Government of West Bengal
Irrigation & Waterways Directorate
Office of the Superintending Engineer
North Bengal Mechanical & electrical Circle
Teesta Administrative Building, Tinbatti, Siliguri-734005,West Bengal,
e-Mail ID: senorthbengal@gmail.com

NOTICE INVITING Expression of Interest (EOI)

EOI No. WBIW/SE/NBMEC/EOI-01(e)/19-20

Expression of Interest (EOI) is being invited by the Superintending Engineer, North Bengal Mechanical & Electrical Circle, Irrigation & Waterways Directorate,tibatti, Siliguri, West Bengal on behalf of the Governor of West Bengal for the work **" Remote operation of Mahananda Barrage with its head regulator gates through state of art SCADA & PLC including operation & maintenance trailing five years under Teesta Barrage Project, Dist. Jalpaiguri & Darjeeling,(West Bengal)."** from eligible and resourceful bonafide Contractors/Agencies/registered JV and Consortiums having previous experience and financial capabilities for execution of works of similar nature.

Intending contractors/bidders interested for participating in the Expression of Interest (EOI) are required to login the website **www.wbiwd.gov.in** (the official website of Irrigation & Waterways Department, Government of West Bengal) and click to search in the "Tenders of I & w dept" link provided there in.

Intending bidders/contractors are requested to download the EOI documents directly from URL **www.wbiwd.gov.in** stated above. The interested bidders eligible for the EOI may submit their bids by mail (senorthbengal@gmail.com) or offline at this office. No postal delay will be considered.

Last date of submission of bid is on 20.12.19 up to 4.00 p.m.
For Interested bidder site inspection & pre-bid meeting (at this office) will be held on 12.12.19 at 12.00 Hrs.

INTRODUCTION

A. Back ground:

Mahananda Barrage is situated at Fulbari, Jalpaiguri district about 7 Km from nearby siliguri town (longitude$88^0$24''E Latitude $26^0$38''N). Mahananda Barrage is the 2nd longest barrage under Teesta Barrage project and it has great importance not only in irrigation section but also as drinking water source by Public Health Engineering department.

Mahananda river originates at Paglajhora Falls on Mahaldiram Hill near Chimli, east of Kurseong in Darjeeling districtnear siliguri and passing through siliguri town and merges with Teesta Mahananda Link Canal (TMLC) at upstream of mahananda barrage. Mahananda barrage has one off taking canal namely Mahananda Main Canal (MMC) stretch up to 32.00 Km which ultimately falls at Dauk river near dauk barrage at Islampur, West Bengal.

Presently 10 nos. spill way gates at main barrage and 10 nos. head regulator gates of MMC which all are vertical gates operated by electrical hoist motor from the top of the trestle bridge.

The electro-mechanical work of the barrage and H/R gates has been commissioned TEXMACO in the year 1986. All electrical and mechanical operation and maintenance are done by Teesta Mechanical Division, Fulbari and civil works are rested up on Mahananda Barrage Division which is situated at Tinbatti, Siliguri.

B. Technical features of Mahananda Barrage:

Mahananda Barrage has followingcomponents:

a. *Spill waybays*-

i.	No of bays	:- 6nos.
ii.	Width of each bay	:- 18.288m
iii.	Crest Level	:- RL+ 103.845 m(G.T.S)
iv.	Super flood level	:- RL+ …..M(G.T.S)
v.	Designed flood discharge	:- 2265.00 Cumec
vi.	Height of each vertical gate	:- 3.750m

b. *Under sluice bays without siltexcluder* -

i.	No of bays	:- 2 nos.
ii.	Width of each bay	:- 18.288m
iii.	Crest Level	:- RL+ 102.931m(G.T.S)
iv.	Height of each vertical gate	:- 4.690m

c. *Under sluice bays with silt excluders*-

i.	No of bays	:- 2 nos.
ii.	Width of each bay	:- 18.288m

iii. Crest level of the top of the tunnel :- RL+ 104.366m(G.T.S)

iv. Height of the vertical gate :- 4.690m

d. *Silt excludertunnels*-

i. No of tunnels per bay :- 6 nos.

ii. Opening size of each tunnel :- 2.50m (wide) x 1.25m(height)

iii. Floor level of the tunnel :- RL+ 104.366m (G.T.S)

Details of Mahananda main canal

Crest Level : RL+ 104.546m

Width of each vent : 6.10m x 3.00 m

No. of vents : 10 nos.

