

**PROCUREMENT OF
NON-CONSULTANCY SERVICES UNDER
SHOPPING PROCEDURES**



GOVT. OF WEST BENGAL
Irrigation & Waterways Directorate
NATIONAL HYDROLOGY PROJECT
NH-2, Purta Bhawan, 3rd Floor, Purba Burdwan-713103
Tel:+91342-2646799, Fax:+91342-2646799
Email: eebipd2012@gmail.com / bengalsw@gmail.com

REQUEST FOR QUOTATIONS

Procurement of Non-Consulting Services under RFQ/Shopping Procedures
E-Procurement Notice
(One-Envelope with e-Procurement Bidding Process)

Memo No: 474/NHP-02/02

Date: 15.12.2021

RFQ No: WBIW/NHP/RFQ-05/2021-22

Employer : Executive Engineer, Burdwan Investigation & Planning Division

Package title : “Bathymetric Survey of the Massanjor Reservoir in Dumka district, Jarkhand”.

Package no:- *NHP-2021-2022-WBSW-395544*

Applicable Procurement Guidelines:

World Bank’s “Guidelines -Procurement of Goods, Works and Non-Consulting Services under IBRD Loans and IDA Credits and Grants by World Bank’s Borrowers” Revised July 2014

1. The Government of India has received financing from the World Bank in various currencies towards the cost of the **National Hydrology Project** and intends to apply part of the proceeds towards eligible payments under the contract for which this request for quotations is issued. **The Executive Engineer, Burdwan Investigation & Planning Division, Irrigation & Waterways Directorate, Govt. of West Bengal, Purta Bhawan, 3rd Floor, Purba Burdwan-713103, West Bengal (for and on behalf of Irrigation & Waterways Department, Govt. of West Bengal** invites quotations electronically from eligible service providers (bidders) for the following non-consulting services.

Name of the Services	Unit	Quantity	Completion Period
“Bathymetric Survey of the Massanjor Reservoir in Dumka district, Jarkhand”	Hectares	6780	90 days

2. This e-Procurement notice includes the terms and conditions applicable to submission of quotations; criteria for qualification, evaluation, and for award of contract; and relevant forms to be filled by the bidders. Implementing Agency has not issued a separate RFQ document for this purchase. The e-Procurement notice including the terms and conditions etc. can be downloaded free of cost by logging on to the website <https://wbtenders.gov.in>. The bidders would be required to register in the website which is free of cost.
4. For submission of Quotation, the Bidder is required to have Digital Signature Certificate (DSC) from one of the Certifying Authorities authorized by Government of India for issuing DSC. Bidders can see the list of licensed CA's from the link (www.cca.gov.in). Bidders who have not obtained the user ID and password for participating in e-procurement in this Project, may obtain the same from the website: <https://wbtenders.gov.in>.
5. Quotations shall be submitted on <https://wbtenders.gov.in> on or before **15.00 hours on 18.01.2022**. Any quotation or modifications to quotation received outside e-procurement system will not be considered. The electronic bidding system would not allow late submission of quotations. The Quotations will be opened online on **18.01.2022 at 16.00 hours**. This can also be viewed by the bidders online. The electronic summary of quotation opening will be generated and uploaded online.
6. If the Employer's office happens to be closed on the date of opening of the Quotations as specified, the Quotations will be opened on the next working day at the same time.
7. Other details can be seen in the RFQ document. The Employer shall not be held liable for any delays due to system failure beyond its control. A Bidder requiring any clarification of the RFQ Document may notify the Employer online or may visit the office of the Employer at the address given below.

Sd/-

*The Executive Engineer
Burdwan Investigation & Planning Division,
I&WDte, Govt. of West Bengal. Purta Bhawan, 3rd Floor,
Purba Burdwan-713103, West Bengal
Telefax: +91342-2646799
e-mail: eebipd2012@gmail.com*

Terms and Conditions

1. **Eligibility:** A Bidder(a) shall not participate in more than one Quotation; (b) shall not have conflict of interest as defined in the Bank's Procurement Guidelines; and (c) should not have been (i) temporarily suspended or debarred by the World Bank Group in compliance with the Bank's Anti-Corruption Guidelines and its Sanctions Framework; or (ii) blacklisted or suspended by Government Department/Semi-Government/Public Sector Organization in India.(d) Bids from Joint Ventures are not acceptable.
2. **Clarifications & Amendments:** If the Employer receives any request for clarification of this RFQ Document, it will upload its response together with any amendment to this document, on the e-procurement portal for information of all bidders. Bidders should check on the e-procurement system, for any amendments to the terms and conditions.

3. **The Quotation shall comprise the following:**

(All documents should be uploaded after converting the same to PDF)

- (a) Letter of Quotation;
- (b) Authorization: The written confirmation of authorization to sign on behalf of the Bidder shall consist of an organizational document, board resolution or its equivalent, or power of attorney specifying the representative's authority to sign the Quotation on behalf of the Bidder.
- (c) Description of services;
- (d) Evidence in accordance with Clause 5 establishing Bidder's qualifications to perform the contract, if its quotation is accepted;
- (e) Performance Statement of services of similar nature made during the last 3 years, in the prescribed Format along with supporting enclosures [copies of work order, schedule of work, completion certificate etc.]
- (f) Complete address and contact details of the Bidder having the following information:
 - Name of Bidder
 - Address for communication
 - Telephone No(s): Office
 - Mobile No.
 - Facsimile (FAX) No.
 - Electronic Mail Identification (E-mail ID)
- (g) Price Schedule (using the Schedule uploaded with the RFQ document) wherein the rate shall be entered online.
- (h) **Self attested scanned copy of documents to be attached: Valid Tread Licence, GST certificate , PAN, P.Tax certificate, Partnership deed/ Affidavit of proprietorship duly attested by a Notary Public, IT returns, Auditors report for last three financial years showing Annual Average Turn Over etc. [Required Annual Average Turn Over during last three Financial year ending 31st March of previous financial year should not be less than 20.00 lakh.[Rupees twenty lakh]**
- (i) The Bidder shall furnish, as part of his Bid, a **Bid Security** in the amount **Rs. 40,000/-**(Rupees forty thousand only) for this particular work through Demand Draft or in the form of a Bank Guarantee (Format attached). Demand Draft to be drawn in favour of **"The Executive Engineer, Burdwan Investigation & Planning Division"** and payable at Burdwan.

- Bank guarantees issued as security for the bid shall be valid for **45 days** beyond the validity of the bid.
- Any bid not accompanied by an acceptable Bid Security shall be rejected by the Employer as non-responsive.
- The Bid Security of unsuccessful bidders will be return within 28 days of the end of the bid validity period.
- The Bid Security of the successful bidder will be discharged when the bidder has signed the Agreement and furnished the required Performance Security. The Bid Security of the successful Bidder shall be required to be kept valid and / or validity extended till such time the Performance Security is accepted by the Employer.
- The Bid Security may be forfeited :
 - i)if the Bidder withdraws the Bid after Bid opening during the period of Bid validity;
 - ii)in the case of a successful Bidder, if the Bidder fails within the specified time limit to :
Sign the Agreement / furnish the required Performance Security.

j) Bidder should upload;

- Scanned copy of **Bid security**.
- Scanned copy of **Power of attorney** for signing the document in the case of firm in partnership/limited company, corporation.
- Scanned copy of an **Affidavit** affirming that information furnished in the bid is correct to the best of knowledge and belief of the bidder as per attached Format.

Offline submission of Bid documents:-

The bidders are required to submit (i) **original Power of Attorney**; (ii) **original DD / BG** towards Bid Security and (iii) **original Affidavit** regarding correctness of information furnished with bid document before the last date and time of bid submission at the address mentioned below either by registered post, courier or by hand, failing which their bids will not be opened online and will be declared nonresponsive.

The original documents as indicated above shall be submitted in sealed envelope to the following address by 15:00 hours on 18/01/2022.

**The Executive Engineer,
Burdwan Investigation & Planning Division,
I&WD, Govt. of West Bengal,
PurtaBhawan, 3rd Floor,
Purba Burdwan-713103, West Bengal**

The envelope should be marked (Name of work and Bid No.)

4. Quotation Prices:

- (a) The contract shall be for the whole of the services, as specified in the Price Quotation Form. Corrections, if any, can be carried out by editing the information before electronic submission.

