Government of West Bengal Irrigation & Waterways Directorate Office of the Executive Engineer Teesta Mechanical Division Fulbari, Jalpaiguri

NOTICE INVITING EXPRESSION OF INTERESTS (EoI)

(for Budgetary quotes)

Expression of interest for obtaining competitive budgetary quotes at competitive market prices is being invited from reliable reputed resourceful manufacturer/ eligible and resourceful contractors/bidders of VCB in connection with the determination of estimated cost for the work "Modification of electrical installation by supply & delivery of indoor type 11KV Vacuum Circuit Breaker (VCB) panel against replacement of old defunct Oil Circuit Breaker (OCB) at Fulbari Teesta Colony, Fulbari, Jalpaiguri under the jurisdiction of Teesta Mechanical Division." by the Executive Engineer, Teesta Mechanical Division, Irrigation & Waterways Directorate on behalf of the Governor of West Bengal.

Issue of EoI documents:

The EoI documents can be obtained from the departmental website <u>www.wbiwd.gov.in</u> as well as from the office of the Executive Engineer, Teesta Mechanical Division during office hours on working days till 02.11.2017.

Submission of EoI:

The intending agencies should submit their most competitive budgetary quotes, as per current market price as per the BOQ FORMAT in a sealed envelope super scribing on the top EOI for the budgetary quotes for the work " Modification of electrical installation by supply & delivery indoor type 11KV Vacuum Circuit Breaker (VCB) panel against replacement of old defunct Oil Circuit Breaker (OCB) at Fulbari Teesta Colony, Fulbari, Jalpaiguri under the jurisdiction of Teesta Mechanical Division." in the tender box to be available at-the following offices:

1. Office of the Executive Engineer, Teesta Mechanical Division, Fulbari, Jalpaiguri.

The intending agencies should submit their most competitive budgetary quotes as per enclosed schedule of work (BOQ) conforming to detailed specifications with reputed manufacturers name. Rate and amount to be quoted should be legible and both in words and figure.

The budgetary quotes rates should be inclusive of GST &. all other statutory taxes/ Duties applicable in the State of West Bengal.

Intending agencies or their authorized representatives may remain present while opening of the sealed covers containing EoIs.

The Superintending Engineer, North Bengal Mechanical & Electrical Circle, I & W Dte. reserves the right to accept or reject any or all EoIs without assigning any reason thereof.

Since, the Notice Inviting Expression of Interests (EoIs) is being made to assess the value of the work, no work order will be issued in favour of any agency against the EoIs.

Pre-Qualification / Credential:

The intending agencies should possess the following and self-attested copies of the same are to be submitted with the EoI.

i) At least one work anywhere in any Govt. Sector in India for procurement, supply & installation of similar work.ii) Suitable document determining financial strength of the bidder.

Inspection of site and its premises before submission of EoIs:

Before submitting EoIs, the intending agencies should make themselves acquainted thoroughly with the exact requirement of works accompanied with the official/representative of the Executive Engineer, Teesta Mechanical Division, having its office at the Fulbari, Jalpaiguri during any working day between 11.30 hours and 17.00 hours prior to the date of submission of proposal.

Pre Bid Meeting:

Pre bid meeting will be held at the office chamber of the Executive Engineer, Teesta Mechanical Division on the following dates and interested agencies may attend the meeting for technical discussions.

EoIs so received in sealed covers will be opened in the chamber of the Executive Engineer, Teesta Mechanical Division in presence of the intending agencies those who will be present at that time.

Schedule of Dates for Eols :

SI No.	Activity	Date & Time	Remarks
1	Publishing Date	17.10.2017	
2	Pre Bid Meeting	30.10.2017 at 12.00 Hrs	
4	E.o.1 submission end date	02.112017 at 15.00 Hrs	
5	Date of E.o.I. opening	02.11.2017 at 15.15 Hrs	

BOQ NAME OF THE WORK

Modification of electrical installation by supply & delivery of indoor type 11KV Vacuum Circuit Breaker (VCB) panel against replacement of old defunct Oil Circuit Breaker (OCB) at Fulbari Teesta Colony, Fulbari, Jalpaiguri under the jurisdiction of Teesta Mechanical Division.