F.S.L. :106.528 m

B.L. :103.461m

Design discharge : 345.26cumec approx.

F.S.D. : ……m

Mahananda Barrage Bridge

Length : 203.20m

Width of roadway : 7.30m

Footpath on both sides : 1.30m

Top level of road : RL+110.50m

Capacity of Gantry crane : 16.00MT

Capacity of Monorail crane: 5.00MT

Lifting speed of gate : 0.30 m/min

C. Scope of Work:

1. Remote monitoring and control of Mahananda barrage and its head regulators i.e. Mahananda Main Canal(MMC), comprising design, planning, supply, installation, testing, trial run, commissioning, operation, training and five years extended operation and maintenance through State of Art communication based Supervisory Control and Data Acquisition (SCADA) system located at Mahananda barrage, Fulbari, Jalpaiguri within PS. Rajganj in District Jalpaiguri of West Bengal under Teesta Barrage Project, Irrigation & Waterways Department, Government of West Bengal.

2. Safety, security, operation, training and maintenance of entire automation system within initial defect liability period of 12 months from date of commissioning which is to be continued for further five years as extended warranty of entire automation system with equipments and installations including operation & maintenance and security.

3. After implementation of state of art SCADA technology the whole barrage operation can be controlled from nearby barrage control room comprising field data processing flow measuring technique data storage information management and telemetry by which two monitoring station can watch the full operational procedure and live data remotely. The automation of the system is to be developed ability to detect extreme situations, faster access to data and response time and ability to perform automatic quality monitoring. The SCADA system should be robust in technology which can susceptible against any climate.
4. All display of results should be monitor on a single screen minimum 98 inch (diagonal) of Sony or Samsung make at barrage control room (BCR) and other monitoring stations. Each field data collection mode will measure and transmit to barrage control room every 10 minutes. BCR shall collect the field data and store it after quality controls. There shall be instantaneous (live data) display of whole barrage discharge, individual gate discharge with gate position height, barrage pond levels (upstream side and downstream side) through appropriate hydraulic gate discharge equation.
5. There should be a Remote Terminal Unit (RTU) with local control panel housing for each gate comprising raise, lower and stop push button switch. RTU should have a digital display indicator through which operator can directly read the present gate position for that moment.
6. All RTU panels which will be installed at the trestle top have to be connected to the BCR through proper cable network as the cable network should involve minimum cable content. RTU to RTU connection (control cable) should be cat-6 in proper protective conduit and RTU to BCR should be connected optical fiber with required strand. In this SCADA system elctro- magnetic limit switch may be replaced by proximity limit switch.

7. All RTU panels may be equipped with designed PLC, Variable frequency drive (VFD) dynamic braking resistance (DBR) with other necessary components enclosed in a IP-55 housing. Certification of IP-55 from STQC is required. All RTUs have to be additional DC power back up in any emergency.
8. Apart from cable network few others field data receiving and sending stations have to be installed in different locations and the data should be sent from remote location to BCR through GSM/GPRS network. These field stations should be solar powered of TATA make solar panel with excide battery. All communications between monitoring station to BCR should be through VSAT communication with extended C-band (certification required). Two monitoring station should be equipped with 98 inch single screen display, one industrial grade i7 desktop, one laser printer, one UPS, one operating desk with two operating chairs. Each monitoring station should be equipped with three plus two sofa, centre table, office desk, six nos. visitor chairs (Godrej make) with all electrical fittings.
9. In Mahananda barrage premise to facilitate the additional power backup 10 KVA solar power system with certified inverter (Solar panel TATA make and Battery Excide make) will be installed within the scope of this work. With this power back up main PLC all RTUs with field data nodes BCR computers with monitors and other essential device will run during main power shut down. All installations and execution of solar work should be as per IS standard.
10. Within this concept one image processing discharge calculation equipments should be installed at tail end of Teesta Mahananda Link Canal (TMLC). This equipment is a camera based system through which flowing river image will be captured by this camera and after processing image data the exact discharge data of canal will be sent to the BCR through GSM/GPRS technology. Before installing the device bidder should investigate the canal depth, canal width and velocity pattern of the flowing canal by Doppler equipments. Hence all hydrological study, equipment selection, installation procedure & quality data receiving will be bidders' responsibility.
11. All automation equipments should have serge protecting device(SPD) e.g. each RTU should have SPD and entire barrage premises will have

sufficient installation of lighting arrester with copper strip including gel earthing for all electrical installations.

