



**Government of West Bengal**  
**Irrigation & Waterways Directorate**  
**Office of the Executive Engineer**  
**Metropolitan Drainage Mechanical Division**  
**Jalasampad Bhawan (4<sup>th</sup> floor), Salt Lake City, Kolkata-91**  
**Telephone No-03323345768, Email Id: [ee-metromecdvn@wbiwd.gov.in](mailto:ee-metromecdvn@wbiwd.gov.in)**

**EoI No.: WBIW/EE/MDMD/EoI-06/2018-19**

**NOTICE INVITING**

**EXPRESSION OF INTEREST (EoI)**

*For*

**Supply, installation, testing and commissioning including trial run of six (6) nos. horizontal non clog dry installed submersible (flood proof) pump of capacity 20 Cusec (2040 M<sup>3</sup>/Hr, each) with allied electromechanical work, new pipe line, valves, intake trash rack etc complete of the Ranichak pumping station, PS. Daspur, Dist. Paschim medinipur.**

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**Telephone No-03323345768, Email Id: [ee-metromecdvn@wbiwd.gov.in](mailto:ee-metromecdvn@wbiwd.gov.in)**

**EoI No.: WBIW/EE/MDMD/EoI-06/2018-19**

**NOTICE INVITING EoI FOR FOR MOST SUITABLE TECHNICAL  
SPECIFICATIONS, BOQ AND BUDGETARY QUOTES**

Offline bids are hereby invited by the Executive Engineer, Metropolitan Drainage Mechanical Division, Irrigation & Waterways Directorate on behalf of the Irrigation & Waterways Department of West Bengal through single stage offline sealed bid for obtaining most suitable Methodology, Technical specifications, BOQ and Budgetary quotes from all interested bidders/agencies/contractors within the country having Original Equipment Manufacturer of Pump Pre-Qualification (eligibility) credential for execution of works of similar nature and financial capabilities. The technical bid and the financial bid will determine the final selection and acceptance of price schedule, items of work, ToR, Specifications and even scope of work for framing of a DPR of the project mentioned later.

The participants may submit their bid with all necessary documents along with the covering letter duly signed by an authorized signatory **on or before 20.12.2018 by 15.00 Hrs** at the following address:

Office of the Executive Engineer  
Metropolitan Drainage Mechanical Division  
Jalasampad Bhawan (4<sup>th</sup> floor), Salt Lake City, Kolkata-91  
Telephone No-03323345768, Email Id: ee-metromechdvn.wbiwd@gov.in

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## SECTION – I

### NOTICE INVITING EXPRESSION OF INTEREST (EoI)

EoI No.: WBIW/EE/MDMD/EoI – 06 /2018-19; Dated **04 th December,2018**

**Subject: Supply, installation, testing and commissioning including trial run of six (6) nos. horizontal non clog dry installed submersible (flood proof) pump of capacity 20 Cusec (2040 M3/Hr, each) with allied electromechanical work, new pipe line, valves, intake trash rack etc complete of the Ranichak pumping station, PS. Daspur, Dist. Paschim medinipur ".**

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Telephone No-03323345768, Email Id: ee-metromechdvn.wbiwd@gov.in**

Offline Expression of Interests (EoIs) are invited by **Executive Engineer, Metropolitan Drainage Mechanical Division, Irrigation & Waterways Directorate** from eligible registered firms for obtaining **Methodology, Specifications, BOQ and (Proposed) Budgetary Quotes** for " **Supply, installation, testing and commissioning including trial run of six (6) nos. horizontal non clog dry installed submersible (flood proof) pump of capacity 20 Cusec (2040 M3/Hr, each) with allied electromechanical work, new pipe line, valves, intake trash rack etc complete of the Ranichak pumping station, PS. Daspur, Dist. Paschim medinipur "**.

1.	EoI Document	The EoI document can be downloaded from <a href="http://www.wbiwd.gov.in">www.wbiwd.gov.in</a> from 06.12.2018 onwards
2.	Pre bid meeting	<b>13.12.18 at 2.00 PM</b>
3.	Last date and time for bid Submission	<b>20.12.2018 at 15:00 Hrs.</b>
4.	Bid Security	<b>NIL</b>

For any queries , bidder may contact this office before submission of offline bid at 033-23345768 , E-mail : ee-metromechdvn@wbiwd.gov.in

## **SECTION - II**

### **1.0 INTRODUCTION TO THE PROJECT**

Ranichak Irrigation cum Drainage Scheme, P.S. Daspur, District Midnapur ( West) was initially approved by Agriculture Department, Government of West Bengal vide Memo No. 20469-MI (II)/81-2/82 dated 26.11.82 for construction of the Pump House and installation of 24 nos. 20-Cusec Pumps and the work was taken up by the Agriculture Department. Subsequently, the work was entrusted to the Irrigation Department, Government of West Bengal and this scheme was revised and administratively approved by the Agriculture Department, Minor Irrigation Wing. M.I. (II) Branch vide Memo no. 3315-MI(II)/81/1-87-1 dated 18.11.89. Initially the scheme was running as a deposit work but subsequently the total scheme was transferred to the Budget Estimate of the Irrigation & Waterways Department vide Memo No. 29/1/78/2193/1(2) dated 02.08.93 of the Superintending Engineer, Western Circle as per decision of the authority concerned.