Sl No.	Item Description	Proposed modification of specification, if any to commensurate the scope of work	Quantity	Units	RATE	TOTAL AMOUNT With Taxes
1	Supply & delivery of indoor type 11KV vacuum circuit breaker (VCB) with indoor switchgear panel equipped with CT, PT & protection relays of rated voltage 11KV, 400A, 250MVA rupturing capacity & short time current rating 13.1KA for 3secs, shunt trip floor mounted, horizontal isolation, horizontal draw out with integral earthing facility, internal arc tested with degree of protection IP4X, dustproof, vermin proof totally enclosed as per detail specification attached. (Detail specification of VCB are in separate sheet as ANNEXURE-I and ANNEXURE-II) [Accepteble Make- SIEMENS/ ABB/PASCAL/ SCHNEIDER]		1	jobs		
Total amount:						
Total amount(in word):						

Specification of VCB:

Sl	Technical parameters	Specification desired by	Specification offered by
No.		authority	the Bidder (To be
			Mentioned by the
-			Bidder)
1	IOCG Panel	400.4	
1.1	In-panel Rating(A)	400A	
1.2	Dimension [HxWxD]*(in mm)	2100mm/600mm/1750mm	
1.3	Panel quantity	lno	
2	Vacuum Circuit Breaker-		
0.1		800 A	
2.1	Rated current	δυυΑ 1 shumt valaass	
2.2	Release combination	1 snunt release	
2.3	Spring charging motor	AC220-240V	
2.4	Closing solenoid	DCIIOV	
2.5			
2.6	Second tripping coll		
2.7	Auxiliary switch contact	6NO+6NC+64pin socket	
2.8	Castell key interlock	n	
3	Current Transformer (Set 1)		
3.1	Type of CT		
3.2		30 A/ 5A / 5A	
3.3	Core I(Rating/ class)	5VA/1.0	
3.4	Core 2(Rating/ class)	5VA/5P10	
4	Potential Transformer (CC)		
4.1	PT primary	6.6/ V3KV	
4.2	PT secondary	$110/\sqrt{3}$ $100/\sqrt{3}$	
4.3	Core I(Rating/ class)	100VA/ CL1.0	
4.4	Core 2(Rating/ class)	50VA/CL.3P	
5	Ventilation Box/Louvers-	Without ventilation	
0	Cable connection type-	D	
6.1	Direction of entry	Bottom	
6.2	Number of cables per phase		
6.5	Size	300 sqmm	
7	Secondary devices-	01no	
	VAJH13	0100	
	Pin Type Bulb	01nos	
	Digital Ammeter	01no	
	L/R switch	01set	
	C-Link	10nos	
	Indicating Lamp	01no	
	7SR10 (50,51,50N,51N,74TC) with RS-485 port communicable on IEC-60870- 5-103 protocol	01set	

MCB 2P	01set	
Control Fuse	01no	
Limit Switch	01no	
Digital Voltmeter	01no	
T/N/C Switch	01no	
Push Button	01no	
MFM,CL-1,RS-485	02nos	
Auxillary Contactor 2NO+2NC	02nos	
VAA33(Trafo Auxiliary relay)	01no	
Switch Socket Block	11KV, 3ph, 3 wire, 50 Hz air insulated Aluminium feeder and suitable for a short circuit capacity of 13.1kA for 3 second.	
The switch board	01no	

ANNEXURE-II

TECHNICAL SPECIFICATION FOR 11 KV INDOOR PANEL / SWITCH BOARD WITH VCB

1. Switch Gear Description

1.1 Switchgear Type

The offered switchgear is an air-insulated, type-tested, metal-clad medium-voltage switchgear for indoor installation. This switchgear meets some requirements such as reliability, personal and operational safety, economy and efficiency in an optimal way.

1.2 Panel design

Standard switchgear panel consists of the following compartments:

- Busbar compartment
- Withdrawable switching device compartment
- Cable / instrument transformer compartment
- Low-voltage compartment

The switchgear panel comprise of standard pre-fabricated cold rolled sheet steel units assembled (bolted) to form a rigid, free standing structure with Sheet Steel Thickness (CRCA in mm) as following:

Front Door LT chamber / VCB Chamber	2.5
Structural members (Vertical & Horizontal)	2
Explosion Cover / Shutter	1
Partition for LT chamber/ Partitions between panels/ Bottom sheet	2
Rear Cover/Side Cover	2
Barrier sheets between VCB, Bus bar and Cable chamber	2

All the compartments of the panel are segregated from each other by means of earthed metallic sheet steel. The shutters which are provided for safety purpose are also of earthed metallic sheet steel only. The shutter mechanism is coupled with the movement of the withdrawable truck and not with the contact arm of the breaker. Except the bus bar compartment, all the compartments of each cubicle are independent from the similar compartment of the adjacent panels. The bus bar compartment is running from end to end without any inter-panel barriers so as in the event of internal arc inside the bus bar compartment, the arc will travel along the length of the switchboard. In case of bus bar sectionalisers, the continuation of the bus bar compartment is up-to the bus-sectionaliser panel.

