

**NATIONAL INSTITUTE OF HYDROLOGY  
JAL VIGYAN BHAWAN  
ROORKEE**

**TENDER DOCUMENT**

**PROCUREMENT SECTION,  
NATIONAL INSTITUTE OF HYDROLOGY,  
JAL VIGYAN BHAWAN,  
ROORKEE –247 667  
UTTARAKHAND  
INDIA**

CHAPTER-I  
**NOTICE INVITING TENDER**

**Ref. Tender Notice No. 5(ix)/2018-Pur-2**

**Dated 02.07.2018**

Director, National Institute of Hydrology, Roorkee, India invites Sealed Bid in two bid form (Technical and Financial) from reputed firms / manufactures in India to carry out the contract work for river cross section survey work in reaches of Ravi river, and Beas and Satluj river as follows:

Sl. NO.	Particulars of item	Qty.	EMD (Rs.)
1.	Survey work in Ravi river, and Beas and Satluj river for river cross section data	For award of contract work for river cross section survey work in Ravi river, and Beas and Satluj river for Hydrodynamic modelling of river system for flood mapping.	Rs.60,000/-

1. The tender document containing specifications of work, terms and conditions, etc. can be obtained from the Purchase Section (Admn), National Institute of Hydrology, Roorkee on payment of Rs.590/- (Rs. Five hundred ninety only) (non-refundable) in the form of crossed Demand Draft/pay order in favour of National Institute of Hydrology, Roorkee, payable at Roorkee.
2. The tender document can also be downloaded from our Website [www.nihroorkee.gov.in](http://www.nihroorkee.gov.in). However, the demand draft towards the cost of tender document as prescribed above will have to be enclosed along with the tender document while submitting the same. In case the offer is not accompanied with the valid demand draft for the cost of the tender document as detailed above, the tender will be rejected.
3. In case the date of opening is declared holiday on any account the said date shall be substituted by the next working day.
4. The National Institute of Hydrology reserves the right to either cancel the tender or reject any or all the tenders without assigning any reason thereof.
5. Tenders complete in all respects should be deposited in the **Tender Box** kept in the Purchase Section (Administration), National Institute of Hydrology, Jal Vigyan Bhawan Roorkee 247 667.

LAST DATE & TIME FOR SUBMISSION OF BID WILL BE	31.07.2018 at 1500 Hours
DATE/TIME OF OPENING OF BIDS WILL BE	31.07.2018 at 1530 Hours
VENUE OF BID OPENING AT NIH, ROORKEE	OFFICE ROOM OF CHAIRMAN, TENDER OPENING COMMITTEE, NIH, ROORKEE

**PLEASE NOTE: Please strictly adhere to the dates/times mentioned in this document.**

6. The Bids will be **opened** in the presence of representatives of tenderers, if any. Request for postponement will not be entertained. Fax/e-mail bids may not be accepted. Late/Delayed tenders shall not be opened.

PURCHASE OFFICER

## **TERMS OF REFERENCE AND INSTRUCTION TO BIDDERS**

### **1.0 INTRODUCTION**

National Institute of Hydrology intends to undertake the work of river cross sections in reaches of Ravi river, and Beas and Satluj river.

### **1.1 DESCRIPTION OF WORK.**

#### **(1) RIVER CROSS SECTION SURVEY WORK IN REACH OF RIVER RAVI , BEAS AND SATLUJ RIVER**

### **2.0 SITE CONDITIONS**

#### **2.1 General Information about Site**

The proposed cross section survey work for Ravi river, and Beas and Satluj river is given separately in Annexure-I. The detail location of the sections to be surveyed would be intimated to the selected firm along with the work order.

#### **3.0 Responsibilities of National Institute of Hydrology Roorkee.**

- To provided site plan of the proposed area of cross section for Ravi river, and Beas and Satluj river.
- Other drawings available with NIH.

### **4.0 INSTRUCTIONS TO BIDDERS**

#### **4.1** The tender shall be submitted in two parts:

Part – I:        Technical Proposal  
Part – II:       Financial Proposal

Each of the above mentioned two parts shall be sealed in separate envelopes duly super scribing Part – I (Technical Proposal) and Part – II (Financial Proposal) on the respective envelopes. The two envelopes shall be put under one sealed cover duly super scribing the name of the project and name of the work before submission.