Out of 24 nos. 100-HP 20-Cusec Pumps, as initially considered, 12 nos. Pumps only were made available to this Department, which have been installed and being operated. 12 nos. Pumps, drainage requirement of the scheme could be achieved partly for which instruction from the concerned authorities were obtained and communicated by the Superintending Engineer, Mechanical & Electrical Circle vide Memo No. 1634/3/16S-14 dated 17.11.95 and No. 1533/16S-3 dated 02.12.96.

### **1.1 LOCATION**

The proposed Pumping Station is located at Ranichak , 60 Km away of Panskura Railway Station, P.S.- Daspur, Dist- Paschim Medinipur, State- West Bengal .

### **1.2 OBJECTIVE**

Objective of replacement of existing 6 nos. old pump with non clog, submersible, submersible pump with dry pit installation the existing pumping Station is to provide intended extent of relief to the command areas of the existing pumping Station from water logging, even in flooded condition . This will lead to significant improvement of environment quality in the area as also the economic improvement of the community. Replacement with flood proof pump of the existing pumping Station of adequate capacity at out fall locations of the canals to reduce the frequency and extent of flooding thereby improving the level of service provided by the canals.

### **1.3 Existing Scenario :**

There are twelve (12) nos. of pumps in the pumping station near the outfall of the main canal and key feature of the existing Pumping Station are as follows :-

Pumping Station	P.S. details like type, nos, capacity, HP etc.	Gross capacity	Net capacity / running capacity
Ranichak Pumping Station, P.S- Daspur Dist-Paschim Medinipur .	Type:- Centrifugal , dry pit, horizontal installation , Mixed flow . No. – 12 Nos. working, each 6 nos. are in parallel operation. Capacity – 20 cusec each Motor HP –100 KW Speed – 975 r.p.m.	12X 20 cusec = 240 cusec.	10 X 20 cusec = 200 cusec

At present there are 12 nos. pumps of Mather and platt make , having capacity 7340 GPM, Head – 33 ft, coupled with Siemens make Motor of 75 KW (100 HP), rpm 975, are in dry pit installed. Existing pumps could not operate under submerged condition. Even after receding the flood, pumps are not pressed into operation immediately. As Motors are required for Heat Varnishing after submersed condition. Keeping in view the purpose that the pumps may able to operate during dry / submerged condition, Existing pumps are not suitable for the intended purpose.

## 1.4 DESIGN

### General Consideration

33 KV Power Supply will be available from WBSEDCL .

The systems, though intended for handling Storm water flow, but will have to handle combined with waste water and hence system components shall be rugged to sustain impacts of aggressive quality of water.

Consideration has been made to provide separate screen to ensure running of the drainage station, so that floating and as well as under water debris may be prevented to entry in the pump suction portion. Operation control will be provided through level indicator scale and manual operation of the pumps.

### Hydraulic Data of the proposed pumping station

Here the inlet canal will act as inlet pond. The shape and configuration are given in G.A. drawing adopted in such way that there is streamline flow entry into the Pump House and keeping the centre line elevation of discharge pipe at elevation at (+)5.785M which is much above the FDL at outlet channel, the other levels as per Hydraulic Institute Standard (HIS).

Sump bottom level = (-) 1.37 M

C/L of discharge pipe (above HWL) = (+) 5.785 M

### Selection of the Pumping Station

For selection and installation of alternate pump, suitable for operation in dry and submerged condition, the following parameters were considered.

- Different mode of installation, using existing structure of the pump house.
- Piping layout, which includes suction piping and discharge piping.
- Availability of floor space.
- Modification of existing intake sump

- e) Changes in the outdoor Sub Station.
- f) Relocation of Starter Panel.

Considering the existing construction of pump house i.e. suitable for dry type installation , final selection in limited to 12 nos. 20 cusec non-Clog type submersible pump with dry pit installation, with total drainage capacity of 240 cusec.

### **Selection the Type of Pump**

The pump shall be of horizontal shaft, single stage, single flow, flood proof ,dry pit type suitable for handling drainage/storm water containing loose slit, gritty and floating matter complete with suction, volute casing, discharge and base plate with all accessories as applicable ,driven by single speed horizontal solid shaft flange mounted motor.

