite commissioning and support shall take place at the USM facility located in Gulfport MS.

#### **XII. Proof of Performance**

The vendor shall provide a proven record of the development of USBL and LBL systems. The vendor needs to provide references where their systems in a similar configuration as specified above have operated successfully within the last 2 years. The above requested information will assist USM in determining the bidder's capability of meeting these requirements.

#### **XIII. Warranty Services**

At a minimum, the Contractor shall provide software/hardware warranty support for one year from acceptance. Longer warranty periods are preferred. The Vendor shall agree to repair, adjust, and/or replace (as determined by the University to be in its best interest) any defective materials at the Vendor and/or manufacturers' sole cost. The University will incur no costs for service or replacement of materials during the warranty period. The vendor will be the sole point of contact for warranty issues.

#### **XIV. Documentation**

The Contractor shall provide Operations and Maintenance manuals to USM. Documentation provided shall include, but not be limited to the following:

- A. Theory of operation
- B. Operating procedures
- C. Troubleshooting and maintenance procedures
- D. IPB (Isometric Parts Breakout) drawings showing how all parts relate to one another.
- E. Documentation of the ML, AI, and DCL software packages.



**THE UNIVERSITY OF SOUTHERN MISSISSIPPI  
PROCUREMENT SERVICES  
118 COLLEGE DRIVE  
#5003  
HATTIESBURG, MS 39406-0001**

**GENERAL TERMS, CONDITIONS AND INSTRUCTIONS FOR BIDS/PROPOSALS**

- 1.) Failure to examine any drawings, specifications, and instructions will be at bidder's risk.
- 2.) Samples of items when called for must be furnished free of expense and if not destroyed in testing, will, upon request, be returned at the bidder's expense. Request for the return of samples must be made within ten (10) days following opening bids. Each individual sample must be labeled with bidder's name and manufacturer's brand name and number.
- 3.) Bids must be signed and sealed with bidder's name and address on the outside of the envelope, and the time and date of the bid opening and the bid file number shown in the lower-left corner of the packages; envelopes, express mailing labels, boxes, etc.
- 4.) At least one (1) signed original and one (1) signed copy of the bid **MUST** be provided. The University **requires** a portable electronic virus/malware free copy (thumb drive) of the bid response from the responding Vendor to be included in the bid response package. If an electronic copy is not included, the University reserves the right to request an electronic copy of the **exact** bid response prior to review of the bid.
- 5.) For your bid to be considered, it must be received, and time stamped in our office by 2:00 P.M. of the bid opening date. It is the responsibility of the vendor to ensure their bid is received within the appointed time. If your bid package is not received in Bond Hall, Room 214, by 2:00 P.M. of the bid opening date, it will not be considered.
  - a. If you are delivering your bid, you need to hand carry the bid package to: The University of Southern Mississippi  
Procurement Services  
Bond Hall, Room 214  
Hattiesburg, Mississippi
  - b. If you are mailing your bid package via U.S. Postal Service, mail to: The University of Southern Mississippi  
Procurement Services  
118 College Drive #5003  
Hattiesburg, MS 39406-0001
  - c. If you are express mailing your bid package via Federal Express or UPS, or any other delivery service which requires the use of a physical address, deliver to:

The University of Southern Mississippi  
Receiving Department  
2609 West 4<sup>th</sup> Street  
Hattiesburg, MS 39401

