

	BHEL-PEM-MAUX PRE-QUALIFICATION CRITERIA		PE-PQ-413-571-11000A-A002	
	PROJECT: 4X111 MW VISHUGAD HEP PACKAGE: HVAC SYSTEM PRE-QUALIFICATION REQUIREMENT (TECHNICAL)		DATE	13.08.2026
			REV NO	01

Sl. No.	DESCRIPTION
1.0	The bidder should have designed, supplied, erected/got erected/supervised erection and commissioned at least one (1) number ventilation system in power station/ industrial/ commercial installations, consisting of Centrifugal Fans having individual fan capacity of 75,000CMH at least or more, along with associated ducting work etc. The system should have been running satisfactorily for at least one (1) year from the date of commissioning/completion/ handover as on date of bid opening.
2.0	The supplier has to submit following supporting documents meeting above mentioned prequalifying requirement: Copy of minimum one (1) performance certificate from end user along with copy of related Purchase Order (PO) or Letter of intent (LOI) or Letter of Award (LOA) or Work Order (WO) in support of PQR clause at S. No. 1.0 above.
Notes	
a	BHEL reserves the right to seek approved design documents from bidders to substantiate technical parameters as specified in clause 1 above.
b	Bidder to submit all supporting documents in Hindi and/or English as required. If documents submitted by bidder are in language other than that specified above, a translated copy of the same, in above language(s) shall be submitted by the bidder. In such case, for purposes of interpretation, the translated version shall govern. The translation of the documents shall be carried out by professional translators and the translator shall certify that he is proficient in both languages in order to translate the document and that the translation is complete and accurate. Further, in case the supporting documents are issued outside India, same shall be authenticated by the Indian Consulate located in the Country where the documents have been issued or the Embassy of that Country in India.
c	In case the PO/ LOI /LOA/ WOs is more than ten (10) years old as on date of bid opening, minimum one (1) no. additional Purchase order (for similar jobs) shall be submitted which should not be more than ten (10) years old as on date of bid opening, for establishing continuity in business.
d	Notwithstanding anything stated above, BHEL/End customer reserves the right for physical assessment of the capabilities and capacity of the bidder to perform the contract, should the circumstances warrant such assessment in the overall interest of BHEL/ End customer.
e	Consideration of offer shall be subject to End customer/Owner's approval of bidder.
f	After satisfactory fulfilment of all the above criteria/ requirement, offer shall be considered for further evaluation as per NIT and all other terms of the tender.
g	The bidder shall meet PQR based on its own credentials. Bid from joint venture (JV) company / Consortium bid is not acceptable.



PRE - QUALIFYING REQUIREMENTS

PROJECT: 4X111 MW VISHNUGAD PIPALKOTI HEP

PACKAGE: HVAC FOR HYDRO

CRITERIA FOR EVALUATION - FINANCIAL :

	Amount (in Rs.)
Average annual financial turnover value during last three Financial Years as on tender due date should not be less than	7,03,00,000

Rs.Seven Crore Three Lakh only

Notes:-

a) The bidder has to submit Audited Financial accounts comprising of Audit report (if applicable), Balance sheet, Profit & Loss A/c Statement and Notes/Schedules pertaining to Turnover/Sales/Revenue, for last three years (or from the date of incorporation, whichever is less) as on tender due date to review the above criteria. In case the incorporation of vendor is less than 3 years, average annual Financial turnover shall be calculated based on available information as below: -

i) If the accounts are available for ≤ 1 Financial Year, the Average Annual Turnover shall be calculated based on available information divided by 1 (One).

ii) If the accounts are available for >1 but ≤ 2 Financial Years, the Average Annual Turnover shall be calculated based on available information divided by 2 (Two).

iii) If the accounts are available for >2 but ≤ 3 Financial Years, the Average Annual Turnover shall be calculated based on available information divided by 3 (Three).

b) Foreign bidder is to submit a latest report from reputed third-party business rating agency like Dun & Bradstreet, Credit reform etc. in addition to the documents mentioned at point (a) above for review of above criteria.

c) Other income shall not be considered for arriving at Annual Turnover/Sales. For evaluation purpose, turnover figure excluding taxes shall be considered.

d) For evaluation of foreign bidder exchange rate (TT selling rate of SBI) as on scheduled date of tender opening (Part-I bid in case of two-part bid) shall be considered.

e) Bidder who is 50% or above subsidiary of any company including those registered outside India and does not meet any of the above Financial criteria, such bidder may be qualified based on credentials of its holding company provided such holding company meets the above PQR criteria. In such case, the bidder would be required to furnish a letter of support from its holding company, pledging unconditional and irrevocable Financial support for the execution of the contract by the bidder in case of award.

f) In cases where audited results for its last Financial year as on the date of Techno-Commercial bid opening are not available, a certificate would be required from CEO/CFO stating the the Financial results of the Company are under audit as on the date of Techno-Commercial bid opening and are not available.

PRICE ADJUSTMENT FOR SUPPLY AND MANDATORY SPARES

- (i) The Contract price shall be subject to price adjustment during performance of the Contract to reflect changes in the cost of material in accordance with the provisions described below
- (ii) The price adjustment provisions shall be applicable separately for price components relating to Supply of Equipment as per price break-up furnished by the Contractor.
- (iii) Only following components of the Contract Price will be subject to Price adjustment:
 - (a) Ex-Works supply price of Plant and Equipment including commissioning spares, Mandatory spares.
- (iv) Price adjustment amounts towards aforesaid components of Contract Price shall be paid in the respective currencies of Contract (INR).
- (v) The indices for price adjustment shall be as elaborated hereunder.
- (vi) The price adjustment formula for the components of the Contract Price, as mentioned at Sl. No. (iii) above, shall be as stipulated hereinafter.
- (vii) Ex-Works Price Component of Plant and Equipment including Mandatory Spares

The amount of price adjustment towards variable portion payable/recoverable on each item shall be computed as under:

Indices to be used for each item shall be as per Economic advisor WPI data for finished goods published at www.eaindustry.nic.in for respective month.

Major list of Indices to be used for HVAC are specified in table A below

Wherever indices of items are not directly specified in WPI data, Indices for the same shall be suitably decided during execution of contract.

EC against each item shall be calculated as per following formula

$$\text{EC} = \frac{(P1 - P0) \times \text{EC0}}{P0}$$

Where

EC = Adjustment to Ex-Works supply Price Component expressed in the currency of The Contract (INR) payable/recoverable to the contractor for each shipment/dispatch.

EC0 = Ex-Works supply Price for the plant and equipment in the currency of the Contract (INR), shipment/dispatch wise.

P1 = Refers to indices of the month of reckoning the variated price which shall be the month before the month in which dispatch is made

P0 = Refers to indices of Base Month for PVC which shall be taken as the month before the month of the price bid opening.

The latest available indices are to be extrapolated to the above defined month wrt the base month.

Note:

- 1) The price adjustment i.e. either increase or decrease shall be applicable upto the contractual date of completion of supplies. Contractual delivery/dispatch date would mean the delivery/dispatch date mentioned in the order including amendments in delivery/dispatch date (if any). PVC will not be applicable for the period beyond the contractual delivery/dispatch date where delay is attributable for supplier.
- 2) Though the calculation shall be done for each Billing Break up (BBU) item at the time of dispatch as per formula mentioned above, Total/Net price variation of package shall be calculated and settled at the end of all required supplies of the package and shall be limited to (+) 20% of Total Ex-Works Supply Price including Mandatory spares. There shall be no limit on negative value of PVC.

TABLE A

Chillers
Cooling Towers
Steel pipes, tubes & poles
Cold Rolled (CR) Coils & Sheets, including Narrow Strip
Steel Container
Air Conditioner
Manufacture of plastics products
Centrifugal Pumps
Manufacture of Fabricated Metal Products, Except Machinery and Equipment
Manufacture of other fabricated metal products
Manufacture of lifting and handling equipment
Manufacture of electronic components
Manufacture of measuring, testing, navigating and control equipment
Salt
Manufacture of Water purifier
Manufacture of Electric heaters
Manufacture of steam generators, except central heating hot water boilers
Manufacture of Fan
Hand tools
Processed rubber
Air Coolers
Manufacture of AC motor
GC/GP sheets
Manufacture Of Electrical Equipment
Industrial Valves

PRICE ADJUSTMENT FOR SERVICE PART (E&C)

- (i) The Contract price shall be subject to price adjustment during performance of the Contract to reflect changes in the cost of labour in accordance with the provisions described below:
- (ii) The price adjustment provisions shall be applicable for price components relating to service part (E&C) as per price break-up furnished by the Contractor.
- (iii) Only following components of the Contract Price will be subject to Price adjustment:
 - (a) Service part (E&C) component of Contract Price.
- (vi) The indices for price adjustment shall be as elaborated hereunder.
- (v) The price adjustment formula for the components of the Contract Price, as mentioned at Sl.No. (iii) above shall be as stipulated hereinafter.

a) Indian Rupee Portion of the Installation Services

$$ER = ER1 - ER0$$

ER1 will be computed as follows:

$$ER1 = ER0 (0.15 + Lb \times (L1/ Lo))$$

Where:

- 1. ER = Adjustment to Erection & Commissioning price component of contract price expressed in Indian Rupees payable to the contractor for each billing.
- 2. ER1 = Adjusted amount of Erection & Commissioning price component of contract price expressed in Indian Rupees payable to the Contractor.
- 3. ER0 = Value of the Erection & Commissioning work done in the billing period, which shall be calculated as under:

For the purpose of computing ER0, each Erection & commissioning bill (service part) during the E & C period up to the 'Completion of the Facilities' shall be calculated as described in this document.