#### **4.2** The bidder shall submit the following information in the Technical Proposal:

- i.        Organization Profile along with audited financial reports of last 3 years
- ii.       List of similar works undertaken (both completed and ongoing) along with the area/line km, cost and time schedule
- iii.      List of equipment available along with their specification and present deployment

- iv. Detailed methodology, along with equipment (including their specification) proposed for these works project.
  - v. The bidder is required to submit the names and bio-data of all the technical personnel proposed to be deployed for the work together with the estimated man-month effort expected to be contributed by each person.
  - vi. An undertaking that financial proposal does not contain any condition (s).
  - vii. Rates should be quoted including all taxes.**
  - viii. Deviations if any shall be mentioned in the technical proposal itself. Deviations (if any) with respect to items/facilities/financial etc. should be brought out clearly in form of BOQ. The bidder shall enclose a copy of this BOQ without rates and cost (including additional items if any) along with the technical proposal duly signed in token of having read the tender documents.
- 4.3** The bidder shall submit only cost along with breakup as per BOQ in the financial bid. The BOQ shall also contain cost of extra items as proposed by the bidder in the technical bid.
- 4.4** The bidders are advised to undertake at their discretion a reconnaissance of the site at their cost, to familiarize themselves with the site conditions before preparing the bid.
- 4.5** Your tender should reach by 31<sup>st</sup> July 2018 by 1500 hrs. in the office of Purchase Officer, National Institute of Hydrology, Jalvigyan Bhawan, Roorkee. NIH shall not be responsible for any delay in receipt of the tender. Late tenders shall not be considered. NIH reserves the right to reject any or all the tenders, without assigning any reasons thereof. The Technical proposal shall be opened on the same day at 1530 hrs.
- 4.6** The bidder shall be required to deposit an amount equal to 5% of the tendered value of the work as performance guarantee and 5% of tender value of the work as security money ( total 10%) in the form of received /deposit at call received of schedule bank/fixed deposit of schedule fixed deposit receipt of schedule bank /demand draft of schedule bank in favour of National Institute of Hydrology, Roorkee.

## **5. GENERAL TERMS AND CONDITIONS**

- 5.1** The bidder shall make their own arrangement for boarding, lodging, travel, transportation of survey equipment, boat/launch, labourers, local transport etc. required for this work and shall include cost in their offer.
- 5.2** Time period for the work – Sixty days from the date of award of the work for one time river cross-section survey for the entire stretch at selected locations. At selected locations,

second time (pre-monsoon and post-monsoon) river cross-section survey need be carried out for about 10 % of the sections in the river stretch in thirty days.

- 5.3 Time is the essence of the contract. Liquidated damages shall be imposed @ 0.5% of the agreed fees for each week of delay subject to a maximum of 5% of total agreed cost.
- 5.4 The successful bidder shall sign an agreement on non-judicial stamp paper of Rs. 100/- before commencement of the work.
- 5.5 **The bidder shall submit an EMD of Rs. 60,000/- the name of NIH in the form of D.D. from a scheduled Bank along with the bid.**
- 5.6 **Permission/authorization:** It shall be the responsibility of the contractor to seek and obtain, well in time, necessary permission of authorization from concerned local or other offices and/or individual property owners etc. to approach, enter, measure, level, place instruments and equipment etc. as may be required to carry out the survey work. However, necessary authorization and assistance in getting permission may be extended by NIH at its discretion.
- 5.7 **Supervision:** The contractor shall provide at all times access to and facilitate inspection and supervision of the works and records for the authorized personnel/scientist of NIH.
- 5.8 **Responsibilities of the bidder** The bidders shall be solely responsible for following sound technical and other methods and practices of river cross section survey work, accuracy of the equipment, and field work.
  - 5.8.1 River cross section survey work for each river will be conducted as per the site plans of the specified areas and methods. And will have to perform as per directions of the scientist of NIH.
- 5.9 Incomplete tender or tender received after the last date shall not be considered under any circumstances.
- 5.10 The bidder shall be submitting weekly progress reports to NIH about the progress of the work and shall comply with the instructions of scientist in NIH.
- 5.11 Financial Conditions**
  - 5.11.1** The bill of quantities is only indicative in order to arrive at the total contract value. The payment shall be made as per actual quantities at the rates accepted by NIH.

