



ASTI-FM 03-11
REV 2/30 APR 2024

DOST-ASTI Bids and Awards Committee
Invitation to Bid (Public Bidding)

IB No:	24-08-4967	Date:	August-21-2024
PR No:	GAA-24-07-19635	Date:	July-16-2024
Source of Funds:			
Total ABC:	Php 3,910,000.00		
Time, Date & Venue of Pre-bid Conference:	August 30, 2024, 9:00 AM at Videoconferencing (MS Teams)		
Time and Date of Submission of Bids:	September 11, 2024, 09:00 AM		
Time, Date & Venue of Opening Bids:	September 11, 2024, 9:30 AM at DOST-ASTI and Videoconferencing (MS Teams)		
Date of availability of Complete Set of Documents:	August 22, 2024		
Deadline of Potential Bidder's Clarifications:	September 02, 2024		
Deadline of ASTI's Supplemental Bid Bulletin:	September 04, 2024		
Delivery Schedule:			

The *Department of Science and Technology (DOST) - Advanced Science and Technology Institute (ASTI)*, through its Bids and Awards Committee (BAC), hereby invites all interested Bidders to submit their bids for the *item/s* listed below. *Section II. Instructions to Bidders (ITB) of the DOST-ASTI Bidding Documents provides information necessary for bidders to prepare responsive bids, in accordance with the requirements of DOST-ASTI. The ITB likewise provides information on bid submission, eligibility check, opening and evaluation of bids, post-qualification, and award of contract.*

Bidding will be conducted through open competitive bidding procedures *using a non-discretionary "pass/fail" criterion as specified in the 2016 revised Implementing Rules and Regulations of Republic Act No. 9184.*

A complete set of *DOST-ASTI Bidding Documents may be acquired by interested Bidders on the date and address given on this document, and upon payment of the applicable fee, pursuant to the latest Guidelines issued by the Government Procurement Policy Board. Further, the DOST-ASTI Bidding Documents may be accessed through the DOST-ASTI website (<https://asti.dost.gov.ph/>).*

For further inquiries, *you may contact the DOST-ASTI BAC Secretariat at telephone number +63 2 8249-8500 / +63 2 8426-9755 local 1206/1212 or send your message to bac-sec@asti.dost.gov.ph .*

Respectfully,

BAYANI BENJAMIN R. LARA
BAC Chairperson

NO.	TECHNICAL SPECIFICATIONS	QTY	UNIT	UNIT PRICE(Php)	TOTAL PRICE(Php)
1	Sensor - Multiparameter Water Quality Sonde 1. GENERAL OVERVIEW 1.1. DOST-ASTI is seeking qualified and competent bidders for the SUPPLY AND DELIVERY OF FIVE (5) UNITS OF MULTIPARAMETER WATER QUALITY SONDE for measuring various water quality parameters and will be an integral part of the Unmanned Surface Vehicle (USV) and the Metbuoy prototypes to be used for unattended and/or long-term deployment. 1.2. Items will be part of the prototypes under the STRIIDER and Metbuoy+ projects. 1.3. The Approved Budget for the Contract includes all	5	unit	782000.00	3,910,000.00

applicable government taxes and services charges.

TECHNICAL SPECIFICATIONS

2.1. Sensors:

2.1.1. Optical Dissolved Oxygen (DO):

2.1.1.1. Must have a US Environmental Protection Agency (EPA) approval and shall comply with the manufacturer's EPA-approved methods or equivalent: 1002-8-2009, 1003-8-2009 and 1004-8-2009.

2.1.1.2. Must utilize frequency domain / lifetime-based measurement methodology

2.1.1.3. Must not require sample flow (movement) or stirring/pulsing requirement for accurate measurements

2.1.1.4. Must not consume oxygen, thus assuring accurate sample measurement in any/all water flow conditions and without the use of a "pulsing" technology or stirring/circulator device

2.1.1.5. Must not utilize membranes and should not require routine calibration maintenance for up to six months or more under typical use conditions

2.1.1.6. Must not require an initial hydration period prior to calibration or instrument deployment

2.1.1.7. Must not require storage in water or in a sealed container with water saturated air in order to retain calibration accuracy

2.1.1.8. Must have a protective sensor cap with expected lifespan of approximately 24 months

2.1.1.9. Optical Dissolved Oxygen on the probes must meet accuracy requirements of;

2.1.1.9.1. ± 0.1 mg/L from 0 to 20 mg/L

2.1.1.9.2. $\pm 5\%$ of reading from 20 to 60 mg/L

2.1.1.10. Automatic compensation of DO readings for salinity must be available from water quality instrument's conductivity sensor