- 4. Lb – Coefficient of labour (for all categories) content in the Indian Rupee portion of the erection & commissioning =0.85
- 5. L=Indian field labour index namely, all India consumer price index for industrial workers (All India Monthly Average) as published labour bureau, Shimla, Government of India.

For the indices,

- 5a. Subscript '0' refers to indices of the Base Month which shall be taken as the month before the month of the price bid opening.
- 5b. Subscript '1' refers to indices of the month in which service / E&C is carried as per the Purchase Order or its amendments issued.

The latest available indices are to be extrapolated to the above defined month wrt the base month.

Note:

- 1) The price adjustment i.e. either increase or decrease shall be applicable upto the contractual date of completion of supplies. Contractual delivery/dispatch date would mean the delivery/dispatch date mentioned in the order including amendments in delivery/dispatch date (if any). PVC will not be applicable for the period beyond the contractual delivery/dispatch date where delay is attributable for supplier.
- 2) The price variation shall be limited to +20% of total E&C price (excluding taxes). There shall be no limit on negative PVC.

Main Price Schedule									
NAME OF THE BIDDER		M/s							
NAME OF PROJECT:		4X111 MW VISHNUGAD PIPALKOTI HEP							
NAME OF PACKAGE:		HVAC SYSTEM							
TECHNICAL SPECIFICATION No:		PE-TS-413-571-11000-A002 (Rev 01)							
Enquiry No:		77/26/6125/AAN dated 21.08.2026				Supply		Service	
S. No.	DESCRIPTION	UOM	QTY	Total Ex-Works (excluding GST) (INR)	Freight in %	Total Freight	Unit Price (INR)	Total Price (INR)	Total Price Including Freight Excluding GST (INR)
1	Total lump sum firm price inclusive of all prevailing taxes, duties and other levies for Supply part, Services part and Mandatory spares comprising of design (i.e. Preparation and submission of drawing /documents including "As Built" drawings and O&M manuals), engineering, manufacture, fabrication, assembly, inspection / testing at vendor's & sub-vendor's works, painting, maintenance tools & tackles (as applicable), fill of lubricants & consumables, mandatory spares along with spares for erection, start up and commissioning as required, forwarding, proper packing, shipment and delivery at site, unloading, handling, transportation to stores area & storage, reloading, handling, transportation to site (from stores area), in-site transportation & unloading at site, assembly, erection & commissioning, final painting at site, minor civil work, trial run at site and carrying out Performance guarantee / Functional / Demonstration tests at site (As applicable), training of customer/client O&M staff, Annual Maintenance Contract for HVAC system before handing over after commissioning, and handover in flawless condition to the end customer complete "HVAC System" with all accessories, for the total scope defined as per BHEL NIT & tender technical specification as specified above, amendment & agreements till placement of order.	Lot	1	₹ -					₹ -
2	MAJOR BREAK-UP OF PRICES GIVEN IN 1.0 ABOVE.								
2.1	Total lumpsum firm price inclusive of all prevailing taxes, duties and other levies for Design (i.e. Preparation and submission of drawing /documents including "As Built" drawings and O&M manuals) and engineering as per tender technical specification above, amendment & agreements till placement of order. (Refer Note-3 below)	Lot	1	NA				₹ -	₹ -
2.2	Total lump sum firm price inclusive of all prevailing taxes, duties and other levies for Supply part comprising of manufacture, fabrication, assembly, inspection / testing at vendor's & sub-vendor's works, painting, maintenance tools & tackles (as applicable), fill of lubricants & consumables along with spares for erection as required, start-up and commissioning spares as required, forwarding, proper packing, shipment and delivery at site for the total scope defined as per BHEL NIT & tender technical specification as specified above, amendment & agreements till placement of order. (Break-up as per Annexure-I)	Lot	1	₹ -		₹ -	NA		₹ -
2.3	Total lumpsum firm prices inclusive of all prevailing taxes, duties and other levies for Services part comprising for unloading, handling, transportation to stores area & storage, reloading, handling, transportation to site (from stores area), in-site transportation & unloading at site, assembly, erection & commissioning, final painting at site, minor civil work, trial run at site and carrying out Performance guarantee / Functional / Demonstration tests at site (As applicable), training of customer/client O&M staff and handover in flawless condition of the package to the end customer complete with all accessories, for the total scope defined as per BHEL NIT & tender technical specification as specified above, amendment & agreements till placement of order. (Break-up as per Annexure-I)	Lot	1	NA			₹ -	₹ -	₹ -
2.4	Total lumpsum firm price inclusive of all prevailing taxes, duties and other levies for Mandatory Spares comprising of manufacture, fabrication, assembly, inspection / testing (as applicable) at vendor's & sub-vendor's works, painting, forwarding, proper packing, shipment, delivery at site & guarantee as per tender technical specification above, amendment & agreements till placement of order. (Price break up of mandatory spares is to be furnished as per Annexure- II)	Lot	1	₹ -		₹ -	NA		₹ -
2.5	Total lumpsum firm price inclusive of all prevailing taxes, duties and other levies for providing Annual Maintenance Contract (AMC) including manpower, supervision, etc. for AMC after commissioning of HVAC system before final handing over to end customer in flawless condition for the scope defined as per technical specification for HVAC System (Break-up as per Annexure-III)	Lot	1	NA			₹ -	₹ -	₹ -

Enquiry No:		77/26/6125/AAN dated 21.08.2026				Supply		Service			
S. No.	DESCRIPTION			UOM	QTY	Total Ex-Works (excluding GST) (INR)	Freight in %	Total Freight	Unit Price (INR)	Total Price (INR)	Total Price Including Freight Excluding GST (INR)
Note: 1) GST shall be extra as per actuals. 2) Bidder to quote the Prices in 'figures' along with corresponding 'words'. Only yellow highlighted cells to be filled, rest values are derived from the variuos annexe sheets. 3) Please note that the complete engineering of the package is in the scope of bidder as per the tender requirement. However, for the payment purpose bidder to note that 50% of price as per sl. no. 2.1 shall be made against basic engineering (i.e. Preparation, submission & approval of basic drawing/ documents as indicated in tender specification) and the remaining payment shall be made for the balance engineering part on pro-rata basis. 4) Engineering design Charges (quoted against Sl no 2.1) shall not be more than 5% of supply price (excluding freight and GST) quoted at sl no 2.2, failing which breakup shall be adjusted accordingly from supply price for ordering.											

ANNEXURE - I : PRICE BREAKUP FOR SUPPLY PART							
NAME OF PROJECT:			4X111 MW VISHNUGAD PIPALKOTI HEP				
NAME OF PACKAGE:			HVAC SYSTEM				
TECHNICAL SPECIFICATION No:			PE-TS-413-571-11000-A002 (Rev 01)				
	ITEM DESCRIPTION	UNIT	Quantity	SUPPLY		E&C	
				Unit Ex-Works Price (INR)	Total Ex-Works Price (INR)	Unit E&C Price (INR)	Total E&C Price (INR)
	BREAK-UP OF ITEMS MENTIONED AT S. NO. 2.2 OF MAIN SHEET						
A	Ventilation System						
1	Sheet metal cabinet type double skin AIR HANDLING UNITS (AHU Configuration 3x50%) each of min. 75000 CMH & 125 mmWG SP (min.) capacity consisting of water cooling coil, centrifugal fan, TEFC sq cage induction motor, drive set, pre filters , VCD, Non Return Dampers, flexible connection and other accessories required for system completeness as per specifications to meet the ventilation requirement of power house building for all floors.	NOS	3		₹ -		₹ -
2	MONSOON REHEATING / WINTER HEATING KIT comprising strip heaters, safety controls, air-stat, contactors, frame work, thermostat & humidistat/ sensors etc. for above AHUs as per specification.	LOT	1		₹ -		₹ -
3	HUMIDIFIER for above AHUs complete with humidistat, safety controls, make up water piping from make up tank / nearest source of water, valves fittings etc	LOT	1		₹ -		₹ -
4	Sheet metal cabinet type double skin AIR HANDLING UNITS (AHU Configuration 3x50%) each of min. 1,30,000 CMH & 125 mmWG SP (min.) capacity consisting of water cooling coil, centrifugal fan, TEFC sq cage induction motor, drive set, pre filters , VCD, Non Return Dampers, flexible connection and other accessories required for system completeness as per specifications to meet the ventilation requirement of Transformer/GIS Caver and Bus Duct Galleries.	NOS	3		₹ -		₹ -
5	MONSOON REHEATING / WINTER HEATING KIT comprising strip heaters, safety controls, air-stat, contactors, frame work, thermostat & humidistat/ sensors etc. for above AHUs as per specification.	LOT	1		₹ -		₹ -