- (b) The Bidder shall be responsible for meeting all tax liabilities other than Goods and Services Tax (GST) arising out of the Contract.
 - (c) GST, which will be payable on the services at the time of invoicing, shall be shown separately.
 - (d) The rates quoted by the Bidders shall be fixed for the duration of the contract and shall not be subject to adjustment on any account.
 - (e) The Prices shall be quoted in Indian Rupees only.
 - (f) Each bidder shall submit only one bid.
5. **Qualification of the Bidder:** Bidder should have performed **services of similar nature and complexity** of value of at least INR 16.00 Lakh (Rupees sixteen lakh) only in any one of last 3 years .Details of services performed during the last 3 years shall be submitted in the specified Proforma. **[copy of Work orders , Schedule of works, Completion Certificate from the competent authority for all are to be attached]**
6. **Validity of Quotation:** Quotation shall remain valid for a period not less than 45 days after the deadline date specified for submission.
7. **Signing of Quotations:** The **name and position** held by each person signing the quotation and related documents must be typed or printed below the signature.
8. **Quotation Submission:** The Letter of Quotation shall be filled, **signed and scanned** copies shall be uploaded along with the Price Schedules that shall be furnished using the Forms available online without any alterations. All blank spaces shall be filled in with the information requested. Scanned copies of all other documents shall also be uploaded on this website.
9. **Deadline for Submission of Quotations:** Quotations must be uploaded online ,not later than the deadline for submission of quotations viz. time **16.00 (hours) and 18.01.2022**, as per server time. A Bidder may modify its Quotation any number of times by using the appropriate option on the e-Procurement Portal, before the deadline for submission of Quotations. **Quotations once withdrawn cannot be resubmitted.**
10. **Online Opening and Evaluation of Quotations:** The Quotations will be opened online on the specified date and time. This can also be viewed by the Bidder online, and electronic summary of quotation opening will be generated and uploaded online.
- (a) The Employer shall examine the quotation to determine whether the quotation **(a)** has been properly signed (Clause 7); **(b)** meets the eligibility criteria& qualification criteria (Clause 1& 5); and **(c)** Price Schedules are in accordance with the requirements specified in the RFQ document.

Clarification of Bids:

(i) To assist in the examination, evaluation, and comparison of the bids, and qualification of the Bidders, the Employer may, at its discretion, ask any Bidder for a clarification of its bid including breakdown of unit rates, giving a reasonable time for response. Any clarification submitted by a Bidder that is not in response to a request by the Employer shall not be considered. The Employer's request for clarification and the response shall be in writing. No change, including any voluntary increase or decrease in the prices or substance of the bid shall be sought, offered, or permitted, except to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the bids.

(ii) If a Bidder does not provide clarifications of its bid by the date and time set in the Employer's request for clarification, its bid may be rejected.

(b) Only Quotations that are both substantially responsive to the RFQ document and meet all Qualification Criteria shall qualify for financial evaluation.

(c) **The evaluation shall be based on excluding GST and including any other taxes.**

(d) Employer shall **notify in writing** those Bidders who have failed to meet the Qualification Criteria or whose Quotations were considered non-responsive to the requirements in the RFQ document, advising them that their Quotation failed to meet the requirements of the RFQ document.

11. Award of Contract: The Employer will award the Contract to the Bidder whose quotation has been determined to be **substantially responsive** and who has offered the **lowest evaluated quotation price**

(a) Notwithstanding the above, the Employer reserves the right to accept or reject any quotations and to cancel the bidding process and reject all quotations at any time prior to the award of contract.

(b) Regarding required number of **substantially responsive bidder**, World Bank's "Guidelines -Procurement of Goods, Works and Non-Consulting Services under IBRD Loans and IDA Credits and Grants by World Bank's Borrowers" Revised July 2014, may be followed.

(c) The Bidder whose quotation is accepted will be notified of the award of Contract by the Employer **prior to expiration of the quotation validity period.**

(d) 100 % payment may be made within 25 days of receipt of all deliverables maintaining all specifications, terms & conditions, acceptance of the same, receipt of invoice subject to availability of fund. Payment of GST for the services at the time of invoicing, although already included in the total cost, will be at actual.

12. Performance Security: Within 15 days of receiving Letter of Acceptance, the successful Bidder shall deliver to **The Executive Engineer, Burdwan Investigation & Planning Division, Irrigation & Waterways Directorate, Govt. of West Bengal** (Employer) the performance security (either a Bank Guarantee or a Fixed Deposit/Term Deposit Receipt in favour of the Employer) for an amount equivalent of **5 (five) %** of the contract price. The Performance Security shall be valid beyond 45 days the contract completion period. Failure of the successful Bidder to furnish performance security and to sign the agreement within the period stipulated shall constitute sufficient grounds for annulment of award and debarring the bidder from participation in bidding for services/works by the Employer for a period of one year, in which case the Employer may make the award to the next lowest evaluated Bidder or seek quotations afresh.

13. Supply of all materials and equipment shall be the responsibility of the Bidder. Employer will not issue any material/equipment.

14. Adjudicator:

The Adjudicator proposed by the Employer is :-**Sri Kaushik Chattopadhyay**

The daily fee for this proposed Adjudicator shall be:-**Rs. 5000.00 only.**

The biographical data of the proposed Adjudicator is:-**Ex-Secretary to the Irrigation & Waterways Department, Govt. of West Bengal.**

If the Bidder disagrees with this proposal, the Bidder should so state in the Quotation. If , in the Letter of Acceptance, the Employer has not agreed on the appointment of the Adjudicator, the Adjudicator shall be appointed by the President of the Institution of Engineers, [State] State Centre at the request of either party.

Description of Services

1. BACKGROUND:

Since (1954) the filling of water starts, the sediment carried by flowing water and from catchment area (1860 Sq. Km) gets deposited within the pond area of the Massanjore/Canada Dam. As a result, the capacity of reservoir gets reduced with time and hence benefits delivered by the reservoir reduce day by day and after certain period it is no longer beneficial to operate. Therefore, monitoring of sediment deposition is necessary to compare the performance with the estimation.

The Mayurakshi River fed with streams originated from Jharkhand viz. Matihari, Dhobbi, Pussaro, Bhamri, Tepra, Nunbil-Siddheswari, and Phuskani, Ghoshbera etc. Before impoundment of a dam in 1954 the principal rivulets of Mayurakshi basin viz. Brahmani, Dwarka, Bakreswar, & Kopai overflow their banks during monsoon and damaged crops and caused heavy soil erosion. Hence the integrated development of the basin has been done in which the dam at Massanjore is one of them. This masonry dam is situated in Dumka district of Jharkhand at about 35 Km from Suri, Birbhum. This dam has the command area for irrigation of about 2428 Sq Km and has a Hydro-electric generation power generation capacity of 4000KW.

At the time of impoundment in 1954, the capacity of the reservoir was estimated as 617 MCM and when measured, it is found that it can bear 608.2 MCM of water. After that another survey work was done during 1964-65 and found that the capacity reduced to 581.42 MCM at FRL. Hydrographic surveys had also been done in the following years 1970, 1973, 1980, 1995, 2001. A survey work had been done in 2017, by the River Research Institute, WB, I&W Directorate, and showed that the capacity was further reduced to 557.932 MCM at FRL.

So, an integrated study of the Massanjore reservoir is required with the modern technology, viz. RTK-DGPS-for determining the global position (latitude & longitude), ADCP-for cross section survey and velocity profile/ discharge measurement, HYPACK-for comprehensive hydrographic survey for full operation of the present SCADA system.

2. OBJECTIVES OF PROPOSED WORK:

The main objectives of the proposal are:

- (a) To estimate and study the sedimentation behavior of reservoirs in different zones including horizontal zones throughout the reservoirs as well as vertical zones namely
(i) dead storage (ii) live storage (iii) Minimum pool level (iv) useful storage (v) maximum reservoir level, if any.
- (b) To upgrade and compare Elevation-Area- Capacity tables /curves of reservoirs at regular intervals since 1954.
- (c) To assess and review life expectancy of reservoirs, particularly in view of some apprehensions from certain quarters about the higher rate of sedimentation in reservoirs.
- (d) To recommend suitable measures for increased benefits and enhanced life of a reservoir, specific measures for soil conservation, catchment area treatment, watershed details etc. should include in the report.
- (e) To create database for developing regional sediment indices and facilitate rational sedimentation planning of future reservoirs.

- (f) To develop contour map of reservoir bed.
- (g) Development of guide curve.
- (h) Analysis of suspended and bed soil samples.
- (i) Analysis of reservoir water quality for engineering purposes.
- (j) To emphasize on the State Government/ Project Authorities on the importance of conducting systematic hydrographic surveys at regular intervals for better operation and management of existing reservoirs.