12. For Security surveillance, PTZ camera with 16 channel NVR will be installed on specific points in the entire barrage premises to look after any abnormal situations.
13. The SCADA HMI applications shall present the operators with control screens that provide for all the control interaction to operate the gate structures. The HMI shall present an overview and detailed state of the operational conditions of the barrage and canals based on customized views of the project area ("mimics"). It shall allow users to input commands to the structures and also access the historical data for reporting or trending. The mimics are created using a graphics editor. They will display key process variables as digital and graphical data. Navigation between mimics is made by selection in a menu or selection of buttons or similar graphic objects. The HMI part of SCADA software shall be based on requirements of Teesta Barrage Project and shall be duly customized as per the operational and other requirements of the Project, as explained by project officials. The SCADA screen builder and editor shall be an integral part of the SCADA package, supporting user building and editing of user friendly control screens in the project. Authority shall provide full explanation of tags and assigned registers and their associated recommended values that need to be designed and displayed in HMI. The screen builder shall allow users to edit existing screens, create new screens or save existing screens to new screen definitions.
14. System redundancy: All field PLCs/RTUs will send the data through optical fiber communication to a centralized main SDACA server at BCR. High availability system with appropriate redundancy provisions for critical components like, communication networks, I/O servers, historians, application software shall ensure minimum down time. It is proposed to have two such servers with redundancy so as to have uninterrupted operation in case of failure of hardware and/or software.

    The redundancy arrangements in hardware and software shall ensure that entire Mahananda Automation computing and communication systems operate smoothly and uninterruptedly during and after the occurrence of any disaster.

15. Automatic weather station will be installed at the top of BCR at Mahananda Barrage site with data logger and communication interface with the SCADA. This weather station will be capable to measure Air Temperature, Relative humidity, rainfall, wind speed, wind direction and solar radiation.

16. Up gradation & modification of existing Barrage Control Room (BCR).

Part-A

The aim of establishing modern sophisticated control room is to be ensured that high quality data collection, compilation, processing, and analyzing may available for efficient barrage flow management. The existing two storied building will be renovated as state of art control room, comprising SCADA room, PLC room, battery room, mini conference room, operator rest room and two no. bath rooms as per schematic drawing will be supplied by project authority. The outer wall will be covered by aesthetic colored ACP sheet with toughened glass windows.

The BCR will have a LED signage display board depicting "Mahananda Barrage Control Room". Along with all civil works the BCR will have required provision of three no. air conditioned room. The existing stair will be renovated with marble flooring and stainless steel railing. All rooms and corridor of BCR will be renovated with vitrified tiles with false sealing.

Part-B

In this modern BCR operator can control monitor and send all barrage related data from single work station, master controller should have the facility for storing data in local drive and communicated through VSAT or GSM/GPRS communication two other station. BCR will be oriented with five seated sofa, centre table, twelve no. chairs, four no. computer table, two desktop computer one as stand by (industrial grade i7) with latest operating software.

The main display wall of the BCR will be not less than 98" single screen video wall or LED screen.

Special Terms & Condition

The following special terms and condition are the part of the Tender documents. Whenever there is conflict the provisions herein shall prevail over those are other terms and condition of agreement.

A. Inspection and Test:

1. The items & rates should conform to the best practice of National & International norms.
2. Engineer-in-charge (EIC) or its representative shall have the right to inspect and/ or to test the Goods to confirm their conformity as per technical specification at no extra cost to the department.
3. The inspection and test may be conducted on the premises of the supplier, at point of delivery and/or at the Goods final destination all reasonable facilities and assistance including access to drawing and production data shall be arranged and to furnished to the EIC or his representatives. Should any inspected or tested Goods fail to conform to the specifications, the authority may reject the Goods and supplier shall either replace the rejected Goods or make alternations necessary to meet specification requirements free of cost to the authority.
4. The authority or EIC shall have the right to conduct a third party inspection at the site to confirm the specification requirements as per tender agreement.
5. All necessary test certificate such as rubber seal test certificate, IP-55 housing test certificate should be issued from any central Govt. approved laboratory as related IS code.
6. In case of bearing, rope, any gauge, transducer etc. manufacturer test certificate is required. In case of foreign Goods international standard certificate IEC/CU etc. should be required.