	ITEM DESCRIPTION	UNIT	Quantity	SUPPLY		E&C	
				Unit Ex-Works Price (INR)	Total Ex-Works Price (INR)	Unit E&C Price (INR)	Total E&C Price (INR)
6	HUMIDIFIER for above AHUs complete with humidistat, safety controls, make up water piping from make up tank / nearest source of water, valves fittings etc	LOT	1		₹ -		₹ -
7	CENTRIFUGAL PUMPS (2x100%) for circulation water complete with TEFC motor & all accessories as specified, common for Power House and Transformer/GIS AHUs	NOS	2		₹ -		₹ -
8	INSULATED COOLING WATER PIPING with necessary fittings like tees, reducers, expanders, elbows, flanges, all types of valves with flanges, strainers with flanges (as required), air vents etc along with complete supporting structure required for piping as per specifications. This item shall cover the entire cooling water piping from MIV Floor to AHUs of Power House and Transformer/GIS cavern, Pan humidifiers for HVAC system and discharge upto tail race tunnel (pipe, valves, strainers (as required), insulation material with all ancillaries for insulation finishing as per specifications)						
8.1	INSULATED COOLING WATER PIPING with necessary fittings like tees, reducers, expanders, elbows, flanges, air vents etc along with complete supporting structure required for piping as per specifications of following NB sizes						
8.1.1*	300 MM	Rmt*	475		₹ -		₹ -
8.1.2*	250 MM	Rmt*	100		₹ -		₹ -
8.1.3*	200 MM	Rmt*	375		₹ -		₹ -
8.1.4*	150 MM	Rmt*	630		₹ -		₹ -
8.1.5*	100 MM	Rmt*	125		₹ -		₹ -
8.1.6*	80 MM	Rmt*	20		₹ -		₹ -
8.1.7*	25 MM	Rmt*	75		₹ -		₹ -
8.2	Valves & Strainers with flanges (as required)						
8.2.1*	Gate Valve 300 MM	NO*	6		₹ -		₹ -
8.2.2*	Gate Valve 250 MM	NO*	2		₹ -		₹ -
8.2.3*	Gate Valve 200 MM	NO*	2		₹ -		₹ -
8.2.4*	Gate Valve 150 MM	NO*	2		₹ -		₹ -
8.2.5*	Gate Valve 25 MM	NO*	6		₹ -		₹ -
8.2.6*	Butterfly Valve 200 MM	NO*	4		₹ -		₹ -
8.2.7*	Butterfly Valve 150 MM	NO*	5		₹ -		₹ -

	ITEM DESCRIPTION	UNIT	Quantity	SUPPLY		E&C	
				Unit Ex-Works Price (INR)	Total Ex-Works Price (INR)	Unit E&C Price (INR)	Total E&C Price (INR)
8.2.8*	Butterfly Valve 100 MM	NO*	3		₹ -		₹ -
8.2.9*	Motorised Butterfly Valve 300 MM	NO*	2		₹ -		₹ -
8.2.10*	Motorised Butterfly Valve 250 MM	NO*	2		₹ -		₹ -
8.2.11*	Motorised Butterfly Valve 150 MM	NO*	3		₹ -		₹ -
8.2.12*	Motorised Butterfly Valve 100 MM	NO*	3		₹ -		₹ -
8.2.13*	Balancing Valve 150 MM	NO*	4		₹ -		₹ -
8.2.14*	Balancing Valve 100 MM	NO*	3		₹ -		₹ -
8.2.15*	Non Return Valve 250 MM	NO*	2		₹ -		₹ -
8.2.16*	Ball Valve 25 MM	NO*	2		₹ -		₹ -
8.2.17*	Y Strainer 300 MM	NO*	2		₹ -		₹ -
8.2.18*	Air release Valve 25MM	NO*	10		₹ -		₹ -
9*	Cyclone Sperator along with instrumentation and associated accessories for cooling water circuit as per specification.	NO*	1		₹ -		₹ -
10	Fresh Air Centrifugal Blowers (2 X 50 %) each having minimum capcity of 55,000 CMH and 150 mmWG SP (min.) with TEFC squirrel cage induction motor, drive pkg, pre filter with filter mounting frame, inlet air louvers, bird screen, Vibration isolation pads, foundation bolts, nuts & washers, canvass connection,VCD, non return damper and all other accesories required for system completeness and installation at site as per specifications and site requirement, to meet fresh air requirement of all floors of Power House including control block, Bus duct galleries, etc. as per specification	NOS	2		₹ -		₹ -
11	Cabinet type centrifugal fans (2x100%) each having minimum capacity of 110,000 CMH and 150 mmWG SP (min.) along with TEFC squirrel cage induction motor, drive pkg, bird screen, Vibration isolation pads, foundation/anchoring bolts (as required), bolts, nuts & washers, canvass connection, alongwith all other accesories required for system completeness and installation at site as per specifications and site requirement, to meet exhaust requirement of Power House building, GIS/Transformer Cavern, Bus duct galleries, MAT,CVT etc. as per specification.	NOS	2		₹ -		₹ -
12	Cabinet type centrifugal fans (1x100%) each having minimum capacity of 26,000 CMH and 100 mmWG SP (min.) along with TEFC squirrel cage induction motor, drive pkg, bird screen, Vibration isolation pads, foundation/anchoring bolts (as required), bolts, nuts & washers, canvass connection, alongwith all other accesories required for system completeness and installation at site as per specifications and site requirement, to meet exhaust requirement of Surge Chamber.	NO.	1		₹ -		₹ -

	ITEM DESCRIPTION	UNIT	Quantity	SUPPLY		E&C	
				Unit Ex-Works Price (INR)	Total Ex-Works Price (INR)	Unit E&C Price (INR)	Total E&C Price (INR)
13	Fresh Air Centrifugal Blowers (2 X 100 %) each having minimum capacity of 65,000 CMH and 130 mmWG SP (min.) with TEFC squirrel cage induction motor, drive pkg, pre filter with filter mounting frame, inlet air louvers, bird screen, Vibration isolation pads, foundation bolts, nuts & washers, canvas connection, VCD, non return damper and all other accessories required for system completeness and installation at site as per specifications and site requirement, to meet fresh air requirement of Butterfly Valve House, Penstock Assembly chamber etc. as per specification.	NOS.	2		₹ -		₹ -
14	Cabinet type centrifugal fans (2x100%) each having minimum capacity of 40,000 CMH and 130 mmWG SP (min.) along with TEFC squirrel cage induction motor, drive pkg, bird screen, Vibration isolation pads, foundation/anchoring bolts (as required), bolts, nuts & washers, canvas connection, along with all other accessories required for system completeness and installation at site as per specifications and site requirement, to meet exhaust requirement of Butterfly Valve House, Penstock Assembly chamber etc. as per specification.	NOS.	2		₹ -		₹ -

	ITEM DESCRIPTION	UNIT	Quantity	SUPPLY		E&C	
				Unit Ex-Works Price (INR)	Total Ex-Works Price (INR)	Unit E&C Price (INR)	Total E&C Price (INR)
15	Fresh Air Centrifugal Blowers (1 X 100 %) each having minimum capacity of 26,000 CMH and 110 mmWG SP (min.) with TEFC squirrel cage induction motor, drive pkg, pre filter with filter mounting frame, inlet air louvers, bird screen, Vibration isolation pads, foundation bolts, nuts & washers, canvass connection,VCD, non return damper and all other accessories required for system completeness and installation at site as per specifications and site requirement, to meet fresh air requirement of Desilting Gate Operation Chamber & its ADIT.	NO.	1		₹ -		₹ -
16	Cabinet type centrifugal fans (1x100%) each having minimum capacity of 16,000 CMH and 110 mmWG SP (min.) along with TEFC squirrel cage induction motor, drive pkg, bird screen, Vibration isolation pads, foundation/anchoring bolts (as required), bolts, nuts & washers, canvass connection, alongwith all other accessories required for system completeness and installation at site as per specifications and site requirement, to meet exhaust requirement of Desilting Gate Operation Chamber & its ADIT.	NO.	1		₹ -		₹ -
17	Fresh Air Centrifugal Blowers (1 X 100 %) each having minimum capacity of 20,000 CMH and 110 mmWG SP (min.) with TEFC squirrel cage induction motor, drive pkg, pre filter with filter mounting frame, inlet air louvers, bird screen, Vibration isolation pads, foundation bolts, nuts & washers, canvass connection,VCD, non return damper and all other accessories required for system completeness and installation at site as per specifications and site requirement, to meet fresh air requirement of Silt Flushing Gate Operation Chamber & its Adit.	NO.	1		₹ -		₹ -
18	Cabinet type centrifugal fans (1x100%) each having minimum capacity of 12,000 CMH and 110 mmWG SP (min.) along with TEFC squirrel cage induction motor, drive pkg, bird screen, Vibration isolation pads, foundation/anchoring bolts (as required), bolts, nuts & washers, canvass connection, alongwith all other accessories required for system completeness and installation at site as per specifications and site requirement, to meet exhaust requirement of Silt Flushing Gate Operation Chamber & its Adit.	NO.	1		₹ -		₹ -