2.1.1.11. Automatic compensation for temperature must be available from probe's temperature sensor

2.1.1.12. Automatic barometric pressure compensation of DO and level readings must be available through the barometric pressure sensor in the water quality instrument

2.1.2. Conductivity:

2.1.2.1. Must comply with Standard Methods 2510 and EPA 120.1 or equivalent

2.1.2.2. Conductivity sensor on the probe must meet accuracy requirements of:

2.1.2.2.1. $\pm 0.5\%$ of reading plus $1 \mu\text{S}/\text{cm}$ from 0 to 100,000 $\mu\text{S}/\text{cm}$

2.1.2.2.2. $\pm 1.0\%$ of reading from 100,000 to 200,000 $\mu\text{S}/\text{cm}$

2.1.2.2.3. $\pm 2.0\%$ of reading from 200,000 to 350,000 $\mu\text{S}/\text{cm}$

2.1.2.3. Must be of a four, titanium electrode design (two drive and two sensing electrodes)

2.1.2.4. Must report measurements as:

2.1.2.4.1. Actual conductivity

2.1.2.4.2. Specific conductivity

2.1.2.4.3. Salinity

2.1.2.4.4. Total Dissolved Solids (TDS)

2.1.2.4.5. Resistivity

2.1.2.4.6. Density

- 2.1.2.5. Must include a thermistor for temperature measurement
- 2.1.2.6. Sensor depth rating shall meet the highest rating
- 2.1.2.7. Response Rate: <5 seconds
- 2.1.3. pH/Oxidation Reduction Potential (ORP):
 - 2.1.3.1. pH must comply with Standard Methods 4500-H+ and EPA 150.2 while ORP must comply with Standard Methods 2580 or equivalent
 - 2.1.3.2. ORP on the probe must meet accuracy requirements of ± 5.0 mV
 - 2.1.3.3. pH on the probe must meet accuracy requirements of ± 0.1 pH unit
 - 2.1.3.4. pH/ORP electrode sensor should be refillable and has a replaceable junction to allow for longer sensor life
 - 2.1.3.5. Minimum Range:
 - 2.1.3.5.1. pH: 0 to 14 pH units
 - 2.1.3.5.2. ORP: ± 1400 mV
 - 2.1.3.6. Depth rating shall meet the highest rating
 - 2.1.3.7. Response rate: <3 seconds
 - 2.1.3.8. Must occupy one smart port of the unit
- 2.1.4. Temperature:
 - 2.1.4.1. Must comply with EPA method 170.1 or equivalent
 - 2.1.4.2. Material: Titanium
 - 2.1.4.3. Range: -5 degrees Celsius to 50 degrees Celsius
 - 2.1.4.4. Accuracy: ± 0.1 degree Celsius
 - 2.1.4.5. Depth rating shall meet the highest rating
 - 2.1.4.6. Response Rate: < 30 seconds
- 2.1.5. Ammonium:
 - 2.1.5.1. Range: 0 to 10,000 mg/L as N
 - 2.1.5.2. Response Rate: <30 seconds
 - 2.1.5.3. Resolution: 0.01 mg/L
- 2.2. Power requirement:
 - 2.2.1. Voltage Input: 8-36 VDC
 - 2.2.2. Current Consumption: 16mA typical, 45mA max or less
 - 2.2.3. Can utilize an external power source from:
 - 2.2.3.1. SDI-12 & Modbus RS485
 - 2.2.3.2. AC (through adapter, 8-36 V maximum)
 - 2.2.3.3. DC
 - 2.2.3.4. Solar
- 2.3. Size:
 - 2.3.1. Outside Diameter: approximately 1.850 inches (4.7 cm)
 - 2.3.2. Length: Approximately 18.145 inches (46 cm)
- 2.4. Material:
 - 2.4.1. PC
 - 2.4.2. PC alloy
 - 2.4.3. Delrin
 - 2.4.4. Santoprene
 - 2.4.5. Inconel
 - 2.4.6. Viton
 - 2.4.7. Titanium
 - 2.4.8. Ceramic
 - 2.4.9. Nylon
- 2.5. Ingress Protection (IP):
 - 2.5.1. IP68 with all sensors and cable attached
 - 2.5.2. IP67 without the sensors and cable attached