- 6.) Bids or proposals shall not be modified, corrected, altered, or amended after the specified closing time and the opening of such bids, unless otherwise noted in the request for bids or proposals.
- 7.) The University of Southern Mississippi reserves the right to reject any and all bids, to waive any informality in bids, and unless otherwise specified by the bidders, to accept any items on the bid. If the bidder fails to state the time within which bids must be accepted, it is understood and agreed that The University of Southern Mississippi shall have 90 days to accept. The University of Southern Mississippi reserves the right to make an award to this bid on an all or none basis, or on a line-by-line basis, whichever serves the best interest of The University of Southern Mississippi.
- 8.) Contracts and purchases will be made or entered into with the lowest, responsible bidder meeting specifications.
- 9.) A written purchase order or contract award mailed or otherwise furnished to the successful bidder within the time of acceptance specified in the Invitation for Bid results in a binding contract without further action by either party. The contract shall not be assignable by the vendor in whole or in part without the written consent of The University of Southern Mississippi.
- 10.) Unless written exception is provided in the bid response, the winning Vendor agrees to be bound by the USM Terms and Conditions, which are incorporated herein, and may be found at <https://www.usm.edu/procurement-contract-services/usm-terms-and-conditions>.
- 11.) Respondents are required to comply with all applicable local, State and Federal laws, codes, ordinances, and regulations in the provision of the materials required.
- 12.) Respondents must comply with Personally Identifiable Information (PII) data protection regarding State, Federal, and University regulations and policies.
- 13.) Mandatory Legal Provisions
  - a. Any provisions disclaiming implied warranties shall be null and void. See Mississippi Code Annotated Sections 11-7-18 and 75-2-719(4). The Vendor shall not disclaim the implied warranties of merchantability and fitness for a particular purpose.
  - b. The Vendor shall have no limitation on liability for claims related to the following items:
    - i. Infringement issues;
    - ii. Bodily injury;
    - iii. Death;
    - iv. Physical damage to tangible personal and/or real property; and/or

- c. The intentional and willful misconduct or negligent acts of the Vendor and/or Vendor's employees or subcontractors.
  - d. All requirements that the University pay interest are deleted, except for those in conjunction with USM's standard payment terms of Net 45 days. Payments made beyond 45 days are subject to late fees and interest.
  - e. Should any of the terms and conditions in the purchase contract conflict with the laws of the State of Mississippi, the laws of the State of Mississippi shall supersede and govern. A revision of the terms and conditions will be required to ensure compliance with Mississippi state law.
  - f. The University shall not pay any attorney's fees, prejudgment interest or costs associated with any legal action to or for the Vendor, except that which are ordered by a court of competent jurisdiction.
- 14.) Bid files may be examined during normal working hours by bid participants. Non- participants will be prohibited from obtaining any information relative to the bid until the official award has been made.
- 15.) If purchase orders or contracts are canceled because of the awarded vendor's failure to perform or request for price increase, that vendor shall be removed from our bidders'list for a period of 24 months.
- 16.) No addendum will be issued within a period of two (2) working days prior to the time and date set for the bid opening. Should it become necessary to issue an addendum within the two-day period prior to the bid opening, the bid date will be reset giving bidders ample time to answer the addendum.
- 17.) Alternate bids, unless specifically requested or allowed, will not be considered.
- 18.) Bid openings will be conducted open to the public. However, they will serve only to open the bids. No discussion will be held with any vendor as to the quality or provisions of the specifications, and no award will be made either stated or implied at the bid opening. After the close of the bid opening meeting, the bids will be considered to be in the evaluation process and will not be available for review by bidders. Proposal openings are not required to be open to the public; however, the resulting award is open for public inspection.
- 19.) Prices quoted shall be firm for the term of the contract or for the stated time of acceptance.
- 20.) The bidder understands that The University of Southern Mississippi is an equal opportunity employer and, therefore, maintains a policy which prohibits unlawful discrimination based on race, color, creed, sex, age, national origin, physical handicap, disability, or any other such discrimination; and the bidder, by signing this bid, agrees during the term of agreement that the bidder will strictly adhere to this policy in its employment practices and provision of products or services.
- 21.) Bidders must upon request of The University of Southern Mississippi furnish satisfactory evidence of their ability to furnish products or services in accordance with the terms and conditions of these specifications. The University of Southern

Mississippi reserves the right to make the final determination as to the bidder's ability.