B. Labour:

1. During continuance of contract, the contractor shall abide by all existing labour enactments and rules made there under, regulation notification and by law of the state or central Govt. or local authority and any other labour law (including rules) regulation by laws that may be passes or modification that may

be used under any labour law in future either by state or central Govt. or local authority.

2. Contractor should abide by employee PF and miscellaneous provision act 1952 (since amended). The acts provide for monthly contributions by the employer to workers at the rate of 10% or 8.33% whichever is applicable should be benifitted to worker. Like PF contractor should abide by all ESI related rules and regulation or act passes by state or central Govt.

C. Site and Technical Manpower:

1. Contractor can have the access of available plant and machinaries such as gantry crane, generator etc. with prior permission to EIC or his representative in case of any damage contractor shall soul responsible and necessary repairing cost or deduction of said amount may be adjusted from their security deposite.
2. After getting Award of Contract, contractor shall submit the detail of drawing and bill of materials (part by part) from the approval of authority. Before procurement in their design, redundancy, disaster recovery plan should be include for each stage.
3. All engineers (from contractor side), site-in-charge. Workers must follow the safety rules as per standard industrial practice. Copy of insurance plan of engineers and workers should be furnished to the EIC or it representative before mobilization of manpower and machinery.

Additional Rules of Contract

1. Executive Engineer of the concerned Division will be the Engineer-in-Charge in respect of the tender contract and all correspondences concerning rates, claims, change in specifications and/or design and similar important matters will be valid only if accepted/recommended by the Engineer-in-Charge. If any correspondence of above tender is made with Officers other than the Engineer-in-charge for speedy execution of works, the same will not be valid unless copies are sent to the Engineer-in-Charge and also approved by him. Instructions given by the Sub-Divisional Officer/Assistant Engineer and the Junior Engineer/Section Officer (SAE) on behalf of the Engineer-in-Charge

shall also be valid (who have been authorized to carry out the work on behalf of the Engineer-in-Charge) regarding specification, supervision, approval of materials and workmanship. In case of dispute relating to specification and work, the decision of Engineer-in-Charge shall be final and binding. The Engineer-in-Charge will however invariably take decisions relating to tender contract or as mentioned in the relevant rules and clauses of the contract document with the approval of the Tender Accepting Authority.

2. Acceptance of the tender including the right to distribute the work between two or amongst more than two bidders will rest with the Tender Accepting Authority without assigning reason thereof to the bidder. The accepting authority reserves the right to reject any or all tenders without assigning any reason thereof to the bidder/contractor.

3. The contractor/bidders shall have to comply with the provision of (a) contract labour (Regulation & Abolition) rules, 1970 including its revision (b) Minimum Wages Act 1948 and the modification there of or any other laws relating thereto as will be in force from time to time.

4. Engineer-in-Charge shall not entertain any claim whatsoever from the contractor for payment of compensation on account of idle labour on such grounds including non-possession of encumbrance free land.

5. Engineer-in-Charge shall not be held liable for any compensation due to machines becoming idle or any circumstances including untimely rains, other natural calamities, like strikes etc.

6. Imposition of any duty / tax / Octoroi / royalty etc whatsoever of its nature (after work order / commencement and before final completion of the work) is to be borne by the contractor/bidder. Original challan of those materials, which are procured by the bidder, may be asked to be submitted for verification.

7. Cess @ 1% of the cost of construction works shall be deducted from the Gross value of all works Bill in terms of Finance Department order. Also it is instructed to register his/her establishment under the Act, with the competent registering Authority, i.e. Assistant Labour Commissioner / Dy. Labour Commissioner of the region. Sales Tax and Income Tax Clearance Certificates should be furnished by the contractor for contract value above Rs 0.50 Lakh.

8. No mobilization / secured advance will be allowed unless specified otherwise in the contract.

9. VAT/Sales Tax, Service Tax,Cess, Royalty of sand, stone chips, stone metal gravel, boulders, forest product etc, Toll Tax, Income Tax, Ferry Charges and other Local Taxes if any are to be paid by the contractor/bidder. No extra payment will be made as a reimbursement or as compensation for these. The rates of supply and finished work items are inclusive of these taxes and charges.

10. All working tools & plants, scaffolding, construction of vats & platforms and arrangement of Labour Campus will have to be arranged by the contractor at his/her own cost.