**5.11.2** The Payment towards carrying out various items of works as detailed shall be made to the successful bidder in the following manner:

- (a) 30% of the contract value on commencement of works at the site against submission of B.G. of equivalent amount
- (b) 20% of contract value on completion of the field work in all respects
- (c) 50% of contract value on submission of report and acceptance by NIH.

**5.12** In no case subletting of the full or part of the work shall be allowed after submitting the bid. However in special cases subletting may be permitted by Scientist at his discretion, for which the contractor shall inform him well in advance for approval. If any such case of subletting without approval comes to the notice of NIH, NO PAYMENT FOR THAT PART OF THE WORK SHALL BE MADE.

**5.13** In the event of any dispute, the decision of the DIRECTOR, NIH shall be final & binding. The venue of the arbitration shall be at local court, Roorkee.

**5.14** NIH reserves the right to reject any one or all the tenders without assigning any reason thereof.

**5.15** The bidder will have to quote the rates for aforesaid for river cross section work as per their respective sites inclusive of all taxes/service tax. No extra payment will be entertained by NIH in respect of any claim whatsoever in the same case.

**5.16** The bidder shall comply with proper and legal orders and directions of the local or public authority or municipality and abide by their rules and regulations and pay all fees and charges, which may be liable. The bidder shall bear all incidental charges carriages, storage and safe custody of materials to be used for conducting the cross section works of respective rivers.

## **6. SPECIAL CONDITIONS OF CONTRACT**

**6.1** The firm should have experience in carrying out the survey work of major western/northern India rivers where rivers are wide and with high discharge.

The firms should have done earlier works of Land Survey/Datum transfer using total station With accuracy of < 1 mm and within water survey using GPS/DGPS enable dual frequency echo sounder with accuracy of 0-2.5 cm in depth range of 0-40 m.

The survey details for the stretch of river are attached as Annexure-I.

- 6.2** The bidder shall mention the equipment and methodology for maintaining the accuracy of above work as mentioned at 6.1. The same shall be the basis for certification of bidders work. The accuracy actually achieved shall be verified by NIH and their decision in this and all other aspects shall be final.
- 6.3** The bidder shall nominate and post one `Resident Officer` for liaisoning with NIH personnel in connection with the work.
- 6.4** NIH may, at its discretion, award total or part of the work and may split the work among more than one bidder depending upon their technical capabilities and financial offers.
- 6.5** The bidder shall be solely responsible for the safety; loss, theft, and breakdown etc. of their equipment and safety of the manpower and shall get the same appropriately insured.
- 6.6** NIH shall deduct taxes at source, demand draft charges etc. as may be applicable and shall provide a certificate to this effect.
- 6.7** The survey details/data collected shall not be passed on to any other person or organization or used anywhere else by the contractor without the prior permission of NIH.

## **7.0 SCOPE OF WORK AND SPECIFICATIONS**

### **7.1 Work of river Cross-sections survey in Ravi river, and Beas and Satluj river.**

#### **7.1.2 Brief Scope of Work**

- (i) The scope of work has been described in Annexure-I.
- (ii) Preparation and supply of charts and survey reports in hard copies as well in digital form in excel spread sheet and autocad drawings. The excel sheet would contain X (distance from left/right bank) and Z (bottom elevation msl) and the geographical/UTM coordinates of both banks.
- (iii) To provide any clarifications/justification required by client during the acceptance of report for the work carried out by the bidders.

#### **7.1.3 Technical Specifications**

##### **7.1.3.1 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 IMSL. New Benchmark on both river bank shall be established for each river cross sections to be surveyed either on existing abutments, jetties 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.

#### **7.1.3.2 Establishment of Horizontal control and marking the selected points**

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

#### **7.1.3.3 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 to reduce the soundings to a recoverable or approved Chart Datum (C.D.).

#### **7.1.3.4 Carrying out Soundings**

The sounding data shall be recorded and reported at an interval of 10m interval at the marked cross section site across the river. Soundings shall be carried out using suitable equipment, which yield accuracy of  $\pm 0.025$  m or better. 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 scientist.