- 22.) Questions or problems arising from bid procedures should be directed to the Buyer listed on the solicitation at:

The University of Southern Mississippi  
118 College Drive #5003  
Hattiesburg, MS 39406-0001  
Phone: (601) 266-4131  
[Bids@usm.edu](mailto:Bids@usm.edu)

- 23.) All items must equal or exceed the specifications listed. The absence of detailed specifications or the omission of detailed description shall be recognized as meaning that only the best commercial practices are to prevail, and that only first quality materials and workmanship are to be used.
- 24.) It is the intent of the specifications to obtain a product that will adequately meet the needs of the user while promoting the greatest extent of competition that is practicable. It is the responsibility of the prospective bidder to review the entire Invitation to Bid packet and to notify The University of Southern Mississippi if the Specifications, Instructions, General, or Special Conditions are formulated in a manner which would unnecessarily restrict competition.
- 25.) It shall be incumbent upon the bidders to understand the specifications. Any requests for clarifications shall be in writing and shall be submitted to our Procurement Services office at least seven (7) business days prior to the time and date set for the bid opening, unless otherwise noted in the bid or proposal specifications.
- 26.) The minimum specifications are used to set a standard and in no case are used with the intention of discriminating against any manufacturer. Bidders should note the name and the manufacturer and model number of the product they propose to furnish and submit descriptive literature.
- 27.) Trade names, brand names, and/or manufacturer's information used in these specifications are for the purpose of establishing quality, unless otherwise noted. Bids on products of other qualified manufacturers are acceptable, provided they are demonstrated as equal to those specified in construction, design and suitability. Each bidder shall submit with his bid a complete brochure with pictures on each item and shall point out specifically any deviations from the specified items. Failure to do so may disqualify any bid. Please bid as specified or an approved equal.
- 28.) A copy of the manufacturer's standard guarantee/warranty shall accompany and become a part of this bid.
- 29.) There are no federal or state laws that prohibit bidders from submitting a bid lower than a price or bid given to the U.S. Government. Bidders may bid lower than U.S. Government contract price without any liability as The University of

Southern Mississippi is exempt from the provisions of the Robinson-Patman Act and other related laws. In addition, the U.S. Government has no provisions in any of its purchasing arrangements with bidders whereby a lower price to The University of Southern Mississippi must automatically be given to the U.S. Government.

- 30.) All invoices, unless noted otherwise, are to be billed to:

The University of Southern Mississippi  
IT Invoices  
118 College Drive #5181  
Hattiesburg, MS 39406-0001  
[ITInvoices@usm.edu](mailto:ITInvoices@usm.edu)

- 31.) All equipment bids shall be of current production and of the latest design and construction.
- 32.) Where all, or part(s), of the bid is requested on a unit price basis, both the unit prices and the extension of the unit prices constitute a basis of determining the lowest responsible and responsive bidder. In cases of error in the extension of price, the unit price will govern.
- 33.) Should the University of Southern Mississippi close due to inclement weather conditions, or any other unforeseen events on the bid opening date, sealed bids will open the following business day at the same time and location.
- 34.) As an alternative to traditional sealed bids in envelopes, the University of Southern Mississippi is capable of receiving electronic bid responses. While this option is available, it is not required, and we ask that all potential respondents keep in mind that with any electronic system there could be delays or glitches with the submission process; therefore, the University highly encourages traditional sealed bids which are either mailed or submitted in person. Should a vendor choose to submit their response electronically, please follow the instructions below using the following website:  
[https://www.ms.gov/dfa/contract\\_bid\\_search/Home/Sell](https://www.ms.gov/dfa/contract_bid_search/Home/Sell). On this site you will find helpful links to procurement opportunities, as well as a link to supplier registration. If not already registered in this system, potential bidders will first need to click on 'Supplier Registration' and follow the steps outlined (a one-time process). Once registered, they can return to the original website and click on 'Procurement Opportunities' where they can either search by keyword for the bid they desire to respond to or leave the search box blank and click 'Search' for a listing of all current bids and proposals for the various State of Mississippi offices.

Regarding construction bids, there is one additional step required during the bid submission process. Along with the bid response and other attachments, contractors will also need to attach their Certificate of Responsibility (COR), or a statement that the bid enclosed does not exceed Fifty Thousand Dollars (\$ 50,000.00). If their COR or such statement is not attached, the bid will be invalid and not considered.

**AA/EOE/ADAI**