The pump head referred above is inclusive of all losses in the discharge in common header and pipeline of the pump. Inlet losses in, discharge head for individual pump shall be calculated by the bidder and included in the design head of bowl assembly. The Bidder shall submit design calculation of submersible pump and its accessories for approval to placement of supply order.

The pump shall have stable performance throughout the whole range of its operation i.e. from zero flow to run out condition. The pump of particular category shall be identical and shall be suitable for continuous operation. The flow rate and minimum submergence for continuous operation and maximum allowable dry running period of the pump shall be stated in their offered bid.

The design, manufacture and performance of the pumps shall conform to the latest version of IS/BS/DIN Standards / specification. In particular, the equipment shall conform to the latest revision of the following specification.

IS : 1710 : Specification of pumps – vertical turbine mixed and axial flow.

IS 5120 : Technical requirement for rotodynamic special purpose pumps.

And applicable IS and Hydraulic Institute Standards, USA.

### **Selection of the Electrical System**

The HT supply from WBSSEDCL at 33 KV (nominal) will be received on HT Switch Board of I & WD power supply and distribution. The 35 cusec pump sets shall be fully Automatic Star Delta (FASD) started operated on 415V, TPN Ac power supply with MCCB etc.

To cater for the above requirements, the pumps station will be provided with a separate Sub-Station complete with outdoor, ONAN type transformers and necessary high voltage control equipment like VCB with incoming and outgoing. Also, outdoor type, ONAN type transformer will also be considered to provide LT power for tower size pump sets and other auxiliary low voltage station loads, lighting etc.

A schematic SLD indicating power distributing system is enclosed.

## **1.5 SCOPE**

The scope of work under this estimate includes the design , supply, installation , testing , commissioning , documentation and defect liability period of one (01) year for 20 cusec of six (06) nos. 20 cusec each with allied Electro- mechanical equipments complete with the proposed pumping station.

The works include all Mechanical, electrical, instrumentation, control and other related work as per as details scope of this estimate. The works are to be executed as per technical specification enclosed a separate part of this estimate. The part of specification shall be read in conjunction with other parts such as specifications, drawings and appendices which provide further information and details.

The contractor shall confirm of having visited site and collected and verified the data relating to site condition. The contractor acknowledges that any failure to acquaint itself with all such data and information shall not relieve its responsibility. The contractor shall be responsible for overall verification of equipment under the scope of work eg. Make, Model, specifications and responsible for detailed design of mechanical and electrical works of the proposed pumping station. Compliances with these specifications does not limit the responsibility of the contractor for the overall performance of the pumping station. Contractor can offer changes in design for better performance. Justification of such changes shall be provided by the contractor. such changes are subject to approval by E.I.C.

### **Basic Scope of work.**

The Basic scope covers the design, manufacturing, supply and inspection, testing, delivery, installation and commissioning of 06 nos. of horizontal shaft, single stage, single flow , flood proof ,dry pit type suitable for handling drainage/storm water pump for the existing pumping station at Ranichak , P.S. Daspur, Dist- Paschim Medinipur.

Each of horizontal shaft, single stage, single flow , flood proof ,dry pit type suitable for handling drainage/storm water pump shall be capable of developing the required total head at rated capacity for continuous operation at the required total head at low water level in the sump. The pump will be required to work with / without parallel operation satisfactorily over the head requirements as per system resistance curves. Supply and installation of common header with MS pipe line of 260 Mtr , MS Gratings with hoisting arrangement are also in the scope of work.

The design, drawing, manufacture, fabrication, erection, testing/ inspection of 33 KV indoor substation shall be carried out strictly as per Indian Electricity Rules , Latest BIS code of practices and prior approval of Directorate of Electricity , Govt of West Bengal.

Complete overhauling of existing 2 nos. power transformer ( 1.6 MVA, 33/0.433 KV, ONAN) , supply and installation of 1 Nos. consumer 3 Panel VCB at Sub-station (33 KV. Consumer 1 panel ACB at Sub Station (433 V), 1 set LT panel at Panel room ,Capacitor Bank , HT &LT Cabling , Earthing, , Internal illumination and allied electrical works ,Lightening conductor, instrumentation and communication system, Batter bank with charges also in the scope of work.

## **2.0 ELIGIBILITY CRITERIA/PRE-QUALIFICATION**

While submitting the proposal, the bidder shall ensure that the bidder meets the conditions of eligibility as described below:

<b>Sl. No.</b>	<b>Eligibility criteria</b>	<b>Capability Assessment Documents</b>
1.	Should be registered in India	<ul style="list-style-type: none"> <li>• IT Return</li> <li>• GST No. (If applicable)</li> </ul>



2.	Should be a original equipment manufacturer of VT Pumps	<input type="checkbox"/> Authorization of manufacturer, if any
4.	Technical Credentials	<ul style="list-style-type: none"> <li>• It is desirable to firm have experience in similar nature of works in drainage / lifting water pumping station</li> <li>• Completion certificate, If any</li> </ul>