#### **7.1.3.5 Position Fixing**

The contractor would use the DGPS enabled sounding instrument to determine the position of points to be surveyed. While taking soundings vessel shall be moved at a slow speed (not greater than 3 knots).

### **7.2 Derivable**

1. The excel sheet containing geographical/ UTM coordinate of permanent marks for river banks. The X, Z coordinates for river cross
2. The AutoCAD drawings for river cross sections

### **7.2 Photographs**

**7.3** Photographs of important locations in and around the project site are also to be included in the survey reports.



### Schedule - 'A'

**NAME OF WORK: Carrying out cross sectional survey works for Ravi river, and Beas and Satluj river**

Sl No.	Detail of Works	Qty	Rate		Unit	Amount Rs.
			In Figures	In words		
1.	<b>Annexure-I</b> Survey Details for a reach Ravi river, and Beas and Satluj river					
2.	Topography survey per hectare (10, 000 m <sup>2</sup> )					

We agree to execute the above work in accordance with the technical specifications and terms and conditions mentioned in this tender documents for a total contract price of Rs.....(Rupees.....) within the period specified in the invitation for tender.

Date

Name & Signature of the Authorized Signatory

## Annexure-I

### Survey Details for the reach of Ravi river, and Beas and Satluj river

The layout of Ravi river of about 180 km downstream of Ranjit Sagar dam; Beas river from downstream of Pong dam to confluence with river Satluj at Harike (about 190 km) and river Satluj from downstream of Bhakhra dam is shown Figure 1. The approximate number river cross-sections to be surveyed in various river stretches are given below:

S.N.	River Streach	Approx Length (km)	No. of river cross-sections
1.	Ravi river from Ranjit Sagar dam to 50 km downstram	50	10
2.	Ravi river from 50 km downstream of Ranjit Sagar dam to 180 km	130	100
3.	Beas River from Pong dam to Harike	191	20
4.	Satluj River from d/s of Bhakhra dam to Harike	245	40
5.	Satluj River from Harike to 180 km downstream	180	100
	Total	796	270

The number of cross-sections to be awarded for surveyed may vary depending on the availability of fund. The locations of river section to be surveyed will be governed by the variability of river morphology (location of bends, braiding, slope change etc.). However, the detail location of the sections to be surveyed would be intimated to the selected firm along with the work order.

One time river cross-section survey will be required for the entire stretch at selected locations. Second time (pre-monsoon and post-monsoon) river cross-section survey need be carried out for about 10 % of the sections in the river stretch of Ravi river from 50 km downstream of Ranjit Sagar dam to 180 km and Sutlej River from Harike to 180 km. Extended river cross-section survey is required beyond both banks of river. In plains and particularly braided river stretches the width of section to be surveyed may extended up to 2-3 km at some locations. The survey should include/ extended up to any flood protection structures like embankment/ bond etc. along the river.

In addition to the river cross-sections, the details of bridges (river bed level, dimension of span, height, waterways etc.) of bridges are also to be measured.

The elevation data of river bed along with the latitude and longitude of observation point would be required. The spacing between two surveyed points along the river cross sections should not be more than 1/10 of waterway width.

It is required to fix some temporary bench marks on each bank particularly for the cross-sections where, survey is required in pre and post monsoon season. The level of temporary bench mark is to be transferred from nearby bench mark, (BM need to be transferred from Central Water

Commission (CWC), Bhakra Beas Management Board (BBMB), State Irrigation Departments GD sites).