11. The contractor shall supply mazdoors, bamboos, ropes, pegs, flags etc. for laying out the work and for taking and checking measurements for which no extra payment will be made.

12. The contractor/bidder should see the site of works and tender documents, drawings etc. before submitting e-tender and satisfy himself/herself regarding the condition and nature of works and ascertain difficulties that might be encountered in executing the work, carrying materials to the site of work, availability of drinking water and other human requirements & security etc. Work on river banks may be interrupted due to a number of unforeseen reasons e.g. sudden rises in water levels, inundation during flood, inaccessibility of working site for carriage of materials. Engineer-in Charge may order the contractor to suspend work that may be subjected to damage by climate conditions. No claim will be entertained on this account. There may be variation in alignment, height of embankment or depth of cutting, location of revetment, structures etc. due to change of topography, river condition and local requirements etc. between the preparation and execution of the scheme for which the tendered rate and contract will not stand invalid. The contractor will not be entitled to any claim or extra rate on any of these accounts.

13. A machine page numbered Site Order book (with triplicate copy) will have to be maintained at site by the contractor and the same has got to be issued from the Engineer-in-Charge before commencement of work. Instructions given by inspecting officers not below the rank of Assistant Engineer will be recorded in this book and the contractor must note

down the action to be taken by him in this connection as quickly as possible.

14. The work will have to be completed within the time mentioned in the e-NIT. A suitable work programme based on time allowed for completion of work as per e-NIT is to be submitted by the contractor within 7(seven) days from the date of receipt of work order which should satisfy the time limit of completion. The contractor should inform in writing the name of his authorized representative who are to remain present at site daily during work execution at site within 7 (seven) days from the date of receipt of work order who will receive instructions of the work, sign measurement book, bills and other Govt. papers etc.

15. No compensation for idle labour, establishment charge or on other reasons such as variation of price indices etc. will be entertained.

16. All possible precautions should be taken for the safety of the people and work force deployed at worksite as per safety rule in force. Contractor will remain responsible for his labour in respect of his liabilities under the Workmen's Compensation Act etc. He must deal with such cases as promptly as possible. Proper road signs as per PWD practice will have to be erected by the contractor at his own cost while operating public thoroughfares.

17. The contractor will have to maintain qualified technical employees and/or Apprentices at site as per prevailing Apprentice Act or as stipulated in the contract.

18. The contractor will have to accept the work programme as per modifications and priority of work fixed by the Engineer-in-Charge so that most vulnerable reach and/or vulnerable items is completed before impending monsoon or rise in river flood water level or for other suitable reasons.

19. Quantities of different items of work mentioned in the tender schedule or in work order are only tentative. In actual work, these may vary considerably. Payment will be made on the basis of works actually done in different items and no claim will be entertained for reduction of quantities in some items or for omission of some items. For execution of quantitative excess in any item beyond 10% or supplementary works, approval of the Superintending Engineer / Chief Engineer /Government in the Irrigation & Waterways Department would be

required depending on who so ever be the Tender Accepting Authority, before making such payment.

19. In order to cope up with the present system of e-billing, supply of departmental materials is generally not encouraged. However, Departmental materials may be issued to the contractor/ bidder to the extent of requirements as assessed and following accounts procedure in the Treasury system of bill payment and in installments as decided by the Engineer-in-Charge. Issue of materials may be of three categories.

    a) Materials issued directly to the work and subject to recovery.
    b) Materials issued from departmental go down and subject to recovery.
    c) Materials issued free of cost.

20. Any materials brought to site by the contractor subject to approval of the Engineer-in-Charge. The rejected materials must be removed by the contractor from the site at his own cost within 24 hrs of issue of the order to that effect. The rates in the schedule are inclusive of cost and carriage of all materials to worksite. The materials will have to be supplied in phase with due intimation to the Sub-Divisional Officer/Assistant Engineer concerned in conformity with the progress of the work. For special type of materials, i.e. Geo Synthetic Bags, HDPE Bags, Geo Textile Filter, Geo jute Filter etc. if any, relevant Data Sheet containing the name of the Manufacturers, Test Report etc. will also be submitted in each occasion. Engineer-in-Charge may conduct independent test on the samples drawn randomly before according approval for using the materials at site. In this regard decision of Engineer-in-Charge shall be final and binding.