### 3.0 INSTRUCTIONS TO BIDDERS

#### Submission of Application

The EoI document can be downloaded from [www.wbiwd.gov.in](http://www.wbiwd.gov.in) from 06.12.2018 onwards. **Last date & time of submission of bid manually in drop box at office of Executive Engineer , Metropolitan Drainage Mechanical Division, is on 20.12.2018 till 15:00 Hours (IST).**

**No processing fee or bid security (EMD) is required during submission of the bid.**

The applicant bidders/contractors are advised to carefully read all the ‘Terms & Conditions’ contained in this EoI. They should particularly go through the minimum desired Pre-qualification (PQ) works credential & financial eligibility criteria and satisfy them for all the mandatory eligibility requirements. Bidders desirous of participating in the EoI and should submit bids only if they fulfill the minimum PQ eligibility criteria and are in possession of all the required PQ Credential documents “in original”

This EoI is not an agreement and is neither an offer nor invitation by ‘The Authority’ to the prospective Bidders or any other person to allot the project. The information contained in this EoI or subsequently provided to Bidder, whether verbally or in documentary or any other form by or on behalf of the ‘Authority’ or any of its employees or advisors, is provided to Bidder on the terms and conditions set out in this EoI and such other terms and conditions subject to which such information is provided. The purpose of this EoI is to provide interested parties with information that may be useful to them in making their financial offers (Bids) pursuant to this EoI. This EoI includes statements, which reflect various assumptions and assessments arrived at by the ‘Authority’ in relation to the Project. Such assumptions, assessments and statements do not purport to contain all the information that each Bidder may require. This EoI may not be appropriate for all persons, and it is not possible for the ‘Authority’, its employees or advisors to consider the objectives, financial situation and particular needs of each party who reads or uses this EoI. The assumptions,

assessments, statements and information contained in the Bidding Documents, especially the Project Report/data may not be complete, accurate, adequate or correct. Each Bidder should, therefore, conduct its own investigations and analysis and should check the accuracy, adequacy, correctness, reliability and completeness of the assumptions, assessments, statements and information contained in this EOI and obtain independent advice from appropriate sources.

Information provided in this EoI to the Bidder(s) is on a wide range of matters, some of which may depend upon interpretation of law. The information given is not intended to be an exhaustive account of statutory requirements and should not be regarded as a complete or authoritative statement of law. The 'Authority' accepts no responsibility for the accuracy or otherwise for any interpretation or opinion on law expressed herein.

The 'Authority', its employees and advisors make no representation or warranty and shall have no liability to any person, including any Applicant or Bidder under any law, statute, rules or regulations or tort, principles of restitution or unjust enrichment or otherwise for any loss, damages, cost or expense which may arise from or be incurred or suffered on account of anything contained in this EoI or otherwise, including the accuracy, adequacy, correctness, completeness or reliability of the EoI and any assessment, assumption, statement or information contained therein or deemed to form part of this EoI or arising in any way for participation in this Bid Stage.

The 'Authority' also accepts no liability of any nature whether resulting from negligence or otherwise howsoever caused arising from reliance of any Bidder upon the statements contained in this EoI.

The 'Authority' may in its absolute discretion, but without being under any obligation to do so, update, amend or supplement the information, assessment or assumptions contained in this EoI.

The issue of this EoI does not imply that the 'Authority' is bound to select a Bidder or to appoint the Selected Bidder/Consortium or Contractor, as the case may be, for the Project and the 'Authority' reserves the right to reject all or any of the Bidders or Bids without assigning any reason whatsoever.

The Bidder shall bear all its costs associated with or relating to the preparation and submission of their Bid including but not limited to preparation, documentation, scanning uploading, expenses associated with any demonstrations or presentations which may be required by the 'Authority' or any other costs incurred in connection with or relating to its Bid. All such costs and expenses will remain with the Bidder and the 'Authority' shall not be liable in any manner whatsoever for the same or for any other costs or other expenses incurred by a Bidder in preparation for submission of the e-Bid, regardless of the conduct or outcome of the e-Bidding Process.

I&WD reserve the right to verify all statements, information and documents submitted by the applicant in response to the EoI Document. Failure of the I&WD to undertake such verification shall not relieve the applicant of its obligations or liabilities hereunder nor will it affect any rights of I&WD there under.

The EoI document shall be submitted by the bidder duly signed on each page of the document. In case the proposal is submitted on the document downloaded from official website, the applicant shall be responsible for its accuracy and correctness as per the version uploaded by I&WD and shall ensure that there are no changes caused in the content of the downloaded document. In case of any discrepancy between the downloaded or photocopied version of the EoI document and the original EoI document issued by the I&WD, the latter shall prevail.