The Switchgear is totally enclosed and vermin proof. The standard degree of protection of the metal enclosure and between adjacent panels is IP4X (external) and IP2X (internal).

In case of an internal arc fault, the pressure in the panel is relieved through explosion vents at the top of all three high voltage compartments, for free-standing switchgear.

The offered switchgear panel is with horizontal isolation and horizontal draw out withdrawable part. The switching device is mounted on a truck, which has distinct positions of Service and Test inside the compartment with the front door of the chamber closed. Each Switching device is provided with a truck so that a separate Circuit Breaker handling trolley is not required. All the operations of the switching device are with front door closed.

All hardware used are zinc passivated, high quality steel. For bus bar connections, Belleville washers are used while for structure bolting, contact washers are used.

1.3 High-Voltage door

During switching operations, the high-voltage door remains closed and mechanical interlock prevents opening of door when the switching device is in service and is switched ON.

The position of the withdrawable section, the CLOSED/OPEN switch position of the switching device, the operating cycle counter and the "spring charged" indication are visible through pressure-resistant inspection windows in the high-voltage door.

1.4 Withdrawable parts (Truck with Switching Device)

The different panel versions can be equipped with the following switching devices / functions:

- Withdrawable vacuum circuit-breaker section
- Withdrawable disconnect or-link section
- Withdrawable PTs.

Vacuum circuit-breakers can be CLOSED or OPENED with high-voltage door closed both in test and in service position.

The low-voltage wires between the withdrawable part and the low-voltage compartment are connected through a 32-pin plug connector. Optionally 64 pin plug connector also can be provided.

Withdrawable parts can easily be taken out or moved into the panels on a collapsible ramp by means of a truck. Withdrawable truck can be easily racked in or racked out from Test to service or service to test within the panel, by means of a crank lever mechanism.

1.5 Switching device compartment

When the withdrawable part is moved, positively driven metal shutters open or close automatically. The shutters cover the fixed contacts comprising round copper bars in epoxy encapsulation connecting to the bus bar compartment and to the cable compartment in a safe-to-touch manner.

The withdrawable part compartment has metal partition walls to the bus bar compartment, to the connection compartment and to adjacent panels.

Withdrawable voltage transformers with or without primary fuses can optionally be mounted in the cable compartment of switchgear panels and can be withdrawn from the front after removing the circuit breaker.

A wiring duct for low-voltage wires is arranged in the withdrawable part compartment and covered with removable metal covers.

1.6 Switching devices

The switching device is Vacuum Circuit Breaker. The mechanism is provided with Motor Spring Reserve Drive (MSRD) with gear box arrangement. The gear box is sealed for the lifetime. A suitable mechanical detaching facility is provided for the spring charging mechanism so that in the event of failure of spring charge limit switch, the drive mechanism will get automatically de-coupled. An anti-pumping auxiliary contactor is an integral part of the Circuit Breaker operating mechanism itself. The VCB auxiliary contacts are also mounted in VCB operating mechanism compartment itself. Mechanical ON/ OFF push buttons are provided for emergency purpose so that the same can be operated in the event of control supply failure without opening the VCB compartment front door.

1.7 Cable / Instrument Transformer Compartment

The cable compartment has metal partition walls to the bus bar compartment, to the withdrawable part compartment and to adjacent panels.

The incomer as well as outgoing power connections are through XLPE cables. Ample space / termination height provided in the cable chamber so as to terminate 3 core aluminium/Copper cables. The power as well as control cable enter the switchgear panel from the bottom. Detachable undrilled gland plates are provided for cables; also the same will be non-magnetic in case of single core cables.

Cables/busducts are earthed via Earthing Truck which can be operated manually from outside with high-voltage door closed.

The cast resin current transformers are mounted inside the cable compartment and shall be wound primary or torroidal/ring type.

The draw out bus PT is mounted in a separate panel while the draw out line PT shall be mounted on a separate trolley inside the cable chamber.