3. SCOPE OF WORK:

Under this request for proposal, the consultant/contractor is expected to perform the following assignments and studies:

- a) Mobilizations of personnel, equipment, instruments, establishment of site camp etc.
- b) Lay out of Ground Control Stations including reconnaissance /preliminary surveys, if any.
- c) Conduct hydrographic and topographic survey to cover the entire pond area (around 6780Hectare) of the reservoir up to Full reservoir level (121.34m in GTS) (50m x 50m grid for hydrographic survey and 100m x 100m grid for topographic survey).
- d) Collection and analysis of sediment samples (suspended and bed) from the reservoir bed with an interval of 500m center to center of the reservoir with geo references (GPS). The collection points should be clearly indicated the chainage on a separate soil map.
- e) Collection and analysis of information from project authorities or any other agency related to the Mayurakshi Reservoir at Messanjore, Dist.-Dumka, Jharkhand catchment characteristics such as location and extent; physiographic and relief; rivers system, Agro climate/Agro- Ecological regions; geology and soils; natural vegetation and Biotic activity; land use with land cover and Soil erosion including results of prioritization of sub- watersheds. The agency shall analysis the status and sensibility of soil conservation measures.
- f) Analysis of results of present capacity survey. The agency shall prepare vertical sedimentation tables and curves by comparing the capacity at the time of impounding; intermediate survey with present survey. The effects of sedimentation on the life of reservoir shall tabulate by the agency comprising with estimated sediment deposit; loss of storage capacity and NZE (new zero elevation) with age upto the year of 2122.
- g) Preparation of guide curve and table for the Massanjor Dam for twelve months. In this respect water demand and supply data will be provided to the agency by the concerned division of I&W Directorate, Govt. of west Bengal.
- h) Preparation of report containing general information about the reservoir, catchment characteristics, details of capacity survey performed including methodology of data collected, analysis of data with standard guidelines/ procedures, finding of results, conclusion and recommendations keeping in view

the objective of the study to the satisfaction by the River Research Institute (RRI), West Bengal, I&W Directorate, Govt. of West Bengal.

- i) Any difficulties/special problem encountered during the course of the study and how they were overcome may be included in the report.
- j) The work shall be completed by the agency in 3 (three) months' time with effect from 21 days after the agreement has been signed.

4. DATA ANALYSIS/PREPARATION OF TABLES/CHARTS/DRAWINGS:

After completion of the capacity survey, the survey data shall be analyzed by the Consultant to obtain the following:

- i) **Elevation-Area-Capacity curves as well as tables;**
Elevation-Area-Capacity curve along with table will be prepared from the lowest elevation (88.41m) up to FRL (121.34m in GTS) at 0.1m or less interval.

- ii) **Assessment of effects of sedimentation on performance of reservoir and balance life of reservoir;**
Assessment of sediment and its distribution in the reservoir shall be made and likely effects of such sedimentation on the performance of the reservoir shall be assessed. While analyzing the reservoir data, the validity of Empirical Area Reduction method using data of silt deposition collected during survey may also be checked out. The Elevation-Area-Capacity curves and L-Section may be produced for another 100years (2121) at 10 years interval by conducting mathematical model studies. The Consultant may refer to various standards/references including I.S. 12182-1987“Guidelines for Determination of Effects of Sedimentation in Planning and Performance of Reservoirs”, C.B.I& P Publication on the subject and I.S. 5477 Part-II “Fixing Capacities of Reservoirs – Dead Storage”.

Separate chapters are to be included in the report for “Sedimentation Analysis”, “Life of Reservoir”, “Mathematical modeling”, “Soil Conservation Measures” and “Conclusions and recommendations”.

A sample calculation is to be shown for each: Estimation of rate of sedimentation, expected life of reservoir, prediction of sediment distribution etc. Future sediment calculation shall be based on every 10 years block.

- iii) **Estimation of Sedimentation in different zones of reservoir;**
Loss and percent loss during the period 1954- present date of storage capacity and rate of sedimentation shall be worked out in each vertical zone separately viz. dead storage, live storage and flood storage, if any. An assessment of the sedimentation behaviors in different horizontal zones throughout the reservoirs may also be made.
- iv) **Analysis of bed material samples;**
Laboratory analysis of the bed material samples collected from the reservoir bed be carried out to obtain sediment sizes, density, specific gravity, moisture content etc. Analysis of samples should also be aimed to evaluate geometric standard deviation to know whether the sediment is uniform or non-uniform (Melville et al.). Kramer's coefficient shall also be evaluated. Method of calculation of bulk density (Lane's method or Miller's method or some other method) is to be mentioned.

- v) **Cross-Sections;**
Cross Sections showing the original bed profile at an interval of 100m C/C along the upstream and all raw data with analysis in X, Y, Z format with Z being the depth of the bed of the reservoir with data intensity along the cross section @ 10m C/C shall provide as soft copy in CD or hard disk to RRI, WB Mohanpur, Nadia.
Officers of RRI and I&W Department shall be trained on the relevant software at Consultants' Office for conversion of raw data into analog form during Stage 3, analysis part of the survey.
- vi) **L-Sections;**
L-Section of the reservoirs may be prepared from the dam sill to end of FRL with the river bed at every survey line.
- vii) **Vertical Sediment Distribution;**
Vertical sediment distribution curve/table shall be provided. Plot between Percent Reservoir Depth and Percent Sediment Deposited is to be plotted as per ISS477PART- II 1994. "Fixing Capacities of Reservoirs – Dead Storage".
- viii) **Contour map of the reservoir;**
The contour map shall be prepared in appropriate size preferably in A0 size with contour at suitable interval from the lowest bed level to MWL.
- ix) **Discharge reading report:-**
Conducting discharge and velocity measurement for 2 days, at upstream of reservoir at river confluence point for 1 day & downstream 500mtr away from spillway for 1 day using modern acoustic depth sounding instruments (ADCP) and RTK (Real Time Kinematic) GPS equipment mounted to a floating raft, using the latest generation of acoustic Doppler current profilers capable of acquiring spatially distributed samples of water depth including velocity column data. The Integrated Bathymetry and velocity mapping system equipment and software shall be in good condition; velocity mapping system should have an integrated RTK GPS for navigation and should also use acoustic bottom track system at the same time. The equipment should also measure the bathymetry data along with velocity data so that the scour depth and the velocity can be measured. Gauge and discharge reading report.
- x) **Development of Guide Curve (GC):**
Only monthly water demand and supply will be provided to the agency. The CWC guide lines can followed for preparation of GC of Massanjor Dam.
- xi) **Trap Efficiency of Reservoir;**
The trap efficiency of reservoir is to be calculated according to Brune's trap efficiency curve as per I.S.12182-1987"Guidelines for Determination of Effects of Sedimentation in Planning and Performance of Reservoirs".
- xii) **Drawings for the report;**

All charts/drawings shall be appropriately reduced for inclusion in the report.

Note :The entire data observed during hydrographic survey by the consultant and the subsequent report prepared by him shall be the exclusive property of I&W Department, Government of West Bengal and the consultant has no right what so ever to divulge the information/data to others without the specific written permission of I&W Department, Government of West Bengal.

5. SUBMISSION OF REPORT:

Submission of report comprising detail drawings , charts, graphs/curves, technical notes , photographs etc [both soft copy & hard copy] along with index map, topographic site plan showing all important features, sections in suitable scale etc. as per direction of PM/E.I.C [6 (six)copies].

- (i) A survey report in triplicate describing the conduct of the survey along with a soft copy and all observed data, along with original records, calculations shall be submitted to Department. The data furnished shall be adequate to re-plot the survey chart independently on the basis of these documents.
- (ii) The charts shall be plotted at 1:5000 scale or any other scale as directed by Project Manager showing soundings at 5.0 m intervals. U.T.M. grid and geographical grid shall be marked on the chart as per normal cartographic practice. Soundings shall be shown in meter (m). All charts/maps should display reference to the ground station and datum based on which the controls are fixed and shall indicate date/time of surveys and name of person in-charge carrying out the surveys.
- (iii) Master copy of the each chart/map shall be provided along with six hard copies and three soft copy on Compact Disc in a format compatible with AUTOCAD.
- (iv) a) Apart from the hard copy of report & drawings, soft copies of all survey data are to be submitted in Excel, Arc-GIS and AutoCAD format for records and further analysis.

b). KMZ/.KML file of the detailed topographic survey shall be made from the survey data such that the layer can be visualized in Google Earth/Arc GIS Earth.

NOTE: Reporting should comprise following points:

- (a) Contour map (Scale-1:5000) [contour interval should be 0.50 mtr] covering at least 1.0 km outward horizontal distance beyond Maximum Water Level of the reservoir after stitching hydrographic and topographic survey maps.
- (b) Topographic map should show the location of hydraulic structures, public utility facilities like road/ rail etc.
- (c) Google map must show the location in Lat-Long collected by actual survey using DGPS/RTK along with photograph of that place/structure.
- (d) Water level must be shown at the barrage gauge point site narrating Lat-Long and date and time.
- (e) Dam-Reservoir legacy data (Full Reservoir Level, Maximum Water Level, Sill Level, Top of Dam Level etc.) must be verified with the respective office of the I.&W. Deptt. GoWB.
- (f) Data in Table and Curves in Graph [Elevation (100 mm interval) vs Water Surface Area and Capacity] of the Reservoir indicating of Sill Level, present Bed Level & Dead Storage Level, FRL, MWL etc.
- (g) 3D DEM picture of reservoirs as considered.
- (h) Bed soil sample and water sample must be taken at the inlet, mid-reservoir and u/s mouth of dam. These are required for the health monitoring of the reservoir.

