

**Office of the Dean Research and Development  
Indian Institute of Engineering Science & Technology (IEST), Shibpur,  
Howrah-711 103**

**Project Code: DRC/SERB/AE&AM/KD/021/16-17**

**Ref.: Tender Advt. No. AM 1226 (dt. 08.11.2016), published in the  
"Statesman", "Bartmaan" and "Sanmarg", dated 10.11.2016**

**Department of Aerospace Engineering and Applied Mechanics  
Indian Institute of Engineering Science and Technology, Shibpur  
Howrah-711 103**

**Notice Inviting Quotations**

Sealed quotations are invited for the supply of (a) 16 MHz Acoustic Doppler Velocimeter (ADV); (b) Multi transducer array (MTA-32) of acoustic bed profilers; (c) Pump-motor complete work including installation: as per the following technical specification. The relevant bidding document can be downloaded from the website. The document can be also obtained from the **Aerospace Engineering and Applied Mechanics** (contact : Prof. Koustuv Debnath) between 10.30 a.m. and 3.00 p.m. on all working days **from 14<sup>th</sup> November, 2016 to 31<sup>st</sup> November, 2016**. Last date of submission of sealed quotation is **01<sup>st</sup> December 2016 by 2.00 p.m.**

**Dean (R & D)**

**(A. Code DRC-T064/16-17)**

*This is downloadable*

**INDIAN INSTITUTE OF ENGINEERING  
SCIENCE AND TECHNOLOGY, SHIBPUR**



**BIDDING DOCUMENT**

**(Project Code: DRC/SERB/AE&AM/KD/021/16-17)**

**Ref.: Tender Advt. No. AM 1226 (dt. 08.11.2016), published in the  
"Statesman", "Bartmaan" and "Sanmarg", dated 10.11.2016**

*For Supply of*

- (a) 16 MHz Acoustic Doppler Velocimeter**
- (b) Multi transducer array (MTA-32) of acoustic bed profilers**
- (c) Pump-motor complete work including installation**

**Under**

**SERB, DST Project Scheme  
Govt. of India (New Delhi)**

**Department of Aerospace Engineering and Applied Mechanics**

**November 08, 2016**

**SECTION I: TERMS & CONDITIONS AND IMPORTANT INSTRUCTIONS  
FOR BIDDERS**

1. Bidders are to invited to submit sealed quotation as per the technical specifications for tendered item to Dr. Koustuv Debnath, Professor, Department of Aerospace Engineering and Applied Mechanics, **on or before 01<sup>st</sup> December 2016** between **10.30 a.m. to 3.00 p.m.** except Saturday, Sunday and other public holidays.
2. The last date of receipt of tenders is **01<sup>st</sup> December 2016 by 2.00 p.m**  
Quotations received later will not be entertained under any circumstances.
3. Date and time of opening of bid is **01st December, 2016 at 2.00 p.m.** and the place of opening of bid is office Room of the Department of Aerospace Engineering and Applied Mechanics, Indian Institute of Engineering Science and Technology, Shibpur, Howrah 711103.
4. Bidders are to submit the quotations in Sealed Cover to the Department of Aerospace Engineering and Applied Mechanics in the following address:

Dr. Koustuv Debnath  
Professor  
Aerospace Engineering and Applied Mechanics  
Indian Institute of Engineering Science and Technology, Shibpur  
Howrah-711103, India

5. All bids should be submitted in ONE-BID (TECHNO-COMMERCIAL BID) Format in covers (Enquiry Number must be mentioned on cover).

TECHNO-COMMERCIAL BID - giving Detailed Specifications, International Standards (BIS/INTERNATIONAL), Catalogues, List of users & Technical Details / Operating Parameters, Pre-Installation Requirements, payment terms, warranty, etc. along with PRICE BID - giving full Prices in Indian Rupees (only) for

- (a) Tendered item.
- (b) Essential Accessories & Spares.

6. The price quoted should be inclusive of all Taxes, duties and levies. Inclusion of Tax/Levy at a latter stage will not be accepted. Freight, Insurance charges should be clearly indicated.
7. The materials are to be supplied at a place within Indian Institute of Engineering Science and Technology, Shibpur premises between 11.00 a.m. and 4.00 p.m. The tenderer will be responsible for any breakage, damage or defect in the equipment detected subsequently. The supply and installation of the equipment should be completed within a period not exceeding 3 months from the placement of the formal work order or opening of the LC failing which appropriate action will be taken as per Institute rules.

8. If the supply is not completed within the stipulated period as indicated in the Work Order, a Liquidated Damage @ ½ per cent per week will be imposed subject to maximum of 5% of the value of work order.
9. For Indian purchase (*This clause is applicable only for Indian purchase and not applicable for foreign purchase*):

Bills in triplicate should be presented for payment within 15 days of Supply / Completion of work. No Advance Payment can be made. All bills are to be accompanied by Order copies and Challan Receipt. The Order Number is to be noted on both the Challan and the Bill.