2.6. Water quality sonde requirements:

2.6.1. The barometric pressure sensor must be fixed and included as standard sensor in its instrument body. The sensor:

2.6.1.1. Shall use silicon gauge methodology

2.6.1.2. Range: 300 – 1100 mBars

2.6.1.3. Resolution: 0.1 mBar

2.6.1.4. Accuracy: ± 0.5 mBar

2.6.1.5. Depth rating shall meet the highest rating

2.6.1.6. Response Rate: <30 seconds per 30 m (100 ft) of cable

2.6.2. Must be calibrated at manufacturer's site with a full calibration report provided for each sensor including their serial numbers. The calibration report must be generated by software and stored after each calibration and available for future recall within the software

2.6.3. Must allow the ability to recover the probe settings when removed from the power source

2.6.4. Must have the ability to receive 8-36 VDC which is not required for normal operation

2.6.5. Must have an easy-to-connect IP-68 cable connector

2.6.6. Shall be able to download logged data directly to an IOS and Android device or a computer running Windows OS

2.6.7. Must be able to compensate for water salinity with a user-input value or via a measurement derived from a conductivity sensor at customer's option, and must provide continuous live salinity compensation of dissolved oxygen

2.6.8. Must include sensor ports that accommodate optional sensors to allow for greatest instrument flexibility. Sensors and ports must:

2.6.8.1. Permit interchangeability and/or replacement by the users in the field (i.e., changing out conductivity sensor with a turbidity sensor, pH/ORP replaced with an optical dissolved oxygen sensor, etc.)

2.6.8.2. Be recognized by sensor type and smart port position by software and LCD display upon connection via mobile device, laptop, or desktop

2.6.8.3. Shall retain recent calibration information and factory default calibration data on an integral circuit within the sensor and must be serialized and show such serial numbers on auto-generated calibration documentation

2.6.8.4. Must be capable of being identified by the instrument/software, and by serial number

2.6.9. Must include sensor screw tool for easy replacement or change of sensors under normal operating conditions and to prevent premature damage of any of the sensors under normal operating conditions

2.6.10. Must utilize captive screws on sensors

2.6.11. Shall give the users an option to add additional sensors with and/or after the placement of the original order

2.6.12. Must permit users to calibrate sensors in one water quality instrument and then be utilized in another water quality instrument while retaining reasonable calibration accuracy

2.6.13. Must include an LCD on the instrument body that provides system indicators for sensor installation/status, power status, data log status and connectivity.

2.6.14. Must communicate wirelessly to an Android/IOS device through Bluetooth Wireless Technology via inbuilt internal Bluetooth feature and external Bluetooth feature

2.6.15. Must be able to log data directly to an Android/IOS smartphone device

2.6.16. Must be able to support active and passive antifouling measures, including an antifouling brush that cleans all sensors at the same time and specially formulated copper sensor guards

2.6.17. Sensor plugs must be wet-mateable to prevent water intrusion to the electronic connection within the plug

2.6.18. Smart ports that do not contain sensors must utilize sensor port plugs in their place

2.6.19. As a user option, capable of being suspended without cable rather using a non-vented backshell hanger and steel cable

2.7. Cable system

2.7.1. Shall be available in thermoplastic polyurethane (TPU) or Tefzel (ETFE fluoropolymer, generic equivalent to Teflon)

2.7.2. Shall provide users the ability to change cable types

2.7.3. Shall provide users to add cable length using an extender

2.7.4. Shall permit users to ability to access data from the sonde

2.7.5. Must have a fully adjustable pulling grip to suspend the sonde and cable

2.8. Software System:

2.8.1. Capable of displaying dissolved oxygen, conductivity, pH, ORP, water level, water temperature, and barometric pressure simultaneously

2.8.2. Offer capability for manual entry or auto-tagging of GPS coordinates

2.8.3. Allow the user to name site data, attach site photos, and a description

2.8.4. Can be integrated into mobile help functionality into the app

2.8.5. Allow the user to email the data in .csv format directly from the display if cellular or wireless communication are available

2.8.6. Allow the user to consolidate all well, pumping and site information for reuse at subsequent events; track low-flow sampling test and set up and calibrations; automate data collection; allow of export of a data log to a standard file format; and monitor and record the stabilization of the water quality parameters

2.8.7. Offer a zero-calibration method for DO

2.8.8. Allow adjustments for specific gravity variations in saline or brackish water, gasified wells, etc

2.8.9. Compensate measurements for specific gravity variations in saline, brackish, or fresh water

2.8.10. Offer ability to transfer data to spreadsheets at the click of a button

2.8.11. Offer the ability to email data directly from the

smartphones at the click of a button

2.8.12. Offer convention to factory reset to individual sensors and sonde, or all the sensor at once

2.8.13. Allow automatic zero referencing at the start of test – or program any reference for immediate or start-to-test referencing; reference can even be changed or removed after a test has been completed

2.8.14. US standard and metric measurement units must be available. Units shall be changeable before, during and after a test. Water level readings must be easily converted to pressure readings and vice-versa

2.8.15. Level/depth reference points and channel definitions must be modifiable even after the data has been collected, eliminating any chance for a setup error.