A. PROJECT TERMS:-

- I. Period of Completion: **90 days** including rainy and festive season.

- II. Mode of Payment: Payment will be made after successful completion of the work as a whole (as specified in the scope of work) on certification of the invoice (raised by the agency) by the Project Manager.

6. TECHNICAL SPECIFICATIONS:-

6.1.1 Hydrographic Surveys:

The Scope of work shall cover all technical aspects of hydrographic and topographic survey at par with standards including the following:-

The detailed hydrographic survey is to be carried out by using Automated Hydrographic Survey System. The survey is to be conducted in WGS 84 Horizontal datum & Vertical Datum EGM 96 or as per direction of PM/EIC.

The dam details are enumerated below:-

Sl	Name of Dam	Area	Location	Position (around Dam)
1	Massanjor	6780 Hectare or 67.8 Sq. Km. approx.	Dist.-Dumka, Jharkhand state	Lat 24.40 ⁰ N Lon 87.30 ⁰ E

TOTAL= 67.8 Sq. Km. at FRL (GTS):

- Establishing vertical control (accuracy +0.1m) and establishing bench mark (accuracy +10mm/perKm.) at suitable interval. [Transfer of Bench Mark/datum w.r.t. MSL in GTS]
- Establishing horizontal control and marking selected points on the shore at suitable intervals. (accuracy +20mm/perKm.)
- Special features like ghats, water intake structure, embankments, spurs, rock outcrops, shoals, hard clay banks, etc. should also be marked when encountered.
- Preparation and supply of charts and survey reports in hard copies as well in electromagnetic form.
- To provide any clarifications/justification required by client during the acceptance of report for the work carried out by the bidders.

Details to be collected [other than soundings Depth]

Water Level observations during the period of survey.

Technical Specifications:

6.1.2 Establishment of Bench Mark;

The levels shall be on the basis of GTS benchmarks in the vicinity. The contractor shall transfer the benchmark to the site. All levels shall be related to MSL. New Benchmark shall be established either on existing abutments, suitable structures or other monoliths which shall meet the stability requirement for benchmarks specified by Survey of India. Alternatively new benchmark of suitable type shall be built to Survey of India standards. Value of benchmarks shall be established to accuracy better than + 5 millimeters.

6.1.3 Establishment of Horizontal Control and marking the selected points on shore;

Horizontal control established shall be properly connected to nearby G.T.S. or other points approved by Project Manager.

Establishment of Vertical Control;

The vertical control shall be established with suitable water level gauges and/or GTS Bench Marks within or near the survey area. Sites of water level gauges should be carefully selected to ensure the free flow of water levels to and from the gauge locations. Approval of the site engineer should be obtained for the location(s) of the water level gauge(s). The leveling accuracy shall be + 0.05 m. For recording of water levels, water level gauges shall be erected at approved locations. The water levels shall be recorded at interval not more than 15 minutes. However, time and height of low water shall be accurately determined.

Carrying out Soundings;

The sounding data shall be recorded and reported at an interval of 50m grid.

Soundings shall be carried out using suitable equipment which yield accuracy of +0.10m or better and maximum range should be 50m. Relevant environmental parameters which effect accuracy of echo sounding shall be measured regularly and appropriate correction shall be applied. 'Bar Checks' shall be carried out daily before commencement and after completion of days' work. Bar Check equipment / tackle and its calibration shall be got approved from Engineer-in-Charge.

Position Fixing;

The contractor may however propose alternative position fixing system that meets above mentioned positional accuracy, provided at least 3 lines of position can be used to determine position. The position fixing system shall be calibrated against a most accurate system or a fixed base line before deployment to the satisfaction of Engineer-in-Charge. While taking soundings vessel shall be moved at a slow speed (not greater than 3 knots).

6.2 Topographic Survey:

Brief Scope of Work -Topographic Survey

- i. Establishing Bench Mark[TBM]
- ii. Establishing horizontal and vertical controls
- iii. Carrying out leveling/ traversing and mapping
- iv. Reporting and charting
- v. Furnishing any clarifications required by client during the process of acceptance of the reports
- vi. Topographic surveys of the area

Topographic Survey map preferably to a scale of 1:5000, of the land adjacent to harbors area should be prepared. The plan should clearly show dry weather channels, with shoals and channels, embankments etc. Plan should also show all important structures like bridges, culverts, weirs, etc. Important towns/ villages located in the area covered in the plan may also be marked in the same plan. The contractor shall deploy a suitable traversing equipment to undertake survey with vertical accuracy of + 10mm./per km and horizontal accuracy of + 20mm / per km. However, at least 3 lines of position should be used to determine location.

The contractor shall accurately delineate the various existing physical features such as high water and low water line , existing structures and road, hillock, houses, important town, villages en-route, roads, embankments, bridges, landmarks, location of gauge discharge stations, rain gauge stations, critical locations to be protected, location of bed/suspended sampling points etc. within the survey area and also mark important physical features which are adjacent to the survey area; important for orientation at the site as per directions of Engineer-in-charge. An index map covering all these features shall be included in the report.

6.3 Reporting : Ref : “Scope of Work”

- i. The contractor shall submit survey reports as per specification laid down. However, the contour shall be marked at an interval 0.10mtr on the survey charts.
- ii. Prediction of sedimentation up to 2122.
- iii. Survey maps shall be plotted at 1:5000 scale showing GTS bench marks and other important land marks. An Index Map showing entire area of survey and important relevant physical features shall also be incorporated and submitted in triplicate along with soft copy as specified.
- iv. The contractor shall also integrate the topographic survey map with hydrographic survey.

7. Service Provider’s qualification requirement (and any other requirements which will be used for evaluation)

The bidder shall furnish the Technical Compliance Sheet as apart of his bid with supporting documents which establishing the bidder’s eligibility to bid and his qualification to participate in the bid, without fulfilling the following parameter the bidder is liable for rejection without arising any reason.

The bidder is qualified only when he is the actual service provider and meets the required norms as specified below and all original evidences to be produced in due course of time as & when asked by the Tender/Quotation Inviting Authority:

TECHNICAL COMPLIANCE SHEET		
No	Item	Yes/No
1	The bidder having experience in similar nature of work & complexity	
2	The bidder having experienced manpower in hydrographic & topographical survey as required for the job	
3	The bidder having requisite equipment as required for the job	

8. TASKS AND DELIVERABLES

As specified in Scope of Work.

9. REPORTING AND REVIEW

The contractor should execute the work as per the direction of Project Manager (PM)/Engineer-in-Charge (EIC).

10. DATA, SERVICES AND FACILITIES TO BE PROVIDED BY THE CLIENT

- Index Map showing dams network within working jurisdiction from concern Division /Sub- Division offices under Irrigation & Waterways Department, Govt. West Bengal (WB).

- Reference Bench Mark point locations and corresponding values as per availability from concern Division/Sub-Division offices under Irrigation & Waterways Department, Govt. WB
- Information on available hydrologic & other data of project sites from concern Division /Sub-Division offices under Irrigation & Waterways Department, Govt. WB

11. SURVEY EQUIPMENTS:

Contractor is required to mobilize the required survey vessels/boat and equipment at survey site, required for carrying out hydrographic survey as per technical & special conditions, such as;

- Each hydrographic survey shall be carried out using a single beam frequency echosounder of suitable make which shall be capable of sounding with accuracy to within one percent (1%) of the depth in conjunction with position fixing using Real Time Differential GPS. Contractor should deploy single beam dual frequency echosounder of 33/210KHZ.
- The interfacing of the GPS and Echo sounder will be done by 'PDS 2000/Hypack standard software acceptable to Engineer.
- The survey vessel guided by the 'PDS 2000' or equivalent standard software acceptable to Engineer will be taken along the cross section lines and continuous depths shall be recorded by the help of echo sounder. The depths recorded and their position will be continuously interfaced and stored in the memory of computer software or post processing.
- Prior to and after each sounding session, the echosounder shall be calibrated by bar checking and the records of the bar check shall be kept with the session sounder traces.
- The automated hydrographic surveying software system shall store the recorded depths in digitized format for subsequent automatic computer plotting. In this event fully annotated analogue (hard copy) records shall be maintained.
- Surveying along any sounding line, which deviates by more than the specified tolerances above shall be repeated to the extent necessary to ensure that all fixes along the sounding line remain within, specified tolerances.