21. For materials under category 19 (a), (b) & (c), the contractor will act as the custodian thereof. The materials will have to be carried from the nearest Departmental go-down to worksite by the contractor at his own cost. The contractor shall remain responsible for the proper storage and safety of the materials. Suitable Go-down/ Store shall have to be made by the contractor at his/her own cost. Penalty charges shall be levied at higher rate for loss, wastage, misuse. Surplus materials of the departmental if any, shall have to be returned to the issuing Go-down or store at the contractor's cost within the time frame as fixed by Engineer-in-Charge, otherwise, the cost at penal rate will be recovered from the bill. Indent for departmental materials shall be submitted by

the contractor to the SDO (AE) at least 7 days in advance of actual requirement. No claim will be entertained for non-issuance of such materials in time but reasonable extension of time will be granted. All materials, whatever be the category thereof, shall be properly stored by the contractor in suitable go downs near the site of work at his own cost & under no circumstances whatsoever shall any material be removed from the site of work without prior written permission of the Engineer-in-Charge. The contractor shall be responsible for any damage or loss of such materials.

22. The contractor shall also have to satisfy the Engineer-in-Charge regarding the proper utilization of materials which have been issued departmentally.

23. Value of the material, under category (a) & (b) of clause 19, will be recovered from the bills of the contractor in one or successive installments as may be decided by the Engineer-in-Charge.

Sd/-
Superintending Engineer,
North Bengal Mechanical & Electrical Circle
Tinbatti, Siliguri

Sl. no.	Description of Item	Qnty	Unit	Basic Rate	GST as Aplicable		Gross Rate
1	Supply, installation, testing and commissioning of **Remote Terminal Units** (RTUs) for remote monitoring and control of all barrage gates and head regulator gates with proper interfacing devices to integrate entire hardware and software with Master controller server at Mahananda Barrage and head regulators with housing panels and connectivity (Reduntancy in wiring-Ethernet/OFC) to master controller. As for the commands from master controller RTUs should operate the motor control panel and set the gate position, for that required relays and control devices should be provided with local display of gate position. Motor protection devices like (over load) OLR, SPP, Timer etc. with local display and "Variable Frequency Drive" facility on Motor status interfaced with master controller for log and monitoring of motor status and local audio/flash light indication of motor failure, panel trip (MCB, Switchgears etc.). Local display unit (LED) to indicate gate position and status. Separate independent facility authenticated either by password/ biometric lock to connect/disconnect from master Control and Burglar Warning Alarm, Redundancy in Wiring IP55 protection and the PLC installed at BCR as per Technical Specifications & Standards.						
2	Supply and Installation of **gate opening sensors** as detailed in the Technical Specifications & Standards of the RFP (**Rotary Shaft Encoder**/ Hall effect/ Ultrasound Type) with suitable coupling for gate position (Opening/Closing) integrated with measurement of Mahananda Barrage main gates & Head Regulator gates of MMC, integrated with Master Controller as per Technical Specifications & Standards.						
3	Supply & installation of Ultrasonic / RF-RADAR (Non-contact type) **Water Level** measuring **sensors** at Mahananda Barrage and Head Regulator gates as desired in the Technical Specifications & Standards of the RFP including all necessary accessories mounts and platforms, power backups and connection up to data logger so that signal data should available up to Master Controller Server at the Barrage Control Room at Mahananda Barrage at Fulbari.						
4	Supply, installation, testing & commissioning of Image processing device for canal discharge measurement with proper communication & interfacing device to integrate master controller SCADA server to get actual canal discharge on real time basis as per Technical Specification & Standards.						
5	Supply, installation, testing and commissioning of one no. Automatic weather station with sensors for air temperature, relative humidity, wind speed, wind direction, solar radiation including a digital Rain Gauge system at Mahananda Barrage Control Room (MBCR) as desired in the Technical Specifications & Standards, INSAT/VSAT/GSM/GPRS data communication including installation with all civil works along with pipes, mast, tower & ARG enclosure complete and to the satisfaction of EIC.						