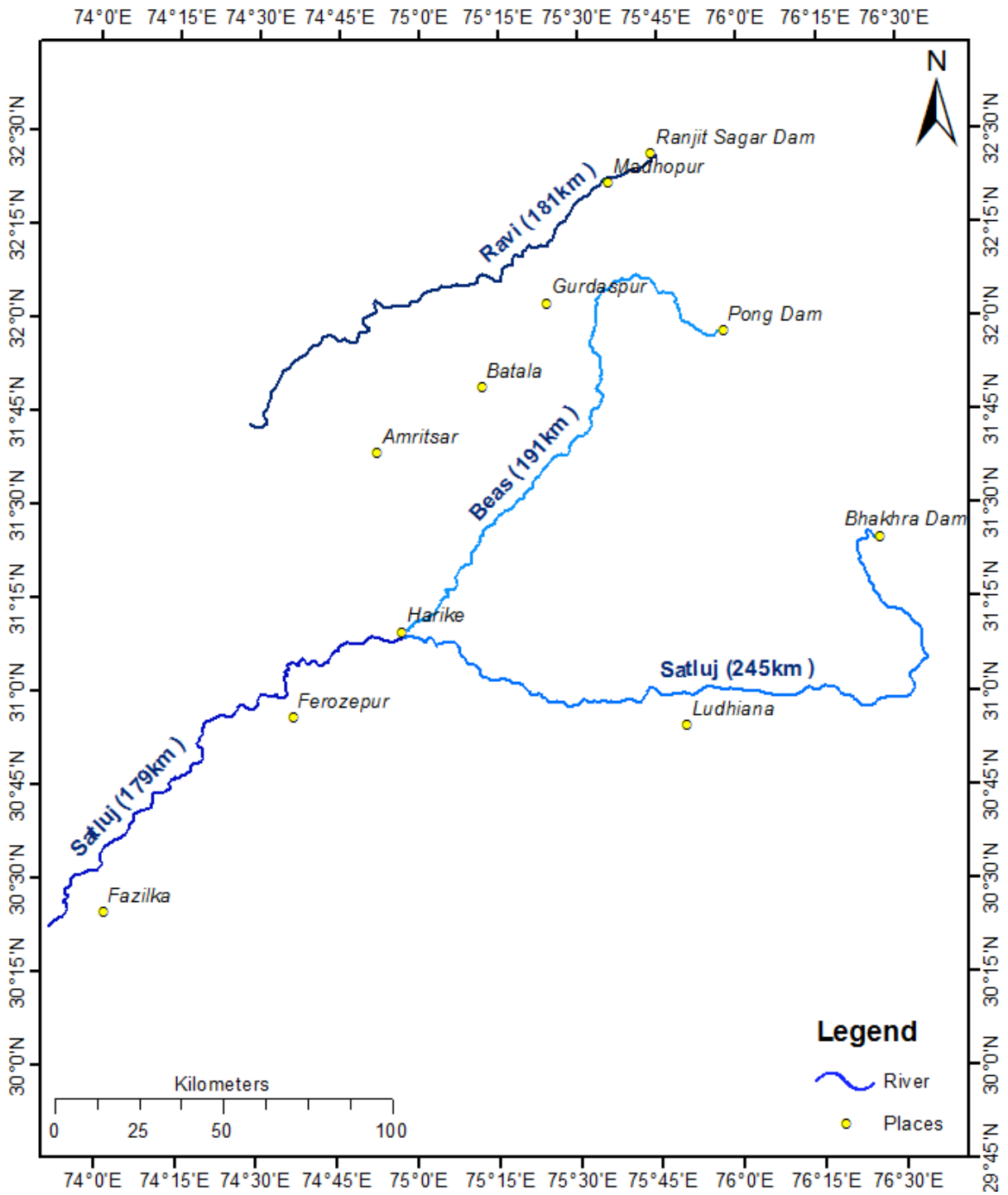
Along the river cross section, survey on land (no water portion) is to be carried out by Total Station while the survey below waterway is to be carried out using echo-sounder. The horizontal coordinates of surveyed points should be in geographical/ UTM coordinates while the vertical coordinate should be as above Mean Sea Level (MSL). The accuracy / least count of the instruments used in the survey should be clearly mentioned in the NIQ.

Topography survey for the selected area at some of the river stretch may also be required. Hence price for topography survey per hectare (10,000 m<sup>2</sup>) is to be quoted.

You are requested to quote your price for the above survey works (rate for each cross section and rate at each ha of land) including the applicable taxes.

Time period for the work: Sixty days from the date of award of the work for one time survey sections. Hence the agency should plan and send multiple survey teams to accomplish timely completion of work.

Photographs and videos are to be made during the survey work and to be submitted in soft copy (DVD).



**Figure 1: Layout of the river system for cross sections survey.**