	ITEM DESCRIPTION	UNIT	Quantity	SUPPLY		E&C	
				Unit Ex-Works Price (INR)	Total Ex-Works Price (INR)	Unit E&C Price (INR)	Total E&C Price (INR)
19	Fresh Air Centrifugal Blowers (1 X 100 %) each having minimum capacity of 10,000 CMH and 110 mmWG SP (min.) with TEFC squirrel cage induction motor, drive pkg, pre filter with filter mounting frame, inlet air louvers, bird screen, Vibration isolation pads, foundation bolts, nuts & washers, canvass connection,VCD, non return damper and all other accesories required for system completeness and installation at site as per specifications and site requirement, to meet fresh air requirement of Adit to DC Bottom.	NO.	1		₹ -		₹ -
20	Cabinet type centrifugal fans (1x100%) each having minimum capacity of 6,000 CMH and 110 mmWG SP (min.) along with TEFC squirrel cage induction motor, drive pkg, bird screen, Vibration isolation pads, foundation/anchoring bolts (as required), bolts, nuts & washers, canvass connection, alongwith all other accesories required for system completeness and installation at site as per specifications and site requirement, to meet exhaust requirement of Adit to DC Bottom.	NO.	1		₹ -		₹ -
21*	Cabinet type centrifugal fans (2x100%) each having minimum capacity of 15,000 CMH and 130 mmWG SP (min.) along with flame proof TEFC squirrel cage induction motor, drive pkg, bird screen, Vibration isolation pads, foundation/anchoring bolts (as required), bolts, nuts & washers, canvass connection, alongwith all other accesories, epoxy painted required for system completeness and installation at site as per specifications and site requirement, to meet exhaust requirement of Power House Battery Room.	NOS.*	2		₹ -		₹ -
22*	Cabinet type centrifugal fans (2x100%) each having minimum capacity of 2,000 CMH and 130 mmWG SP (min.) along with flame proof TEFC squirrel cage induction motor, drive pkg, bird screen, Vibration isolation pads, foundation/anchoring bolts (as required), bolts, nuts & washers, canvass connection, alongwith all other accesories, epoxy painted required for system completeness and installation at site as per specifications and site requirement, to meet exhaust requirement of Transformer/GIS Cavern Battery Room.	NOS.*	2		₹ -		₹ -

	ITEM DESCRIPTION	UNIT	Quantity	SUPPLY		E&C	
				Unit Ex-Works Price (INR)	Total Ex-Works Price (INR)	Unit E&C Price (INR)	Total E&C Price (INR)
23*	Cabinet type centrifugal fans (2x100%) each having minimum capacity of 2,000 CMH and 130 mmWG SP (min.) along with flame proof TEFC squirrel cage induction motor, drive pkg, bird screen, Vibration isolation pads, foundation/anchoring bolts (as required), bolts, nuts & washers, canvass connection, alongwith all other accesories, epoxy painted required for system completeness and installation at site as per specifications and site requirement, to meet exhaust requirement of Butterfly Valve Chamber Battery Room.	NOS.*	2		₹ -		₹ -
24*	Cabinet type Fresh Air Centrifugal Blowers (1 X 100 %) each having minimum capcity of 5,000 CMH and 240 mmWG SP (min.) with TEFC squirrel cage induction motor, drive pkg, pre filter with filter mounting frame, inlet air louvers, bird screen, Vibration isolation pads, foundation bolts, nuts & washers, canvass connection,VCD, non return damper and all other accesories required for system completeness and installation at site as per specifications and site requirement, to meet fresh air requirement of Dam Galleries	NO.*	1		₹ -		₹ -
25*	Cabinet type Centrifugal Blowers (1 X 100 %) each having minimum capcity of 5,000 CMH and 240 mmWG SP (min.) with TEFC squirrel cage induction motor, drive pkg, , bird screen, Vibration isolation pads, foundation bolts, nuts & washers, canvass connection,VCD, non return damper and all other accesories required for system completeness and installation at site as per specifications and site requirement, to meet exhaust air requirement of Dam Galleries	NO.*	1		₹ -		₹ -
26*	Cabinet type centrifugal fans (2x50%) each having minimum capacity of 2,000 CMH and 130 mmWG SP (min.) along with TEFC squirrel cage induction motor, drive pkg, bird screen, Vibration isolation pads, foundation/anchoring bolts (as required), bolts, nuts & washers, canvass connection, alongwith all other accesories required for system completeness and installation at site as per specifications and site requirement, to meet exhaust requirement of Toilet/Pantry.	NOS.*	2		₹ -		₹ -

	ITEM DESCRIPTION	UNIT	Quantity	SUPPLY		E&C	
				Unit Ex-Works Price (INR)	Total Ex-Works Price (INR)	Unit E&C Price (INR)	Total E&C Price (INR)
27*	Cabinet type Fresh Air Centrifugal Blowers each having minimum capacity of 21,000 CMH and 80 mmWG SP (min.) with TEFC squirrel cage induction motor, drive pkg, pre filter with filter mounting frame, inlet air louvers, bird screen, Vibration isolation pads, foundation bolts, nuts & washers, canvass connection,VCD, non return damper and all other accesories required for system completeness and installation at site as per specifications and site requirement.	NO.*	1		₹ -		₹ -
28*	Cabinet type centrifugal Exhaust fans each having minimum capacity of 21,000 CMH and 80 mmWG SP (min.) along with TEFC squirrel cage induction motor, drive pkg, bird screen, Vibration isolation pads, foundation/anchoring bolts (as required), bolts, nuts & washers, canvass connection, alongwith all other accesories required for system completeness and installation at site as per specifications and site requirement.	NO.*	1		₹ -		₹ -
29	Axial flow supply fans with pre and fine filter (wall mounted) complete with casing, TEFC sq cage induction motors & mounting frame, MS rain protection cowl, bird screen and all other accessories for system completeness and installation at site as per specifications and site requirement. (suitable for 415V/3-phase supply). Following fans shall have min. 30 mmwc static pressure.						
29.1*	Capacity 10,000 CMH with Motor rating 2.2 KW	NOS.*	2		₹ -		₹ -
29.2*	Capacity 7,500 CMH with Motor rating 1.5 KW	NOS.*	2		₹ -		₹ -
29.3*	Capacity 6,000 CMH with Motor rating 1.1 KW	NOS.*	2		₹ -		₹ -
29.4*	Capacity 4,000 CMH with Motor rating 0.75 KW	NOS.*	2		₹ -		₹ -

	ITEM DESCRIPTION	UNIT	Quantity	SUPPLY		E&C	
				Unit Ex-Works Price (INR)	Total Ex-Works Price (INR)	Unit E&C Price (INR)	Total E&C Price (INR)
30	Axial flow supply fans with pre filter (wall mounted) complete with casing, TEFC sq cage induction motors & mounting frame, MS rain protection cowl, bird screen and all other accessories for system completeness and installation st site as per specifications and site requirement. (suitable for 415V/3-phase supply) as specified. Following fans shall have min. 20 mmwc static pressure.						
30.1*	Capacity 10,000 CMH with Motor rating 1.5 KW	NOS.*	2		₹ -		₹ -
30.2*	Capacity 7,500 CMH with Motor rating 1.1 KW	NOS.*	2		₹ -		₹ -
30.3*	Capacity 6,000 CMH with Motor rating 1.1 KW	NOS.*	2		₹ -		₹ -
30.4*	Capacity 4,000 CMH with Motor rating 0.75 KW	NOS.*	2		₹ -		₹ -
31	Axial flow exhaust fans (Bifurcated type, spark proof construction, wall mounted) complete with casing, flame proof motor & mounting frame, MS rain protection cowl, bird screen and all other accessories epoxy painted (suitable for 415V/3-phase supply). Following fan shall have 15 mmwc static pressure.						
31.1*	Capacity 15,000 CMH with Motor rating 2.2 KW	NOS.*	2		₹ -		₹ -
31.2*	Capacity 10,000 CMH with Motor rating 1.5 KW	NOS.*	2		₹ -		₹ -
31.3*	Capacity 7,500 CMH with Motor rating 1.1 KW	NOS.*	2		₹ -		₹ -
31.4*	Capacity 4,000 CMH with Motor rating 0.55 KW	NOS.*	2		₹ -		₹ -
31.5*	Capacity 2,000 CMH with Motor rating 0.55 KW	NOS.*	2		₹ -		₹ -
32	Axial flow exhaust fans (Wall mounted) complete with casing, TEFC sq cage induction motor & mounting frame, MS rain protection cowl, bird screen and all other accessories epoxy painted for system completeness and installation st site as per specifications and site requirement. (suitable for 415V/3-phase supply) as specified. Following fan shall have min. 10 mmwc static pressure.						
32.1*	Capacity 15,000 CMH with Motor rating 1.1 KW	NOS.*	2		₹ -		₹ -
32.2*	Capacity 10,000 CMH with Motor rating 0.75 KW	NOS.*	2		₹ -		₹ -
32.3*	Capacity 7,500 CMH with Motor rating 0.55 KW	NOS.*	2		₹ -		₹ -
32.4*	Capacity 6,000 CMH with Motor rating 0.55 KW	NOS.*	2		₹ -		₹ -
32.5*	Capacity 4,000 CMH with Motor rating 0.55 KW	NOS.*	2		₹ -		₹ -
32.6*	Capacity 2,000 CMH with Motor rating 0.37 KW	NOS.*	2		₹ -		₹ -