**10. Documents to be submitted with the tender:**

Tender Documents/Terms & Conditions in Original duly signed by the Proprietor / Partner/ Director of the Company as a token of acceptance of Terms & Conditions of Tender.

**11. Customs Duty & Excise Duty**

- The University will not issue any C or D form availing of concessional Sales Tax/ VAT.
- The Institute will issue Customs Duty Exemption Certificate or Excise Duty Exemption Certificate for foreign purchase, if required.

**12. Indian Institute of Engineering Science and Technology, Shibpur, Howrah reserves the right to accept / reject all or any of the tenders without assigning any reason whatsoever.**

We accept the above terms and conditions.

Dated:

Signature of Bidders/Suppliers  
With date & Seal

## **SECTION II: TECHNICAL SPECIFICATIONS**

### **(a) Specification for 16 MHz, Acoustic Doppler velocimeter**

16 MHz, Acoustic Doppler velocimeter:. Complete system such that 3D flow velocity data can be directly logged into computer including real time data acquisition software.16-MHz. ADV should be mounted on a flexible cable so that the ADV can be oriented in any direction for measurement.

- **Bidders should be authorized by the OEM** (Original Equipment Manufacturer)

**Technology: Acoustic Doppler technology; Velocity Range:** 3cm/s to 250cm/s;  
**Accuracy:** +/- 1% of measured velocity, 0.25 cm/s; **Resolution:** 0.01cm/s;

**Sampling Distance from probe:** 5 cm; **Sampling Volume:** 0.09(cc); **Sampling Rate:** 0.1 Hz to 50 Hz (samples/sec); **Stem:** ADV should be mounted on a flexible cable so that the ADV can be oriented in any direction for measurement; **Data storage and communication:** Direct transmission of data to PC through RS 232/USB port in real time and the software should be capable of data collection, storage, graphical display of data, generation of reports etc.; **Power source:** 12v to24 VDC with rechargeable batteries; Cable length to processor: 10 m

The maker of the sensors that are quoted should have proven track record of being used in real time velocity measurements in flume experiments that have been published in SCI journals (Reference of such literature must be made in the quote).

**DELIVERY TIME: Maximum 3 months from date of issue of supply order**

### **(b) Specification for Multi transducer array (MTA-32) of acoustic bed profilers**

Multi transducer array (MTA-32) of acoustic bed profilers: Complete system such that the real time bed elevation changes can be monitored at 32 different positions in the loose bed. The 32 individual 2 MHz transducers should be interfaced with single electronics box. Transducers should be housed in stainless steel 1 cm in diameter with an acoustic return range of 10 cm to 2 meters. Supply should include electronics for ultrasonic ranging system; all required electronics item to run the microprocessor controlled transducers described above as well as a data logging system including the real time data display unit in SI unit of length. The system should be complete system will necessary software to acquire the data and retrieve and store the data in SI unit of length. Any necessary software should be in perpetual mode with no license expiry date. Main cable length should be at least 10 m.

- **Bidders should be authorized by the OEM** (Original Equipment Manufacturer).

The sensors will be used both in muddy (cohesive) beds as well as sand bed for real time bed elevation measurements at 32 points in laboratory flume experiments for quantification of bed topography in real time. The sensors should have a proven track

record of being used in similar application as above and their use is reported in international literature across continents. The maker of the sensors that are quoted should have proven track record of being used in real time bed elevation measurements in flume experiments that have been published in SCI journals (Reference of such literature must be made in the quote).

The scope of the work includes supply, installation and demonstration of the complete system that will provide real time bed elevation data at 32 measurement points to the computer in SI unit of length and capable of storing the data.

**DELIVERY TIME: Maximum 3 months from date of issue of supply order**

### **(c) Specification for Pump-motor set including (supply, installation and commissioning)**

**Specifications for pump:** Capacity- 300 liters/s (1080 cum/hr); Head- 6-7 meters; Type- vertical wet pit mixed flow; Minimum efficiency of pump: 80%; Bowl efficiency: 83% (Approx); Bowl input power: 25 KW (Approx); Recommended Drive 30KW/6 pole, VSS Motor; Max speed of pump- 1000 RPM. Material of construction: bowl/casing/suction bell- cast iron; impeller- bronze; line shaft / pump shaft- ss-410; discharge head- cast iron; Sump depth: 2000 mm (approx).