2.9. Must be compliant to the international requirements and compliance standards under the EMC Directive 2004/108EC listed below or equivalent:

2.9.1. IEC 61000-6-1:2005 – Electromagnetic Compatibility (EMC) – Part 6-1: Generic Standards – Immunity for Residential, Commercial and Light-Industrial

2.9.2. IEC 61000-6-3:2006 – Electromagnetic Compatibility (EMC) – Part 6-3: Generic Standards – Emission Standard for Residential, Commercial and Light-Industrial Environments

2.9.3. IEC 61000-4-2:2008 – Electrostatic Discharge Immunity Test

2.9.4. IEC 61000-4-3: 2006, A1:2007, A2:2010 – Radiated, Radio-Frequency, Electromagnetic Field Immunity Test

2.9.5. IEC 61000-4-4: 2004, A1:2010 – EFT/Burst Immunity Test

2.9.6. IEC 61000-4-6: 2008 – Immunity to conducted disturbances, induced by radio-frequency fields

2.9.7. IEC 61000-4-8: 2009 – Power Frequency Magnetic Field Immunity Test

2.9.8. CISPR 22:2008 – Radiated Electromagnetic Emissions

2.9.9. RoHS

2.10. Certification:

2.10.1. The sonde shall comply with all applicable directives required by:

2.10.1.1. CE

2.10.1.2. WEEE

2.10.1.3. RoHS

2.10.1.4. FCC

2.10.1.5. EN 61326

2.10.1.6. ICES-003

PACKAGE INCLUSION

3.1. Five (5) pcs of Water Quality Sonde base unit

3.2. Sets of Sensors or Ports listed below per base unit

3.2.1. Five (5) pcs of Temperature/Conductivity

3.2.2. Five (5) pcs of Ammonium

3.2.3. Five (5) pcs of Dissolved Oxygen (DO); must include a protective reading cap for each

3.2.4. Five (5) pcs of pH/ORP

3.2.5. Five (5) pcs of Wiper

3.3. Five (5) pcs of Customized Rugged Cable

3.3.1. Termination: Twist-lock made of titanium

(female connector that mates with the sonde base unit) on one end, pigtails on the opposite (stripped and tinned)
 3.3.2. Conductors: 6-wire, 24AWG
 3.3.3. Non-vented
 3.3.4. Jacket Material: TPU (Thermoplastic Polyurethane)
 3.3.5. Length: 12 meters

NOTES

4.1. Charging:
 4.1.1. Three (3) units charged to Metbuoy+ Project
 4.1.2. Two (2) units charged to STRIIDER Project
 4.2. The supplier must provide and submit a price breakdown of the quotation for future reference in purchasing replacement components or consumable parts.

WARRANTY AND AFTER SALES SUPPORT

5.1. Must have at least twenty-four (24) months of warranty from the time of delivery which covers defects in the components and sensors except the Ammonium which is ninety (90) days.
 5.2. Warranty service shall commence from the date of end-user acceptance.
 5.3. Technical support service must be available Monday to Friday (including holidays), during business hours, 9AM –6PM Philippines Standard Time (UTC+8).
 5.4. Any repair or replacement service must be performed within fifteen (15) calendar days upon receipt of notice from DOST-ASTI.
 5.5. The end-user must be able to request technical support by phone, email or through a website.

DELIVERY AND PAYMENT TERMS

6.1. The goods must be delivered within thirty (30) calendar days upon issuance of Notice to Proceed.
 6.2. Full payment will only be processed once the items are completely delivered, inspected, and accepted by the End-user.
 6.3. No payment shall be made for item/s not delivered under this contract.

TOTAL APPROVED BUDGET FOR THE CONTRACT (ABC):

Php 3,910,000.00

RESERVATION CLAUSE

The Advanced Science and Technology Institute reserves the right to accept or reject any proposal, to annul the bidding process, and to reject all proposals at any time prior to contract award, without thereby incurring any liability to the affected proponent or proponents.