The right to suspend the short-listing process or part of the process to accept or reject any or all applications at any stage of the process and / or to modify the process or any part thereof at any time without assigning any reason therefore is reserved by I&WD without any obligation or liability whatsoever.

**The bid document should be sealed in single envelope marked with the address, Name of work and EoI notice No., Last Date and Time of submission, Date and time of opening, name and address of the applicant.**

**The bid document should contain the following documents attached as annexure:**

1. Cover Letter (as per Annexure-A/1)
2. Details of Representative from Bidder/Lead Member of Consortium (as per Annexure-A/2)
3. Technical Credentials of the Bidder and / or Consortium (Form-1)
4. Approach and Methodology being adopted by the Bidder and / or Consortium (Form-2)
5. BOQ details with Estimated cost in item rate (as per Form-3)

If the envelope is not sealed and marked as instructed above, this office assumes no responsibility for the misplacement or premature opening of the contents of the Proposal submitted. This office is not responsible for the non-receipt or delayed receipt of bid document send through courier or post.

**Note: -**

The envelope shall contain EoI document, signed copy of budgetary quotes along with Annexure in the prescribed format.

The Proposal shall be made in the Forms specified in this EoI Document. Any attachment to such Forms must be provided on separate sheets of paper and only information that is directly relevant should be provided. This may include photocopies of the relevant pages of printed documents.

EoIs received by this office after the specified time on the due date shall not be eligible for consideration and shall be summarily rejected.

Executive Engineer is not bound to accept any EoI and reserve the right to accept or reject any EoI, and reserve the right to annul the selection process and reject all EoI at any time prior to the award of the selection without assigning any reason(s) whatever and without thereby incurring any liability towards the affected participant(s) on this ground.

#### **4.0 DECLARATION**

I/We have completely read and hereby accept the scope of work, requirements, terms & conditions.

**Signature of bidders authorised**

**Representative with seal:**

**Full address:**

### **SECTION - III**

ANNEXURE – A/1

#### **Cover letter for Expression of Interest**

To,  
The Executive Engineer  
Metropolitan Drainage Mechanical Division,  
Jalasampad Bhawan (4<sup>th</sup> floor), Salt Lake City, Kolkata-91  
Telephone No-03323345768, Email Id: ee-metromechdvn.wbiwd@gov.in  
I & WD, Govt. of West Bengal

***Sub: Submission of bid for obtaining Methodology, Technical Specification, BOQ and Budgetary Quote for the proposed: Supply, installation, testing and commissioning including trial run of six (6) nos. horizontal non clog dry installed submersible (flood proof) pump of capacity 20 Cusec (2040 M3/Hr, each) with allied electromechanical work, new pipe line, valves, intake trash rack etc complete of the Ranichak pumping station, PS. Daspur, Dist. Paschim medinipur***

Dear Sir,

In response to the Invitation for Expressions of Interest (EoI) published on \_\_\_\_\_ bearing Ref. No. \_\_\_\_\_ “Supply, installation, testing and commissioning including trial run and one (1) year successful operation and maintenance(with spares) of (water lubricated) vertical turbine mixed / axial flow pump sets four (04) nos. 50 cusec with allied electrical (HT & LT) and mechanical works complete for the proposed dumdum park pumping station at the confluence of cantonment khal and Bagjola khal , dist- 24 PGS(N) ,West bengal .”

I / We acknowledge that Executive Engineer will be relying on the information provided in the Bid and the documents accompanying the Bid for recommendation of the most suitable Methodology, Technical Specification, BOQ and Budgetary quotes for the aforesaid Project, and we certify that all information provided therein is true and correct; nothing has been omitted which renders such information misleading; and all documents accompanying the Bid are true copies of their respective originals.

I / We shall make available to the Executive Engineer any additional information it may find necessary or require to supplement or authenticate the Bid.

I / We acknowledge the right of the Executive Engineer to reject our Bid without assigning any reason or otherwise and hereby waive, to the fullest extent permitted by applicable law, our right to challenge the same on any account whatsoever.

I / We declare that:

- a) I / We have examined and have no reservations to the Bidding Documents, including any Addendum issued by the Authority; and
- b) I / We do not have any conflict of interest in accordance with the EoI document; and

I / We understand that you may cancel the Bidding Process at any time and that you are neither bound to accept any Bid that you may receive nor to invite the Bidders to Bid for the Project, without incurring any liability to the Bidders.

In the event of my / our being declared as the Recommended Bidder, I / we agree to enter into an Agreement in accordance with the documents that has been provided to me / us. We agree not to seek any changes in the aforesaid documents and agree to abide by the same.

I / We agree and understand that the Bid is subject to the provisions of the Bidding Documents. In no case, I / we shall have any claim or right of whatsoever nature if the Project / Agreement is not awarded to me / us or our Bid is not opened or rejected.