**Specifications for Motor:** Motor of appropriate capacity to run the above pump; TEFC, sq. cage induction motor, vertical solid shaft (SS) flange mounted; Make of motor- Kirloskar/Alstom/Marathon/Crompton & Greaves Ltd.; Service - continuous duty; 3 phase 440V connection, Frequency 50 Hz; rated output: 30 KW

#### **Scope of work:**

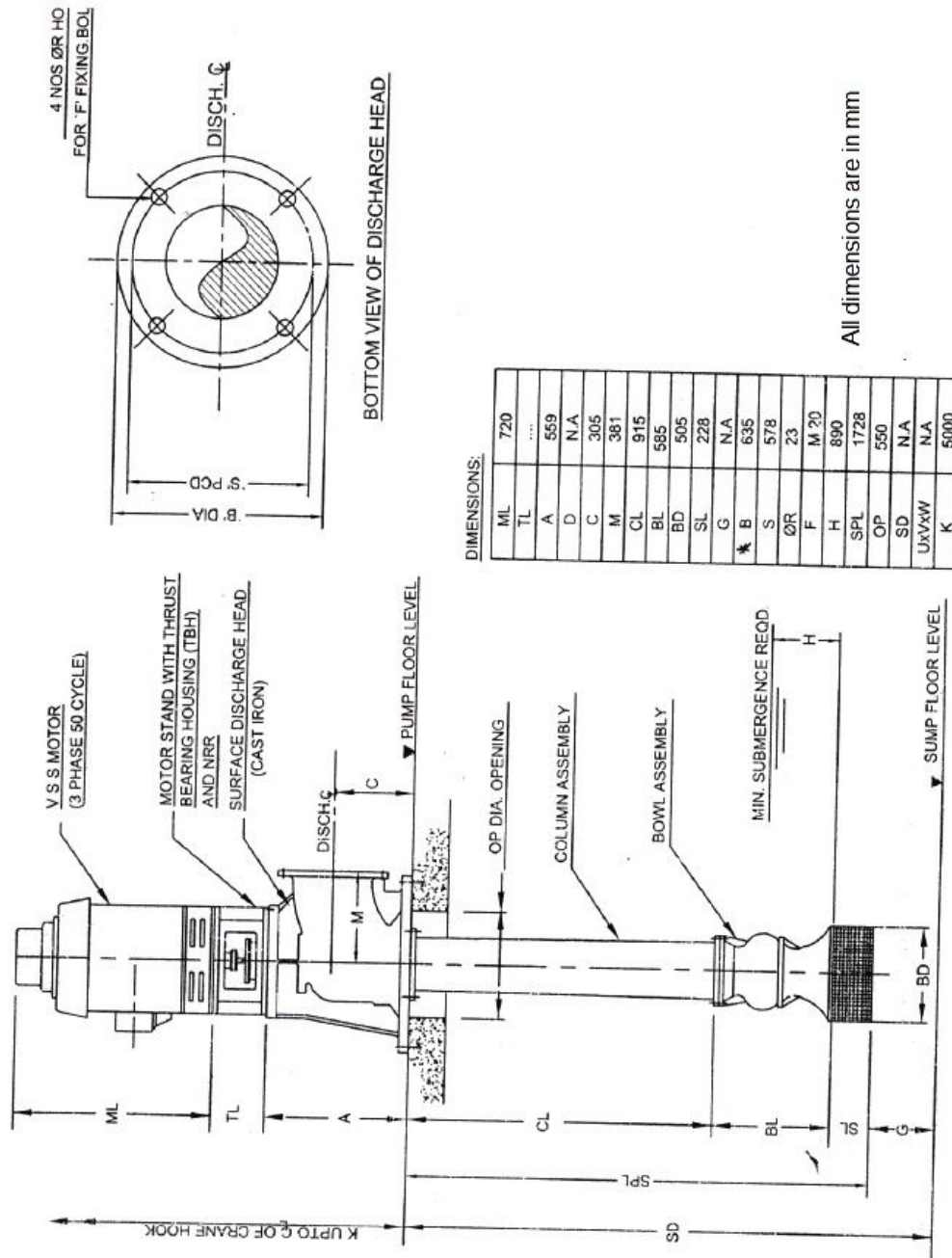
Complete pump with Discharge head; thrust bearing/NRR assembly, Suitable length of column and shaft assembly, bowl assembly, basket strainer, appropriate vertical solid shaft motor to couple with above pump, **supply and installation of gate valve. The suction and delivery dimensions of the pump-motor assembly should exactly match exactly with the suction and delivery pipes of the flume circuit.** The work will include supply and installation of the above items and connect it to the existing flume circuit (for detail dimensions please ref below general arrangement drawing for pump) as housed in the Fluid Mechanics and Hydraulics Laboratory, Department of Aerospace Engineering and Applied Mechanics, IEST, Shibpur and dismantling of the old pump from the existing flume circuit.

Warranty: 12 months from date of commissioning.

EARNEST MONEY: Rs. 5000/- to be submitted along with tender document (in the form of DD payable to “Registrar, BESU, Shibpur”) for item (c ) only

**DELIVERY TIME: Maximum 3 months from date of issue of supply order**

**INSTALLATION AND COMMISSIONING TIME: Maximum one month from date of delivery**



DIMENSIONS:

ML	720
TL	.....
A	559
D	N.A
C	305
M	381
CL	915
BL	585
BD	505
SL	228
G	N.A
* B	635
S	578
ØR	23
F	M.20
H	890
SPL	1728
OP	550
SD	N.A
UxW	N.A
K	5000

All dimensions are in mm

General arrangement drawing for pump with surface discharge