Sl. no.	Description of Item	Qnty	Unit	Basic Rate	GST as Aplicable		Gross Rate
6	Supply, Testing, and Commissioning of **SCADA Software with a master controller server** and its integration with all hardware and software to be applied in operation of Mahananda Barrage & MMC H/R Gates as per the Technical Specifications & Standards desired suitably designed for installation of an Industrial grade computer work station comprising the Master Controller Server to interface with discrete PID controllers such as PLC to interface most appropriate highest quality interfacing devices to acquire data from the Data Loggers and operator/ Remote Control Panel equipments from Master Controller Server on an open protocol such as MODBUS/PROFIBUS with desired speed Master Controller Server at the Barrage Control Room at Mahananda Barrage,Fulbari with the System should be capable to run SCADA or compatible software with all maximum potential functionalities with interface terminal for operator control and monitoring system-Master controller should have the facility of storing the data in local drive and communicate through suitable communication devices with antenna and tower etc. for INSAT/VSAT and GSM/GPRS to remote locations with programmable inputs to collect data/sms text messages of river inflow on real time basis through GPRS or any suitable communication mode with Master Controller; Min. 90 inch diagonal LED one single screen monitoring screen/video wall interfaced with Master Controller to view the all the parameters and status of the system in text and graphical display, OS of computer Windows 10 or equivalent compatible, LASER digital scanner cum duplex printer, UPS, Modem, Routers/Ethernet Switches, RAM and Hard Disc Drive,Antenna, USB ports etc. with all fittings and fixures complete as per Technical Specifications & Standards.						
7	Design, supply, installation, testing & commissioning separate HMI panel(screen size: 22'') unit that shall allow users to input commands to the structures and also access the historical data for report generating or trending etc. The SCADA HMI software must support real-time and historical trend graphic displays with up to eight variables trends per graph with SCADA all features and graphics.						
8	Supply, laying & Installation of Power junction boxes, Power DB, copper power cable accessories and hardware as per Technical Specifications & Standards of the RFP to the satisfaction of EIC.						
9	Supply, laying & installation with all civil works, Housing etc. of **control cable along with Optical Fibre cable/ Ethernet cable** with suitable IP protocol to get proper interfacing with all RTUs' as per Technical Specifications & Standards with connector for installation and data transmission system.						

Sl. no.	Description of Item	Qnty	Unit	Basic Rate	GST as Aplicable		Gross Rate
10	Civil works and furnitures required for renovation and remodeling of Mahananda Barrage control room (all equipments of the Master controller at BCR is required to be installation of Automation & Remote control panel system with all furniture, equipments and fixtures as per SCADA Room cum BCR GAD Plan) and Godrez interio or equivalent Furnitures (1) BCR: 1 SCADA desk, 4 tables, 12 revolving chairs, 2 computer tables.						
11	Supply, Erection and commissioning of Solar power system upto maximum 10 KVA for 12 hrs backup without sunshine to run all the panels and provide lighting arrangement at the BCR 24X7. The Solar Panels shall be provided in anodized aluminum frame with tubular batteries, preferably Power Solar Panel of TATA or equivalent make and Batteries of EXIDE make or equivalent make as approved by E.I.C. after due consideration of performance of equipment. Solar panel should conform to IEC- 61215, 61701 and 61730 and as per Technical Specifications & Standards.						
12	Supply & Installation of split-type Air conditioning system each of 1.5 ton capacity electric saver with 5-star rating of Hitachi/LG/ Samsung or equivalent reputed brand 4 nos. at BCR including civil and complete electrical, overall wiring works as per Technical Specifications & Standards.						
13	Supply, installation, commissioning and trial-run of PTZ Cameras of Sony/Cannon/Hikvision/ CP-Plus brand with NVR GW Security 16CH independent PoE 10MPixel NVR 4TB Network Security System with 12 HD 1920P 2.8 12mm Manual Varifocal Lens 64PCs IR LED Waterproof IP Cameras or equivalent of 25GB storage of recording with 360° rotation screen resolution compatable to with stand harsh environments for 24 X 7 monitoring & security surveilance as per Technical Specifications & Standards.						
14	Supply, delivery and trial run of an Under water camera with depth up to 15m cable and a separate monitoring screen set of min. 7'' LCD display for inspection of under water hydraulogical structure of Mahananda Barrage site. Camera should be corrosion-resistant to withstand effects of saltwater, sandy water of barrage pond.						
15	Supply and delivery of Solar Power driven motor boat for inspection, hydraulogical study, structure inspection, having a capacity to carrying Max. seven person at a time appealing a speed of about 10 km/h without access the batteries during day time.						

Note: Any other item(S), if relevant or necessary may be included or altered by the bidders.

Sd/-
Superintending Engineer
North Bengal Mechanical & Electrical Circle
Tinbatti, Siliguri