	ITEM DESCRIPTION	UNIT	Quantity	SUPPLY		E&C	
				Unit Ex-Works Price (INR)	Total Ex-Works Price (INR)	Unit E&C Price (INR)	Total E&C Price (INR)
33	Exhaust fan (propeller type) completes with induction motor & mounting frame MS rain protection cowl, bird screen and all other accessories as specified for system completeness and installation st site as per specifications and site requirement. (suitable for 240V/ 1 phase). Following fan shall have min. 5 mmwc static pressure.						
33.1*	Capacity 1000/1200 CMH with Motor rating 100 watts	NOS.*	20		₹ -		₹ -
34*	Circular duct inline fan of capacity 1000 CMH and 15mmwc Static	NOS.*	10		₹ -		₹ -
35*	Air curtain for smoke control for preventing smoke ingress in case of fire. Air curtain shall be as per latest OEM standard.						
35.1*	Air curtain Height up to 11-15 feet & with width up to 13 feet	No*	6		₹ -		₹ -
35.2*	Air curtain Height up to 16-27 feet & with width up to 13-27 feet	No*	6		₹ -		₹ -
B	Air Conditioning System						
1	AIR COOLED DUCTABLE TYPE SPLIT UNITS consisting of outdoor unit (having compressor condenser coils with fan and motor), indoor unit (having evaporator coil, filter,fan with motor), complete interconnecting refrigerant piping as per site requirement & fittings with insulation, cordless remote, electrical power cord upto the nearest available point along with isolator / MCB, fixing frame for indoor and outdoor unit, drain piping up to nearest drain point, piping support, Stablizer,etc. and all other accessories for system completeness and installation at site as per specifications and site requirement.						
1.1*	11 TR (Actual), capacity (415 V, 3 phase with isolation switch)	NO.*	3		₹ -		₹ -
1.2*	7.5TR (Actual), capacity (415 V, 3 phase with isolation switch)	NO.*	3		₹ -		₹ -

	ITEM DESCRIPTION	UNIT	Quantity	SUPPLY		E&C	
				Unit Ex-Works Price (INR)	Total Ex-Works Price (INR)	Unit E&C Price (INR)	Total E&C Price (INR)
2	MONSOON REHEATING / WINTER HEATING KIT comprising strip heaters, safety controls, air-stat, contactors, frame work, thermostat & humidistat/ sensors etc. for Air conditioning areas served with ductable Split AC of below mentioned capacities						
2.1*	2 KW	NO.*	3		₹ -		₹ -
2.2*	3 KW	NO.*	3		₹ -		₹ -
2.3*	5 KW	NO.*	3		₹ -		₹ -
3	Humidifier complete with humidistat, safety controls, make up water piping from make up tank / nearest source of water, valves fittings and all other accessories Air Conditioning areas served with ductable Split AC of below mentioned capacities						
3.1*	2 KW	NO.*	2		₹ -		₹ -
3.2*	3 KW	NO.*	2		₹ -		₹ -
3.3*	5 KW	NO.*	2		₹ -		₹ -
4	AIR COOLED SPLIT UNITS consisting of outdoor unit (having compressor condenser coils with fan and motor), indoor unit (having evaporator coil, filter,fan with motor), complete interconnecting refrigerant piping as per site requirement & fittings with insulation, cordless remote, electrical power cord upto the nearest available point along with isolator / MCB, fixing frame for indoor and outdoor unit, Voltage Stabilizer, insulated drain piping upto nearest drain etc. and all other accessories for system completeness and installation at site as per specifications and site requirement (Maximum available BEE star Rating)						
4.1*	2.0 TR capacity (non-ductable type, 240 V, 1 phase with isolation switch) i.e MCB of suitable rating as specified.	NO.*	5		₹ -		₹ -
4.2*	1.5 TR capacity (non-ductable type, 240 V, 1 phase) with isolation switch , i.e. MCB of suitable rating as specified.	NO.*	10		₹ -		₹ -

	ITEM DESCRIPTION	UNIT	Quantity	SUPPLY		E&C	
				Unit Ex-Works Price (INR)	Total Ex-Works Price (INR)	Unit E&C Price (INR)	Total E&C Price (INR)
5	Oil filled room heaters of suitable ratings alongwith control system and assessories.						
5.1*	1 kW	NO.*	3		₹ -		₹ -
5.2*	1.5 kW	NO.*	3		₹ -		₹ -
5.3*	2 kW	NO.*	3		₹ -		₹ -
5.4*	2.5 kW	NO.*	3		₹ -		₹ -
6	Cassette AC (non ductable type) with isolation switch, i.e.e MCB of suitable rating as specified, voltage stablizer, cabling, all supporting structure and complete refrigerant piping to suite actual site conditions, drain piping up to nearest drain, support for piping etc. and all other accessories for system completeness and installation at site as per specifications and site requirement.						
6.1*	4 TR actual capacity	NO.*	1		₹ -		₹ -
6.2*	3 TR actual capacity	NO.*	1		₹ -		₹ -
6.3*	2 TR actual capacity	NO.*	1		₹ -		₹ -
C	Items Common to HVAC System						
1	GSS zinc coating 275 gms/ m2 finished ducting complete with hangers, tie rods, gaskets, sealant, adhesive , nut, bolt, locknut, hilti ,bracing and all other accessories as required for installation of ducting at site as per specifications and site requirement.						
1.1*	18 G	SQM*	3500		₹ -		₹ -
1.2*	20 G	SQM*	12100		₹ -		₹ -
1.3*	22 G	SQM*	10500		₹ -		₹ -
1.4*	24 G	SQM*	8800		₹ -		₹ -
2*	MS Duct With Epoxy paint for battery room complete with hangers, tie rods,gaskets, sealant, adhesive , nut, bolt, lock nut, hilti, bracing and all other accessories as required for installation of ducting at site as per specifications and site .requirement.	SQM*	2200		₹ -		₹ -

	ITEM DESCRIPTION	UNIT	Quantity	SUPPLY		E&C	
				Unit Ex-Works Price (INR)	Total Ex-Works Price (INR)	Unit E&C Price (INR)	Total E&C Price (INR)
3	Fire damper.						
3.1*	Fire damper with auto resetting, limit switches, indication lamps and all other accessories required for system completeness and installation at site as per specifications and site requirement.	SQM*	40		₹ -		₹ -
3.2*	Motorized actuator with single phase power supply for the above fire damper with all accessories required for system completeness and installation at site as per specifications and site requirement.	NO*	40		₹ -		₹ -
3.3*	Fusible Link type Fire Damper with all accessories required for system completeness and installation at site as per specifications and site requirement.	SQM*	15		₹ -		₹ -
4*	VOLUME CONTROL DAMPERS in GSS construction as per specifications for supply / return ducts complete with fixing arrangement.	SQM*	60		₹ -		₹ -
5*	MOTORIZED VOLUME CONTROL DAMPERS in GSS construction as per specifications for supply / return ducts,AHU/Fan - Inlet/Outlet complete with fixing arrangement	SQM*	60		₹ -		₹ -
6*	Motorized actuator with single phase power supply for the above VCD with all accessories required for system completeness and installation at site as per specifications and site requirement.	NO*	60		₹ -		₹ -
7*	Supply Air Grills with VCD (Extruded Aluminium powder coated) complete with fixing frames, nuts, bolts, gaskets, washers etc.	SQM*	70		₹ -		₹ -
8*	Return Air Grills without VCD (Extruded Aluminium powder coated) complete with fixing frames, nuts, bolts, gaskets, washers etc.	SQM*	70		₹ -		₹ -
9*	Supply air diffuser with VCD (Extruded Aluminium powder coated) complete with fixing frames, nuts, bolts, gaskets, washers etc.	SQM*	10		₹ -		₹ -
10*	Return air diffuser without VCD (Extruded Aluminium powder coated) complete with fixing frames, nuts, bolts, gaskets, washers etc.	SQM*	10		₹ -		₹ -
11*	Return air diffuser without VCD (Epoxy Painted) complete with fixing frames, nuts, bolts, gaskets, washers etc.	SQM*	2		₹ -		₹ -
12*	Wall mounted dampers (gravity operated) along with all accessories for complete installation at site as per specifications and site requirement.	SQM*	10		₹ -		₹ -
13*	Inlet Louvres along with all accessories for complete installation at site as per specifications and site requirement.	SQM*	10		₹ -		₹ -

	ITEM DESCRIPTION	UNIT	Quantity	SUPPLY		E&C	
				Unit Ex-Works Price (INR)	Total Ex-Works Price (INR)	Unit E&C Price (INR)	Total E&C Price (INR)
14*	Thermal insulation for AHU Supply ducting, Fresh air Ducts inside PH & Transformer Cavern & AC Ducting with material and finish as per specifications, adhesives, jointing tape and all other required accessories for installation of insulation for HVAC System.	SQM*	5600		₹ -		₹ -
15*	Acoustic insulation as per specification requirement.	SQM*	600		₹ -		₹ -
16	Insulated drain water piping from various equipment like AHUs (including equalising line), strainer, etc. upto nearest available drain point with necessary fittings like tees, reducers, expanders, elbows, flanges, valves with flanges, U trap etc as per specifications.						
16.1*	50mm	Rmt*	200		₹ -		₹ -
16.2*	40mm	Rmt*	200		₹ -		₹ -
17*	Fibre optic Cable with its accessories from I/O Panel / Racks to PLC Panel of HVAC System	Mtr*	100		₹ -		₹ -
18	FIELD INSTRUMENTS like gauges, transmitters, switces etc. for measuring of flow, temperature, pressure, differential pressure, level, humidity and other instrument required for local monitoring & control etc alongwith all hook up accessories, Junction Box etc. for completeness of HVAC System as per specification.						
18.1*	Water Pressure Transmitter	No*	2		₹ -		₹ -
18.2*	Water Pressure Indicator	No*	19		₹ -		₹ -
18.3*	Water Temperature Indicator	No*	7		₹ -		₹ -
18.4*	Water Pressure Switch	No*	6		₹ -		₹ -
18.5*	Air Pressure Switch	No*	8		₹ -		₹ -
18.6*	Air Stat	No*	4		₹ -		₹ -
18.7*	GeyserStat	No*	2		₹ -		₹ -
18.8*	Water Differential Pressure Switch	No*	2		₹ -		₹ -
18.9*	Air Differential Pressure Switch	No*	6		₹ -		₹ -
18.10*	RH+Temperature Transmitter with indicator	No*	4		₹ -		₹ -
18.11*	Dilatometric Thermostatic Switch	No*	4		₹ -		₹ -
18.12*	Air Pressure Indicator	No*	8		₹ -		₹ -
18.13*	Air Temperature Indicator	No*	8		₹ -		₹ -
18.14*	Hook up accessories, Junction Box etc.	Lot	1		₹ -		₹ -
19*	Fire resistant board for Ducts as per Specification	SQM*	1500		₹ -		₹ -