The estimated budgetary price has been quoted by me / us after taking into consideration all the terms and conditions stated in the EoI documents, our own estimates of costs including all direct and indirect tax liabilities and after a careful assessment of the site and all the conditions that may affect the project cost and implementation of the project.

I / We agree and undertake to abide by all the terms and conditions of the EoI document.

In witness thereof, I / we submit this Bid under and in accordance with the terms of the EoI documents.

Yours faithfully,

(Signature, Name & Designation of the Authorized Signatory)

Date:

Place:

Name & Seal of Bidder

**Details of Representative from Bidder/Lead Member of Consortium**

<b>Part A : General Information of Bidding Companies/Agency</b>		
<b>1</b>	Name of the Company/Agency	
<b>2</b>	Type of Organization	
<b>3</b>	Address of the registered office of the company/Agency	
<b>4</b>	Year incorporated	
<b>5</b>	Address for communication	
<b>6</b>	Contact person:  Name Designation Phone No. Fax No. Mobile No. Email address	
<b>General Information Subsidiary and Associated Companies (wherever applicable):</b>		
<b>1</b>	Name of the company	
<b>2</b>	Address of the registered office of the company/Agency	
<b>3</b>	Nature of Business	
<b>4</b>	Brief description of company (not more than 100 words)	
<b>5</b>	Any other information the bidder would like to include:	
<b>Part B - Details of GST</b>		
<b>1</b>	GST Registration No.	

2	LUT No. for zero rated supply	
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(Form-1)

**Technical Credentials of the Bidder and / or Consortium**

<b>Name of Client (End User) :</b>	
<b>Name of the Work :</b>	
<b>Nature of Work :</b>	
<b>Description of services performed by the company :</b>	
<b>Project Location :</b>	
<b>Name, e-mail ID, telephone no. and fax no. of client's</b>	
<b>Project Cost (Rs. in lakh)</b>	
<b>Start date and finish date of the services (month and year):</b>	
<b>Brief description of the Work:</b>	

**Notes:**

- Use separate sheet for each Eligible Assignment.

(Form-2)

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A description of the approach, methodology and work plan for performing the assignment, including a detailed description of the proposed methodology and staffing for the assignment.

- ❖ **Technical Approach and Methodology.** {Please explain your understanding of the objectives of the assignment as outlined in the scope mentioned in the Expression of Interest (EoI) document, the technical approach, and the methodology you would adopt for implementing the tasks to deliver the expected output(s), and the degree of detail of such output. Please do not repeat/copy the EoI in here.}

## QUOTED BID PRICE IN EOI

Sl. No	Description of work as per preliminary assessment	Qty	Unit	Description of work proposed by the bidder (for budget quotes)	Quantity (for budget quotes)	Unit (for budget quotes)	Rate (Rs.) (budget quotes)	Amount (Rs). (budget quotes)
1	Supply, delivery, storing at site, installation, testing and commissioning of horizontal non clog dry installed submersible (flood proof) pump coupled with motor as per following specification and as per direction of EIC. Pump should be suitable for pumping solid bearing liquid such as wastewater, industrial discharge, storm or canal drainage etc. in both dry and submerged condition.	6	set					
	<ul style="list-style-type: none"> <li>a) Rated discharge - 2040 M<sup>3</sup>/Hr (each)</li> <li>b) TDH (rated) = 8 MWC</li> <li>c) Motor: 75kw, 3ph squirrel cage induction motor, IE3 type as per standard IEC 60034, 50Hz, 415V, IP-68 protection, S-1 duty, insulation class- H, temp. rise class-B, motor will be oil cooled or ethylene glycol water mixture through cooling jacket.</li> <li>d) Motor rpm- below 1000</li> <li>e) Motor efficiency - 90% (minimum)</li> <li>f) Pump efficiency - 80% (minimum)</li> <li>g) Double mechanical seal type.</li> <li>h) Grease lubricated ball and roller type bearing, life- 100000 hr.</li> <li>i) Casing- FG 260</li> <li>j) Shaft- SS 420</li> <li>k) Impeller- Duplex stainless steel / SS 316L</li> <li>l) Solid handling size- 50mm (minimum)</li> <li>m) Sp. Gr. Of liquid to be handled - 1.04 (approx.)</li> <li>n) Along with submersible cable of 30m length.</li> <li>o) The pump must have service facility in West Bengal. <b>(Acceptable Make: KBL, KSB, GRUNDFOS, SULZER, Wilo Mather and Platt, XYLEM)(Pump must be European origin only)</b></li> </ul>							
2	Mechanical seal set (compatible with the supplied pump)	6	set					

## **SPECIFICATION**

### **5.1 Horizontal non clog dry installed submersible (flood proof) pump**

#### **5.1 General**

**5.1.1** The pump shall be horizontal, dry pit installed submersible, non-clog, single stage, mono block type driven by single speed submersible motor suitable for pumping all kinds of sewage/ sludge/ storm water containing plastics and fibrous materials. The pumps must have fitted with in-built cutting and tearing system for foreign matters. The speed of the pump should not be more than 750/1000 rpm. The pump efficiency shall not be less than 80%. The motor efficiency shall not be less than 90% (IE 3) and shall be non-overloading type. The motor should never be overloaded throughout the entire pump operating range as shown in the performance curve. The pump performance must be stable from zero discharge to run out condition.