12. ADDITIONAL TERMS & CONDITIONS:

- Bidder should upload educational certificates of technical manpower for bathymetric survey.
- The bidder should have successfully executed in past, work of similar nature and complexity. Similar work is defined as hydrographic & topographic surveys especially in the field of conducting reservoir survey preparation of guide curve for reservoir, assessment of effects of sedimentation on performance of reservoir and balance life of reservoir and etc.
- The bidder should submit documentary evidence against following instruments;

- (a) Echo Sounder instrument with necessary spares and consumables interfaced with HYPACK Software.
 - (b) Satellite based correction Receiver (OMNISTAR) to receive the Pseudo range corrections through Echo sounder and HYPACK Software.
 - (c) Differential GPS for benchmarking positioning.
 - (d) Digital Auto Level Instrument should have minimum accuracy.
 - (e) Acoustic Doppler Current Profiler (ADCP) of 600 kHz or 1200 kHz.
4. Covid-19 protocol should be followed during survey/fieldworks.
5. During hydrographic survey all safety measures should be followed as per the rules and guidelines of the Disaster Management Department Govt. of India or WB.

Quotation Forms

LETTER OF QUOTATION

The Bidder must prepare the Letter of Quotation on stationery with its letterhead clearly showing the Bidder complete name and address. The italicized text is for Bidder's guidance in preparing these forms and shall be deleted from the final products.

RFQ No.:*[insert identification]*

Our Reference: No..... Dated.....

To

The Executive Engineer

Burdwan Investigation & Planning Division,

I&WD, Govt. of West Bengal.PurtaBhawan, 3rd Floor,

Purba Burdwan-713103, West Bengal

Subject: "Bathymetric Survey of the Massanjor Reservoir in Dumka district, Jarkhand".

Sir,

1. We, the undersigned, hereby submit our Quotation.
2. In submitting our Quotation, we make the following declarations:
 - (a) **No reservations:** We have examined and have no reservations to the RFQ Document;
 - (b) **Quotation Validity Period:** Our Quotation shall be valid for the period of **45 days**, from the deadline fixed for the Quotation submission;
 - (c) **Eligibility:** We meet the eligibility requirements and have no conflict of interest, we are not participating in more than one quotation in this bidding process, and we have not been temporarily suspended or debarred by the World Bank or blacklisted or suspended the government department/semi-government/public sector organization in India;
 - (d) **Fraud and Corruption:** We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in any type of corrupt, fraudulent, collusive, coercive, or obstructive practices; and we will strictly observe the laws against fraud and corruption in force in India namely, "Prevention of Corruption Act 1988."
 - (e) **Commissions, gratuities and fees:** We have paid, or will pay the following commissions, gratuities, or fees with respect to the Bidding process or execution of the Contract: *[insert complete name of each Recipient, its full address, the reason for which each commission or gratuity was paid and the amount and currency of each such commission or gratuity. If none has been paid or is to be paid, indicate "none."]*
 - (f) **We are not participating as a Joint Venture in this bidding process.**
We accept the appointment of *[name proposed in the RFQ]* as the Adjudicator.
[or]
We do not accept the appointment of *[name proposed in the RFQ]* as the Adjudicator, and propose instead that *[name]* be appointed as Adjudicator, whose daily fees and biographical data are attached.
 - (g) The total price of our Quotation, including any unconditional discounts offered is:
Total price of the Quotation*[insert the total price of the quotation excluding GST and including any other taxes,in words and figures]*;

Yours faithfully,

Authorized Signature*

Name & Title of Signatory _____

In the capacity of *[insert legal capacity of person signing the Letter of Quotation]*

Name of Bidder _____

Address _____

Dated on _____ day of _____, _____ *[insert date of signing]*

*Authorization of a person to sign on behalf of the Bidder:

PRICE SCHEDULE FORM

Tender Inviting Authority: The Executive Engineer, Burdwan Investigation & Planning Division								
Name of Work: "Bathymetric Survey of the Massanjour Reservoir in Dumka district, Jarkhand"								
Contract No: WBIW/NHP/RFQ-05/2021-22								
Name of the Bidder/ Bidding Firm / Company :								
PRICE SCHEDULE								
(This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevant columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only)								
NUMBER #	TEXT #	NUMBER #	TEXT #	NUMBER #	NUMBER #	NUMBER #	NUMBER #	TEXT #
Sl. No.	Item Description	Quantity	Units	Quoted Unit Rate exclusive of GST and inclusive of any other taxes in INR	Total GST applicable per item in INR	TOTAL AMOUNT Without Taxes [Col. (51 + 53)]	TOTAL AMOUNT With Taxes [Col. (51 + 53)]	TOTAL AMOUNT In Words
1	2	4	5	13	51	53	54	55
1	Survey work -							
1.01	Hydrographic & Topographic Survey (upto FRL +2.0m vertical height) of reservoir areas in Dumka District by using instruments like Total Station, RTK-DGPS, Eco-Sounder etc, collection of sediment / bed material samples, analysis of data & collected samples, preparation and submission of reports comprising of various tables/ charts/ graphs/ drawings/technical notes /photographs etc. in accordance with scope of work and as per direction of Project Manager/E.I.C-----complete. Note: The rate is inclusive of all incidental charges like all types of carriage, engagement of manpower & instruments/equipment etc. as applicable to complete to work in all respect.	6780.00	ha			0.000	0.000	INR Zero Only
Total in Figures						0.00	0.00	INR Zero Only
Quoted Rate in Words		INR Zero Only						

PROFORMA FOR PERFORMANCE STATEMENT

RFQ No. -----

Name of Bidder -----

[for a period of last 03 financial years]

NAME OF WORK	WORK ORDER REFERENCE	ORDER PLACED BY	DESCRIPTION OF SERVICES	VALUE OF ORDER	DATE OF COMPLETION	VALUE OF SERVICES AT COMPLETION	REMARKS IF ANY

SIGNATURE OF BIIDDER

PERFORMANCE BANK GUARANTEE

(To be given from a nationalized or scheduled bank in India)

To:

The Executive Engineer

Burdwan Investigation & Planning Division,

I&WD, Govt. of West Bengal. Purta Bhawan, 3rd Floor,

PurbaBurdwan-713103

West Bengal

Whereas *[name and address of Service Provider]* (hereinafter called “the Service Provider”) has undertaken, in pursuance of Contract No. *[number]* dated *[date]* to execute :
“Bathymetric Survey of the Massanjor Reservoir in Dumka district, Jarkhand”.

(hereinafter called “the Contract”);

And whereas it has been stipulated by you in the said Contract that the Service Provider shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with his obligations in accordance with the Contract;

And whereas we have agreed to give the Service Provider such a Bank Guarantee;

Now therefore we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Service Provider, up to a total of *[amount of Guarantee] [amount in words]*, such sum being payable in the types and proportions of currencies in which the Contract Price is payable, and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of *[amount of Guarantee]* as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the Service Provider before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the Contract or of the Services to be performed there under or of any of the Contract documents which may be made between you and the Service Provider shall in any way release us from any liability under this Guarantee, and we hereby waive notice of any such change, addition, or modification.

This Guarantee shall be valid until a date 45 days from the date of completion of the Services.

Signature and seal of the Guarantor

Name of Bank

Address

Date

FORM OF AFFIDAVIT FOR CORRECTNESS OF INFORMATION AND DOCUMENTS SUBMITTED WITH BID

[This affidavit should be on a non-judicial stamp paper of Rs.10/- and shall be attested by Magistrate/ Sub-Judge/ Notary Public]

I,(name of the authorised representative of the Bidder) solemnly affirm and state as under:

1. I hereby certify that all the information and documents furnished with the Bid submitted online in response to IFB number date issued by (authority inviting bids) for (name and identification of work) are true and correct.

2. *I hereby certify that I have been authorised by (the bidder) to sign on their behalf, the Bid mentioned in paragraph 1 above.

Deponent

Place:

Date:

* This sub-paragraph is not applicable if the Bidder is an individual and is signing the Bid on his own behalf.

LETTER OF ACCEPTANCE

[letterhead paper of the Employer]

[date]

To: *[name and address of the Bidder]*

This is to notify you that your Quotation dated *[date]* for execution of the *[name of the Contract and identification number as given in RFQ]* for the Contract Price of the equivalent of INR *[amount in numbers and words]*, as corrected and modified in accordance with Request for Quotations (RFQ) is hereby accepted by our Agency.