Earth Bus bar is running throughout the length of the switchboard and is mounted in the cable compartment. All non-current carrying metallic parts are earthed to the main earth bus bar effectively through structure. The movable Vacuum Circuit Breaker truck is provided with scrapping earth connection so that the truck remains earthed during test and service position and earthing gets disengaged only when the breaker truck is withdrawn from the panel.

1.8 Busbar compartment

The bus bar compartment has metal partition walls to the cable compartment and to the withdrawable part compartment. Three phase bus bars are made of flat aluminium/copper and bolted from panel to panel. The feeder connections are encapsulated in epoxy cast resin and no separate bushings are required for supporting the bus bar. All the phases of Bus bars are uniform in cross section throughout the length of the switchgear.

1.9 Low-Voltage compartment

The low voltage compartment is completely separated from the rest of the panel.

Electrical connections between the withdrawable part and the fixed part of the panel are performed with flexible wires located in a PVC tube and a 32 or 64-pin low-voltage plug connector.

Current transformer circuits are brought to terminals in the low-voltage compartment. All other panel-internal circuits are brought to fixed terminal in low voltage compartment.

Inside the cubicles, the wiring for control, signaling, protection and instrument circuits are done with PVC insulated conductors. The bunch of wiring is enclosed in plastic channels or neatly bunched together. All the control wiring including CT and VT is done with minimum 1.5 sq.mm. wires. The wiring is multi stranded copper wire. Each wire is identified at both ends by PVC ferrules as per local dependent ferruling system.

1.10 Earthing

Cable/Bus duct and Bus bar earthing can be achieved through separate earthing truck. Earthing Truck suitable for short circuit withstand capacity are offered as standard. Earthing truck equipped with vacuum circuit breaker suitable for making fault capacity can be provided, if required.

1.11 Operation

All switching operations are made with high-voltage door closed:

- Closing and opening the switching device in test or service position
- Establishing the isolating distance by moving the withdrawable part

1.12 Interlocking Conditions

• It will not be possible to rack out the withdrawable part from Service to Test position when the switching device is switched ON. Similarly, it will not be possible to rack in the withdrawable part from Test to Service position, if the switching device is switched ON.

- Any attempt to rack out withdrawable part from Service to Test position will not result in switching OFF of the Circuit Breaker instead the Service position will be locked till switching device is 'ON'.
- It will not be possible to rack in or rack out withdrawable truck when the front high voltage door is open. However, a suitable defeat interlock mechanism is provided for emergency purpose.
- It will not be possible to rack in the withdrawable truck from test to service position when the low voltage control plug is not in position and locked on the truck itself.
- It will not be possible to close the door if the low voltage control plug is not engaged.
- Earthing trucks can be supplied at an extra price. Additionally solenoid interlock can be provided on earthing trucks for incomers and tie feeders.
- Automatic metallic safety shutters are provided covering the opening for bus bar and cable chambers. The movement of these shutters is interlocked mechanically with the movement of the truck so that these will open only when the movement of the truck is from test to service and will close the respective opening when the movement of the truck is from service to test position. These automatic safety shutters are individual for cable and bus bar openings and also provided with the facility for padlocking. Suitable danger name plates can be provided on these safety shutters.

2. <u>Special features / User requirements</u>

2.1 Reliability

- a) The type and routine tests required by IEC 60298 guarantee maximum reliability regarding insulation capacity, current carrying capacity during normal operation and in case of short circuit, making capacity of the switching devices installed and safe mechanical functioning.
- b) The switchgear panels are constructed with high-quality materials, standardised parts and proven components which are available on the market. These materials and the simple and robust structure of the switchgear panel minimise the probability of faults.
- c) The floor cover in the cable compartment excludes the ingress of small animals through the cable basement and prevents associated faults.
- d) The solid concept of logical mechanical interlocks prevents mal operation.
- e) The panels guarantee sufficient mechanical resistance.

2.2 Personal and operational safety

The following features of the switchgear ensure maximum personal and operational safety:

- a) Each H.V. chamber of the switchgear panels is individually arc fault tested according to IEC 298, Appendix AA, as for the quoted short-circuit currents.
- b) Each panel is closed by a pressure-resistant door. The positions of the switching device and the withdrawable part are visible through inspection windows in the high-voltage door.
- c) The high-voltage door needs not be opened for switching operations. Additionally it is possible to perform all preparations for work inside a panel with doors closed and full shock protection.
- d) The high-voltage door need not be opened for moving the withdrawable part to the service or the disconnected position.
- e) The upper and lower fixed-mounted mating contacts in the withdrawable part compartment are supported in cast resin bushings. These are covered by metal shutters that are automatically operated when the withdrawable part is moved.