	ITEM DESCRIPTION	UNIT	Quantity	SUPPLY		E&C	
				Unit Ex-Works Price (INR)	Total Ex-Works Price (INR)	Unit E&C Price (INR)	Total E&C Price (INR)
20*	Semirigid spiral PVC Duct with spiral spring steel wire for ventilation of Dam Galleries (400 mm Dia) suitable for industrial use/tunnel ventilation at 240mm static pressure complete with leak proof couplings, hooks etc along with all the necessary connections and support structure required for site installation.	Mtr*	350		₹ -		₹ -
21	Complete Structural work for routing & supporting ducts between equipment/ventilation building till tunnel as mentioned in specification (through duct racks, bracket support, channels, angles, hilti etc.) along with bolting for fixing/anchoring.						
21.1*	Complete Structural work for Duct Rack -01 (DR-01) as per tender documents.	Lot*	6		₹ -		₹ -
21.2*	Complete Structural work for Duct Rack -02 (DR-02) as per tender documents.	Lot*	10		₹ -		₹ -
21.3*	Complete Structural work for Duct Rack -03 (DR-03) as per tender documents.	Lot*	1		₹ -		₹ -
21.4*	Complete Structural work for Duct Rack -04 (DR-04) as per tender documents.	Lot*	8		₹ -		₹ -
21.5*	Complete Structural work for Duct Rack -05 (DR-05) as per tender documents.	Lot*	1		₹ -		₹ -
22	Handling arrangement for HVAC equipment.						
22.1*	Manually operated, platform trolley of 1 Ton capacity with base area 2m x 1.5m	NO*	3		₹ -		₹ -
22.2*	1T Chain Pulley Block arrangement with travelling trolley	NO*	1		₹ -		₹ -
22.3*	1T Chain Pulley Block arrangement without travelling trolley with tripod stand	NO*	1		₹ -		₹ -
22.4*	2T Chain Pulley Block arrangement with travelling trolley	NO*	1		₹ -		₹ -
22.5*	3T Electric Hoist along with monorail arrangement as per specification	NO*	1		₹ -		₹ -
23	Electrical Switchboards, LPBS, Local Motor Starters, Cable trays, Tray support, Termination & Jointing kit, cabling items, Above ground earthing material, LT power cables, LT control cables, Screened control cables etc. for completeness of HVAC system.						
23.1	LV Switchgear (panels, feeder modules, cabinet etc.) with base frame and angle/channel for floor mounting/wall mounting along with insulating mats						
23.1.1	Power House Switchboard-A (800A, 415V, 3PH-4 wire, Incomer power cable size - 2 RUN-1C-400 SQMM/Phase, 1RUN-1C-400 SQMM Neutral, floor mounted) with incomer & buscoupler as breaker and outgoing feeder with breaker/MCCB as applicable.	Lot	1		₹ -		₹ -

	ITEM DESCRIPTION	UNIT	Quantity	SUPPLY		E&C	
				Unit Ex-Works Price (INR)	Total Ex-Works Price (INR)	Unit E&C Price (INR)	Total E&C Price (INR)
23.1.2	Transformer & GIS Hall Switchboard-B (630A, 415V, 3PH-4 wire, Incomer power cable size - 2 RUN-1C-400 SQMM/Phase, 1RUN-1C-400 SQMM Neutral, floor mounted) with incomer & buscoupler as breaker and outgoing feeder with breaker/MCCB as applicable.	Lot	1		₹ -		₹ -
23.1.3	Adit of MAT/CVT (Pothead /yard) Switchboard-C (250A, 415V, 3PH-4 wire, Incomer power cable size - 3.5C-240 SQMM, floor mounted) with incomer & buscoupler as breaker and outgoing feeder with breaker/MCCB as applicable.	Lot	1		₹ -		₹ -
23.1.4	Butterfly Valve House Switchboard-D (250A, 415V, 3PH-4 wire, Incomer power cable size - 3.5C-240 SQMM, floor mounted) with incomer & buscoupler as breaker and outgoing feeder with breaker/MCCB as applicable.	Lot	1		₹ -		₹ -
23.1.5	Desilting Area Switchboard-E (250A, 415V, 3PH-4 wire, Incomer power cable size - 3.5C-95 SQMM, floor mounted) with incomer & buscoupler as breaker and outgoing feeder with breaker/MCCB as applicable.	Lot	1		₹ -		₹ -
23.1.6*	Dam Area ACDB (63A, 415V, 3PH-4 wire, incomer power cable size - 3.5C-50 sqmm) incoming & outgoing feeder with MCCB.	No*	1		₹ -		₹ -
23.1.7*	Pot Head Yard ACDB (63A, 415V, 3PH-4 wire, incomer power cable size - 3.5C-50 sqmm) incoming & outgoing feeder with MCCB.	No*	1		₹ -		₹ -
23.2	Local Push Button Stations (LPBS) for motor drives.	Lot	1		₹ -		₹ -
23.3	Local Motor Starter panel for Supply and Exhaust fans of smaller rating for local control	Lot	1		₹ -		₹ -
23.4	LT XLPE POWER CABLES	Lot	1		₹ -		₹ -
23.5	LT PVC CONTROL CABLES	Lot	1		₹ -		₹ -
23.6	SCREENED CONTROL CABLE	Lot	1		₹ -		₹ -
23.7	Cabling Items (Cable tray, tray support, clamps, tie, connector, cable glands & lugs, termination & joining kit and cable junction box etc.)	Lot	1		₹ -		₹ -
23.8	ABOVE GROUND EARTHING & LIGHTNING PROTECTION MATERIALS	Lot	1		₹ -		₹ -
23.9	Communicable ethernet switches,CAT-6E and OFC cable for numerical relays integration of LT boards(as applicable)mentioned under S.No. 23.1 above with PLC . All the numerical relays to be integrated and one common point to be made available for upper level SCADA communication.	Lot	1		₹ -		₹ -

				SUPPLY		E&C	
	ITEM DESCRIPTION	UNIT	Quantity	Unit Ex-Works Price (INR)	Total Ex-Works Price (INR)	Unit E&C Price (INR)	Total E&C Price (INR)
24	PLC BASED CONTROL SYSTEM for HVAC system with Hot redundant PLC consisting of PLC Panels,RIO Panel etc,I/Omodules,I/O adaptor modules,power supply,Connectivity to SCADA for monitoring purpose , etc as specified as per tender specification including FAT of PLC, preparation of control scheme, and commissioning of PLC as per relevant specification.	Lot	1		₹ -		₹ -
25	RELAY BASED CONTROL SYSTEM for HVAC system - as specified as per tender specification	Lot	1		₹ -		₹ -
26*	Under deck insulation with resin bonded rock wool 50 mm nominal thickness conforming to IS 8183 having a density of 48kg/cum using minimum 0.05 mm thick aluminium foil on exposed surface followed by 0.56 mm dia and 25 mm mesh GI wire netting, fixed at various elevations with rawl plugs including clips, etc complete as per specifications.	SQM*	500		₹ -		₹ -
27*	Venetian blinds of light colour, made of aluminium/wooden slats of 25 mm / 50 mm width, with powder coated / natural finish, complete with head rail, bottom rail, ladder tape, control rod, cord mechanism and all necessary fittings, fixtures, brackets, screws etc., including transportation to site, installation, alignment, testing for smooth operation and handing over complete in all respects.	SQM*	300		₹ -		₹ -
28	Total lumpsum price for Special Tools & Tackles for maintenance inclusive of packing forwarding, transportation up to site, etc. common for HVAC System (Bidder shall submit item-wise price break-up as per Appendix-A).	Lot	1	₹ -	₹ -	NA	NA
29	Total lumpsum price for Commissioning spares for HVAC System inclusive of packing forwarding, transportation up to site, etc. (Bidder shall submit item-wise price break-up as per Appendix-B).	Lot	1	₹ -	₹ -	NA	NA
30	Any other item not indicated above, but required to make the HVAC system complete in all respects as per specification and system requirement	Lot	1		₹ -		₹ -
Total					₹ -		₹ -
NOTES							
1	The bidder shall furnish unit rates for variable item (marked *) for necessary adjustment (plus or minus) variation during detailed engg. stage. The unit rates quoted above shall be considered for adjustment and no separate unit rates shall be quoted. Unit rates shall be valid throughout the contract. Final qty. shall be paid as per actual measurement at site for erection for all the variable items..						
2	Price format shall not be changed by the bidder as the bidder may get disqualified by doing so. Only yellow highlighted cells to be filled, rest values are derived from the variuos anneux sheets.						
3	Any cell left blank in the unpriced schedule shall be treated as "Quoted" and is included in total price.						
4	The BOQ mentioned above shall be read in conjunction with technical specification requirement. Any other item required as per technical specification but not specifically indicated in above BOQ, shall deemed to be incuded in total prices quoted by bidder. No additional price shall be payable against such items.						