Note : Insert one of the 3 options for the second paragraph. The first option should be used if the Bidder has not objected the name proposed for Adjudicator. The second option if the Bidder has objected the proposed Adjudicator and proposed a name for a substitute, who was accepted by the Employer. And the third option if the Bidder has objected the proposed Adjudicator and proposed a name for a substitute, who was not accepted by the Employer.

We confirm that *[insert name proposed by Employer in the RFQ]*

or

We accept that *[name proposed by bidder]* be appointed as the Adjudicator

or

We do not accept that *[name proposed by bidder]* be appointed as Adjudicator , and by sending a copy of this letter of acceptance to *[insert the name of the Appointing Authority]* , we are hereby requesting *[name]* , the Appointing Authority , to appoint the Adjudicator in accordance with RFQ.

You are hereby requested to furnish **performance security** for an amount of INR _____ *[equivalent to 5% of the contract price]* within 15 days of the receipt of the letter. The Performance Security in the form of Bank guarantee or a Fixed Deposit/ Term Deposit Receipt in favour of..... (Employer) shall be valid beyond **45** days the contract completion period. Failure to furnish the Performance Security will entail cancellation of the award of contract.

You are also requested to return the Contract Agreement duly signed.

Authorized Signature:

Name and Title of Signatory:

Name of Agency:

Attachment: Contract Agreement

DRAFT CONTRACT AGREEMENT

1. This deed of agreement is made in the form of agreement on _____ day _____ month _____ 20____, between the _____ (Employer) or his authorized representative (hereinafter referred to as the first party) and _____ (Name of the Service Provider), S/O _____ resident of _____ (hereinafter referred to as the second party), to execute the non-consulting services of : **“Bathymetric Survey of the Massanjor Reservoir in Dumka district, Jarkhand”**

(hereinafter referred to as services) on the following terms and conditions.

2. Contract Price

The total Contract Price for the services (hereinafter referred to as the “total price”) is INR ____ (excluding/including (*Choose one option*) Goods and Services Tax) as reflected in **Annexure 1**.

2.1. Payments under the Contract

Payments to the second party for the services will be released by the first party in the following manner:

100 % Payment to the second party for the works/services will be released by the first party after completion of all works/services as per schedule-specification by maintaining all terms & condition and receipt & acceptance of all deliverables as a whole as per direction & satisfaction of E.I.C.

2.2 Payments will be made on certification of the invoice by the Project Manager nominated by the first party with respect to quality/quantity of services executed in the format in Annexure I.

2.3 **Project Manager:** The Dy. Director (Hydraulics), River Research Institute will act as Project Manager on behalf of the I&W Department.

3. Notice by Service Provider to Employer

The second party, on the services reaching each stage of execution, issue a notice to the first party or the Project Manager nominated by the first party (who is responsible for supervising the Service Provider, administering the contract, certifying the payments due to the Service Provider, issuing and valuing variations to the contract, awarding extensions of time etc.), to visit the site for certification of stage completion. Within 15 days of the receipt of such notice, the first party or the Project Manager nominated by it, will ensure issue of stage completion certificate after due verification.

3. Completion Time

The services should be completed in three months [90 days] from the date of this Agreement. In exceptional circumstances, the time period stated in this clause may be extended in writing by mutual consent of both the parties.

4. If any of the compensation events mentioned below would prevent the services being completed by the intended completion date, the first party will decide on the intended completion date being extended by a suitable period:

- (a) The first party orders a delay for execution of the services on time.
- (b) Ground conditions are substantially more adverse than could reasonably have been assumed before issue of letter of acceptance and from information provided to second party or from visual inspection of the site.
- (c) Payments due to the second party are delayed without reason.
- (d) Certification for stage completion of the services is delayed unreasonably.

6. Any willful delay on the part of the second party in completing the services within the stipulated period will render him liable to pay liquidated damages. @ INR 0.05% of the contract value per day which will be deducted from payments due to him. The first party may cancel the contract and take recourse to such other action as deemed appropriate once the total amount of liquidated damages exceeds 5 % of the contract amount.

7. Duties and Responsibilities of the First Party

7.1 The first party shall be responsible for providing regular and frequent supervision and guidance to the second party for carrying out the services as per description of services. This will include written guidelines and regular site visit of the authorized personnel of the first party, for checking quality of services to ensure that it is as per the norms.

7.2 The Project Manager or such other person as may be authorized by the first party shall hold meeting once in a fortnight where the second party or his representative will submit the latest information including progress report and difficulties if any, in the execution of the services. The whole team may jointly inspect the site on a particular day to take stock of activities.

7.3 The Project Manager shall record his observations/instructions at the time of his site visit. The second party will carry out the instructions and promptly rectify any deviations pointed out by the Project Manager. If the deviations are not rectified, within the time specified in the Project Manager's notice, the first party as well as the Project Manager nominated by it, may instruct stoppage or suspension of the services. It shall thereupon be open to the first party or the Project Manager to have the deviations rectified at the cost of the second party.

8. Duties and Responsibilities of the Second Party

8.1 The second party shall:

- (a) take up the services and arrange for its completion within the time period stipulated in Clause 2 ;
- (b) employ suitable manpower and equipment to carry out the services;
- (c) regularly supervise and monitor the progress of services;

- (d) abide by the technical suggestions/direction of supervisory personnel designated by the Employer;
- (e) be responsible for bringing any discrepancy to the notice of the representative of the first party and seek necessary clarification;
- (f) ensure that the service is carried out in accordance with specifications, drawings and within the total of the contract amount without any cost escalation;
- (g) keep the first party informed about the progress of services;
- (h) maintain necessary insurance against loss of equipment and property etc. or workman disability compensation claims of the personnel deployed on the services as well as third party claims.
- (i) pay all duties, taxes and other levies payable by service providers' agencies as per law under the contract (First party will effect deduction (TDS) from running bills in respect of such taxes as may be imposed under the law).

9. Variations / Extra Items

The services shall be carried out by the second party in accordance with the approved description of services. However, if, on account of any other factors, variations are considered necessary, the following procedure shall be followed:

- (a) The second party shall provide the Project Manager with a quotation for carrying out the Variation when requested to do so by the Project Manager. The Project Manager shall assess the quotation, which shall be given within seven days of the request before the Variation is ordered.
- (b) If the quotation given by the second party is unreasonable, the Project Manager may order the Variation and make a change to the Contract Price which shall be based on Project Manager's own forecast of the effects of the Variation on the Service Provider's costs.
- (c) The second party shall not be entitled to additional payment for costs which could have been avoided by giving early warning.

10. Securities

The Performance Security (either a Bank Guarantee in the format attached or Fixed Deposit/ Term Deposit Receipt from a Nationalized or Scheduled Bank in India) shall be provided to the Employer no later than the date specified in the Letter of Acceptance and shall be issued in an amount and form and by a bank or surety acceptable to the Employer. The Performance Security shall be valid beyond 45 days of the completion period.

11. Termination

11.1 By the Employer

The Employer may terminate this Contract, by not less than 15 days' written notice of termination to the Service Provider, to be given after the occurrence of any of the events specified below:

- (a) if the Service Provider does not remedy a failure in the performance of its obligations under the Contract, within 15 days after being notified or within any further period as the Employer may have subsequently approved in writing;
- (b) if the Service Provider become insolvent or bankrupt or goes into liquidation other than for a reconstruction or amalgamation;
- (c) if, as the result of Force Majeure (means an event which is beyond the reasonable control of a Party and which makes a Party's performance of its obligations under the Contract impossible or so impractical as to be considered impossible under the circumstances.), the Service Provider is unable to perform a material portion of the services for a period of not less than 30 days; or
- (d) if the Service Provider, in the judgment of the Employer has engaged in corrupt or fraudulent practices in competing for, then the Employer may after giving fourteen days written notice to the Service provider, terminate the contract and expel him from the site.

11.2 By the Service Provider

The Service Provider may terminate this Contract, by not less than 15 days' written notice to the Employer, such notice to be given after the occurrence of any of the events specified below:

- (a) if the Employer fails to pay any monies due to the Service Provider pursuant to this Contract and not subject to dispute pursuant to Clause 10 within 45 days after receiving written notice from the Service Provider that such payment is overdue; or
- (b) if, as the result of Force Majeure, the Service Provider is unable to perform a material portion of the services for a period of not less than 30 days.

11.3 Suspension of Loan or Credit

In the event that the World Bank suspends the loan or Credit to the Employer, from which part of the payments to the Service Provider are being made, the Employer is obligated to notify the Service Provider of such suspension within 7 days of having received the World Bank's suspension notice.

12 Payment upon Termination

Upon termination of this Contract, the Employer shall make the following payments to the Service Provider:

- (a) payment for services satisfactorily performed less advances or other recoveries or any taxes to be deducted at source (TDS) as per applicable law, prior to the effective date of termination;
- (b) except in the case of termination pursuant to paragraphs above reimbursement of any reasonable cost incident to the prompt and orderly termination of the Contract, including the cost of the return travel of the Personnel.