**5.1.2** The motor shall be of 8/6 pole construction with adequate kW rating with the usual 25% (at least) safety margin to drive the pumps. Starting frequency in emergency shall be maximum 3 hot starts per hour and the motor starting method will be DOL/ Auto Start Delta Starting as per standard norms.

**5.1.3** The design, manufacture and performance of the submersible pump-motor sets shall comply with the latest applicable Indian/ International standards. In particular, the equipment must conform to the latest revision of applicable specification. The pump shall be capable of developing the required total dynamic head at rated capacity and will be suitable for parallel and continuous operation. The head - capacity curve of the pump shall be continuously rising towards the shut-off with highest head at shut-off. The pump shall be designed to be protected against reverse direction of rotation due to the sewerage returning through the pump. The set rotor assembly weight and unbalanced hydraulic thrust of the impeller shall be carried out by the thrust bearings provided in pump assembly. The pump shall operate trouble free, smooth and without any undue noise and vibrations. The magnitude of peak-to-peak vibration at shop and at site installation will be limited to 75 microns and 50 microns respectively at the bearing housing.

#### **5.2 Constructional Features**

##### **5.2.1 Casing**

**5.2.1.1** The pump casing, made of cast iron shall be hydrostatically tested at 1.5 times the shut-off head with maximum impeller size. The pump casing shall be of robust construction and the liquid passage in the casing shall be finished smooth.

##### **5.2.2 Impeller**

**5.2.2.2** The non-clog, semi-open/ vortex type impeller will be both statically and dynamically balanced and will be keyed and positively held on the motor shaft. The impeller will also be secured against damages, if the direction of rotation should reverse due to liquid flowing backward through the pump. The impeller shall be capable of handling soft solids of minimum 100 mm x 100 mm size. The leading edge of the vanes shall be rounded and cut back to prevent rags, stringy materials etc. from impinging on the impeller vanes.

### **5.2.3 Shaft**

**5.2.3.1** The shaft, made of stainless steel shall be finished to close tolerance at the impeller and bearing diameters. The impeller shall firmly be secured to the shaft by key and/ or nuts. The size of the shaft shall be calculated on the basis of maximum combined stresses. While designing the shaft the critical speed of the shaft must be taken into account which shall be at least 20% above/ below the operating speed. The rotor shall be dynamically balanced to avoid any vibration during operation.

### **5.2.4 Seal**

**5.2.4.1** The pump shall have two mechanical seals in tandem arrangement.

### **5.2.5 Bearing**

**5.2.5.1** Maintenance free anti-friction deep grooved, permanently grease filled ball/ roller bearings should be provided and this should take care of axial and radial thrust at any point of operation.

### **5.2.6 Motor**

**5.2.6.1** The motors should be dry, squirrel cage non overloading type, suitable for 3 ph, 415 ± 10% volt, 50 Hz supply, designed, manufactured and tested conforming to IS:325. The motor should be rated for continuous duty with IP 68 Protection and class 'F', insulation or better. However, the motor frame size shall be liberally designed to restrict the temperature rise as per class 'B' application.

**5.2.6.2** All squirrel cage induction motors shall be provided with electrolytic grade copper winding for stator and the rotor of the motor shall be of copper bars only. The cable from the submersible motor shall be rubber insulated copper core water proof cables of adequate core and size, which shall be brought through water sealed terminals from the stator body to enable the motor to be connected with the switch on the pump floor.

**5.2.6.3** The submersible cable of the pumpsets shall not have any joint or break in the route from the submersible motor to the LT Motor Control Centre located in the room in close proximity of the sump.

### **5.2.6.4 Internal Protection Features for Pumpsets**

**5.2.6.5** The pumpsets shall at the minimum be provided with the following internal protections. The leads of all the protecting sensors shall be brought out from the motor with separate control cables.

### **5.2.6.6 Winding Temperature**

The motors shall be provided with 3 sets of PT 100 type thermistors embedded in the winding to protect it from getting overheated.

### **5.2.6.7 Bearing Temperature**

For detection of mechanical faults, both bearings, at drive end and non-drive end shall be provided with PT 100 type temperature sensors for monitoring the bearing temperature, protection and annunciation.

### **5.2.6.8 Moisture Sensors**

The motors shall be provided with a resistance type sensor to sense entry of any moisture in the motor chamber. It shall operate on 230 V AC supply.

#### 5.2.6.9 Monitoring Seal Leakage Chamber

The pumpset shall be provided with in-built sensor assembled in the seal leakage collection chamber. In the event of any leakage this sensor will give the tripping signal. The sensor should be sensitive enough to sense the smallest leakage so that the motor does not burn out.

#### 5.3 Material of Construction

Casing	: Cast Iron, IS:210, FG 260
Impeller	: Duplex Stainless Steel /SS 316L
Shaft	: Stainless Steel, AISI:410
Motor housing	: Cast Iron, IS:210, FG 260
Stator/ rotor core	: CRGO Steel
Stator/ rotor winding	: Electrolytic grade copper wire/ bar
Fasteners	: Stainless Steel, AISI:316

Material of Construction of any other International Standard may also be considered.

#### 5.4 Acceptable Makes

##### 5.4.1 ABS / Grundfos / Flyght / Wilo / KSB /equivalent

The pumps shall be manufactured in overseas works of manufacturer's and shipped from the respective European country.

#### 5.7 Inspection & Testing at Manufacturer's Works

5.7.1 The manufacturer will submit their QAP for Engineer's approval including the following inspections and testing which will be carried out at the manufacturer's works.

##### 5.7.2 Hydrostatic Test

5.7.2.1 The pump casing will be hydrostatically tested for any leakage, with water at a pressure 1.5 times of closed valve pressure with maximum impeller size or 2 (two) times of pump duty point pressure whichever is higher. Unless otherwise stated the minimum duration of testing will be 30 minutes.

##### 5.8.3 Static Balancing

5.8.3.1 All major rotating components must be statically balanced individually.

##### 5.8.4 Dynamic Balancing

5.8.4.1 In addition to static balancing of individual component the whole rotor assembly of pump must be dynamically balanced at rated operational speed.

### **5.8.5 Performance Test**

**5.8.5.1 Each assembled pump shall be shop tested by the manufacturer, in presence of Employer/ Engineer to determine the following characteristics as furnished in the characteristics curve.**

- 1. Capacity vs. Total Dynamic Head curve**
- 2. Capacity vs. Brake Power (BkW) curve**
- 3. Capacity vs. Efficiency (%) curve**

**5.8.5.2 While testing the following are also to be recorded :**

- i) Bearing temperature**

**5.8.5.3 The above tests for each pump for its full operating range at rated speed shall be conducted in accordance with the latest revision of IS/ BS/ DIN/ ISO specifications and/ or Hydraulic Institute Standards, USA.**

**5.8.5.4 During pump testing, reading to the extent possible, shall be taken corresponding to its full working range from its closed valve condition to 30% increase of the rated output or corresponding to the output at its minimum head specified, whichever is higher.**

**5.8.5.5 Each pump performance shall be documented by obtaining concurrent readings showing motor voltage and amperage, pump suction head, pump discharge head, pump discharge etc. Such readings shall be documented for at least seven pumping conditions including one at the shut-off head and each power load shall be checked for proper current balance.**

**5.8.5.6 The curves produced from the above readings shall be used to determine the capability of pump sets to meet the guaranteed performance at site.**

**5.8.5.7 Bearing temperatures shall be determined by PT 100 or equivalent type temperature detector. A running time of at least 30 minutes shall be maintained for this test at shut off head if sufficient water is not available for a complete test.**

**5.8.5.8 After the test runs have been performed to the satisfaction of the Employer/ Engineer that the pumping equipment complies with the stipulated specifications, the Engineer shall be provided with the manufacturer's Test Certificates.**

**5.8.5.9 All instruments and equipment required for such test shall be provided by the manufacturer and the instruments shall be calibrated and certified by an approved independent testing authority not more than 15 days prior to the test in which they will be used.**

**5.8.5.10 In the event of any pump failing to meet the specified test requirements, it shall be modified and retested until the requirements are attained.**

### **5.8.6 Non-Destructive Tests**

**5.8.6.1 Physical and chemical tests of the major components of each pump must be done. These tests shall be conducted in accordance with relevant IS/ BS/ DIN/ ISO standard. Prior to testing the tests and major components' identifications along with the actual standard to be followed, shall be submitted for Client's approval and only those, which will pass the tests successfully, shall be used for the manufacture of end product. All material test certificates to be submitted before machining operation to the Client for his approval and finally these 'Approved' test certificates will be produced during pump performance testing.**

**5.8.7 Visual Inspection**

**5.8.7.1 Pumps shall be offered for visual inspection to the Client before despatch. The pump assembly/ any component shall not be painted before inspection.**

**5.8 Testing At Site**

**5.8.1 All pump sets shall be tested at site in the presence of manufacturer's expert. The  $Q_H$  parameters shall be measured with the electromagnetic flowmeter installed at the rising main for DWF. The testing shall be arranged by the contractor at no extra cost.**