APPENDIX-A Special tools & tackles for maintenance					
NAME OF PROJECT:			4X111 MW VISHNUGAD PIPALKOTI HEP		
NAME OF PACKAGE:			HVAC SYSTEM		
TECHNICAL SPECIFICATION No:			PE-TS-413-571-11000-A002 (Rev 01)		
SL NO	DESCRIPTION	UNIT	Qty	Unit Ex-Works Price (INR)	Total Ex-Works Price (INR)
1	FLAT D WRENCH - 6 MM TO 32 MM (12 Pcs)	SET	1		₹ -
2	BOX WRENCHES - 6 MM TO 22 MM (14 Pcs)	SET	1		₹ -
3	RING SPANNER - 6 MM TO 32 MM (12 Pcs)	SET	1		₹ -
4	ALLEN KEYS - 2 MM TO 10 MM	SET	1		₹ -
5	CRESCENT SCREW SPANNER	NO.	1		₹ -
6	SCREW DRIVER SET	NO.	1		₹ -
7	OFFSET SCREW DRIVER	NO.	1		₹ -
8	INSULATED PLIER	NO.	1		₹ -
9	TORCH LIGHT FOR 2 CELL	NO.	1		₹ -
10	HAMMER 1 LB	NO.	1		₹ -
11	OIL CAN	NO.	1		₹ -
12	POCKET THERMOMETER - 0 TO 50 DEG. C)	NO.	1		₹ -
13	INSULATION TAPE ROLL	NO.	1		₹ -
14	STEEL FOOT RULE - 12"	NO.	1		₹ -
15	FEELER GAUGE 9 BLADES	NO.	1		₹ -
16	PIPE WRENCH	NO.	1		₹ -
17	FLARE NUT (1/4")	NOS.	6		₹ -
18	FLARING TOOL	NO.	1		₹ -
19	TUBE CUTTER	NO.	1		₹ -
20	GAS CHARGING PIPE	NO.	1		₹ -
21	NITROGEN CHARGING ADAPTER	NO.	1		₹ -
22	FREON PRESSURE GAUGE (2 1/2" DIA DIAL) 0 - 300 MM PSI	NO.	1		₹ -
23	FREON PRESSURE GAUGE (2 1/2" DIA DIAL) 30 - 150 MM PSI	NO.	1		₹ -
24	PSYCHRO METER	NO.	1		₹ -
25	LOCK WITH KEY FOR TOOL BOX	NO.	1		₹ -
26	RATCHET 1/4"	NO.	1		₹ -
27	MS TOOL BOX	NO.	1		₹ -
28	Measuring tape	NO	1		₹ -
29	Tachometer	NO	1		₹ -
30	Double ended spanner	SET	1		₹ -
31	Gasket punch	NO.	1		₹ -
32	Center punch	NO.	1		₹ -
33	Scissors for sheet metal cutting	NO.	1		₹ -
34	Multimeter	NO.	1		₹ -
35	Anemometer	NO.	1		₹ -
36	Compound pressure gauge	NO.	1		₹ -
37	Slide wrench 8"	NO.	1		₹ -
38	Slide wrench 10"	NO.	1		₹ -
39	Slide wrench 6"	NO.	1		₹ -
40	Box spanner set	SET	1		₹ -
Total					₹ -
NOTES					
1	Above is the minimum list. Any other Tools and tackles required for HVAC system w.r.t. Mechanical, Electrical and C&I part shall also be provided by the Bidder as per system / customer requirement without any commercial & Delivery implication to BHEL.				
2	Supply of special tools and tackle including tool box required for operation, maintenance and overhauling of the system is in the scope of the bidder. Only yellow highlighted cells to be filled, rest values are derived from the variuos anneuxre sheets.				

APPENDIX-B Commissioning spares					
NAME OF PROJECT:			4X111 MW VISHNUGAD PIPALKOTI HEP		
NAME OF PACKAGE:			HVAC SYSTEM		
TECHNICAL SPECIFICATION No:			PE-TS-413-571-11000-A002 (Rev 01)		
SL NO	DESCRIPTION	UNIT	Qty	Unit Ex-Works Price (INR)	Total Ex-Works Price (INR)
1	Fan Belts (each type & size)	Set	1		₹ -
2	Pressure Gauge (for each type and range)	No.	1		₹ -
3	Temperature Gauge (for each type and range)	No.	1		₹ -
4	Filter (each size)	Set	1		₹ -
5	Compressor Oil	Ltr./Lot	1		₹ -
6	Refrigerant gas of each type in a non-returnable cylinders	Kg/Lot	1		₹ -
7	Wall chipping machine - 10kg	NO.	1		₹ -
8	FACTORY BUILT ASSEMBLIES (PCC/MCC/DB)				
8.1	BUSBAR SUPPORTS (HORIZONTAL)	1 SET OF 3	1		₹ -
8.2	PRIMARY ISOLATING CONTACTS (BUS SIDE)	1 SET OF 3	1		₹ -
8.3	PRIMARY ISOLATING CONTACTS (LOAD SIDE)	1 SET OF 3	1		₹ -
8.4	SECONDARY ISOLATING CONTACTS	1 SET OF 3	1		₹ -
8.5	GASKETS (EACH SIZE)	SET	1		₹ -
8.6	RESISTOR (EACH SIZE)	Nos.	12		₹ -
8.7	FIXED TERMINAL BLOCK (CONTROL)	1 WAY	1		₹ -
8.8	SHROUDS (ACB O/B TERMINALS)	SET	1		₹ -
8.9	WIRE (FOR SECONDARY WIRING)				
8.9.1	2.5 MM2	COIL	1		₹ -
8.9.2	1.5 MM2	COIL	1		₹ -
8.10	LUGS (FOR SECONDARY WIRING)	NOS.	12		₹ -
8.11	FERRULES Set*	PACKET	1		₹ -
9	AIR CIRCUIT BREAKER				
9.1	SHUNT TRIP COIL	NOS.	1		₹ -

SL NO	DESCRIPTION	UNIT	Qty	Unit Ex-Works Price (INR)	Total Ex-Works Price (INR)
9.2	SPRING CHARGING MOTOR	NOS.	1		₹ -
9.3	CLOSING RELEASE COIL	NOS.	1		₹ -

SL NO	DESCRIPTION	UNIT	Qty	Unit Ex-Works Price (INR)	Total Ex-Works Price (INR)
9.4	AUXILIARY SWITCH	NOS.	1		₹ -
9.5	SOLID STATE TRIP DEVICES (OR SPARES THEROF)	SET	1		₹ -
10	ISOLATING SWITCH (FOR EACH RATINGS)				
10.1	COMPLETE UNIT (EACH RATING)	NOS.	1		₹ -
10.2	MAIN CONTACT KIT	1 SET OF 3	1		₹ -
10.3	ARC CHAMBER	NOS.	1		₹ -
11	POWER CONTACTORS				
11.1	COMPLETE UNIT (EACH RATING)	NOS.	1		₹ -
11.2	CONTACTOR COIL (EACH SIZE)	NOS.	1		₹ -
11.3	CONTACTS KIT (MAIN)	1 SET OF 3	1		₹ -
11.4	CONTACTS KIT (AUXILIARY)	SETS OF STANDARD NUMBER OF PAIRS	1		₹ -
12	AUXILIARY CONTACTORS				
12.1	COMPLETE UNIT	NOS.	1		₹ -
12.2	CONTRACTOR COIL	NOS.	1		₹ -
13	HRC FUSE				
13.1	FUSE BASE (EACH RATING)	NOS.	1		₹ -
13.2	FUSE LINK (EACH RATING)	NOS.	2		₹ -
14	PUSH BUTTONS				
14.1	ACTUATOR CONTACTS	NOS.	1		₹ -
14.2	ELEMENTS	SET	1		₹ -
15	INDICATING LAMPS				
15.1	COMPLETE UNIT	NOS.	1		₹ -
15.2	LENS(ASSORTED)	NOS.	1		₹ -
16	OTHERS				

SL NO	DESCRIPTION	UNIT	Qty	Unit Ex-Works Price (INR)	Total Ex-Works Price (INR)
16.1	SELECTOR & CONTROL SWITCH (EACH TYPE)	NOS.	1		₹ -
16.2	CONTROL TRANSFORMER (EACH RATING)	NOS.	1		₹ -
16.3	MCB	ONE OF EACH RATING	1		₹ -
	Total				₹ -
NOTES					
1	Above is the minimum list. Any other commissioning spare required for HVAC System w.r.t. Mechanical, Electrical and C&I part shall also be provided by the Bidder as per system / customer requirement without any commercial & Delivery implication to BHEL. Only yellow highlighted cells to be filled, rest values are derived from the variuos anneuxre sheets.				

ANNEXURE - II LIST OF MANDATORY SPARES			
NAME OF PROJECT:		4X111 MW VISHNUGAD PIPALKOTI HEP	
NAME OF PACKAGE:		HVAC SYSTEM	
TECHNICAL SPECIFICATION No:		PE-TS-413-571-11000-A002 (Rev 01)	
S. No.	Description	QTY	Total Ex-Works Price (INR)
A	VENTILATION SYSTEM		
1	Fan Bearings	2 Sets for each type of fan	
2	Motor Bearings	2 Sets for each type of electric motor	
3	V-Belts / Flexible coupling	2 Sets for each type of fan	
4	Filter element	2 Sets of complete installed quantity	
5	Water Cooler	1 Set	
B	AC SYSTEM		
1	Ductable Split AC		
1.1	Fan-motor bearing for outdoor unit & indoor unit	2 Sets for each type of fan	
1.2	Filter	2 Sets of complete installed quantity	
1.3	Expansion valve	2 Sets of complete installed quantity	
2	Non Ductable Split AC		
2.1	Fan-motor bearing for outdoor unit	2 Sets for each type of fan	
2.2	Filter	2 Sets of complete installed quantity	
2.3	Expansion valve	2 Sets of complete installed quantity	
C	Electrical Spares		
1	Spare cable lengths of each type and size of power cables used	5% of the total cable length but at least one length equal to the longest cable length used in the scope.	
2	Cable racks, trays, supports, embedment plats, conduits etc.	5% of the total scope of quantities of each type & size	
3	Other Accessories:		
3.1	Termination kits for each type and size of cable	5% of the total scope of each accessory but not less than 2pcs. of each item	
3.2	Sealing ends / glands for each cable size	5% of the total scope of each accessory but not less than 2pcs. of each item	
3.3	Cable lugs for each type and size of cable	5% of the total scope of each accessory but not less than 2pcs. of each item	
3.4	Pre-fabricated straight through joints for each type and size of cables	5% of the total scope of each accessory but not less than 2pcs. of each item	
3.5	Cable marker ferrules	5% of the total scope of each accessory but not less than 2pcs. of each item	
3.6	Self adhesive marker	5% of the total scope of each accessory but not less than 2pcs. of each item	
3.7	Aluminium strips	5% of the total scope of each accessory but not less than 2pcs. of each item	

S. No.	Description	QTY	Total Ex-Works Price (INR)
3.8	Couplings, elbow plates, G.I. flats, brackets, rock bolts etc. (for each type)	5% of the total scope of each accessory but not less than 2pcs. of each item	
4	415V completely assembled ACBs	10% of each type but not less than one	
5	415 V MCCBs	10% of each type but not less than one	
6	240 V AC, MCBs	10% of each type but not less than one	
7	220V DC MCBs	10% of each type but not less than one	
8	Spares for ACBs -1No. Each of following		
i)	Main Contacts	5 sets of each rating	
ii)	Arcing contacts	5 sets of each rating	
iii)	Trip coils	10 nos. of each rating	
iv)	Closing coils	10 nos. of each rating	
v)	Spring charging mechanism complete with motors	6 nos. for each rating	
vi)	Closing & tripping springs	4 sets of each ratings	
vii)	Auxiliary contact assembly	6 nos. of each rating	
viii)	Local/Remote selector switch	4 Nos. of each rating	
9	Relays	2 nos. of each type	
10	CTs	2 set of each rating	
11	PTs	2 set of each rating	
12	Voltmeters	2 nos.	
13	Ammeters	6 nos.	
14	KWH meters	6 nos.	
15	Glass covers for relays with rubber gaskets	6 nos. of each size	
16	Glass covers for measuring instruments with rubber gaskets	6 nos. of each size	
17	Indicating lamps	200 nos.	
18	Indicating lamp assembly (W/O lamp)	200 nos.	
19	Glass dome covers of different colours	500 nos. of each colour	
20	Fuse units	100 sets of each rating	
21	Push buttons	100 nos. of each shade	
22	Contactors	12 nos. of each rating	
23	Timers	12 nos.	
24	Terminal blocks	50 nos.	
25	Brass screws	50 packets of each size	
26	Spring washers	50 packets of each size	
27	Ferrules	1000 nos. of each size	
28	Auto-manual switches	12 nos.	
29	Bus bar supporting insulators with fittings	30 nos.	
30	Strip heaters	12 nos.	
31	Thermostats for heaters	6 nos.	
D	C&I Spares		
1	Measuring transmitter of type/model used	02 sets of each type	
2	Sensors/transducers of type and model used	02 sets of each type	
3	Indicating instruments of type/model used	02 sets of each type	
4	Relays of type/model used	02 sets of each type	
5	Router/gateway with necessary firewall functionality	01 No. of each type	
6	Indicating Instruments	01 set of each type	
7	Control Switch, Selector Switches, Push Buttons, Indicating	20 % of each type	
8	Bulbs for indicating lamps	20 % of each type	
9	Heating resistor for thermostat for cubicle heater	02 sets of each type	
10	Terminals of each type	200 each type	
11	Fuses of each type	200 each type	
12	PLC		
12.1	Power Supply Module/Card		
12.1.1	Redundant Power Supply Assembly	10 % for each type and rating but minimum 1 No	
12.1.2	Power Supply Module	10 % for each type and rating but minimum 1 No	
12.1.3	Redundancy Module	10 % for each type and rating but minimum 1 No	
12.2	I/O Card (Each Type)		

S. No.	Description	QTY	Total Ex-Works Price (INR)
12.2.1	Analog Input Card 8 Channel	10 % for each type and range but minimum 2 No.	
12.2.2	Digital Input Card 16 Channel	10 % for each type and range but minimum 2 No.	
12.2.3	Digital Output Card 16 Channel	10 % for each type and range but minimum 2 No.	
12.2.4	Terminal Base, 3-Wire, Cage Clamp	10 % for each type and range but minimum 2 No.	
12.3	Network Card/ Switches		
12.3.1	Ethernet Switch (with multimode fiber port)	10 % for each type and but minimum 2 No.	
	TOTAL		₹ -
Notes:			
a)	Mandatory spares listed in Price Schedule are bare minimum requirement. In case any additional mandatory spares requirement is covered elsewhere in the tender specification apart from specified above, same shall be deemed to have been covered in bidder's scope of supply.		
b)	Wherever "set" is indicated, it shall mean complete replacement for one main equipment of similar size & capacity.		
c)	All Spares shall be supplied as per the requirement of the specifications. In case any spare indicated in the specification is "not applicable" for particular equipment, then suitable applicable alternate spare has been offered / shall be supplied by the bidder without any financial implication."		
d)	Bidder to write "Quoted / Not Applicable" against all items. Any item which is quoted as "not applicable" by the bidder in the above list and is found to be "applicable" at a later date shall be supplied by the bidder without any commercial and delivery implication.		
e)	For quantities indicated in percentage, fractions are to be rounded-off to next higher integer.		
f)	Any cell left blank in the unpriced schedule shall be treated as "Quoted" and is included in total price. Only yellow highlighted cells to be filled, rest values are derived.		
g)	Bidder to note that even though there may be some spares which are repetitive at various sl.no mentioned above, bidder to ensure that prices are quoted against each sl.no. In case any cell is left blank in the unpriced schedule shall be treated as "quoted" and included in total price.		
h)	List of above mandatory spares shall be finalized during detail engineering. In case of deletion/increase in quantity of any particular item during detail engineering, prices quoted by the bidder against such item shall be reduced/adjusted (wrt unit rate quoted by the bidder) from the overall prices quoted by the bidder.		

ANNEXURE-III ANNUAL MAINTENANCE CONTRACT					
NAME OF PROJECT:			4X111 MW VISHNUGAD PIPALKOTI HEP		
NAME OF PACKAGE:			HVAC SYSTEM		
TECHNICAL SPECIFICATION No:			PE-TS-413-571-11000-A002 (Rev 01)		
SL NO	DESCRIPTION	UNIT	Qty	Unit Price (INR)	Total Price (INR)
1*	Total lump sum price for visits (should include travel expenses to/fro site/intermediary stay for maintenance services for the total scope defined as per BHEL NIT & tender technical specification, amendment & agreements till placement of order for Annual Maintenance Service for HVAC equipment as per technical specification of HVAC system.	numer of visits*	4		₹ -
2*	Total lump sum prices for Maintenance Services consisting of manpower as per BHEL NIT & tender technical specification, amendments & agreements till placement of order for Annual Maintenance Service for HVAC equipment as per technical specification of HVAC system.	days*	28		₹ -
	Total				₹ -
NOTES					
1	No. of days at site defines at S.No. 2* above shall be calcualted on the basis of presence at site (travel time is excluded).				
2	No. of Visits and days for Maintenance Services for HVAC equipment may vary depending on site requirement. Bidder to replace the items damages which are already covered under warranty as defined under supply part and detail as mentioned in BHEL NIT & tender technical specification, amendment & agreements till placement of order. Any variation in no. of visits & no. of days shall be exercised based on unit rate arrived form S. NO. 1* & 2* above respectively. Only yellow highlighted cells to be filled, rest values are derived.				