13. Settlement of Disputes

13.1 Amicable Settlement: The Employer and Bidder shall use their best efforts to settle amicably all disputes arising out of or in connection with this Contract or its interpretation.

13.2 Dispute Settlement

- (a) If any dispute arises between the Employer and the Service Provider in connection with, or arising out of, the Contract or the provision of the services, whether during carrying out the services or after their completion, the matter shall be referred to the Adjudicator within 14 days of the notification of disagreement of one party to the other.
- (b) The Adjudicator shall give a decision in writing within 28 days of receipt of a notification of a dispute.
- (c) The Adjudicator shall be paid by the hour at the rate specified above together with reimbursable expenses for vehicle hire, food and lodging, if required, as agreed in connection with the adjudication procedure, and the cost shall be divided equally between the Employer and the Bidder, whatever decision is reached by the Adjudicator. Either party may refer a decision of the Adjudicator to an Arbitrator within 28 days of the Adjudicator's written decision. If neither party refers the dispute to arbitration within the above 28 days, the Adjudicator's decision will be final and binding.
- (d) The arbitration shall be conducted in accordance with the Arbitration and Conciliation Act, 1996 and latest amendment.
- (e) Should the Adjudicator resign or die, or should the Employer and the Bidder agree that the Adjudicator is not functioning in accordance with the provisions of the Contract, a new Adjudicator will be jointly appointed by the Employer and the Bidder. In case of disagreement between the Employer and the Bidder, within 30 days, the Adjudicator shall be designated by the President of the Institution of Engineers, [State] State Centre at the request of either party, within 14 days of receipt of such request.
- (f) The place of Adjudicator /arbitrator shall be _____
- (g) The Court of Jurisdiction shall be _____

15. Corrupt and Fraudulent Practices

The World Bank requires compliance with its policy in regard to corrupt and fraudulent practices as set forth in Section 4. In further pursuance of this policy, Bidders shall permit and shall cause its agents (whether declared or not), sub-contractors, sub-consultants, service providers, or suppliers and any personnel thereof, to permit the Bank to inspect all accounts, records and other documents relating to any prequalification process, bid submission, and contract performance (in the case of award), and to have them audited by auditors appointed by the Bank.

The Format of Certificate (Annexure-I) & Description of Services (Annexure-II) are attached.

Signed and delivered by Sri. _____ for and on behalf of the Service Provider

In the presence of the Witness:

i)

ii)

SIGNATURE

Signed and delivered by Sri _____ for and on behalf of the Employer.

In the presence of the Witness:

i)

ii)

SIGNATURE

Annexure I

FORMAT OF CERTIFICATE

Certified that the services upto ----- stage in respect of non-consulting services of ----- RFQ No. ----- have been executed satisfactorily in accordance with the terms and conditions of the agreement and as per approved specifications.

Signature
Name & Designation
(Official address)

Place:
Date:

Office seal

ANNEXURE II

DESCRIPTION OF SERVICES

Description of services as follows :

The main objectives of the proposal are:

1. To estimate and study the sedimentation behavior of reservoirs in different zones including horizontal zones throughout the reservoirs as well as vertical zones namely
(i) dead storage (ii) live storage (iii) Minimum pool level (iv) useful storage (v) maximum reservoir level, if any.
2. To upgrade and compare Elevation-Area- Capacity tables /curves of reservoirs at regular intervals since 1954.
3. To assess and review life expectancy of reservoirs, particularly in view of some apprehensions from certain quarters about the higher rate of sedimentation in reservoirs.
4. To recommend suitable measures for increased benefits and enhanced life of a reservoir, specific measures for soil conservation, catchment area treatment, watershed details etc. should include in the report.
5. To create database for developing regional sediment indices and facilitate rational sedimentation planning of future reservoirs.
6. To develop contour map of reservoir bed.
7. Analysis of suspended and bed soil samples.
8. Analysis of reservoir water quality for engineering purposes.
9. To emphasize on the State Government/ Project Authorities on the importance of conducting systematic hydrographic surveys at regular intervals for better operation and management of existing reservoirs.

SCOPE OF WORK:

Under this request for proposal, the consultant/contractor is expected to perform the following assignments and studies:

1. Mobilizations of personnel, equipment, instruments, establishment of site camp etc.
2. Lay out of Ground Control Stations including reconnaissance /preliminary surveys, if any.
3. Conduct hydrographic and topographic survey to cover the entire pond area (around 6780 Hectare) of the reservoir up to Full reservoir level (FRL) (121.34m in GTS) (50m x 50m grid for hydrographic survey and 100m x 100m grid for topographic survey).
4. Collection and analysis of sediment samples (suspended and bed) from the reservoir bed with an interval of 500m center to center of the reservoir with geo references (GPS). The collection points should be clearly indicated the chainage on a separate soil map.
5. Collection and analysis of information from project authorities or any other agency related to the Mayurakshi Reservoir at Messanjore, Dist.-Dumka, Jharkhand catchment characteristics such as location and extent;

physiographic and relief; rivers system, Agro climate/Agro- Ecological regions; geology and soils; natural vegetation and Biotic activity; land use with land cover and Soil erosion including results of prioritization of sub- watersheds. The agency shall analysis the status and sensibility of soil conservation measures.

6. Analysis of results of present capacity survey. The agency shall prepare vertical sedimentation tables and curves by comparing the capacity at the time of impounding; intermediate survey with present survey. The effects of sedimentation on the life of reservoir shall tabulate by the agency comprising with estimated sediment deposit; loss of storage capacity and NZE (new zero elevation) with age upto the year of 2121.
7. Preparation of report containing general information about the reservoir, catchment characteristics, details of capacity survey performed including methodology of data collected, analysis of data with standard guidelines/ procedures, finding of results, conclusion and recommendations keeping in view the objective of the study to the satisfaction by the River Research Institute (RRI), West Bengal, I&W Directorate, Govt. of West Bengal.
8. Any difficulties/special problem encountered during the course of the study and how they were overcome may be included in the report.
9. The work shall be completed by the agency in 3 (three) months' time with effect from 21 days after the agreement has been signed.

DATA ANALYSIS/PREPARATION OF TABLES/CHARTS/DRAWINGS:

After completion of the capacity survey, the survey data shall be analyzed by the Consultant to obtain the following:

1. Elevation-Area-Capacity curves as well as tables;

Elevation-Area-Capacity curve along with table will be prepared from the lowest elevation (88.41m) up to FRL (121.34m in GTS) at 0.1m or less interval.

2. Assessment of effects of sedimentation on performance of reservoir and balance life of reservoir;

Assessment of sediment and its distribution in the reservoir shall be made and likely effects of such sedimentation on the performance of the reservoir shall be assessed. While analyzing the reservoir data, the validity of Empirical Area Reduction method using data of silt deposition collected during survey may also be checked out. The Elevation-Area-Capacity curves and L-Section may be produced for another 100years (2121) at 10 years interval by conducting mathematical model studies. The Consultant may refer to various standards/references including I.S. 12182-1987“Guidelines for Determination of Effects of Sedimentation in Planning and Performance of Reservoirs”, C.B.I& P Publication on the subject and I.S. 5477 Part-II “Fixing Capacities of Reservoirs – Dead Storage”. Separate chapters are to be included in the report for “Sedimentation Analysis”, “Life of Reservoir”, “Mathematical modeling”, “Soil Conservation Measures” and “Conclusions and recommendations”.

A sample calculation is to be shown for each: Estimation of rate of sedimentation, expected life of reservoir, prediction of sediment distribution etc. Future sediment calculation shall be based on every 10 years block.

3. Estimation of Sedimentation in different zones of reservoir;

Loss and percent loss during the period 1954- present date of storage capacity and rate of sedimentation shall be worked out in each vertical zone separately viz. dead storage, live storage and flood storage, if any. An assessment of the sedimentation behaviors indifferent horizontal zones throughout the reservoirs may also be made.

4. Analysis of bed material samples;

Laboratory analysis of the bed material samples collected from the reservoir bed be carried out to obtain sediment sizes, density, specific gravity, moisture content etc. Analysis of samples should also be aimed to evaluate geometric standard deviation to know whether the sediment is uniform or non-uniform (Melville et al.). Kramer's coefficient shall also be evaluated. Method of calculation of bulk density (Lane's method or Miller's method or some other method) is to be mentioned.

5. Cross-Sections;

Cross Sections showing the original bed profile at an interval of 100m C/C along the upstream and all raw data with analysis in X, Y, Z format with Z being the depth of the bed of the reservoir with data intensity along the cross section@ 10m C/C shall provide as soft copy in CD or hard disk to the RRI, WB, I&W Directorate, Mohanpur, Nadia.