2.3 Flexibility

Withdrawable parts of same ratings/specification can easily be inserted in a panel or transferred to another panel by one person without tools using the withdrawable truck.

2.4 Low maintenance

Vacuum Circuit breaker, by virtue of their design and manufacturing process requires very low maintenance, operating under normal environmental conditions.

2.5 Easy installation

Switchgear installation is made without special tools. The feeder cables can be connected at an optimal height.

2.6 Environmental compatibility / Disposal

The switchgear must be an environment-compatible product. At the end of the service life, the switchgear can be easily disposed of.

3. GERNERAL REQUIRMENTS OF VCB

The circuit breakers shall comply with the requirements of the latest edition of IS: 13118/1991 or IEC-62271-100 except where specified, otherwise in the specification. The circuit breakers shall be with vacuum insulating medium and shall be indoor, floor mounting, draw out type.

3.1 The circuit breaker shall be capable of rapid and smooth interruption of currents under all conditions, completely suppressing all undesirable phenomena even under the most severe and persistent short circuit conditions or during capacitor switching operations.

3.2 The temperature rise and maximum temperature on any part of the circuit breaker, while in service under continuous full load conditions shall not exceed the permissible limits of temperature rise as specified in the IEC-694:1996 publication for alternating current circuit breakers. Gaskets shall be of a material which will not deteriorate under service conditions.

3.3 Main contacts shall have ample area and contacts pressure for carrying the rated current and the short time rated tripping current of the breakers without excessive temperature rise which may cause pitting or welding.

3.4 Mechanical indicators to show the 'close' or 'open' position of the contacts shall be provided. Operating handle shall be provided for charging the operating mechanism.

3.5 All MS parts of breakers and ferrous parts such as hangers, supports, bolts & nuts shall be hot dip galvanized as per IS:2629 (latest edition) with zinc platting & olive green passivation. The material for spring shall be rust proof.

3.6 CIRCUIT BREAKER

The circuit breakers shall be vacuum circuit breaker.

The bidder shall submit the following test report for offered type rating vacuum interrupter OR shall offer these tests during acceptance.

i) LIGHTING IMPULSE VOLTAGE WITHSTAND TEST

ii) SHORT TIME CURRENT WITHSTAND TEST

iii) TEMPERATURE RISE TEST

The vacuum interrupter shall be encapsulated for protection against explosion. Live part indicators shall be provided on panel to conform that there is no malfunction. Each pole "CLOSE POSITION" indication shall be provided on the front panel door.

3.7 NAME PLATE

The name plate / rating plate shall be provided and shall also indicate all required details of breaker, panel, CT, PT, support insulator, vacuum interrupters, and any other required details.

3.8 CURRENT TRANSFORMERS

Matching differential current transformers on 11 KV side shall be provided for differential protection. Necessary details of HV side current transformers will be furnished to successful bidders.

Memo No:677(13)/2A-23

Copy submitted for favour of kind information and taking necessary action for wide circulation to the:-

- 1. Secretary, Irrigation & Waterways Department, Jalasampad Bhawan, Salt lake, Kolkata-700091
- 2. Chief Engineer, Teesta Barrage Project, 2nd mile, Siliguri.
- 3. Superintending Engineer, North Bengal Mechanical & Electrical Circle, Tinbatti, Siliguri.
- 4. Superintending Engineer, Mahananda Barrage Circle, Tinbatti, Siliguri.
- 5. Executive Engineer, Teesta Monitoring & Evaluation Division, Siliguri.
- 6. Executive Engineer, Mahananda Barrage Division, Tinbatti, Siliguri.
- 7. Executive Engineer, Teesta Barrage Electrical Division, Tinbatti, Siliguri
- 8. Nodal Officer of e-tendering, I & WD., Jalasampad Bhawan, 7th Floor, Salt Lake City, Kolkata-700091 with the request to publish the same in the Departmental website.
- 9. Concerned SDOs' of the work.
- 10. Sub Divisional Officer, Information& Cultural Affairs Department, Siliguri.
- 11. Divisional Accounts Officer of this office.
- 12. Divisional Estimator, Teesta Mechanical Division.
- 13. Office Notice Board.