Officers of RRI and I&W Department shall be trained on the relevant software at Consultants' Office for conversion of raw data into analog form during Stage 3, analysis part of the survey.

6. L-Sections;

L-Section of the reservoirs may be prepared from the dam sill to end of FRL with the river bed at every survey line.

7. Vertical Sediment Distribution;

Vertical sediment distribution curve/table shall be provided. Plot between Percent Reservoir Depth and Percent Sediment Deposited is to be plotted as per IS5477PART- II 1994. "Fixing Capacities of Reservoirs – Dead Storage".

8. Contour map of the reservoir;

The contour map shall be prepared in appropriate size preferably in A0 size with contour at suitable interval from the lowest bed level to MWL.

9. Discharge reading report:-

Conducting discharge and velocity measurement for 2 days, at upstream of reservoir at river confluence point for 1 day & downstream 500mtr away from spillway for 1 day using modern acoustic depth sounding instruments (ADCP) and RTK (Real Time Kinematic) GPS equipment mounted to a floating raft, using the latest generation of acoustic Doppler current profilers capable of acquiring spatially distributed samples of water depth including velocity column data. The Integrated Bathymetry and velocity mapping system equipment and software shall be in good condition; velocity mapping system should have an integrated RTK GPS for navigation and should also use acoustic bottom track system at the same time. The equipment should also measure the bathymetry data along with velocity data so that the scour depth and the velocity can be measured. Gauge and discharge reading report.

10. Development of Guide Curve (GC):

Only monthly water demand and supply will be provided to the agency. The CWC guide lines can followed for preparation of GC of Massanjor Dam.

11. Trap Efficiency of Reservoir;

The trap efficiency of reservoir is to be calculated according to Brune's trap efficiency curve as per I.S.12182-1987 "Guidelines for Determination of Effects of Sedimentation in Planning and Performance of Reservoirs".

12. Drawings for the report;

All charts/drawings shall be appropriately reduced for inclusion in the report.

Note :The entire data observed during hydrographic survey by the consultant and the subsequent report prepared by him shall be the exclusive property of I&W Department, Government of West Bengal and the consultant has no right what so ever to divulge the information/data to others without the specific written permission of I&W Department, Government of West Bengal.

SUBMISSION OF REPORT:

Submission of report comprising detail drawings , charts, graphs/curves, technical notes , photographs etc [both soft copy & hard copy] along with index map, topographic site plan showing all important features, sections in suitable scale etc. as per direction of PM/E.I.C [6 (six)copies].

- (i) A survey report in triplicate describing the conduct of the survey along with a soft copy and all observed data, along with original records, calculations shall be submitted to Department. The data furnished shall be adequate to re-plot the survey chart independently on the basis of these documents.

- (ii) The charts shall be plotted at 1:5000 scale or any other scale as directed by Project Manager showing soundings at 5.0 m intervals. U.T.M. grid and geographical grid shall be marked on the chart as per normal cartographic practice. Soundings shall be shown in meter (m). All charts/maps should display reference to the ground station and datum based on which the controls are fixed and shall indicate date/time of surveys and name of person in-charge carrying out the surveys.
- (iii) Master copy of the each chart/map shall be provided along with six hard copies and three soft copy on Compact Disc in a format compatible with AUTOCAD.
- (iv)
 - a) Apart from the hard copy of report & drawings, soft copies of all survey data are to be submitted in Excel, Arc-GIS and AutoCAD format for records and further analysis.
 - b). KMZ/.KML file of the detailed topographic survey shall be made from the survey data such that the layer can be visualized in Google Earth/Arc GIS Earth.

NOTE: Reporting should comprise following points:

- (a) Contour map (Scale- 1:5000) [contour interval should be 0.50 mtr] covering at least 1.0 km outward horizontal distance beyond Maximum Water Level of the reservoir after stitching hydrographic and topographic survey maps.
- (b) Topographic map should show the location of hydraulic structures, public utility facilities like road/ rail etc.
- (c) Google map must show the location in Lat-Long collected by actual survey using DGPS/RTK along with photograph of that place/structure.
- (d) Water level must be shown at the barrage gauge point site narrating Lat-Long and date and time.
- (e) Dam-Reservoir legacy data (Full Reservoir Level, Maximum Water Level, Sill Level, Top of Dam Level etc.) must be verified with the respective office of the I.&W. Deptt. GoWB.
- (f) Data in Table and Curves in Graph [Elevation (100 mm interval) vs Water Surface Area and Capacity] of the Reservoir indicating of Sill Level, present Bed Level & Dead Storage Level, FRL, MWL etc.
- (g) 3D DEM picture of reservoirs as considered.
- (h) Bed soil sample and water sample must be taken at the inlet, mid-reservoir and u/s mouth of dam. These are required for the health monitoring of the reservoir.

A. PROJECT TERMS:-

III. Period of Completion: 90 days including rainy and festive season.

IV. Mode of Payment: Payment will be made after successful completion of the work as a whole (as specified in the scope of work) on certification of the invoice (raised by the agency) by the Project Manager.

NOTE : Reporting should comprise followings points :

- (a) Contour map (Scale - 1:5000) [contour interval should be 0.50 mtr] covering at least 1.0 km outward horizontal distance beyond Maximum Water Level of the reservoir after stitching hydrographic and topographic survey maps.
- (b) Topographic map should show the location of hydraulic structures, public utility facilities like road/ rail etc.
- (c) Google map must show the location in Latitude -Longitude collected by actual survey using DGPS/RTK along with photograph of that place/ structure.
- (d) Water level must be shown at the barrage gauge point site narrating Lat-Long and date and time.
- (e) Dam-Reservoir legacy data (Full Reservoir Level, Maximum Water Level, Sill Level, Top of Dam Level etc.) must be verified with the respective office of the I&W Deptt. Got. Of WB.
- (f) Data in Table and Curves in Graph [Elevation(100 mm interval) vs Water Surface Area and Capacity] of the Reservoir indicating of Sill Level, present Bed Level & Dead Storage Level, FRL, MWL etc.
- (g) 3D DEM picture of reservoirs as considered.
- (h) Model study report [loss of storage capacity and NZE (new zero elevation) with age upto the year of 2121.]
- (i) Bed soil sample and water sample must be taken at the inlet, mid-reservoir and u/s mouth of dam or as per the direction project manager. These are required for the health monitoring of the reservoir.

NOTICE TO PROCEED

[letterhead paper of the Employer]

_____ (date)

To

_____ (name and address of the Service Provider)

Pursuant to your furnishing the requisite security as stipulated in RFQ Clause 12, and as stated in letter of acceptance and signing of the contract agreement for the non-consulting services of _____ @ a Contract Price of INR _____, you are hereby instructed to proceed with the execution of the said services in accordance with the contract documents.

Authorized Signature:

Name and Title of Signatory:

Name of Agency:

Attachment: Contract Agreement

BANK GUARANTEE FOR ADVANCE PAYMENT

(To be given from a nationalized or scheduled bank in India)

To:

*The Executive Engineer
Burdwan Investigation & Planning Division,
I&WD, Govt. of West Bengal. Purta Bhawan, 3rd Floor,
PurbaBurdwan-713103
West Bengal*

Name of work: “Bathymetric Survey of the Massanjor Reservoir in Dumka district, Jarkhand”

In accordance with the provisions of the Contract Agreement, Sub-Clause 2.1 (“**Payments under the Contract**”) of the above-mentioned Contract, *[name and address of Service Provider]* (hereinafter called “the Service Provider”) shall deposit with *The Executive Engineer, Burdwan Investigation & Planning Division, I&WD, Govt. of West Bengal* a Bank Guarantee to guarantee his proper and faithful performance under the said Clause of the Contract in an amount of *[amount of Guarantee] [amount in words]*

We, the *[Bank or Financial Institution]*, as instructed by the Service Provider, agree unconditionally and irrevocably to guarantee as primary obligator and not as Surety merely, the payment to *[name of Employer]* on his first demand without whatsoever right of objection on our part and without his first claim to the Service Provider, in the amount not exceeding *[amount of Guarantee] [amount in words]*

We further agree that no change or addition to or other modification of the terms of the Contract or of Services to be performed there under or of any of the Contract documents which may be made between *[name of Employer]* and the Service Provider, shall in any way release us from any liability under this Guarantee, and we hereby waive notice of any such change, addition, or modification.

This Guarantee shall remain valid and in full effect from the date of the advance payment under the Contract until *The Executive Engineer, Burdwan Investigation & Planning Division, I&WD, Govt. of West Bengal* receives full repayment of the same amount from the Service Provider.

Yours truly,

Signature and seal:

Name of Bank/Financial Institution:

Address:

Date: