

E-TENDER SPECIFICATIONS

BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239

S. No.	Package	E- TENDER SPECIFICATION NUMBER
01	Package-I	BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238
02	Package-II	BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-II/2239

FOR

PACKAGE-I: All Civil and Architectural work of RC Foundations, RC Circular Hollow Columns and RC Top Slab over RC Columns supporting Air Cooled Condenser Fan Deck (ACC) - approx. 30nos, Complete Civil & Architectural works of Staircase and Elevator Structure of ACC including Lift Pit and Machine Room of Elevator (Unit-1&2), PMCC Building (Unit-1), Duct supporting pedestals and foundation (Unit-1&2), Vacuum pump foundation (Unit-1&2) and Paving in ACC block area only for Unit-(1&2) at **3x800MW PVUNL Patratu STPS, Jharkhand.**

and

PACKAGE-II: All Civil and Architectural work of RC Foundations, RC Circular Hollow Columns and RC Top Slab over RC Columns supporting Air Cooled Condenser Fan Deck (ACC) - approx. 30nos, Complete Civil & Architectural works of Staircase and Elevator Structure of ACC including Lift Pit and Machine Room of Elevator (Unit-3), PMCC Building (Unit-2&3), Duct supporting pedestals and foundation (Unit-3), Vacuum pump foundation (Unit-3) and Paving in ACC block area only for (Unit-3) at **3x800MW PVUNL Patratu STPS, Jharkhand.**

VOLUME I – TECHNICAL BID

THIS TENDER SPECIFICATION CONSISTS OF:

Notice Inviting Tender	
Volume-IA	Technical Conditions of Contract
Volume-IB	Special conditions of Contract
Volume-IC	General conditions of Contract
Volume-ID	Forms & Procedures
Volume-IE	Technical Specification and Plot Plan
Volume II	Price Bid



Bharat Heavy Electricals Limited
(A Government of India Undertaking)
Power Sector - Western Region

345-Kingsway, Nagpur-440001

CONTENTS		
Volume No	Description	Hosted in website bhel.com (Briefly) and detailed in BHEL e-Procurement Portal as files titled
NIL	Tender Specification Issue Details	(Part of <u>Vol-IA-2238-2239</u>)
NIL	Notice Inviting Tender	(Part of <u>Vol-IA-2238-2239</u>)
I-A	Technical Conditions of Contract	Vol-I-A-2238-2239
I-B	Special Conditions of Contract	Vol-I-BCD-2238-2239
I-C	General Conditions of Contract	(Part of Vol-I-BCD-2238-2239)
I-D	Forms & Procedures	(Part of Vol-I-BCD-2238-2239)
I-E	Technical Specification and Plot Plan	Vol-IE-2238-2239
II	Price Bid Specification as specified in E-Procurement Portal	Volume-II-2238

E-TENDER SPECIFICATIONS

BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239

S. No.	Package	E- TENDER SPECIFICATION NUMBER
01	Package-I	BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238
02	Package-II	BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-II/2239

FOR

PACKAGE-I: All Civil and Architectural work of RC Foundations, RC Circular Hollow Columns and RC Top Slab over RC Columns supporting Air Cooled Condenser Fan Deck (ACC) - approx. 30nos, Complete Civil & Architectural works of Staircase and Elevator Structure of ACC including Lift Pit and Machine Room of Elevator (Unit-1&2), PMCC Building (Unit-1), Duct supporting pedestals and foundation (Unit-1&2), Vacuum pump foundation (Unit-1&2) and Paving in ACC block area only for Unit-(1&2) at **3x800MW PVUNL Patratu STPS, Jharkhand.**

and

PACKAGE-II: All Civil and Architectural work of RC Foundations, RC Circular Hollow Columns and RC Top Slab over RC Columns supporting Air Cooled Condenser Fan Deck (ACC) - approx. 30nos, Complete Civil & Architectural works of Staircase and Elevator Structure of ACC including Lift Pit and Machine Room of Elevator (Unit-3), PMCC Building (Unit-2&3), Duct supporting pedestals and foundation (Unit-3), Vacuum pump foundation (Unit-3) and Paving in ACC block area only for (Unit-3) at **3x800MW PVUNL Patratu STPS, Jharkhand.**

EARNEST MONEY DEPOSIT: Refer Notice Inviting Tender

LAST DATE FOR Refer Notice Inviting Tender
TENDER SUBMISSION

THESE TENDER SPECIFICATION DOCUMENTS CONTAINING VOLUME-I AND VOLUME- II ARE ISSUED TO:

M/s.

.....

PLEASE NOTE:
THESE TENDER SPECS DOCUMENTS ARE NOT TRANSFERABLE.

For Bharat Heavy Electricals Limited

AGM (Purchase)

Place: Nagpur

Date:

2238-
2239

NOTICE INVITING TENDER

Bharat Heavy Electricals Limited



BHEL PSWR
Notice Inviting Tender

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239

Page 5 of 108

Date: 13/12/2019

NOTICE INVITING E-TENDER (NIT)

NOTE: BIDDER MAY DOWNLOAD/ UPLOAD THE TENDER/ OFFER FROM/ON BHEL E-PROCUREMENT PORTAL → <https://bhel.abcprocure.com>

To,

Dear Sir/Madam,

Sub : NOTICE INVITING E-TENDER

Offers are invited in two part bid system from reputed & experienced bidders (meeting [PRE QUALIFICATION CRITERIA](#) as mentioned in Annexure-I) through **E-procurement portal → <https://bhel.abcprocure.com>** only for the subject job by the undersigned on behalf of BHARAT HEAVY ELECTRICALS LIMITED as per the tender documents. Following points relevant to the tender may please be noted and complied with:

Note: **The bidder should respond by submitting their offer online only in our e-Procurement platform at <https://bhel.abcprocure.com>. No Hard copy bid/ bids through email/ fax shall be accepted.**

1.0 Salient Features of NIT

S No.	ISSUE	DESCRIPTION
i	E-TENDER NUMBER	BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239
ii	Broad Scope of job	PACKAGE-I: All Civil and Architectural work of RC Foundations, RC Circular Hollow Columns and RC Top Slab over RC Columns supporting Air Cooled Condenser Fan Deck (ACC) - approx. 30nos, Complete Civil & Architectural works of Staircase and Elevator Structure of ACC including Lift Pit and Machine Room of Elevator (Unit-1&2), PMCC Building (Unit-1), Duct supporting pedestals and foundation (Unit-1&2), Vacuum pump foundation (Unit-1&2) and Paving in ACC block area only for Unit-(1&2) at 3x800MW PVUNL Patratu STPS, Jharkhand. and PACKAGE-II: All Civil and Architectural work of RC Foundations, RC Circular Hollow Columns and RC Top Slab over RC Columns supporting Air Cooled Condenser Fan Deck (ACC) - approx. 30nos, Complete Civil & Architectural works of Staircase and Elevator Structure of ACC including Lift Pit and Machine Room of Elevator (Unit-3), PMCC Building (Unit-2&3), Duct supporting pedestals and foundation (Unit-3), Vacuum pump foundation (Unit-3) and Paving in ACC block area only for (Unit-3) at 3x800MW PVUNL Patratu STPS, Jharkhand.
iii	DETAILS OF TENDER DOCUMENT	
A	Volume-IA	Technical Conditions of Contract (TCC) consisting of Scope of work, Technical Specification, Drawings, Procedures, Bill of Quantities, Terms of payment, etc. Applicable
B	Volume-IB	Special Conditions of Contract (SCC) Applicable
C	Volume-IC	General Conditions of Contract (GCC) Applicable
D	Volume-ID	Forms and Procedures Applicable
E	Volume-IE	Technical Specification and Plot Plan Applicable
F	Volume-II	Price Bid as specified in E-Procurement Portal Applicable

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Website: www.bhel.com

BHEL PSWR
Notice Inviting Tender

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239

Page 6 of 108

S No.	ISSUE	DESCRIPTION	
iv	Issue of Tender Documents	From https://bhel.abcprocure.com (Tender documents will be available for downloading from BHEL e-Procurement website till due date of submission) Brief information of the tender shall also be available at Central Public Procurement portal (https://eprocure.gov.in) and BHEL website (www.bhel.com).	Applicable
v	DUE DATE & TIME OF OFFER SUBMISSION	Date: 03/01/2020, Time: 15.00 Hrs Place: on E-Tender Portal https://bhel.abcprocure.com • Offer to be submitted online only through e-procurement Portal	Applicable
vi	OPENING OF TENDER (Techno-Commercial Bid)	Date: 03/01/2020, Time: 16.00 Hrs Notes: (1) In case the due date of opening of tender becomes a non-working day, then the due date & time of offer submission and opening of tenders get extended to the next working day. (2) This tender being an e-tender, it shall be opened online only through the E-Procurement Portal. Participating bidders may witness the Opening online only.	Applicable
vii	EMD AMOUNT	Rs. 46,00,000/- (Rupees Forty-Six Lakhs only) [To be submitted in the form and manner as mentioned below] Important Note: Bidders kindly to take note that EMD (Earnest Money Deposit) shall be furnished by MSE bidders as well, as per the amount and procedure indicated in the NIT/GCC.	Applicable
viii	COST OF TENDER	Rs 2000/- [To be submitted in the form and manner as mentioned below]	Applicable
ix	LAST DATE FOR SEEKING CLARIFICATION	Three days before the due date of offer submission. Along with soft version also, addressing to undersigned & to others as per contact address given below.	Applicable
x	SCHEDULE OF Pre Bid Discussion (PBD)	23/12/2019, 11.00 Hrs at BHEL PSWR HQ Nagpur	Applicable
xi	INTEGRITY PACT & DETAILS OF INDEPENDENT EXTERNAL MONITOR (IEM)	Shri Arun Chandra Verma, IPS (Retd.) and Shri Virendra Bahadur Singh, IPS (Retd.) (Please refer Annexure-04 "Important Information" of NIT for more details)	Applicable
xii	Latest updates	Latest updates on the important dates, Amendments, Correspondences, Corrigenda, Clarifications, Changes, Errata, Modifications, Revisions, etc to Tender Specifications will be hosted in BHEL webpage (www.bhel.com)-->Tender Notifications →View Corrigendum), Central Public Procurement portal (https://eprocure.gov.in) & on e-tender portal https://bhel.abcprocure.com and not in the newspapers. Bidders to keep themselves updated with all such information.	

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BHEL PSWR
Notice Inviting Tender

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239

Page 7 of 108

- 2.0 The offer shall be submitted as per the instructions of tender document and as detailed in this NIT. Bidders to note specifically that all pages of tender document, including these NIT pages of this particular tender together with subsequent correspondences shall be submitted by them, duly **digitally** signed on each page, as part of offer. **Rates/Price including discounts/rebates, if any, mentioned anywhere/in any form in the techno-commercial offer other than the Price Bid, shall not be entertained.**
- 3.0 Unless specifically stated otherwise, bidder shall remit cost of tender and courier charges if applicable, in the form of Demand Draft drawn in favour of Bharat Heavy Electricals Ltd, payable at Power Sector Regional HQ at Nagpur issuing the Tender, along with techno-commercial offer. Bidder may also choose to deposit the Tender document cost by cash at the Cash Office as stated above against sl no iv of 1, on any working day. Copy of Cash receipt or the proof of Demand Draft duly **digitally** signed is to be uploaded with the Techno Commercial offer **on e-tender portal <https://bhel.abcpocure.com>**. However Original Demand Draft shall be sent to the officer inviting tender within a reasonable time failing which the offer is liable to be rejected. Sale of tender Documents shall not take place on National Holidays, holidays declared by Central or State Governments and BHEL PS HQ at _____, Sundays and second/ last Saturdays.
- 4.0 Unless specifically stated otherwise, bidder shall deposit EMD as per the provisions in General Conditions of Contract Clause no. 1.9.1. In case of remittance of EMD through **Demand Draft/Pay Order**, same shall be in favour of **Bharat Heavy Electricals Ltd**, payable at Nagpur. **In case of remittance of EMD through Bank Guarantee (for the balance EMD amount in excess of Rs 2 Lakhs) OR through FDR**, refer General Conditions of Contract Clause no. 1.9.1(iv). Proforma of Bank Guarantee for Earnest Money shall be as provided in Vol-ID "FORMS & PROCEDURES". For other details and for 'One Time EMD' please refer General Conditions of Contract.

In case of remittance of EMD through Electronic Fund Transfer, Bank account details of BHEL PSWR to be used is as below: -

NAME OF THE COMPANY	BHARAT HEAVY ELECTRICALS LTD
ADDRESS OF THE COMPANY	SHREE MOHINI COMPLEX 345, KINGSWAY,NAGPUR
NAME OF BANK	STATE BANK OF INDIA
NAME OF BANK BRANCH AND BRANCH CODE	SBI,KINGSWAYBRANCH,BRANCH CODE-00432
CITY	NAGPUR
ACCOUNT NUMBER	31380025872
ACCOUNT TYPE	CURRENT A/C
IFSC CODE OF THE BANK BRANCH	SBIN0000432
MICR CODE OF THE BANK BRANCH	440002002

Above bank account, details can be used for remittance of Security Deposit as well by the successful tenderer.

Procedure for Earnest Money Deposit					
Description/ Mode of Submission	EFT	Cash	DD/Pay Order	FDR (Refer GCC clause no 1.9.1(iv) for FDR)	Bank Guarantee (Refer GCC clause no 1.9.1(iv) for Acceptable Portion of EMD in the Form of BG)
Proof of EMD along with the offer	Receipt of Amount Transferred	Recei pt of cash	Scan Copy has to be uploaded	Scan Copy has to be uploaded	Scan Copy of BG has to be uploaded.

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BHEL PSWR
Notice Inviting Tender

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239

Page 8 of 108

Procedure for Earnest Money Deposit					
Submission of EMD to BHEL PSWR, Nagpur	into BHEL Account	depos it at BHEL office	Original DD/ Pay order to be sent through Registered Post	The Original FDR to be sent through Courier/Post to BHEL PSWR Nagpur.	The Original Bank Guarantee/any extensions /amendments shall be sent directly by the Bank to BHEL under Registered Post (Acknowledgement Due), addressed to the Purchase Department, BHEL PSWR, Nagpur.

~~Copy of One Time EMD Certificate or~~ The proof of Demand Draft/ Payorder/FDR or BG or receipt of Electronic Fund Transfer duly **digitally** signed is to be uploaded with the Techno Commercial offer on '**e-tender portal**' → <https://bhel.abcpurchase.com>. In case of Demand Draft/ Payorder/FDR/BG, Original Demand Draft/ Payorder/FDR/BG shall be sent to the officer inviting tender within a reasonable time failing which the offer is liable to be rejected.

5.0 Procedure for Submission of Tenders:

Procedure for Submission of Tender is available in the "[Bidder Manual for BHEL Bidders](https://bhel.abcpurchase.com)" at E-tender portal <https://bhel.abcpurchase.com>. Terms and conditions mentioned therein shall form integral part of the NIT and bidders shall abide by the same.

a) Hardware and Software requirements for participating in e-tender:

- ❖ Please refer the website for the minimum system requirements and setting document for Bidders under the link: <https://bhel.abcpurchase.com>

b) Digital Signature

- ❖ To know the procedure for obtaining Digital Signature Certificate (DSC), suppliers who are not having the DSC are advised to visit our website www.bhel.com → Tender Notifications → Sample Checklist.

c) M/s E-Procurement Technologies Limited Helpdesk Contacts:

During normal business hours, helpline maintained by the service provider e-Procurement Technologies Limited is available for clarifying any doubts of supplier/s. The helpline numbers are provided in the e-procurement website.

- ❖ Mr. Swapnil Hamilton, Support Executive, Ph: +91 7940270549, e-mail ID: swapnil.h@eptl.in
- ❖ Mr. Hardik Oza, Support Executive, Ph: +91 7940270560, e-mail ID: hardik.oza@eptl.in
- ❖ Mr. Ankur Bhatt, Support Executive, Ph: +91 7940270590, e-mail ID: ankur.bhatt@eptl.in
- ❖ Mr. Prashant, Asst. Manager – Implementation & Support, Ph: +91 7940270545, e-mail ID: prashant@eptl.in

Note

- i. **Offers/tenders submitted in the E-tender portal shall only be considered for further evaluation. Offers sent by FAX / E-mail / any mode other than E-tender would not be entertained.**

The Tenderers must submit their Tenders, as detailed below:

- PART-I consisting of 'PART-I A (Techno Commercial Bid)' & 'PART-I B (EMD/COST of TENDER)'
- PART-II (Price Bid)

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BHEL PSWR
Notice Inviting Tender

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239

Page 9 of 108

The contents of the offer/tender are as given below. **(All Documents to be digitally signed and uploaded in E-tender Portal)**

SN	Description	Remarks
	Part-I A	
i.	Covering letter/Offer forwarding letter of Tenderer (in the techno commercial compliance sheet provided)	
ii.	Duly filled-in 'No Deviation Certificate' as per prescribed format. Note: <ol style="list-style-type: none"> In case of any deviation, the same should be submitted separately, indicating respective clauses of tender against which deviation is taken by bidder. It shall be specifically noted that deviation recorded elsewhere shall not be entertained. BHEL reserves the right to accept/reject the deviations without assigning any reasons, and BHEL decision is final and binding. <ol style="list-style-type: none"> In case of acceptance of the deviations, appropriate loading shall be done by BHEL In case of unacceptable deviations, BHEL reserves the right to reject the tender 	
iii.	Supporting documents/ annexure/ schedules/ drawing etc as required in line with Pre-Qualification criteria. It shall be specifically noted that a credential certificates issued by clients shall distinctly bear the name of organization, contact phone no, FAX no, etc.	
iv.	All Amendments/Correspondences/Corrigenda/Clarifications/Changes/Errata etc. pertinent to this NIT.	
v.	Integrity Pact Agreement (Duly signed by the authorized signatory)	If applicable
vi.	Duly filled-in annexures, formats etc. as required under this Tender Specification/NIT	
vii.	Notice inviting Tender (NIT)	
viii.	Volume – I A : Technical Conditions of Contract (TCC) consisting of Scope of work, Technical Specification, Drawings, Procedures, Bill of Quantities, Terms of payment, etc	
ix.	Volume – I B : Special Conditions of Contract (SCC)	
x.	Volume – I C : General Conditions of Contract (GCC)	
xi.	Volume – I D : Forms & Procedures	
xii.	Volume - IE: Technical Specification and Plot Plan	
xiii.	Volume – II (UNPRICED – without disclosing rates/price, but mentioning only 'QUOTED' or 'UNQUOTED' against each item	
xiv.	Any other details preferred by bidder with proper indexing.	

	PART-I B	
i.	1. Earnest Money Deposit (EMD) in the form as indicated in this Tender OR Documentary evidence for 'One Time EMD' with the Power Sector Region of BHEL floating the Tender 2. Cost of Tender (Demand Draft or copy of Cash Receipt as the case may be)	

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Website: www.bhel.com

BHEL PSWR
Notice Inviting Tender

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239

Page 10 of 108

	Note: Refer Clause No-3 and 4 of NIT for further details	
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	PART-II	
ii	Volume II – PRICE BID (Duly Filled in Schedule of Rates – rate/price to be entered in words as well as figures)	

- **SPECIAL NOTE: All documents/ annexures to be submitted should be uploaded in respective places in the E-Tender portal as per the list mentioned given in this NIT. BHEL shall not be responsible for in-complete documents.**

6.0 Void

7.0 Deviation with respect to tender clauses and additional clauses/suggestions in Techno-commercial bid / Price bid shall NOT be considered by BHEL. Bidders are requested to positively comply with the same.

8.0 BHEL reserves the right to accept or reject any or all Offers without assigning any reasons thereof. BHEL also reserves the right to cancel the Tender wholly or partly without assigning any reason thereof. Also BHEL shall not entertain any correspondence from bidders in this matter (except for the refund of EMD).

9.0 Assessment of Capacity of Bidders:

Bidder's capacity for executing the job under tender shall be assessed 'LOAD' wise and 'PERFORMANCE' wise as per the following:

- I. **LOAD:** Load takes into consideration **ALL** the contracts of the Bidder under execution with BHEL Regions, irrespective of whether they are similar to the tendered scope or not. The cut off month for reckoning 'Load' shall be the 3rd Month preceding the month corresponding to the 'latest date of bid submission', in the following manner -
(**Note:** For example, if latest bid submission is in Jan 2017, then the 'load' shall be calculated up to and inclusive of Oct 2016)

Total number of Packages in hand = Load (P)

Where 'P' is the sum of all unit wise identified packages (refer table-1) under execution with BHEL Regions as on the cut off month defined above, including packages yet to be commenced, excepting packages which are on Long Hold.

- II. **PERFORMANCE:** Here 'Monthly Performance' of the bidder for all the packages (under execution/ executed during the 'Period of Assessment' in all Power Sector Regions of BHEL) **SIMILAR** to the packages covered under the tendered scope, excepting packages not commenced shall be taken into consideration. The 'Period of Assessment' shall be 6 months preceding and including the cut off month. The cut off month for reckoning 'Period of Assessment' shall be the 3rd Month preceding the month corresponding to 'latest date of bid submission', in the following manner:

(**Note:** For example, if 'latest date of bid submission' is in Jan 2017, then the 'performance' shall be assessed for a 6 months' period up to and inclusive of Oct 2016 (i.e. from May 2016 to Oct 2016), for all the unit wise identified packages (refer Table I))

- i). **Calculation of Overall 'Performance Rating' for 'Similar Package/Packages' for the tendered scope under execution at Power Sector Regions for the 'Period of Assessment':**

This shall be obtained by summing up the 'Monthly Performance Evaluation' scores obtained by the bidder in all Regions for all the similar Package/packages', divided by the total number of Package months for which evaluation should have been done, as per procedure below:

BHEL PSWR
Notice Inviting Tender

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239

Page 11 of 108

- a) $P_1, P_2, P_3, P_4, P_5, \dots, P_N$ etc. be the packages (under execution/ executed during the 'Period of Assessment' in all Regions of BHEL) **SIMILAR** to the packages covered under the tendered scope, excepting packages not commenced. Total number of similar packages for all Regions = P_T (i.e. $P_T = P_1 + P_2 + P_3 + P_4 + \dots + P_N$)
- b) Number of Months ' T_1 ' for which 'Monthly Performance Evaluation' as per relevant formats, should have been done in the 'Period of Assessment' for the corresponding similar package P_1 . Similarly T_2 for package P_2 , T_3 for package P_3 , etc. for the tendered scope. Now calculate cumulative total months ' T_T ' for total similar Packages ' P_T ' for all Regions (i.e. $T_T = T_1 + T_2 + T_3 + T_4 + \dots + T_N$)
- c) Sum ' S_1 ' of 'Monthly Performance Evaluation' Scores ($S_{1-1}, S_{1-2}, S_{1-3}, S_{1-4}, S_{1-5} \dots S_{1-T_1}$) for similar package P_1 , for the 'period of assessment' ' T_1 ' (i.e. $S_1 = S_{1-1} + S_{1-2} + S_{1-3} + S_{1-4} + S_{1-5} + \dots + S_{1-T_1}$). Similarly, S_2 for package P_2 for period T_2 , S_3 for package P_3 for period T_3 etc. for the tendered scope for all Regions. Now calculate cumulative sum ' S_T ' of 'Monthly Performance Evaluation' Scores for total similar Packages ' P_T ' for all Regions (i.e. ' $S_T = S_1 + S_2 + S_3 + S_4 + S_5 + \dots + S_N$ ')
- d) **Overall Performance Rating ' R_{BHEL} ' for the Similar Package/Packages** (under execution/ executed during the 'Period of Assessment') in all the Power Sector Regions of BHEL

$$= \frac{\text{Aggregate of Performance scores for all similar packages in all the Regions}}{\text{Aggregate of months for each of the similar packages for which performance should have been evaluated in all the Regions}}$$

$$= \frac{S_T}{T_T}$$

- e) Bidders to note that the risk of non-evaluation or non-availability of the 'Monthly Performance Evaluation' reports as per relevant formats is to be borne by the Bidder.
- f) Table showing methodology for calculating 'a', 'b' and 'c' above

Sl. No.	Item Description	Details for all Regions							Total
(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)
1	Similar Packages for all Regions → (under execution/ executed during period of assessment)	P_1	P_2	P_3	P_4	P_5	...	P_N	Total No. of similar packages for all Regions = P_T i.e. Sum (Σ) of columns (iii) to (ix)

BHEL PSWR
Notice Inviting Tender

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239

Page 12 of 108

Sl. No.	Item Description	Details for all Regions							Total
(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)
2	Number of Months for which 'Monthly Performance Evaluation' as per relevant formats should have been done in the 'period of assessment' for corresponding Similar Packages (as in row 1)	T ₁	T ₂	T ₃	T ₄	T ₅	...	T _N	Sum (Σ) of columns (iii) to (ix) = T _T
3	Monthly performance scores for the corresponding period (as in Row 2)	S ₁₋₁ , S ₁₋₂ , S ₁₋₃ , S ₁₋₄ , ... S _{1-T1}	S ₂₋₁ , S ₂₋₂ , S ₂₋₃ , S ₂₋₄ , ... S _{2-T2}	S ₃₋₁ , S ₃₋₂ , S ₃₋₃ , S ₃₋₄ , ... S _{3-T3}	S ₄₋₁ , S ₄₋₂ , S ₄₋₃ , S ₄₋₄ , ... S _{4-T4}	S ₅₋₁ , S ₅₋₂ , S ₅₋₃ , S ₅₋₄ , ... S _{5-T5} S _{N-TN}	S _{N-1} , S _{N-2} , S _{N-3} , S _{N-4} , S _{N-TN}	-----
4	Sum of Monthly Performance scores of the corresponding Package for the corresponding period (as in row-3)	S ₁	S ₂	S ₃	S ₄	S ₅	...	S _N	Sum (Σ) of columns (iii) to (ix) = S _T

- ii). Calculation of Overall 'Performance Rating' (R_{BHEL}) in case at least 6 evaluation scores for 'similar Package/Packages' for the tendered scope ARE NOT AVAILABLE, during the 'Period of Assessment':

This shall be obtained by summing up the 'Monthly Performance Evaluation' scores obtained by the bidder in all Regions for ALL the packages, divided by the total number of Package months for which evaluation should have been done. 'R_{BHEL}' shall be calculated subject to availability of 'performance scores' for at least 6 'package months' in the order of precedence below:

- 'Period of Assessment' i.e. 6 months preceding and including the cut-off month
- 12 months preceding and including the cut-off month
- 24 months preceding and including the cut-off month

In case, R_{BHEL} cannot be calculated as above, then Bidder shall be treated as 'NEW VENDOR'. Further eligibility and qualification of this bidder shall be as per definition of 'NEW VENDOR' described in 'Explanatory Notes'.

- iii). Factor "L" assigned based on Overall Performance Rating (R_{BHEL}) at Power Sector Regions:

Sl. no.	Overall Performance Rating (R _{BHEL})	Corresponding value of 'L'
1	=60	NA
2	> 60 and ≤ 65	0.4
3	> 65 and ≤ 70	0.35
4	> 70 and ≤ 75	0.25
5	> 75 and < 80	0.2
6	≥ 80	NA

BHEL PSWR
Notice Inviting Tender

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239

Page 13 of 108

III. 'Assessment of Capacity of Bidder':

'Assessment of Capacity of Bidder' is based on the Maximum number of packages for which a vendor is eligible, considering the performance scores of similar packages, as below:

Max number of packages $P_{Max} = (R_{BHEL} - 60)$ divided by corresponding value of 'L', i.e. $(R_{BHEL} - 60)/L$

Note:

- i). In case the value of P_{Max} results in a fraction, the value of P_{Max} is to be rounded off to next whole number
- ii). For $R_{BHEL} = 60$, $P_{Max} = '1'$
- iii). For $R_{BHEL} \geq 80$, there will be no upper limit on P_{Max}

The Bidder shall be considered 'Qualified' as per 'Assessment of Capacity of Bidder' for the subject Tender if $P \leq P_{Max}$
(Where P is calculated as per clause 'I' above)

Note: For the transition period of 1 year (i.e. for all the NITs floated between 11th May 2019 to 10th May 2020), in addition to above, 'Assessment of Capacity of Bidder' shall also be calculated considering 'performance scores' till 36 months as per Sl. no II ii).

Higher of the results obtained out of both shall be considered for 'Assessment of Capacity of Bidder'.

IV. Explanatory note:

- i). Similar package means Boiler or ESP or Piping or Turbine or Civil or Structure or Electrical or C&I etc. at the individual level irrespective of rating of Plant and irrespective of whether the subject tender is a single package or as part of combined/composite packages. Normally Boiler, ESP, Piping, Turbine, Electrical, C&I, Civil, Structure etc. is considered individual level of package. For example, in case the tendered scope is a Boiler Vertical Package comprising of Boiler, ESP and Power Cycle Piping (i.e. the 'identified packages as per Table-1 below), the 'PERFORMANCE' part against sl.no. II above, needs to be evaluated considering all the identified packages (i.e. Boiler, ESP and Power Cycle Piping) and finally the Bidder's capacity to execute the tendered scope is assessed in line with III above.

- ii). Identified Packages (Unit wise)

Table-1

Civil	Electrical and C&I	Mechanical
i). Enabling works ii). Pile and Pile Caps iii). Civil Works including foundations iv). Structural Steel Fabrication & Erection v). Chimney vi). Cooling Tower vii). Others (Civil)	i). Electrical ii). C&I iii). Others (Elect. and C&I)	i). Boiler & Aux (All types including CW Piping if applicable) ii). Power Cycle Piping/Critical Piping iii). ESP iv). LP Piping v). Steam Turbine Generator set & Aux vi). Gas Turbine Generator set & Aux vii). Hydro Turbine Generator set & Aux

BHEL PSWR
Notice Inviting Tender

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239

Page 14 of 108

		viii). Turbo Blower (including Steam Turbine) ix). Material Management x). Others (Mechanical)
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iii). Bidders who have not been evaluated for at least six package months in the last 24 months preceding and including the Cut-off month in the online BHEL system for contractor performance evaluation in BHEL PS Regions, shall be considered “NEW VENDOR”.

A ‘NEW VENDOR’ shall be considered qualified subject to satisfying all other tender conditions.

A ‘NEW VENDOR’ if awarded a job (of package/packages identified under this clause) shall be tagged as “FIRST TIMER” on the date of first LOI from BHEL.

The “FIRST TIMER” tag shall remain till completion of all the contracts against which vendor has been tagged as First Timer or availability of 6 evaluation scores within last 24 months preceding and including the Cut-off month in the online BHEL system for contractor performance evaluation in BHEL PS Regions.

A Bidder shall not be eligible for the next job as long as the Bidder is tagged as “FIRST TIMER” excepting for the Tenders which have been opened on or before the date of the bidder being tagged as ‘FIRST TIMER’.

After removal of ‘FIRST TIMER’ tag, the Bidder shall be considered ‘QUALIFIED’ for the future tenders subject to satisfying all other tender conditions including ‘Assessment of Capacity of Bidders’.

iv). Consequent upon applying the criteria of ‘Assessment of Capacity of Bidders’ detailed above on all the bidders qualified against Technical and Financial Qualification criteria, if the number of qualified bidders reduces to less than four, then for further processing of the Tender, BHEL at its discretion reserves the right to also consider the bidders who are “not qualified” as per criteria of ‘Assessment of Capacity of Bidders’ and for this, procedure described in following three options shall be followed:

- a) All the bidders having Overall Performance Rating (R_{BHEL}) ≥ 60 shall be considered qualified against criteria of ‘Assessment of Capacity of Bidders’.
- b) If even after using option “a”, the number of qualified bidders remains less than four, then in addition to bidders considered as per option “a”, “First timer” bidders having average of available performance scores ≥ 60 upto and including the Cut Off month shall also be considered qualified against criteria of ‘Assessment of Capacity of Bidders’.
- c) If even after using option “a” and “b”, the number of qualified bidders remains less than four, then in addition to bidders considered as per option “a” and “b”, “First timer” bidders for whom no performance score is available in the system upto and including the Cut Off month, shall also be considered qualified against criteria of ‘Assessment of Capacity of Bidders’.

Note:- In case, the number of bidders qualified against Technical and Financial Qualification criteria itself is less than four, then all bidders (a)- having Overall Performance Rating (R_{BHEL}) ≥ 60 , (b)- “First timer” bidders having average of available performance scores ≥ 60 upto and including the Cut Off month, (c)- “First timer” bidders for whom no performance score is available in the system upto and including the Cut Off month, shall be considered qualified against criteria of ‘Assessment of Capacity of Bidders’ for further processing of tender.

v). ‘Under execution’ shall mean works in progress as per the following:

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BHEL PSWR
Notice Inviting Tender

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239

Page 15 of 108

-
- a. Up to execution of 90% of anticipated Contract Value in case of Civil, MM, Structural and Turbo Blower Packages
 - b. Up to Steam Blowing in case of Boiler/ESP/Piping Packages
 - c. Up to Synchronization in all Balance Packages

Note: BHEL at its discretion can extend (or reduce in exceptional cases in line with Contract conditions) the period defined against (a), (b) and (c) above, depending upon the balance scope of work to be completed.

- vi). Contractor shall provide the latest contact details i.e. mail-ID and Correspondence Address to SCT Department, so that same can be entered in the Contractor Performance Evaluation System, and in case of any change/discrepancy same shall be informed immediately. Login Details for viewing scores in Contractor Performance Evaluation System shall be provided to the Contractor by SCT Department.
 - vii). Performance Evaluation for Activity Month shall be completed in Evaluation Month (i.e. month next to Activity Month) or in rare cases in Post Evaluation Month (i.e. month next to Evaluation Month) after approval from Competent Authority. In case scores are not acceptable, Contractor can submit Review Request to GM Site/ GM Project latest by 25th of Evaluation Month or 3 days after approval of score, whichever is later. However, acceptance/rejection of 'Review Request' solely depends on the discretion of GM Site/GM Project. After acceptance of Review Request, evaluation score shall be reviewed at site and the score after completion of review process shall be acceptable and binding on the contractor.
 - viii). Project on Hold due to reasons not attributable to bidder -
 - a. **Short hold:** Evaluation shall not be applicable for this period, however Loading will be considered.
 - b. **Long hold:** Short hold for continuous six months and beyond or hold on account of Force Majeure shall be considered as Long Hold. Evaluation as well as Loading shall not be considered for this period.
 - ix). Performance evaluation in CL 9 above is applicable to Prime bidder and Consortium partner (or Technical tie up partner) for their respective scope of work.
- 10.0 Since the job shall be executed at site, bidders must visit site/ work area and study the job content, facilities available, availability of materials, prevailing site conditions including law & order situation, applicable wage structure, wage rules, etc before quoting for this tender. They may also consult this office before submitting their offers, for any clarifications regarding scope of work, facilities available at sites or on terms and conditions.
- 11.0 For any clarification on the tender document, the bidder may seek the same in writing or through e-mail or **through E-tender Portal**, as per specified format, within the scheduled date for seeking clarification, from the office of the undersigned. BHEL shall not be responsible for receipt of queries after due date of seeking clarification due to postal delay or any other delays. Any clarification / query received after last date for seeking clarification may not be normally entertained by BHEL and no time extension will be given.
- 12.0 BHEL may decide holding of pre-bid discussion [PBD] with all intending bidders as per date indicated in the NIT. The bidder shall ensure participation for the same at the appointed time, date and place as may be decided by BHEL. Bidders shall plan their visit accordingly. The outcome of pre-bid discussion (PBD) shall also form part of tender.

BHEL PSWR
Notice Inviting Tender

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239

Page 16 of 108

- 13.0 In the event of any conflict between requirement of any clause of this specification/ documents/drawings/data sheets etc or requirements of different codes/standards specified, the same to be brought to the knowledge of BHEL in writing for clarification before due date of seeking clarification (whichever is applicable), otherwise, interpretation by BHEL shall prevail. Any typing error/missing pages/ other clerical errors in the tender documents, noticed must be pointed out before pre-bid meeting/submission of offer; else BHEL's interpretation shall prevail.
- 14.0 Unless specifically mentioned otherwise, bidder's quoted price shall deemed to be in compliance with tender including PBD.
- 15.0 Bidders shall submit Integrity Pact Agreement (Duly **Digitally** signed by authorized signatory who signs in the offer), **if applicable**, along with techno-commercial bid. This pact shall be considered as a preliminary qualification for further participation. **The names and other details of Independent External Monitor (IEM) for the subject tender is as given at point (1) above.**
- 16.0 The Bidder has to satisfy the Pre-Qualifying Requirements stipulated for this Tender in order to be qualified. The Price Bids of only those bidders will be opened who will be qualified for the subject job on the basis of satisfying the Pre-Qualification Criteria specified in this NIT as per Annexure-I (as applicable), past performance etc. and date of opening of price bids shall be intimated to only such bidders. BHEL reserves the right not to consider offers of parties under HOLD.
- ~~17.0 In case BHEL decides on a 'Public Opening', the date & time of opening of the sealed PRICE BID shall be intimated to the qualified bidders and in such a case, bidder may depute one authorized representative to witness the price bid opening. BHEL reserves the right to open 'in camera' the 'PRICE BID' of any or all Unsuccessful/Disqualified bidders under intimation to the respective bidders.~~
- 18.0 Validity of the offer shall be for **six months** from the latest due date of offer submission (including extension, if any) unless specified otherwise.
- 19.0 BHEL reserves the right to decide the successful bidder on the basis of Reverse Auction process. In such case all qualified bidders will be intimated regarding procedure/ modality for Reverse Auction process prior to Reverse Auction and price will be decided as per the rules for Reverse Auction. .
- However, if reverse auction process is unsuccessful as defined in the RA rules/procedures, or for whatsoever reason, then the sealed 'PRICE BIDS' will be opened for deciding the successful bidder. BHEL's decision in this regard will be final and binding on bidder.
- 20.0 On submission of offer, further consideration will be subject to compliance to tender & qualifying requirement and customer's acceptance, as applicable.
- 21.0 In case the bidder is an "Indian Agent of Foreign Principals", 'Agency agreement has to be submitted along with Bid, detailing the role of the agent along with the terms of payment for agency commission in INR, along with supporting documents. For the tenders requiring services of Original supplier of equipment/services, offer is preferred from the OEM/Principal. However, if the OEM/Principal insists on engaging the services of an agent, such agent shall not be allowed to represent more than one manufacturer/supplier in the same tender. Moreover, either the agent could bid on behalf of manufacturer / supplier or manufacturer / supplier could bid directly but not both. In case bids are received from both manufacturer / supplier and the agent, bid from agent shall be ignored.
- 22.0 The bidders shall not enter into any undisclosed M.O.U. or any understanding amongst themselves with respect to tender.

BHEL PSWR
Notice Inviting Tender

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239

Page 17 of 108

23.0 Consortium Bidding (or Technical Tie up) shall be allowed only if specified in Pre-Qualifying Requirement (PQR) criteria, and in such a case the following shall be complied with:

- 23.1 Prime Bidder and Consortium Partner or partners are required to enter into a consortium agreement with a validity period of six months initially. In case the consortium is awarded the contract, then the Consortium Agreement between the Prime Bidder and Consortium Partner or partners shall be extended till contractual completion period including extension periods if any applicable.
- 23.2 ‘Standalone’ bidder cannot become a **‘Prime Bidder’ or a ‘Consortium bidder’ or ‘Technical Tie up bidder’ in a consortium (or Technical Tie up) bidding**. Prime bidder shall neither be a consortium partner to other prime bidder nor take any other consortium partners. However, consortium partner may enter into consortium agreement with other prime bidders. In case of non-compliance, consortium bids of such Prime bidders will be rejected.
- 23.3 Number of partners for a consortium Bidding (or Technical Tie up) shall be as specified in the PQR.
- 23.4 Prime Bidder shall be as specified in the Pre-Qualification Requirement, else the bidder who has the major share of work.
- 23.5 In order to be qualified for the tender, Prime Bidder and Consortium partner or partners shall satisfy (i) the Technical ‘Pre Qualifying Requirements’ specified for the respective package, (ii) “Assessment of Capacity of Bidder” as specified in clause 9.0.
- 23.6 Prime Bidder shall comply with additional ‘Technical’ criteria of PQR as defined in ‘Explanatory Notes for the PQR’.
- 23.7 Prime Bidder shall comply with all other Pre Qualifying criteria for the Tender unless otherwise specified.
- 23.8 In case customer approval is required, then Prime Bidder and Consortium Partner or partners shall have to be individually approved by Customer for being considered for the tender.
- 23.9 Prime Bidder shall be responsible for the overall execution of the contract.
- 23.10 In case of award of job, Performance shall be evaluated for Prime Bidder and Consortium Partner or partners for their respective scope of work(s) as per prescribed formats.
- 23.11 In case the Consortium partner or partners back out, their SDs shall be encashed by BHEL. In such a case, other consortium partner or partners meeting the PQR have to be engaged by the Prime Bidder, and if not, the respective work will be withdrawn and executed on risk and cost basis of the Prime Bidder. The new consortium partner or partners shall submit fresh SDs as applicable.
- 23.12 In case the prime Bidder withdraws, the whole contract shall be considered cancelled and short closed.
- 23.13 After execution of work, the work experience shall be assigned to the Prime Bidder and the consortium partner or partners for their respective scope of work. ~~After successful execution of two similar works with the same consortium partner or partners under direct orders of BHEL, the Prime Bidder shall be eligible for becoming a ‘standalone’ bidder for similar works, subject to certification from BHEL about the active involvement of the Prime Bidder for satisfactory execution of the works.~~

BHEL PSWR
Notice Inviting Tender

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239

Page 18 of 108

23.14 The consortium partner shall submit SD equivalent to 1% of the total contract value in addition to the SD to be submitted by the prime Bidder for the total contract value. In case there are two consortium partners, then each partner shall submit SD equivalent to 0.5% of the total contract value in addition to the SD to be submitted by the prime Bidder for the total contract value. The 100% SD value to be submitted by the consortium partner/(s) shall be remitted before start of work. All the terms & conditions of the SD clause in Vol-IC GCC shall be applicable for this SD except clauses no 1.10.1, 1.10.4 & 1.10.6 of Vol-IC GCC. For “**modes of deposit**” of this SD, clause no 1.10.3 of Vol-IC GCC shall be applicable.

23.15 In case of a Technical Tie up, all the clauses applicable for the Consortium partner shall be applicable for the Technical Tie up partner also.

24.0 The bidder shall submit/upload documents in support of possession of ‘Qualifying Requirements’ duly self-certified and stamped by the authorized signatory (**through Digital Signature**), as per the format for PQR. In case BHEL requires any other documents/proofs, these shall be submitted immediately.

25.0 The bidder may have to produce original document for verification if so decided by BHEL.

26.0 Order of Precedence

In the event of any ambiguity or conflict between the Tender Documents, the order of precedence shall be in the order below:

- a. Amendments/Clarifications/Corrigenda/Errata etc issued in respect of the tender documents by BHEL
- b. Notice Inviting Tender (NIT)
- c. Price Bid-Volume-II
- d. Technical Conditions of Contract (TCC)—Volume-1A
- e. Special Conditions of Contract (SCC) —Volume-1B
- f. General Conditions of Contract (GCC) —Volume-1C
- g. Forms and Procedures —Volume-1D

It may please be noted that guidelines/rules in respect of suspension of business dealings, ‘Vendor evaluation format’, ‘Quality, Safety & HSE guidelines’, etc may undergo change from time to time and the latest one shall be followed.

For BHARAT HEAVY ELECTRICALS LTD

(Addl. General Manager - Purchase)

Enclosure

01. Annexure-1: Pre Qualifying criteria.
02. Annexure-2: Check List.
03. Annexure-3: Integrity Pact
04. Annexure-4: Important Information.
- ~~05. Annexure-5: MSE Annex.~~
06. Annexure-6: Declaration for Reverse Auction.
07. Annexure-7: Declaration for not being under Bankruptcy Code Proceedings.

BHEL PSWR
Notice Inviting Tender

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239

Page 19 of 108

ANNEXURE - 1

PRE QUALIFYING CRITERIA

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239			
JOB	<p><u>PACKAGE-I:</u> All Civil and Architectural work of RC Foundations, RC Circular Hollow Columns and RC Top Slab over RC Columns supporting Air Cooled Condenser Fan Deck (ACC) - approx. 30nos, Complete Civil & Architectural works of Staircase and Elevator Structure of ACC including Lift Pit and Machine Room of Elevator (Unit-1&2), PMCC Building (Unit-1), Duct supporting pedestals and foundation (Unit-1&2), Vacuum pump foundation (Unit-1&2) and Paving in ACC block area only for Unit-(1&2) at 3x800MW PVUNL Patratu STPS, Jharkhand.</p> <p style="text-align: center;">and</p> <p><u>PACKAGE-II:</u> All Civil and Architectural work of RC Foundations, RC Circular Hollow Columns and RC Top Slab over RC Columns supporting Air Cooled Condenser Fan Deck (ACC) - approx. 30nos, Complete Civil & Architectural works of Staircase and Elevator Structure of ACC including Lift Pit and Machine Room of Elevator (Unit-3), PMCC Building (Unit-2&3), Duct supporting pedestals and foundation (Unit-3), Vacuum pump foundation (Unit-3) and Paving in ACC block area only for (Unit-3) at 3x800MW PVUNL Patratu STPS, Jharkhand.</p>		
S No	PRE QUALIFICATION CRITERIA	Bidders claim in respect of fulfilling the PQR Criteria	
		Applicability	
A	<p>Submission of Integrity Pact duly signed (if applicable)</p> <p>(Note: To be submitted by Prime Bidder & Consortium /Technical Tie up partner jointly in case Consortium bidding is permitted, otherwise by the sole bidder)</p>	APPLICABLE	
B	<p><u>TECHNICAL PQR:</u></p> <p>Bidder shall essentially meet all the Qualifying Requirements (i.e. B.1, B.2, B.3 and B.4) as under, in the last seven years as on latest date of bid submission:</p> <p><u>B.1: Bidder should have Executed “Piling or Civil or Structure or ‘Civil and Structural works’ or RCC Chimney or RCC Cooling Tower or RCC Silo or Mill Bunker or any combination of these works” for any one of the following in the last seven years from latest date of bid submission:</u></p> <p>B.1.1) Executed One work of value not less than Rs. 2880.00 Lakhs against single work order.</p> <p style="text-align: center;">OR</p> <p>B.1.2) Executed Two works each of value not less than Rs. 1800.00 Lakhs against maximum two work orders.</p> <p style="text-align: center;">OR</p> <p>B.1.3) Executed Three works each of value not less than Rs. 1440.00 Lakhs against maximum three work orders.</p>	APPLICABLE	

BHEL PSWR
Notice Inviting Tender

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239

Page 20 of 108

S No	PRE QUALIFICATION CRITERIA	Bidders claim in respect of fulfilling the PQR Criteria	
		Applicability	
	<p style="text-align: center;">AND</p> <p>B.2: Bidder should have executed Reinforced Cement Concrete (RCC) quantities of atleast 19,840 Cum within a period of twelve consecutive months against one running/ completed contact.</p> <p style="text-align: center;">AND</p> <p>B.3: Bidder should have executed atleast 29,720 Cum of Earthwork in filling involving mechanical compaction within a period of twelve consecutive months against one running/ completed contact.</p> <p style="text-align: center;">AND</p> <p>B.4: Bidder should have executed atleast one RCC shell of “Chimney / Silo /NDCT” of minimum 40 Mtr Height against one running/ completed contract.</p> <p>Note-01: Bidder should satisfy PQR B.1, B.2, B.3 and B.4 as a <u>standalone bidder</u>. In case a bidder does not satisfy PQR-B.4 above, then the bidder can form consortium with one party who satisfies the PQR B.4 above. This will be termed as “Consortium Bidding”. In case of consortium bidding, following shall be applicable:</p> <ul style="list-style-type: none"> • Prime bidder should satisfy PQR B.1, B.2 & B.3 above. • Agency satisfying PQR B.4 shall be termed as “Consortium Partner”. • Prime bidder shall be responsible for satisfying the financial PQR-C (i.e. C-1, C-2, C-3 & C.4). • Prime bidder shall submit the entire tender along with the credentials, all statutory documents and the documents in support of PQR condition of the Consortium Partner. <p>Note-02: All conditions as in Clause 23 of NIT shall also be applicable for consortium bidding.</p>		
C-1	<p><u>Financial TURNOVER</u></p> <p>Bidders must have achieved an average annual financial turnover (audited) of Rs. 1080.00 Lakhs or more over last three Financial Years (FY) i.e. 2016-17, 2017-18 & 2018-19.</p>	APPLICABLE	
C-2	<p><u>NETWORTH</u> (only in case of Companies)</p> <p>Net worth of the Bidder based on the latest Audited Accounts as furnished for ‘C-1’ above should be positive.</p>	APPLICABLE	
C-3	<p><u>PROFIT</u></p> <p>Bidder must have earned profit in any one of the three Financial Years as applicable in the last three Financial Years as furnished for ‘C-1’ above.</p>	APPLICABLE	

BHEL PSWR
Notice Inviting Tender

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239

Page 21 of 108

S No	PRE QUALIFICATION CRITERIA	Bidders claim in respect of fulfilling the PQR Criteria	
		Applicability	
C-4	Bidder must not be under Bankruptcy Code Proceedings (IBC) by NCLT or under Liquidation / BIFR, which will render him ineligible for participation in this tender, and shall submit undertaking to this effect. <i>(Refer Annexure-7 of NIT for format).</i>	APPLICABLE	
D	Assessment of Capacity of Bidder to execute the work as per sl no 9 of NIT (if applicable) The "Assessment of Capacity of Bidders" for this Tender shall be carried out by considering the identified similar package.	APPLICABLE	BY BHEL
E	Approval of Customer (if applicable) Note: Names of bidders (including consortium/Technical Tie up partners in case consortium bidding is permitted) who stand qualified after compliance of criteria A to D shall be forwarded to customer for their approval	APPLICABLE	BY BHEL
F	Price Bid Opening Note: Price Bids of only those bidders shall be opened who stand qualified after compliance of criteria A to E		BY BHEL
G	Consortium tie-ups	APPLICABLE	

Explanatory Notes for the PQR (unless otherwise specified in the PQR):

Explanatory Notes for PQR B.1 (Technical)

- For the criteria (B.1), actual executed value shall be considered.
- Value of work is to be updated with indices for "All India Avg. Consumer Price index for industrial workers" and "Monthly Whole Sale Price Index for All Commodities" with base month as per last month of work execution and indexed up to three (3) months prior to the month of latest due date of bid submission as per following formula-

$$P = R + \left\{ \frac{0.425 \times R \times (X_N - X_0)}{X_0} \right\} + \left\{ \frac{0.425 \times R \times (Y_N - Y_0)}{Y_0} \right\}$$

Where

P = Updated value of work

R = Value of executed work

X_N = All India Avg. Consumer Price index for industrial workers for three months prior to the month of latest due date of bid submission (e.g. If latest bid submission date is 02-Mar-17, then bid submission month shall be reckoned as March'17 and index for Dec'16 shall be considered).

X₀ = All India Avg. Consumer Price index for industrial workers for last month of work execution.

Y_N = Monthly Whole Sale Price Index for All Commodities for the month, three months prior to the month of latest due date of bid submission (e.g. If latest bid submission date is 02-Mar-17, then bid submission month shall be reckoned as March'17 and index for Dec'16 shall be considered).

Y₀ = Monthly Whole Sale Price Index for All Commodities for last month of work execution.

BHEL PSWR
Notice Inviting Tender

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239

Page 22 of 108

S No	PRE QUALIFICATION CRITERIA	Bidders claim in respect of fulfilling the PQR Criteria	
		Applicability	
<u>Explanatory Notes for PQR B.2, B.3 & B.4 (Technical):</u>			
<p>3. Unless otherwise specified, for the purpose of “B.2, B.3 & B.4 Technical Criteria”, the word 'EXECUTED' means achievement of milestones as defined below –</p> <p>a) "ACHIEVEMENT OF PHYSICAL QUANTITIES" as per PQRs.</p> <p>b) “READINESS FOR COAL FILLING” in respect of Mill Bunker.</p> <p>c) “CHARGING” in respect of Power Transformers / Bus Ducts / “HT/LT Switchgears” / “HT / LT Cabling”.</p> <p>d) For C&I works: "SYNCHRONISATION" in case of power project and “WORK COMPLETION of the value as defined in PQR” in case of industry.</p> <p>e) “BOILER LIGHT UP” in respect of Boiler / CFBC / ESP.</p> <p>f) “GAS IN” in respect of HRSG.</p> <p>g) “STEAM BLOWING COMPLETION” in respect of Power Cycle Piping.</p> <p>h) “HYDRAULIC TEST” of the system in respect of Pressure parts / LP Piping / CW Piping.</p> <p>i) “FULL LOAD OPERATION OF THE UNIT” in respect of Insulation work.</p> <p>j) “SYNCHRONISATION” in respect of STG / GTG.</p> <p>k) “SPINNING” in respect of HTG.</p> <p>l) “COMPLETION AND HANDING OVER FOR MECHANICAL ERECTION” in respect of STG Deck and Machine/Equipment foundation.</p> <p>4. Boiler means HRSG or WHRB or any other types of Steam Generator.</p> <p>5. Power Cycle piping means Main Steam, Hot Reheat, Cold Reheat, HP Bypass.</p> <p>6. For the purpose of evaluation of the PQR, one MW shall be considered equivalent to 3.5 TPH where ever rating of HRSG/BOILER is mentioned in MW. Similarly, wherever rating of Gas Turbine is mentioned in terms of Frame size, ISO rating of the same in terms of MW shall be considered for evaluation.</p> <p>7. Scope for Capital overhaul of STG shall cover Bearing Inspection work and overhauling of all cylinders of the Turbine.</p> <p>8. In case the tendered scope is not a Pulverized Fuel Boiler, experience of Oil/Gas Fired Boilers can also be considered.</p> <p>9. In case of lower rated units in Cogen, Combined Cycle of Industrial projects (especially Refinery projects), the packaging philosophy should be a composite package consisting of GTGs/STGs/Boilers etc. for tendering purpose with a PQR of a 500 MW Boiler with consortium provision for STG.</p>			
<u>Explanatory Notes for PQR -C (Financial):</u>			
<p>10. Bidder to submit Audited Balance Sheet and Profit and Loss Account for the respective years as indicated against C-1 above.</p> <p>11. In case audited financial statements have not been submitted for all the three years as indicated against C-1 above, then the applicable audited statements submitted by the bidders against the requisite three years, will be averaged for three years.</p> <p>12. If financial statements are not required to be audited statutorily, then instead of audited financial statements, financial statements are required to be certified by Chartered Accountant.</p> <p>13. C-2: -NETWORTH: Shall be calculated based on the latest Audited Accounts as furnished for C-1 above. Net worth = Paid up share capital* + Reserves. (*: Share Capital OR Partnership Capital OR Proprietor Capital as the case may be)</p> <p>14. C-3: Bidder must have earned profit in any one of the three financial years as applicable in the last three financial years as furnished for ‘C-1’ above.</p> <p>Note: PROFIT shall be PBT earned during any one year of last three financial years as in ‘C-1’ above.</p>			

BHEL PSWR
Notice Inviting Tender

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239

Page 23 of 108

S No	PRE QUALIFICATION CRITERIA	Bidders claim in respect of fulfilling the PQR Criteria	
		Applicability	
<u>Common Explanatory Notes:</u>			
<div><div>1.</div><div>For evaluation of PQR, the credentials of the Bidder alone, and not that of the Group Company shall be considered.</div></div> <div><div>2.</div><div>Completion date for achievement of the technical criteria specified in the Common QR should be in the last 7 years ending on the 'latest date of Bid Submission' of Tender irrespective of date of the start of work.</div></div> <div><div>3.</div><div>"Executed" means the bidder should have achieved the criteria specified in the Common QR even if the Contract has not been completed or closed.</div></div> <div><div>4.</div><div>In case the Experience/PO/WO certificate enclosed by bidders do not have separate break up of prices for the E&C portion for Electrical and C&I works (i.e. the certificates enclosed are for composite order for supply and erection of Electrical and C&I and other works if any), then value of Erection & Commissioning for the Electrical and C&I portion shall be considered as 15% of the price for supply & erection of Electrical and C&I.</div></div> <div><div>5.</div><div>Following shall be complied with in case of consortium:<div><div>a.</div><div>The Prime Bidder and Consortium Partner(s) are required to enter in to a consortium agreement with a validity period of "six months" initially. Thereafter, the Prime Bidder and Consortium Partner(s) shall certify to BHEL regarding existence and validity of their consortium agreement on six monthly basis.</div></div><div><div>b.</div><div>Prime Bidder and Consortium partners shall be approved by Customer for being considered for the tender (applicable if customer approval is required).</div></div><div><div>c.</div><div>Number of partners including prime Bidder shall be NOT more than 2 (Two).</div></div><div><div>d.</div><div>Prime Bidder alone shall necessarily comply with "B1 Technical Criteria" except for mechanical package where B1 criteria is not applicable.</div></div><div><div>e.</div><div>Prime Bidder and Consortium Partner shall together comply with the 'Pre-Qualification Requirements' specified for the respective category of technical requirement as per "technical criteria".</div></div><div><div>f.</div><div>Prime Bidder shall comply with all other Pre Qualifying criteria for the Tender unless otherwise specified.</div></div><div><div>g.</div><div>All other conditions shall be read in conjunction with clause no 23.0 of NIT.</div></div><div><div>h.</div><div>Prime Bidder shall be the Bidder who has a major share of work.</div></div><div><div>i.</div><div>Prime Bidder shall be responsible for the overall execution of the Contract.</div></div><div><div>j.</div><div>Performance shall be evaluated for Prime Bidder and the Consortium partner for their respective scope of work.</div></div><div><div>k.</div><div>In case the Consortium partner backs out, another consortium partner meeting the QRs, has to be engaged by Prime Bidder and if not, the respective work will be withdrawn and executed on risk and cost basis of the prime bidder.</div></div><div><div>l.</div><div>In case Prime Bidder withdraws, the whole contract shall be considered cancelled and short closed.</div></div><div><div>m.</div><div>After successful execution of one work with a consortium partner under direct orders of BHEL, the Prime Bidder shall be eligible for becoming a 'standalone' bidder for works similar to that for which consortium partner was engaged, for subsequent tenders.</div></div><div><div>n.</div><div>The Consortium partner shall submit SD equivalent to 1% of the total contract value in addition to the SD to be submitted by the Prime Bidder for the total contract value.</div></div></div></div>			

BHEL PSWR
Notice Inviting Tender

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239

Page 24 of 108

.....
BIDDER SHALL SUBMIT CREDENTIALS (DETAILED WORK ORDER, BOQ, ONGOING/COMPLETION CERTIFICATE, **TDS CERTIFICATES AND FINANCIAL DOCUMENTS ETC) BASED ON WHICH BIDDER IS CLAIMING TO SATISFY THE PQ CRITERIAS.**

Note:

1. Credentials submitted by the bidder against “PRE QUALIFYING CRITERIAS” shall be verified for its authenticity. In case, any credential (s) is/are found unauthentic, offer of the bidder is liable to the rejection. BHEL reserves the right to initiate any further action as per its internal guidelines.

2. Void

BHEL PSWR
Notice Inviting Tender

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239

Page 25 of 108

Bidder's Response against BHEL TECHNICAL PQR (WHICHEVER IS APPLICABLE)				
PQR No	Pre-Qualifying Requirement	Ref of Detailed Work Order, Name of the Work based on which bidder is claiming PQR	Ref of Completion Certificate and TDS Certificates based on which bidder is claiming PQR	Remarks, if Any
B	Bidder shall essentially meet all the Qualifying Requirements (i.e. B.1, B.2, B.3 and B.4) as under, in the last seven years as on latest date of bid submission:			
B.1	<p>Bidder should have Executed <u>"Piling or Civil or Structure or 'Civil and Structural works' or RCC Chimney or RCC Cooling Tower or RCC Silo or Mill Bunker or any combination of these works"</u> for any one of the following in the last seven years from latest date of bid submission:</p> <p>B.1.1) Executed One work of value not less than Rs. 2880.00 Lakhs against single work order.</p> <p style="text-align: center;">OR</p> <p>B.1.2) Executed Two works each of value not less than Rs. 1800.00 Lakhs against maximum two work orders.</p> <p style="text-align: center;">OR</p> <p>B.1.3) Executed Three works each of value not less than Rs. 1440.00 Lakhs against maximum three work orders.</p>			
B.2	Bidder should have executed Reinforced Cement Concrete (RCC) quantities of atleast 19,840.00 Cum within a period of twelve consecutive months against one running/completed contact.			
B.3	Bidder should have executed atleast 29,720.00 Cum of Earthwork in filling involving mechanical compaction within a period of twelve consecutive months against one running/completed contact.			

BHEL PSWR
Notice Inviting Tender

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239

Page 26 of 108

Bidder's Response against BHEL TECHNICAL PQR (WHICHEVER IS APPLICABLE)				
PQR No	Pre-Qualifying Requirement	Ref of Detailed Work Order, Name of the Work based on which bidder is claiming PQR	Ref of Completion Certificate and TDS Certificates based on which bidder is claiming PQR	Remarks, if Any
B.4	Bidder should have executed atleast one RCC shell of " <u>Chimney / Silo /NDCT</u> " of minimum 40 Mtr Height against one running/ completed contract.			
NOTE: 1. BIDDERS MUST CLEARLY INDICATE IN THE TABLE ABOVE, HOW THEY ARE SATISFYING TECHNICAL PQR ALONG WITH THE REFERENCE OF THE SUPPORTING DOCUMENTS. 2. BHEL WILL NOT CONSIDER ANY OTHER DOCUMENT OTHER THAN THOSE SPECIFIED BY THE BIDDERS IN THE TABLE ABOVE FOR EVALUATION OF TECHNICAL PQR. BIDDER MAY ATTACH SEPERATE SHEET IF NECESSARY.				

BHEL PSWR
Notice Inviting Tender

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239

Page 27 of 108

ANNEXURE - 2

CHECK LIST

NOTE: - Tenderers are required to fill in the following details and no column should be left blank

1	Name and Address of the Tenderer		
2	Details about type of the Firm/Company		
3.a	Details of Contact person for this Tender	Name : Mr/Ms Designation: Telephone No: Mobile No: Email ID: Fax No:	
3.b	Details of alternate Contact person for this Tender	Name : Mr/Ms Designation: Telephone No: Mobile No: Email ID: Fax No:	
4	EMD DETAILS	DD No: Date : Bank : Amount: <u>Please tick (✓) whichever applicable:-</u> ONE TIME EMD / ONLY FOR THIS TENDER	
5	Validity of Offer	TO BE VALID FOR SIX MONTHS FROM DUE DATE	
		APPLICABILITY (BY BHEL)	ENCLOSED BY BIDDER
6	Whether the format for compliance with PRE QUALIFICATION CRITERIA (ANNEXURE-I) is understood and filled with proper supporting documents referenced in the specified format	Applicable/ Not Applicable	YES / NO
7	Audited profit and Loss Account for the last three years	Applicable/ Not Applicable	YES/NO
8	Copy of PAN Card	Applicable/ Not Applicable	YES/NO
9	Whether all pages of the Tender documents including annexures, appendices etc. are read understood and signed	Applicable/ Not Applicable	YES/NO
10	Integrity Pact	Applicable/ Not Applicable	YES/NO
11	Declaration by Authorized Signatory	Applicable/ Not Applicable	YES/NO
12	No Deviation Certificate	Applicable/ Not Applicable	YES/NO
13	Declaration for Reverse Auction by Bidder	Applicable/ Not Applicable	YES/NO

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BHEL PSWR
Notice Inviting Tender

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239

Page 28 of 108

14	Declaration confirming knowledge about Site Conditions	Applicable/ Not Applicable	YES/NO
15	Declaration for relation in BHEL	Applicable/ Not Applicable	YES/NO
16	Non-Disclosure Certificate	Applicable/ Not Applicable	YES/NO
17	Bank Account Details for E-Payment	Applicable/ Not Applicable	YES/NO
18	Capacity Evaluation of Bidder for current Tender	Applicable/ Not Applicable	YES/NO
19	Tie Ups/Consortium Agreement are submitted as per format	Applicable/ Not Applicable	YES/ NO
20	Power of Attorney for Submission of Tender/Signing Contract Agreement Power of Attorney of Consortium Partner.	Applicable/ Not Applicable	YES/NO
21	Analysis of Unit rates	Applicable/ Not Applicable	YES/NO

NOTE: STRIKE OFF 'YES' OR 'NO', AS APPLICABLE. TENDER NOT ACCOMPANIED BY THE PRESCRIBED **ABOVE APPLICABLE DOCUMENTS** ARE LIABLE TO BE SUMMARILY REJECTED.

DATE :

AUTHORISED SIGNATORY

(With Name, Designation and Company seal)

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BHEL PSWR
Notice Inviting Tender

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239

Page 29 of 108

ANNEXURE-3

INTEGRITY PACT

Between

Bharat Heavy Electricals Ltd. (BHEL), a company registered under the Companies Act 1956 and having its registered office at "BHEL House" Siri Fort, New Delhi – 110049 (India) hereinafter referred to as "The Principal", which expression unless repugnant to the context of meaning hereof shall include its successors or assigns of the ONE PART

And

_____, (description of the party along with address), hereinafter referred to as "The Bidder/ Contractor" which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the OTHER PART

Preamble

The Principal intends to award, under laid-down organizational procedures, contract/s for

_____. The Principal values full compliance with all relevant laws of the land, rules and regulations and the principles of economic use of resources, and of fairness and transparency in its relations with its Bidder(s)/ Contractor(s).

In order to achieve these goals, the Principal will appoint Independent External Monitor(s), who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

Section 1 - Commitments of the Principal

- 1.1 The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles: -
 - 1.1.1 No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.
 - 1.1.2 The Principal will, during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential / additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.
 - 1.1.3 The Principal will exclude from the process all known prejudiced persons.
- 1.2 If the Principal obtains information on the conduct of any of its employees which is a penal offence under the Indian Penal Code 1860 and Prevention of Corruption Act 1988 or any other statutory penal enactment, or if there be a substantive suspicion in this regard, the Principal will inform its Vigilance Office and in addition can initiate disciplinary actions.

BHEL PSWR
Notice Inviting Tender

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239

Page 30 of 108

Section 2 – Commitments of the Bidder(s)/ Contractor(s)

- 2.1** The Bidder(s)/ Contractor(s) commit himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the tender process and during the contract execution.
- 2.1.1** the Bidder(s)/ Contractor(s) will not, directly or through any other person or firm, offer, promise or give to the Principal or to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material, immaterial or any other benefit which he / she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.
- 2.1.2** The bidder(s)/ Contractors(s) will not enter with other Bidder(s) into any illegal or undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.
- 2.1.3** The Bidder(s)/ Contractor(s) will not commit any penal offence under the relevant Indian Penal Code (IPC) and Prevention of Corruption Act; further the Bidder(s)/ Contractor(s) will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.
- 2.1.4** Foreign Bidders (s)/ Contractor(s) shall disclose the name and address of agents and representative in India and India Bidder(s)/Contractor(s) to disclose their foreign principals or associates. The Bidders (s)/ Contractor(s) will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.
- 2.2** The Bidder(s)/ Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.

Section 3 – Disqualification from tender process and execution from future contracts

If the Bidder(s)/Contractor(s), before award or during execution has committed a transgression through a violation of Section 2 above, or acts in any other manner such as to put his reliability or credibility in question, the Principal is entitled to disqualify the Bidder(s)/ Contractor(s) from the tender process or take action as per separate "Guidelines on Banning of Business dealings with Suppliers/ Contractors" framed by the Principal.

Section 4 – Compensation for Damages

- 4.1** If the Principal has disqualified the Bidder from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover the damages equivalent to Earnest Money Deposit/ Bid Security.
- 4.2** If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to Section 3, the Principal shall be entitled to demand and recover from the Contractor liquidated damages equivalent to 5% of the contract value or the amount equivalent to Security Deposit/ Performance Bank Guarantee, whichever is higher.

BHEL PSWR
Notice Inviting Tender

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239

Page 31 of 108

Section 5 – Previous Transgression

- 5.1 The Bidder declares that no previous transgressions occurred in the last 3 years with any other company in any country conforming to the anti-corruption approach or with any other Public Sector Enterprise in India that could justify his exclusion from the tender process.
- 5.2 If the Bidder makes incorrect statement on his subject, he can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason.

Section 6 – Equal treatment of all Bidders/ Contractors/ Sub-Contractors

- 6.1 The Principal will enter into agreements with identical conditions as this one with all Bidders and Contractors. In case of sub-contracting, the Principal contractor shall be responsible for the adoption of IP by his sub-contractors and shall continue to remain responsible for any default by his sub-contractors.
- 6.2 The Principal will disqualify from the tender process all bidders who do not sign this pact or violate its provisions.

Section -7 Criminal Charges against violating Bidders/ Contractors/ Sub-contractors

If the Principal obtains knowledge of conduct of a Bidder, Contractor or Sub-contractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the Vigilance Office.

Section – 8 Independent External Monitor(s)

- 8.1 The Principal appoints competent and credible Independent External Monitor for this Pact. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement.
- 8.2 The Monitor is not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. He reports to the CMD, BHEL.
- 8.3 The Bidder(s)/ Contractors(s) accepts that the Monitor has the right to access without restriction to all contract documentation of the Principal including that provided by the Bidder(s)/ Contractor(s). The Bidder(s)/Contractor(s) will grant the monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his contract documentation. The same is applicable to Sub-contractor(s). The Monitor is under contractual obligation to treat the information and documents of the Bidder(s)/ Contractor(s)/ Sib-contractor(s) with confidentiality in line with Non-disclosure agreement.
- 8.4 The Principal will provide to the Monitor sufficient information about all meetings among the parties related to the contract provided such meeting could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the Monitor the option to participate in such meetings.
- 8.5 The role of IEMs is advisory, would not be legally binding and it is restricted to resolving issues raised by an intending bidder regarding any aspect of the tender which allegedly restricts competition or bias towards some bidders. At the same time, it must be understood that IEMs are not consultants to the Management. Their role is independent in nature and the advice once tendered would not be subject to review at the request of the organization.

BHEL PSWR
Notice Inviting Tender

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239

Page 32 of 108

- 8.6 For ensuring the desired transparency and objectivity in dealing with the complaints arising out of any tendering process, the matter should be examined by the full panel of IEMs jointly as far as possible, who would look into the records, conduct an investigation, and submit their joint recommendations to the Management.
- 8.7 The IEMs would examine all complaints received by them and give their recommendations/ views to CMD, BHEL, at the earliest. They may also send their report directly to the CVO and the Commission, in case of suspicion of serious irregularities requiring legal/ administrative action. IEMs will tender their advice on the complaints within 10 days as far as possible.
- 8.8 The CMD, BHEL shall decide the compensation to be paid to the Monitor and its terms and conditions.
- 8.9 IEM should examine the process integrity, they are not expected to concern themselves with fixing of responsibility of officers. Complaints alleging mala fide on the part of any officer of the organization should be looked into by the CVO of the concerned organization.
- 8.10 If the Monitor has reported to the CMD, BHEL, a substantiated suspicion of an offence under relevant Indian Penal Code/Prevention of Corruption Act, and the CMD, BHEL has not, within reasonable time, taken visible action to proceed against such offence or reported it to the Vigilance Office, the Monitor may also transmit this information directly to the Central Vigilance Commissioner, Government of India.
- 8.11 The number of Independent External Monitor(s) shall be decided by the CMD, BHEL.
- 8.12 The word 'Monitor' would include both singular and plural.

Section 9 – Pact Duration

- 9.1 This Pact shall be operative from the date IP is signed by both the parties till the final completion of contract for successful bidder and for all other bidder 6 months after the contract has been awarded. Issues like warranty / guarantee etc. should be outside the purview of IEMs.
- 9.2 If any claim is made/ lodged during currency of IP, the same shall be binding and continue to be valid despite the lapse of this pact as specified above, unless it is discharged/ determined by the CMD, BHEL.

Section 10 – Other Provisions

- 10.1 This agreement is subject to Indian Laws and jurisdiction shall be registered office of the Principal, i.e. New Delhi.
- 10.2 Changes and supplements as well as termination notices need to be made in writing. Side agreements have not been made.
- 10.3 If the contractor is a partnership or a consortium, this agreement must be signed by all partners or consortium members.
- 10.4 Should one or several provisions of this agreement turn out to be invalid, the reminder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

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BHEL PSWR
Notice Inviting Tender

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239

Page 33 of 108

10.5 Only those Bidders/ Contractors who have entered into this agreement with the Principal would be competent to participate in the bidding. In other words, entering into this agreement would be a preliminary qualification.

For & On Behalf of the Principal

(Office Seal)

For & On Behalf of the Bidder/ Contractor

(Office Seal).

Place -----

Date-----

Witness: _____

(Name & Address) _____

Witness: _____

(Name & Address) _____

BHEL PSWR
Notice Inviting Tender

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239

Page 34 of 108

ANNEXURE-4

IMPORTANT INFORMATION

E -Tender for this work is invited by BHEL PSWR NAGPUR and offer shall be submitted through BHEL e-procurement portal only. All correspondences regarding this tender shall be through E-procurement portal.

Postal Address:

AGM /Purchase BHEL PSWR,
SRIMOHINI COMPLEX, 345 KINGSWAY, NAGPUR 440001, INDIA

Following are the concerned BHEL officials to whom bidders can contact in case of any difficulty:

AGM Purchase, Email: prchiwarkar@bhel.in. Ph: +91 – 712 – 3048 - 633

Dy Manager Purchase, Email: nktiwari@bhel.in, Ph: +91 – 712 – 3048 – 713

Sr Engineer Purchase, Email: svm@bhel.in, Ph: +91 – 712 – 3048 – 715

Asst. Engineer Purchase, Email: bajinath@bhel.in , Ph: +91 – 712 – 3048 - 652

- 1. The offers of the bidders who are on the banned list as also the offer of the bidders, who engage the services of the banned firms, shall be rejected. The list of banned firms is available on BHEL web site (www.bhel.com → Tender Notification → List of Banned Firms)**
- 2. Refer Chapter XII of Volume IB Special Conditions of Contract regarding Suspension of Business Dealings: The abridged version of extant 'Guidelines for suspension of business dealings with suppliers/ contractors' has now been uploaded on www.bhel.com on "supplier registration page" at the following link: http://www.bhel.com/vender_registration/pdf/Suspension_guidelines_adbridged.pdf**
- 3. The offers of the bidders who are under suspension as also the offers of the bidders, who engage the services of the banned firms, shall be rejected. The list of banned firms is available on BHEL web site www.bhel.com.**

3.0 Integrity commitment, performance of the contract and punitive action thereof:

3.1. Commitment by BHEL:

BHEL commits to take all measures necessary to prevent corruption in connection with the tender process and execution of the contract. BHEL will during the tender process treat all Bidder(s) in a transparent and fair manner, and with equity.

3.2. Commitment by Bidder/ Supplier/ Contractor:

3.2.1. The bidder/ supplier/ contractor commit to take all measures to prevent corruption and will not directly or indirectly influence any decision or benefit which he is not legally entitled to nor will act or omit in any manner which tantamount to an offence punishable under any provision of the Indian Penal Code, 1860 or any other law in force in India.

3.2.2. The bidder/ supplier/ contractor will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in

Registered Office: BHEL House, Siri Fort, New Delhi – 110 049, India
Website: www.bhel.com

BHEL PSWR
Notice Inviting Tender

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239

Page 35 of 108

connection with the award of the contract and shall adhere to relevant guidelines issued from time to time by Govt. of India/ BHEL.

3.2.3. The bidder/ supplier/ contractor will perform/ execute the contract as per the contract terms & conditions and will not default without any reasonable cause, which causes loss of business/ money/ reputation, to BHEL.

If any bidder/ supplier/ contractor during pre-tendering/ tendering/ post tendering/ award/ execution/ post-execution stage indulges in mal-practices, cheating, bribery, fraud or and other misconduct or formation of cartel so as to influence the bidding process or influence the price or acts or omits in any manner which tantamount to an offence punishable under any provision of the Indian Penal Code, 1860 or any other law in force in India, then, action may be taken against such bidder/ supplier/ contractor as per extant guidelines of the company available on www.bhel.com and/or under applicable legal provisions”.

4. **“Pradhan Mantri Kaushal Vikas Yojna:** The contractor shall, at all stages of work deploy skilled/semi-skilled tradesmen who are qualified and possess certificate in particular trade from CPWD Training Institute/Industrial Training Institute/ National Institute of Construction Management and Research (NICMAR), National Academy of Construction, CIDC or any similar reputed and recognized Institute managed/ certified by State/ Central Government. The number of such qualified tradesmen shall not be less than 20% of total skilled/semi-skilled workers required in each trade at any stage of work. The contractor shall submit number of man days required in respect of each trade, its scheduling and the list of qualified tradesmen along with requisite certificate from recognized Institute to Engineer-in-Charge for approval. Notwithstanding such approval, if the tradesmen are found to have inadequate skill to execute the work of respective trade, the contractor shall substitute such tradesmen within two days of written notice from Engineer-in-Charge. Failure on the part of contractor to obtain approval of Engineer-in-Charge or failure to deploy qualified tradesmen will attract a compensation to be paid by contractor at the rate of Rs.100 per such tradesman per day. Decision of Engineer-in-Charge as to whether particular tradesman possesses requisite skill and amount of compensation in case of default shall be final and binding”.
5. **All Statutory Requirements as applicable for this project shall be complied with.**
6. **BHEL Fraud Prevention Policy:** “The Bidder along with its associate/ collaborators/ sub-contractors/ sub-vendors/ consultants/ service providers shall strictly adhere to BHEL Fraud Prevention Policy displayed on BHEL website <http://www.bhel.com> and shall immediately bring to the notice of BHEL Management about any fraud or suspected fraud as soon as it comes to their notice.”
7. **Following clause shall form part of the HSE documents issued under Chapter IX of Volume IB ‘Special Conditions of Contract’**

“In case of any financial deduction made by Customer for lapses of safety other than what is provided elsewhere in the contract, the same shall be charged on back-to-back basis on the defaulting contractor without prejudice to any other right spelt anywhere in the tender /contract”
8. **Please take note of following Revised Tender Clauses:**
 - Notice Inviting Tender: Sl No 4 and corresponding Changes in GCC Clause No 1.9 regarding EMD
 - General conditions of Contract: Clause 1.10, 2.13, 1.15.11, Clause No. 2.7.2, Clause No. 2.7.3, Clause No 2.7.10 (New), Clause No 2.28.5 (New), Clause No 2.21.

BHEL PSWR
Notice Inviting Tender

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239

Page 36 of 108

9. Following Notes are added to Form F- 15 of Volume I D 'Forms & procedures'

- i. It is only indicative and shall be as per the online format issued by BHEL time to time.
- ii. No request will be entertained after specified date of the current month w.r.t the changes requested in the scores of immediate previous month.

10. OVER RUN COMPENSATION

Over Run Compensation Clause no. 2.12 of Vol I C GCC **shall not be Applicable** for this contract.

11. Start of Period for "Performance Guarantee for Workmanship" as per clause no 2.24 of Vol-IC GCC:

This period shall commence after the completion of Contract Period as certified by Engineer-in-Charge.

12. Delay in 1st submission of SDBG/ PBBG: SDBG/ PBG is to be furnished by the vendor before start of work. No payment will be released till SDBG/PBG is submitted by the vendor.

However if requested by the vendor, cash recovery equivalent to SDBG/ PBG value to be made from the running bills submitted by the vendor. In such case, recovery of interest calculated @SBI PLR +2% on amount equivalent to SDBG/ PBG value to be made for the gap period (difference between date of start of work and date of submission of BG/ cash recovery).

13. Compensation in case of Death/ Permanent Incapacitation of Person: BHEL shall recover the amount of compensation paid to victim (s) by BHEL towards loss of life/ permanent disability due to an accident which is attributable to the negligence of contractor, agency or firm or any of its employee as detailed below:

- a) Victim: Any person who suffers permanent disablement or dies in an accident as defined below.
- b) Accident: Any death or permanent disability resulting solely and directly from any unintended and unforeseen injurious occurrence caused during the manufacturing/ operation and works incidental thereto at BHEL factories/ offices and precincts thereof, project execution, erection and commissioning, services, repairs and maintenance, trouble shooting, serving, overhaul, renovation and retrofitting, trial operation, performance guarantee testing undertaken by the company or during any works/ during working at BHEL Units/ Offices/ townships and premises/ Project sites.
- c) Compensation in respect of each of the victims:
 - (i) In the event of death or **permanent disability** resulting from **Loss of both limbs**: Rs 10,00,000/- (**Rs Ten Lakh**)
 - (ii) In the event of **other permanent disability**: Rs 7,00,000/- (**Rs Seven Lakh**)
- d) Permanent Disablement: A disablement that is classified as a permanent total disablement under the proviso to Section 2(I) of the Employee's Compensation Act, 1923.

14. The clause 2.7.9.1 below is added under the heading "Rights of BHEL" of General Conditions of Contract Volume-IC GCC.

2.7.9.1 Provision of Penalty in case of slippage of Intermediate Milestones:

BHEL PSWR
Notice Inviting Tender

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239

Page 37 of 108

- i) Two major Intermediate Milestones are mentioned as M1 & M2 in Chapter VI: Time Schedule of Vol IA Technical Conditions of Contract.
- ii) In case of slippage of these identified Intermediate Milestones, Delay Analysis shall be carried out on achievement of each of these two Intermediate Milestones in reference to Form 14.
- iii) In case delay in achieving M1 Milestone is solely attributable to the contractor, 0.5% per week of Executable Contract Value*, limited to maximum 2% of Executable Contract Value, will be withheld.
- iv) In case delay in achieving M2 Milestone is solely attributable to the contractor, 0.5% per week of Executable Contract Value*, limited to maximum 3% of Executable Contract Value, will be withheld.
- v) Amount already withheld, if any against slippage of M1 milestone, shall be released only if there is no delay attributable to contractor in achievement of M2 Milestone.
- vi) Amount required to be withheld on account of slippage of identified intermediate milestone(s) shall be withheld out of respective milestone payment and balance amount (if any) shall be withheld @10% of RA Bill amount from subsequent RA bills.
- vii) Final deduction towards LD (if applicable as per clause 2.7.9 above), on account of delay attributable to contractor shall be based on final delay analysis on completion / closure of contract. Withheld amount, if any due to slippage of identified intermediate milestone(s) shall be adjusted against LD or released as the case may be.
- viii) In case of termination of contract due to any reason attributable to contractor before completion of work, the amount already withheld against slippage of intermediate milestones shall not be released and be converted into recovery.

* **Executable Contract Value** - Value of work for which inputs/ fronts were made available to contractor and were scheduled for execution till the date of achievement of that milestone.

15. Amended Quantity Variation Sub Clause no. 2.14.1 of Clause no. 2.14 of Vol-IC GCC:

"The quantities given in the contract are tentative and may change to any extent (both in plus side and minus side). The quoted rates for individual items shall remain firm irrespective of any variations in the individual quantities. No compensation becomes payable in case the variation of the final executed contract value is within the limit of Minus (-) 30% of awarded contract value."

Note: Sub clause no. 2.14.2 of Clause no. 2.14 shall be applicable as per Vol-IC-GCC.

16. Acceptance of Bank Guarantee (BG)

Revision in Acceptance of Bank Guarantee (BG) Clause no. 1.10.3 (iii) of Vol I C GCC:

Clause No. 1.10.3 (iii) of Vol IC GCC is revised as below: -

"Bank Guarantee issued by:

- a. Any of the BHEL consortium bank listed below:

State Bank of India
ABN Amro Bank N.V.
Bank of Baroda
Canara Bank
Citi Bank N.A.
Corporation Bank
Deutsche Bank

BHEL PSWR
Notice Inviting Tender

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239

Page 38 of 108

.....
HDFC Bank Ltd.
The Hongkong and Shanghai Banking Corporation Ltd
ICICI Bank Ltd.
IDBI Ltd.
Punjab National Bank
Standard Chartered Bank
State Bank of Travancore
State Bank of Hyderabad
Syndicate Bank

- b. Any public sector Bank (other than consortium banks) with a clause in the text of Bank Guarantee that **"It is enforceable at Nagpur, Maharashtra"**.
- c. Any private sector banks, with a clause in the text of Bank Guarantee that **"It is enforceable by being presented at any branch of the bank"**.

Note: "Bank Guarantees issued by Co-operative Banks are not acceptable".

17. Broad Terms & Conditions of Reverse Auction

In continuation to Clause 19.0 of NIT (Notice Inviting Tender) following are the broad terms and conditions of Reverse Auction for which Declaration Proforma by bidder has been given in Annexure VI of NIT:

BHEL reserves the right to go for Reverse Auction (RA) (Guidelines as available on www.bhel.com) instead of opening the sealed envelope price bid, submitted by the bidder. This will be decided after techno-commercial evaluation. Bidders to give their acceptance with the offer for participation in RA. Non-acceptance to participate in RA may result in non-consideration of their bids, in case BHEL decides to go for RA.

Those bidders who have given their acceptance to participate in Reverse Auction will have to necessarily submit 'Process compliance form' (to the designated service provider) as well as 'Online sealed bid' in the Reverse Auction. Non-submission of 'Process compliance form' or 'Online sealed bid' by the agreed bidder(s) will be considered as tampering of the tender process and will invite action by BHEL as per extant guidelines for suspension of business dealings with suppliers/ contractors (as available on www.bhel.com).

The bidders have to necessarily submit online sealed bid less than or equal to their envelope sealed price bid already submitted to BHEL along with the offer. **The envelope sealed price bid of successful L1 bidder in RA, if conducted, shall also be opened after RA and the order will be placed on lower of the two bids (RA closing price & envelope sealed price) thus obtained. The bidder having submitted this offer specifically agrees to this condition and undertakes to execute the contract on thus awarded rates.**

If it is found that L1 bidder has quoted higher in online sealed bid in comparison to envelope sealed bid for any item(s), the bidder will be issued a warning letter to this effect. However, if the same bidder again defaults on this count in any subsequent tender in the unit, it will be considered as fraud and

BHEL PSWR
Notice Inviting Tender

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239

Page 39 of 108

will invite action by BHEL as per extant guidelines for suspension of business dealings with suppliers/ contractors (as available on www.bhel.com).

As a reminder to the bidders, system will flash following message (in RED color) during the course of 'online sealed bid':

"Bidders to submit online sealed bid less than or equal to their envelope sealed bid already submitted to BHEL"

Note:- In case the tender is an e-tender and bids are submitted on e-procurement portal of BHEL → <https://bhel.abcpocure.com>, the term 'envelope sealed bid' to be read as "price bid in e-procurement portal".

- 18. MSE Vendors:** MSE bidders kindly to take note that EMD (Earnest Money Deposit) shall be furnished by MSE bidders as well, as per the amount and procedure indicated in the NIT/GCC.

Micro & Small Enterprises (MSE) is exempted from Payment of Tender Fees (as in Sl No 1 viii of NIT) and Earnest Money deposit (EMD) (as in Sl No 1 vii of NIT), if Applicable.

To avail this benefit, participating MSEs should be registered with District Industries Centers or Khadi and Village Industries Commission or Khadi and Village Industries Board or Coir Board or National Small Industries Corporation or Directorate of Handicrafts and Handloom or Udyog Aadhaar Memorandum or any other body specified by Ministry of Micro Small and Medium Enterprises.

MSE bidders can avail the above benefit only if they submit along with the offer, copies of either Udyog Aadhaar Memorandum or EM II certificate having deemed validity (five years from the date of issue of acknowledgement in EM II) or valid NSIC certificate or ~~EM II certificate along with copy of a CA certificate (format enclosed at Annexure- 5 where deemed validity of EM II certificate of five years has expired) applicable for the relevant financial year (latest audited). Date to be reckoned for determining the deemed validity will be the date of bid opening (part 1 in case of two part bid). Non submission of said documents will lead to consideration of their bid at par with other bidders in terms of EMD. No benefit shall be applicable for this enquiry, if any deficiency in the above required documents is not submitted before price bid opening. If the tender is to be submitted through e-procurement portal, then the above required documents are to be uploaded on the portal.~~

19. PUBLIC PROCUREMENT (PREFERENCE TO MAKE IN INDIA) CLAUSE:

"For this procurement, Public Procurement (Preference to Make in India), Order 2017 dated 15.06.2017 & 28.05.2018 and subsequent Orders issued by the respective Nodal Ministry shall be applicable even if issued after issue of this NIT but before finalization of contract/ PO/ WO against this NIT.

In the event of any Nodal Ministry prescribing higher or lower percentage of purchase preference and/ or local content in respect of this procurement, same shall be applicable."

20. Integrity Pact:

- (a) IP is a tool to ensure that activities and transactions between the company and its Bidder/Contractors are handled in a fair, transparent and corruption free manner.

BHEL PSWR
Notice Inviting Tender

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239

Page 40 of 108

Following Independent External Monitors (IEMs) on the present panel have been appointed by BHEL with the approval of CVC to oversee implementation of IP in BHEL.

SI	IEM	Address	Email
1	Shri Arun Chandra Verma, IPS (Retd.)	Flat No. C -1204, C Tower, Amrapali, Platinum Complex, Sector 119, Noida (U.P.)	acverma1@gmail.com
2	Shri Virendra Bahadur Singh, IPS (Retd.)	H. No. B-5/64, Vineet Khand, Gomti Nagar, Lucknow - 226010	vbsinghips@gmail.com

- (b) The IP as enclosed with the tender is to be submitted (duly signed by authorized signatory) along with techno-commercial bid (Part-I, in case of two/three part bid). Only those bidders who have entered into such an IP with BHEL would be competent to participate in bidding. In other words, entering into this pact would be a preliminary qualification.
- (c) Please refer section-8 of the IP for Role and Responsibilities of IEMs. In case of any complaint arising out of the tendering process, the matter may be referred to any of the IEM(s). All correspondence with the IEMs shall be done through email only.

Note:

No routine correspondence shall be addressed to the IEM (phone/ post/ email) regarding the clarifications, time extensions or any other administrative queries, etc. on the tender issued. All such clarification /issues shall be addressed directly to the tender issuing (procurement) department's officials whose contact details are provided below:

Details of contact person (s):

Name: (1) P R Chiwarkar/ AGM (Purchase)

(2) Neeraj Tiwari/ Dy Manager (Purchase)

Dept.: Purchase Department

Address: Shreemohini Complex, 345 Kingsway, Nagpur-440001

Phone: (LL/ Mobile) (1) 0712-3048633

(2)0712-3048713

Email: prchiwarkar@bhel.in

(2) nktiwari@bhel.in

Fax: 0712-3048699

21. Modality of Tendering and Award:

- i) This is a combined tender of two Packages (i.e. Package-I and Package-II) for Civil Works of Air Cooled Condenser at 3X800 MW PVUNL Patratu Project site.
- ii) The entire scope of work has been divided in two packages (Package-I and Package-II). For both the packages, separate BOQs has been issued (i.e. For Package-I, 'Chapter-XI of Vol-IA-TCC' and for Package-II, 'Chapter-XII of Vol-IA-TCC'). Percentage weightages for individual items has been fixed by BHEL w.r.t. to the total quoted price for 'Package-I only'. For award of 'Package-II', price matching philosophy based on the items rates finalized for Package-I has been envisaged, however, price matching philosophy for award of Package-II shall be at BHEL's discretion. BHEL may opt any other suitable method to finalize the Package-II.

Registered Office: BHEL House, Siri Fort, New Delhi – 110 049, India

Website: www.bhel.com

BHEL PSWR
Notice Inviting Tender

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239

Page 41 of 108

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- iii) All tender documents (other than BOQs) are common for both the Packages i.e. Package-I and Package-II.
 - iv) Bidder has to submit their Price for Package-I only as indicated in the Part-C of Vol-II "Price Bid" at BHEL e-procurement Portal.
 - v) L-1 Bidder shall be considered for award of Package-I.
 - vi) For award of Package-II, next bidder in the order of their price competitiveness (i.e. L-2, then L-3 and henceforth) shall be given an option to match the rate for all the individual items with that of finalized/awarded rate for individual items of Package-I. In case, none of the bidders agree to match the awarded rate for Individual Items of Package-I then BHEL at its discretion may consider awarding the Package-II to L-1 bidder or opt any other suitable method to finalize the Package-II.
 - vii) Each package will be treated as a separate contract.

22. Format for Consortium Agreement:

In case of consortium bidding against this tender, bidders are requested to furnish the consortium agreement in the format attached separately namely, "Format for Consortium Agreement-2238-2239"

**BHEL PSWR
Notice Inviting Tender**

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239

Page 42 of 108

ANNEXURE-5

MSE ANNEX

Certificate by Chartered Accountant on letter head

This is to Certify that M/s _____, (hereinafter referred to as 'company') having its registered office at _____ is registered under MSMED Act 2006, (Entrepreneur Memorandum No _____ (Part-II) _____ dtd: _____,

Category: _____ (Micro/Small)). (Copy enclosed).

Further verified from the Books of Accounts that the investment of the company as per the latest audited financial year _____ as per MSMED Act 2006 is as follows:

1. For Manufacturing Enterprises: Investment in plant and machinery (Le. original cost excluding land and building and the items specified by the Ministry of Small Scale Industries vide its notification No.S.O.1722(E) dated October 5, 2006:-

Rs _____ Lakhs

2. For Service Enterprises: Investment in equipment (original cost excluding land and building and furniture, fittings and other items not directly related to the service rendered or as may be notified under the MSMED Act, 2006:

Rs _____ Lakhs

The above investment of Rs _____ Lakhs is within permissible limit of Rs _____ Lakhs for _____ Micro / Small (Strike off which is not applicable) Category under MSMED Act 2006.

OR

The company has been graduated from its original category (Micro/ Small) (Strike off which is not applicable) and the date of graduation of such enterprise from its original category is..... (dd/mm/yyyy) which is within the period of 3 years from the date of graduation of such enterprise from its original category as notified vide S.O. No. 3322(E) dated 01.11.2013 published in the gazette notification dated 04.11.2013 by Ministry of MSME.

Date:
(Signature)

Name—

Membership number—

Seal of Chartered Accountant

Registered Office: BHEL House, Siri Fort, New Delhi – 110 049, India
Website: www.bhel.com

**BHEL PSWR
Notice Inviting Tender**

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239

Page 43 of 108

ANNEXURE-6

Declaration for Reverse Auction

(To be typed and submitted in the Letter Head of the Company/Firm of Bidder)

To,

(Write Name & Address of Officer of BHEL inviting the Tender)

Dear Sir,

Sub: Declaration for Participation in Reverse Auction (RA)

Ref: NIT/Tender Specification No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238

We declare that we will participate in Reverse Auction (RA) if BHEL decides for that instead of opening the sealed envelope/ E-Procurement Portal Price Bid, submitted by us. We have read all the guidelines of reverse auction available in tender enquiry as well as on www.bhel.com portal. We also declare that during reverse auction:

- ❖ We will submit online sealed bid less than or equal to of our envelope sealed/ E-Procurement Portal price bid already submitted to BHEL along with the offer.

We also declare to submit the “Process Compliance Form” (to the designated service provider) as well as “Online Sealed Bid” in the Reverse Auction, in case BHEL decides to go for that.

Yours Faithfully,

(Signature, Date & Seal of Authorized
Representative of the Bidder)

Date:

Registered Office: BHEL House, Siri Fort, New Delhi – 110 049, India
Website: www.bhel.com

**BHEL PSWR
Notice Inviting Tender**

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239

Page 44 of 108

ANNEXURE-7

UNDERTAKING

(To be typed and submitted in the Letter Head of the Company/Firm of Bidder)

To,

(Write Name & Address of Officer of BHEL inviting the Tender)

Dear Sir,

Sub: Declaration for not being under Bankruptcy Code Proceedings (IBC) by NCLT or under Liquidation / BIFR

Ref: NIT/Tender Specification No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/PKG-II/2239

We, _____ declare that we are not under Bankruptcy Code Proceedings (IBC) by NCLT or under Liquidation / BIFR, which will render us ineligible for participation in this tender.

Yours Faithfully,

(Signature, Date & Seal of Authorized
Representative of the Bidder)

Date:

2238-
2239

TECHNICAL CONDITIONS OF CONTRACT (TCC)

BHARAT HEAVY ELECTRICALS LIMITED



CONTENTS

Sl No	DESCRIPTION	Chapter
Volume-IA	Part-I: Contract specific details	
1	Project Information	Chapter-I
2	Scope of Works and Technical Specifications	Chapter-II
3	Facilities in the scope of Contractor/BHEL (Scope Matrix)	Chapter-III
4	T&Ps and MMEs to be deployed by Contractor	Chapter-IV
5	T&Ps and MMEs to be deployed by BHEL on sharing basis	Chapter-V
6	Time Schedule	Chapter-VI
7	Terms of Payment	Chapter-VII
8	Taxes and other Duties	Chapter-VIII
9	Technical Specifications and Plot Plan	Chapter-IX
10	Tentative Manpower Requirements	Chapter-X
11	Bill of Quantities and % Weightage of Individual Items	Chapter-XI

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter - I: PROJECT INFORMATION

1.0 Project Information:

3X800 MW PVUNL PATRATU TPP PHASE-1 is being set up by PVUNL (Patratu Vidyut Utpadan Nigam Limited, a subsidiary of PVUNL Ltd in Joint venture with Jharkhand Bijli Vitran Nigam Limited).

Sl. No.	Description	Details
1.1	Location	PATRATU
1.2	Nearest Railway Station	Patratu (04Kms)
1.3	Nearest Airport	RANCHI (45Kms)
1.4	Access By Road	Patratu (04Kms)
1.5	Major Towns/Cities	Ranchi (45Kms)
1.6	Source of Water	Patratu Reservoir.
1.7	Maximum Temperature	48 degree Centigrade
1.8	Minimum Temperature	0.6 degree Centigrade

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – II: Scope of Works and Technical Specifications

2.0 SCOPE OF WORK

2.1 Micro Grading: After the completion of civil work the entire area shall be micro graded up to required levels by the contractor to achieve the ground profile as per pavement level requirement at no extra cost. Filling/ cutting required to bring the site up to the required finished levels is in the scope of the contractor. Extra earth required to make up to paved levels shall be arranged by the contractor at his own cost from approved borrow areas.

SCOPE OF WORK:-

Package -I: All Civil and Architectural work of RC Foundations, RC Circular Hollow Columns and RC Top Slab over RC Columns supporting Air Cooled Condenser Fan Deck (ACC) - approx. 30nos, Complete Civil & Architectural works of Staircase and Elevator Structure of ACC including Lift Pit and Machine Room of Elevator (Unit-1&2), PMCC Building (Unit-1), Duct supporting pedestals and foundation (Unit-1&2), Vacuum pump foundation (Unit-1&2) and Paving in ACC block area only for Unit-(1&2) at 3x800MW PVUNL Patratu STPS.

Package - II: All Civil and Architectural work of RC Foundations, RC Circular Hollow Columns and RC Top Slab over RC Columns supporting Air Cooled Condenser Fan Deck (ACC) - approx. 30nos, Complete Civil & Architectural works of Staircase and Elevator Structure of ACC including Lift Pit and Machine Room of Elevator (Unit-3), PMCC Building (Unit-2&3), Duct supporting pedestals and foundation (Unit-3), Vacuum pump foundation (Unit-3) and Paving in ACC block area only for (Unit-3) at 3x800MW PVUNL Patratu STPS.

Interchangeability of Scope:

BHEL reserves the right to swap any particular scope of work/any portion of work between Package I and Package II of subject tender as per the requirement of the site during execution of the job. In no case Scope of any vendor should be allowed to reduce less than 85% of total contract value of any package due to invoking of this clause by engineer in charge.

Scope includes complete civil and architectural works including finishing items from foundation to bottom of fan deck level i.e. top of RC column including inserts and embedment's as per ACC manufacturer's approved diagram and handing over of the same to mechanical agency for erection.

Numbers of ACC columns per unit shall be as per engineer's instruction at site based on requirement of the project and planned progress.

Mobilization of Slip-form & access tower as per **BOQ item 301.I** shall be limited to 09 Sets and agency to ensure the repeated utilization of the same in **BOQ item no B302** for successful completion of all ACC columns etc. in the present scope without any cost implication to BHEL. Prior approval / consent is required to be obtained from PSWR-HQ for mobilization of Slip-form & access tower beyond 09 Sets.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – II: Scope of Works and Technical Specifications

2.2 **THE WORK WILL INVOLVE:**

All civil work required to complete Civil and architectural works for ACC Civil as per scope including RCC work, earth work, concrete work, brick work, steel work, embedment, plastering and painting, wooden and metal doors, windows and partitions, waterproofing, flooring, ceiling, plumbing works, sanitary works, road work, drainage, grouting etc.

2.3 **CIVIL AND ARCHITECTURAL WORKS**

The scope covers all Civil and Architectural works within the battery limits of this Package. The important works covered under this package are as below:

- 2.3.1 Excavation of earth and backfilling including dewatering of excavations for foundations, trenches, pits, etc. till the construction of the same is completed and disposal of surplus earth.
- 2.3.2 Construction Raft/ Foundation with pedestal for all civil structures, trenches, sumps, grade beams, tie beams at foundation level, grade slabs, floor slabs and roof slabs at any height, equipment foundations etc.
- 2.3.3 Preparation and submission of detailed calculations, arrangement drawings and detail drawings of formwork/slip formwork, staging and scaffolding for all reinforced concrete structures and foundations as directed by the Engineer for his checking and approval.
- 2.3.4 Preparation of detailed working drawings and bar bending schedule for all reinforced concrete work and getting them approved before start of work by the BHEL Engineer.
- 2.3.5 Taking delivery of TMT Steel, structural steel, earthing rod, GI flat, GI grating, etc. from BHEL stores/ storage yards for utilisation in construction work under this package.
- 2.3.6 Fabrication and fixing of templates/frames, inserts, fixing of anchor bolts, sleeves, and embedment's etc. in concrete.
- 2.3.7 Supply of all instruments and personnel for conducting necessary tests at site as specified/as directed by the Engineer.
- 2.3.8 Providing Access Tower to each Slip formwork arrangement for Labour and material movement for Column shell construction.

2.4 **General Scope:**

- 2.4.1 Furnishing all labour, materials, supervision, construction plans, equipment, supplies, transport, to and fro the site, fuel, compressed air, and all other incidental items and temporary works not shown on specified but reasonably implied or necessary for the proper completion, maintenance and handling over the works, except in accordance with the stipulations laid down in the contract documents and

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – II: Scope of Works and Technical Specifications

additional stipulations as may be provide by the engineer during the course of works.

- 2.4.2 Furnishing samples of all materials required by the engineers for testing/inspection and approval for use in the works. The samples may be retained by the engineer for final incorporation in the works.
- 2.4.3 Furnishing test reports for the products used or intended to be used, if called for the specifications or if so desired by the engineer.
- 2.4.4 Giving all notices, paying all fees, taxes etc., in accordance with the general conditions of contract, that is required for all works including temporary works.
- 2.4.5 Arranging manufacturer's supervision for items of work done as per manufacturer's specifications when so specified.
- 2.4.6 Carrying out topographic survey of the entire and establish levels and coordinates at suitable intervals from existing grid levels and coordinates furnished by the owner established bench marks, setting out the locations and levels of proposed structures, constructions and marking of reference pillars and other identification works etc., The contractor shall provide the owner/BHEL such a assistance, instruments, machines, labour and materials as are normally required for examining, measuring and testing any work and the quality, weight or quantity of any material used.
- 2.4.7 Providing all incidental items not shown or specified but reasonably implied or necessary for the successful completion of the work in accordance with contract.
- 2.4.8 Arranging for joint checking (with BHEL/BHEL's Customer/Consultant) of all site construction activities Preparation of joint protocols for each & every activity and maintaining quality records for audit/inspection as per approved FQP by BHEL.
- 2.4.9 The drawings enclosed with this tender are intended to give the tenderer a general idea of the type and extent of work involved. The drawings are as such only indicative and not to be considered as the exact construction drawings.

Further this is to be noted that the drawings and the documents furnished along with this specification are the sole property of B.H.E.L. It must not be used directly or indirectly in any way detrimental to the interest of the company.

- 2.4.10 The scope of work will also include such other related works although they may not be specifically mentioned in the above paragraph and all such incidental items not specified but reasonably imply and necessary for completion of the job as a whole all as desired and as directed by the engineer.
- 2.4.11 The detail scope of work covered above is not a comprehensive list of items of work involved. The detail scope of work may vary considerably depending on the actual construction requirements as per RFC Drawings.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – II: Scope of Works and Technical Specifications

2.5 **WORKS BY OTHERS**

No work under the specification will be provided by any agency other than the contractor unless specifically mentioned elsewhere in the contract.

2.6 **SITE VISIT**

Contractor should visit 3X800MW PVUN project site, to acquaint himself with the conditions prevailing at site and in and around the plant premises, together with all the statutory, obligatory, mandatory requirements of various authorities before submission of the bid.

2.7 **Carrying out work by BHEL**

BHEL reserves the right to withdraw/restrict/alter the quantum of works as per clause No. 2.7 of GCC. BHEL may carry work through any other agency/purchase bought out items as per GCC.

NOTE:

Contractor has to make him well conversant with the Customer specification. In case of ambiguity between BHEL and customer specification, customer specification shall prevail.

2.8 **PREAMBLE FOR THE SCHEDULE OF QUANTITIES/BOQ.**

2.8.1 Details of the items in this Schedule shall be read in conjunction with the Corresponding Consultants/PVUN specifications, drawings and other documents and shall have precedence over any contrary statement mentioned anywhere in this document.

2.8.2 The work shall be carried out as per construction drawings, specifications, the description of the items in this schedule and/or Engineer's instructions, Drawings enclosed with these documents are only indicative giving some idea of the type of work involved. The layout, sizes and details of the building, structures and foundations shown in tender drawings may vary at a large extent during actual construction. Final drawings will be issued progressively during the execution of the work.

2.8.3 Items of work provided in this schedule but not covered in the specifications shall be executed strictly as per instructions of the Engineer.

2.8.4 Unless specifically mentioned otherwise in the contract, the bidder shall quote his rates for the finished items and shall provide for the complete cost towards fuel, tools, tackle, equipment, constructional plant, temporary works, labour materials, levies, taxes, transport, layout, repairs, rectification, maintenance till handing over, supervision, shops, establishments, services, temporary roads, revenue expenses, contingencies, overheads, profits and all incidental items not specifically mentioned but reasonably implied and necessary to complete the works according to the contract.

2.8.5 The rate quoted shall be inclusive of cleaning the site of any vegetations, dressing and levelling etc., required for commencement of site activities. The rates shall also be

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – II: Scope of Works and Technical Specifications

inclusive of final micro grading before handing over. No separate payment will be made towards the same.

- 2.8.6 The rate shall also be inclusive of carrying out topography survey of site to establish levels and coordinates at suitable intervals, form existing grid levels and coordinates furnished by the owner, establish bench marks, setting out the location and levels of the proposed structures, constructions and making references, pillars and other identification marks etc. No separate payment will be made towards the same.
- 2.8.7 The quantities of the various items mentioned in the schedule are approximate and may vary up to any extent or be deleted altogether. The overall variation in contract value on execution shall be dealt as per GCC. Contractor has to obtain prior approval of BHEL/PVUN before procurement of bought out items/ building materials.
- 2.8.8 Rates shall be quoted both in figures and in words in clear legible writing. No over writing is allowed. All scoring and cancellation should be counter signed by the bidder. In case of illegibility, the interpretation of the engineer shall be final. All entries shall be in English language.
- 2.8.9 Engineers decision shall be final and binding on the contractors regarding clarification of items in this schedule with respect to the other section of the contract.
- 2.8.10 In case of any discrepancy between item description, relevant drawing and/or specification Clarification shall be sought at tender stage itself. Otherwise it shall be assumed that the bidder has quoted for the more stringent requirement.
- 2.8.11 Mix design (M 20, M 25, M 30/M 35) for all concreting shall be carried out either at site or from a reputed approved institute, contractor has to ensure adding of admixture and minimizing of cement content in line with IS 456 as advised by BHEL time to time without any additional cost. Bidder may use approved available Design Mix at site with approval of Engineer Incharge. Engineer Incharge decision shall be final and binding in this regard.
- 2.8.12 The scope shall also include setting up by the bidder a testing laboratory (one AC lab size 4.5mtrx6mtr and 1 non AC lab 4.5 mtrx4.5 mtr.) in the field to carry out all relevant tests. Detail of laboratory equipments as per TCC is to be arranged by the contractor within quoted rate for conducting day to day one no. chemist to be deployed as necessary. The may tie up with approved/registered inspection agencies for setting up test lab at site as described above.

2.9 Installation of necessary amenities- temporary infrastructure for construction activities at Project site locations- following are the minimum amenities to be provided by the bidder without any extra cost and removal/disposal of the same in environment friendly manner after its intended use/completion of complete scope of work:

1. Labour rest sheds near work spot.
2. Canteen facility creation.
3. Drinking water facility.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – II: Scope of Works and Technical Specifications

4. Labour toilets near work spot in sufficient nos. with regular cleaning & maintenance arrangement
5. First Aid Facility will be maintained by BHEL and it will be on cost sharing basis.
6. Labour colony should have all hygienic condition, dining hall, toilets, proper sewerage system, good drinking water arrangements.

NOTE: In case of non-compliance of above points, BHEL will make penal recoveries at the rate decided at site mutually by BHEL and contractor or as imposed by PVUNL.

2.10 Laying / Cutting & Re-welding of associated electrical earthing works below the road & drains and surrounding areas shall also be done by civil contractor as per drawings for which 40mm dia. MS rod/GI flats (as applicable) shall be supplied by BHEL free of cost.

2.11 Following works shall be executed by other agency(Exclusion):

- 2.11.1 Dismantling of all over ground structures of existing plant in all areas identified for site levelling works in drawing no. 9585-001-POC-A-001 (Rev-D) titled "SITE LEVELLING PLAN".
- 2.11.2 Removal/Dismantling of all underground structures of existing plant up to foundation level required for the facilities of New proposed plant.
- 2.11.3 Dismantling of all underground structures of existing plant up to 1m depth below FGL in other areas identified in site levelling works drawing no. 9585-001-POC-A-001 (Rev-D) titled "SITE LEVELLING PLAN".

2.12 Hierarchy of Documents:

In case of any conflict/deviations of technical specifications with regard to any work; amongst various documents, the order of precedence shall be as follows:

- (1) Statutory Regulations
- (2) PVUNL Technical Specifications / Section-C: Specific Technical Requirements
- (3) Items in Schedule of Quantities
- (4) IS standards
- (5) Section-D: General Technical Specifications

The above hierarchy shall be followed strictly for technical requirements only to carry out works under the scope of this contract.

2.13 Construction Power (Chargeable):

- 2.13.1 Construction Power shall be made available to the Contractor at 415 V feeders of LT substation located at Single point in the plant. Contractor shall be fully responsible to make all the arrangement beyond these LT feeder points for further

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – II: Scope of Works and Technical Specifications

distribution to meet all construction power requirements for the entire area in scope of this package.

- 2.13.2 Supply, erection, testing and commissioning of 415V switchboards, power and control cables, DC Systems etc. under the Contractor's scope. All necessary statutory requirements for charging construction power Contractor's network shall be in the Contractor's scope.
- 2.13.3 Contractor shall deploy and install required energy meter, cables, fuses, distribution boards, switchboards, bus bars, earthing arrangements, protection devices and any other installation as specified by statutory authority/act. Capacitor Bank is to be arranged by vendor for power factor improvement of the system as per I. E. Rule.
- 2.13.4 Contractor shall also obtain approvals of appropriate authority and pay necessary fees, levies etc towards the clearance of such installations, prior to use. Sufficient power factor compensation equipment's like capacitor shall be provided by contractor for reactive loads like welding machines etc. In case of any fine/penalty on account of low power factor, same shall be shared by contractor proportionately according to power consumption.
- 2.13.5 Contractor shall make necessary arrangements for onward distribution of construction power taking due care of surrounding construction activities like movement of cranes & vehicles, civil work, fabrication/construction/assembly/erection etc. and safety of personnel. It may become necessary to relocate some of the installations to facilitate work by other agencies or by him.
- 2.13.6 It shall be the responsibility of the Contractor to provide, maintain the complete installation on the load side of the supply with due regard to the safety requirements at site. All cabling and installations shall comply in all respects with the appropriate statutory requirements. The installation and maintenance of this shall be done by licensed and experienced electrician.
- 2.13.7 While reasonable efforts will be made to ensure continuous electric power supply, interruptions cannot be ruled out and no claim from the Contractor shall be entertained on this account such as idle labor, extension of time etc. The Contractor shall adjust his working shift accordingly and deploy additional manpower, if necessary, so as to achieve the target.
- 2.13.8 Contractor shall be well equipped with back-up power supply arrangement like DG set and diesel operated welding machine etc. to tackle situations arising due to failure of supplied power, so as to ensure continuity and completion of critical processes that are underway at the time of power failure or important activities planned in immediate future.
- 2.13.9 BHEL is not responsible for any loss or damage to the Contractor's equipment as a result of variations in voltage or frequency or interruptions in power supply.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – II: Scope of Works and Technical Specifications

2.13.10 The charges for the actual energy consumed by contractor shall be recovered on relevant rate of Discom and as specified in specification.

GENERAL: -

If any other voltage level (other than normally available) is required, the same shall be arranged by the contractor from power supply as above by use of suitable electrical equipments. Contractor will have to provide at his own cost necessary calibrated energy meters (tamper proof, suitably housed in a weather proof box with lock & key arrangement) at point of power supply along with calibration certificate from authorized / accredited agency for working out the power consumption. In case of recalibration required for any reason the necessary charges including replacement by calibrated meters is to be borne by the contractor. Supply of electricity shall be governed by Indian Electricity Act and Installation Rules and other Rules and Regulation as applicable. The contractor shall ensure usage of electricity in an efficient manner and the same may be audited by BHEL time to time. In case of any major deviation from normally accepted norms is observed, BHEL will reserve the right to impose penalty as deemed fit for such cases.

2.14 Construction Water:

Construction Water shall be arranged by contractor at his own cost during all stages of construction.

BHEL is making arrangement of construction water from PVUN resources, it may take few months for arrangement. Please note BHEL will give construction water at single location on chargeable basis. Distribution will be in bidder scope.

Note: Due to any constraint at site if BHEL fails to provide construction water, contractor may have to arrange for construction water on its own. Any cost implication of the same shall be to the account of contractor and no extra payment shall be made for any such arrangements made by contractor (if required).

2.15 Field Quality Assurance:

The contractor shall be responsible for day-to-day quality checks of concrete and other building materials during the progress of work. All quality records and log sheets shall be maintained as per the requirement of BHEL/BHEL'S customer and as per field quality plan approved by BHEL/PVUNL. Contractor shall establish their own field quality lab and have tie-up with approved lab by BHEL/PVUNL in/outside of the plant if so required by BHEL/PVUNL.

2.16 Reconciliation of steel issued by BHEL (free of cost):

2.16.1 General Notes:

- (a) All steel like structural steel, reinforcement bars, earthing rod/ GI flats, foundations bolts, MS rails **except MS/GI/SS Hand rails** as specified in relevant BOQ and shall be issued free of cost by BHEL unless specified otherwise in BOQ for use in the work covered in this contract from BHEL stores/storage yard. The

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – II: Scope of Works and Technical Specifications

contractor shall collect these materials from BHEL stores/store yard at specified places at his own cost and store the same at the work site or in his stores as per standard norms. Materials issued will be used only for construction of permanent works. **Procurement, supply, fabrication erection and painting of MS Handrails is in contractor scope.**

- (b) BHEL reserves the right to recover from the contractor any loss arising out of damage/ theft or any other causes or during verification/stacking or at any time under the custody of the contractor.
- (c) The contractor shall take care of material issued by BHEL and shall protect the same from damage and weathering. Contractor shall construct waterproof cement store (**capacity minimum 1000 MT/ 20000 Bags**) for storing and stacking of cement **issued by BHEL free of cost.**
- (d) The contractor shall in no case be entitled for any compensation on account of any delay in supply or non-supply thereof for all or any such materials. However, in case of non-availability of any specific section(s) which delays the completion of work, such cases shall be recorded separately in monthly planning format (F14) and shall be considered for time extension of contract.
- (e) Contractor will have to make his own arrangement at his own cost for procurement of any other materials except as mentioned above, as required for the works and of such quality as acceptable to BHEL.
- (f) The contractor shall maintain proper store account for all the BHEL issued materials and shall give **Three (03) copies of monthly-computerized reconciliation statement** of such account showing total receipt, consumption and balance at site to the BHEL. BHEL Engineer's certification for the reconciliation of steel shall be final. The detailed reconciliation (dia. Wise or as required) shall be done **at least once in three months (03) or before submission of final bill which comes earlier.**
- (g) Contractor shall also carryout in complete association with BHEL, the material management functions and execution like day-to-day update of materials, issued to contractor, accounting for surplus/scrap material returned etc. These functions shall also be carried out through computerized system utilizing suitable software. Contractor shall engage experienced software personnel to associate on dedicated basis for efficient discharge of the same in time.
- (h) The contractor shall solely be responsible for the safety & security of material after it is handed over and issued to contractor by the BHEL.
- (i) BHEL issued materials, shall not be under any circumstances whatsoever, and shall be taken out of the project site unless otherwise permitted by BHEL for outside job.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – II: Scope of Works and Technical Specifications

2.17 HANDLING OF MATERIALS ISSUED BY BHEL:

- 2.17.1 Materials shall be issued by BHEL based on the weighment basis/linear measurements & sectional weight. However, on specific request of the contractor **“as a special case to expedite the job”** the consignment received at BHEL stores can directly be diverted to the work site following issuance procedure of BHEL. Such direct issues shall be as per the Challan/dispatch document/LR received with the consignment. In such cases, Contractor shall do unloading of materials from trucks/lorry at their own cost.
- 2.17.2 All materials issued by BHEL shall be stacked, stored above ground level **by use of concrete or wooden sleepers. No materials shall remain on ground at any time.** All concrete or wooden sleepers required for stacking the materials shall be arranged by contractor (successful bidder of this package) at his own cost within the quoted rates. All other equipments like winches, D-Shackles, slings of various sizes, max puller, pulley blocks, jacks, trucks, trailers etc. Required for such handling of steel from BHEL stores/storage yard etc. Shall be arranged by contractor within quoted/accepted rates.
- 2.17.3 The contractor shall take delivery of the materials from the designated place within the project premises at his own cost and store the same at his stores as per standard norms. Open land for such purposes shall be provided by BHEL on free of cost basis. Temporary barbed wire fencing of the open storage yard is to be done by the contractor and is included under the scope of his work. Contractor shall also remove grass, bushes, trees etc wherever required off the land provided to him and shall make proper continuous up keeping of the open yard /land by removing grass, bushes trees etc and same is included under the scope of his work & No extra payment shall be made to the contractor in this regard. The bidder shall make complete arrangement of necessary security personnel's to safeguard all such materials in his custody. Materials issued will be used only for construction of permanent works. The contractor shall take care of material issued by BHEL and shall protect the same from theft, damage and weathering. Excessive rusting of steel in custody of agency/contractor must be avoided. **In case, due to any cause attributable to the contractor, such rusting of steel occur rendering the same unusable, then such quantity of steel shall be recovered from the interim payment at the penal rate specified in the tender.**

2.18 Issue of cement free of cost:

- 2.18.1 Cement is issued through Bag being supplied from manufacturer/stockiest; the same shall be stored in cement stores of batching plant and necessary assistance shall be provided by contractor.
- 2.18.2 Contractor to note that batching plant being established at site shall have minimum **cement Storage shed of 1000 MT capacities. (1000 MT & 3 SHEDS)**
- 2.18.3 Cement is issued through bags as received from the manufacturer/stockiest. The theoretical weight of each bag of cement for issued purposes will be considered as 50 kg. The contractor shall be accountable for the cement issued to the contractor on this notional weight only. No claim whatsoever will be entertained because of difference between theoretical and actual weight of the bags of cement.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – II: Scope of Works and Technical Specifications

2.18.4 The empty cement bags duly accounted for against issue shall be the contractor's property and the same shall be disposed as per statutory regulation prevailing in the project.

2.18.5 In case BHEL supplies cement through Bulker, Bidder has to store cement in Silos of Suitable capacities as decided by Engineer in charge. Silos Capacities shall be finalized mutually.

BHEL will not issue cement free of cost for factory made Product/BOI like Fly Ash Brick, Paver Block, Tiles, Hume Pipe etc. unless specified otherwise.

2.19 ISSUE OF STEEL.

2.19.1 The steel shall be issued to the contractor on the following basis:

- Structural Steel: Weighment basis (Unit – MT)
- Reinforcement Steel and Earthing Rod: Weighment basis (Unit-MT)
- MS Rails: Weighment Basis (Unit-MT)

2.19.2 All the steel (structural, reinforcement, earthing rod/GI flats, GI gratings, foundation bolts, MS Rails) issued by BHEL shall be properly accounted for. The total quantity of steel required for the work will be calculated from the approved Bar Bending schedule, fabrication drawings, approved laps, chairs and lugs etc. The measurement for payment as well as for accounting shall be based on the sectional weights as indicated in the following IS/BS/EN specifications.

Sr No	Name of Standard	Name of Section
1	IS: 808-1964	Beams, Channels and Angles
2	IS: 1730-1961	Plates, Sheets and Strips/Flats
3	BS4-1: 1993	UB/UC sections
4	IS: 12778/equivalence with EN-19-57	For NPB sections
5	IS: 12778/equivalence with EN-53-62	For HE/WPB sections
6	IS: 1786 or grade -1 of IS432 (Part-I)	Rounds including deformed high yield strength bars.

In case any such sectional weights are not available in the above documents, the manufacturer recommendation shall be binding.

2.19.3 The steel issued to the contractor shall be mainly in standard length and sections as received from the supplier. However, the contractor shall be bound to accept the steel in length as available in the project stores, no claims for extra payment because of issue of non-standard length will be entertained.

2.19.4 The contractor shall satisfy himself of the quality and quantity of the materials at the time of taking delivery from BHEL stores. No claims whatsoever will be entertained by

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – II: Scope of Works and Technical Specifications

BHEL because of quality or quantity after the materials are taken by the contractor from BHEL stores.

- 2.19.5 The contractor shall submit to BHEL, a statement indicating estimated quantity of cement and steel required during a quarter. In addition, the contractor shall also furnish the estimated requirement of steel during a month by the third week of the previous month indicating his requirement.
- 2.19.6 Following shall be limit for the maximum quantity of BHEL issue materials that would be with the contractor at any point of time when work is in progress (excluding what has already been incorporated in the works).

SL No.	ISSUE OF MATERIALS	MAX QUANTITY IN CONTRACTORS STORE
01	Reinforcement steel, earthing rod/GI flat, Foundation bolt, MS Rails , as per BOQ	ONE MONTH
02	Structural Steel	ONE MONTH
03	Cement	ONE MONTH

- 2.19.7 Bidders shall ensure that no lamination material is taken over by them from BHEL.
- 2.19.8 The contractor must note that cement and steel required for the contractor's enabling job like store/ site office/batching plant/temporary works etc. shall be arranged by the contractor at his own cost.
- 2.19.9 Bidder to give requirement of Material in BHEL Scope well in advance of before Three month from requirement. Any delay in raising the requirement of these item leading to delay in placement of order, will be Contractor responsibility and its attributable delay in erection will be responsibility of Bidder only.

2.20 RETURN OF MATERIALS

- 2.20.1 **Return of Cement:** Sealed cement bags remaining unused and in perfectly good condition at the time of completion or termination of the contract shall be returned promptly, (within 15 days from assessment) if BHEL/ engineer is satisfied of the physical condition of the cement. Return of such cement to the project stores / place as identified within the project area by engineer/ BHEL will not be entitled to handling and incidental charges. Surplus sealed and good conditioned cement bags will be taken back on weighment basis.
- 2.20.2 **Return of Reinforcement Steel and Structural Steel including Scrap:** All surplus steel and all wastage materials will be taken back on weighment basis. Surplus, unused and untampered steel shall be sorted section-wise and returned separately at a place directed by BHEL/Engineer within the project area. Return of such materials will not be entitled to any handling and incidental charges. All wastage / scrap (including melting scrap, wastage, and unusable scrap) shall be promptly returned to the stores and a receipt obtained for material accounting purposes. Return of such material will not be entitled to any transportation and incidental charge. Scrap for reinforcement steel and structural steel shall be returned separately.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – II: Scope of Works and Technical Specifications

2.21 **Scrap and Serviceable Materials:**

- 2.21.1 All structural steel of length above 2 M except M.S Plate shall be considered as **serviceable materials** provided the materials is in good and acceptable condition. Structural steel in length less than 2 M Shall be treated as scrap.
- 2.21.2 Plates having both side greater than 1 Meter OR if any side is less than 1 M but greater than 0.5 M and the total area is equal or greater than 2 sq. Meter shall be considered as **serviceable material**.
- 2.21.3 All pipe measuring 2 M and above in length shall be treated serviceable materials provided they are in good and acceptable condition. Pipe in less than 2 M length shall be treated as Scrap.
- 2.21.4 All TMT measuring 3 M and above in length shall be treated as **serviceable material** provided they are in good acceptable condition. TMT in less than 3 M shall be treated as scrap.

2.22 **Cement, Steel Consumption and wastage:**

2.22.1 **Cement Consumption:**

The theoretical consumption of cement shall be based on the following:

- For design mix concrete as per approved design mix.
- For nominal mix concrete work, as per minimum cement as specified or as approved by engineer-in-charge.
- For item of works, where volume mix is permitted in writing by the BHEL, for masonry works, plaster other miscellaneous items, the cement consumption shall be governed by the “Statement of cement consumption” attached to the DSR-2013 unless otherwise specified in the specifications or the drawing of contract or mutually agreed by engineer-in-charge and the contractor.
- Actual consumption = Issue – Surplus/ unused quantity of cement returned in good condition by the contractor to store. (No sweep cement will be taken back by BHEL).

2.22.2 **Cement Wastage:**

- 2.22.2.1 **Allowable wastage:** One and half percent (+1.5%) of theoretical consumption of cement.
- 2.22.2.2 For any material issued by BHEL to the contractor free of cost, and which is not accounted for by the contractor to BHEL, then recovery for such material shall be affected at penal rates.

Sl no.	Cement consumption	Basis of issue & penal recovery
C-1	Theoretical consumption (without considering any wastage or loss).	Free

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – II: Scope of Works and Technical Specifications

Sl no.	Cement consumption	Basis of issue & penal recovery
C-2	Actual consumption being Limited to one and half percent (+1.5%) of aforesaid theoretical consumption towards allowable wastage.	Free
C-3	Actual consumption beyond one and half percent (+1.5%) of above (C-1).	Penal rate

2.22.3 Reinforcement Steel, MS earthing rod, GI gratings, Foundation bolts and MS Rails Consumption

The theoretical consumption of various sections and/or diameter of reinforcement and earthing rod steel shall be based on approved construction drawing and bar bending schedule. Weight shall be calculated considering the sectional weights as per Indian standards. No extra cost shall be payable to the contractor for any deviation in weights for the different procedures adopted for issue and calculation of the theoretical consumption including rolling tolerances.

2.22.3.1 Actual consumption = Issue – Surplus.

2.22.3.2 Surplus = un-tampered, unused, uncut QTY of steel **including serviceable material** returned by the contractor to BHEL store along-with relevant documents.

2.22.3.3 Wastage = Actual consumption – Theoretical consumption.

2.22.4 Reinforcement Steel, MS earthing rod, Foundation bolts and MS Rails Wastage

2.22.4.1 **Allowable Wastage:** (+3%) of the theoretical consumption shall be considered as allowable wastage.

Wastage and scrap shall be as per actual weighment basis.		
Sl no.	Reinforcement steel & MS earthing rod	Basis of issue & penal recovery
R-1	Theoretical consumption (without considering wastage and scrap or loss)	Free
R-2	Wastage limited to plus THREE percent (+3%) of aforesaid theoretical consumption (R-1) towards allowable wastage.	Free
R-3	Wastage beyond THREE percent (+3%) of the theoretical consumption above (R-1).	Penal rate

2.22.5 Structural Steel (Rolled Sections and Plates etc.) Consumption

The theoretical consumption of various sections shall be based on approved drawings. Weights shall be calculated considering the sectional weights as per Indian standard. No extra shall payable to the contractor for any deviation in weights for the two

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – II: Scope of Works and Technical Specifications

different procedures adopted for issue and calculation of the theoretical consumption including rolling tolerances.

2.22.5.1 Actual consumption = Issue – Surplus.

2.22.5.2 Surplus = un-tempered, unused, uncut quantity of steel **including serviceable material** returned by the contractor to BHEL store.

2.22.5.3 Wastage = Actual consumption – Theoretical consumption.

2.22.6 Structural Steel Wastage

2.22.6.1 **Allowable wastage:** 4% (FOUR percent) of the theoretical consumption shall be considered. Wastage shall be considered as cut pieces and scrap material, measured as per actual weighment basis. Invisible wastage, if any, shall be considered to be included in the specified 4 % allowable wastage.

Sl no	Structural steel including SS plate	Basis of issue & penal recovery
S-1	Theoretical consumption (without considering any wastage, scrap or loss) as per specification & drg.	Free
S-2	Wastage limited to plus four percent (+4%) of the aforesaid theoretical consumption (S-1) towards allowable wastage.	Free
S-3	Wastage beyond four percent (4%) of the aforesaid theoretical consumption (S-1).	Penal rate

2.23 Reconciliation of Materials:

- 2.23.1 The contractor shall submit a reconciliation statement of cement and steel issued to the contractor with each RA Bill.
- 2.23.2 At the time of submission of bills, the contractor shall properly account for the material issued to him as specified herein to the satisfaction of BHEL certifying that the balance material are available in the contractor custody at site.
- 2.23.3 At the time of submission of bills, if it is noticed by BHEL that the wastage is high and calls recovery at the penal rate, then, BHEL will proceed for recovery for the excess wastage as per penal recovery rates as specified.
- 2.23.4 The reference drawings for actual material consumption to be used for the purpose of reconciliation shall be drawings prepared by the BHEL and drawings approved by BHEL for fabrication works and such other drawings approved by BHEL. This shall also include the bar bending schedule prepared by the contractor and approved by BHEL.

2.24 Recovery of Materials (Penal Rates):

If wastage exceeds the specified limit, the recovery of excess wastage shall be made from monthly RA Bills as per following penal rates if material Supply is in BHEL SCOPE:

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – II: Scope of Works and Technical Specifications

Sl. No.	Item	Penal rate (Rs)
P-1	Cement (OPC/ PPC/ PSC).	6,500 per MT
P-2	Reinforcement steel and MS earthingrod/GI flat	65,000 per MT
P-3	Chequered Plates(if supplied by BHEL) and MS plates	65,000 per MT
P-4	MS Flats, beams, channel, angels etc. (Rolled Sections)	60,000 per MT
P-5	Foundation bolts if supplied by BHEL	90,000 per MT

2.25 Procurement and Testing of Materials by Contractor:

Material required for the entire job (other than issued by BHEL as explained above) like sand, aggregates, BHEL's cement, windows, doors, ventilators, rolling shutter, sanitary fixtures, painting & finishing material, all embedment's/inserts and all other material required for the completion of entire scope, has to be arranged by the contractor, except those specifically indicated as BHEL scope of supply. BHEL/ PVUNL reserves the right to reject any material not found satisfactory. Apart from the above, it shall be the responsibility of contractor to get materials procured from outside from approved vendors/source, should get laboratory approved by BHEL/PVUNL to ascertain the quality if insisted by BHEL/PVUNL.

Rate quoted shall be inclusive of all such contingencies and no additional payment shall be made on this account. For this purpose, sample shall be collected at site in presence of BHEL/PVUNL representative.

Bidders are requested to have pre-bid visit/ inspection of site to make them fully acquainted with the site situation & nature of job. No claim shall be entertained at later date on account of non-familiarization of site condition.

Bidders may fix up their site visit in consultation with below mentioned contact person:

Sh B. Majhi/ Construction Manager, BHEL Site Office 3x800 MW PVUNL Patratu STPS Email: bmajhi@bhel.in Ph no: +91-9427506341	Sh Gopal Tiwary/ Dy. Manager (PMX) PSWR Nagpur Email: gopalt@bhel.in Ph no: +91-9881718378
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TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – III: Facilities in the scope of Contractor/BHEL

Sl. No.	Description	Scope / to be taken care by		Remarks
		BHEL	Bidder	
3.1	PART I ESTABLISHMENT			
3.1.1	FOR CONSTRUCTION PURPOSE:			
a	Open space for office (as per availability)	Yes		BHEL may provide free of charge limited open space for office and store as and where made available by its customer. Also refer clause no. 3.9.2
b	Open space for storage (as per availability)	Yes		
c	Construction of bidder's office, canteen and storage building including supply of materials and other services		Yes	
d	Bidder's all office equipments, office / store / canteen consumables		Yes	
e	Canteen facilities for the bidder's staff, supervisors and engineers etc		Yes	
f	Firefighting equipments like buckets, extinguishers etc		Yes	
g	Fencing of storage area, office, canteen etc of the bidder		Yes	
3.1.2	FOR LIVING PURPOSES OF THE BIDDER			
a	Open space for labour colony (as per availability)		Yes	
b	Labour Colony with internal roads, sanitation, complying with statutory requirements		Yes	
3.2.0	ELECTRICITY			
3.2.1	Electricity for construction 415 V (To be specified whether chargeable or free)			
a	Single point source of 415 V	Yes		Chargeable. Bidder to make it own arrangement of distribution of electricity at its own cost.
b	Further distribution including all materials, Energy Meter, Protection devices and its service		Yes	
c	Duties and deposits including statutory clearances if applicable		Yes	

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – III: Facilities in the scope of Contractor/BHEL

Sl. No.	Description	Scope / to be taken care by		Remarks
		BHEL	Bidder	
	PART I			
3.2.2	Electricity for the office, stores, canteen etc of the bidder(to be specified whether chargeable or free)			
a	Single point source		Yes	
b	Further distribution including all materials, Energy Meter, Protection devices and its service		Yes	
c	Duties and deposits including statutory clearances if applicable		Yes	
3.2.3	Electricity for living accommodation of the bidder's staff, engineers, supervisors etc		Yes	Contractor has to make his own arrangement.
a	Single point source		Yes	
b	Further distribution including all materials, Energy Meter, Protection devices and its service		Yes	
c	Duties and deposits including statutory clearances if applicable		Yes	
3.3.0	WATER SUPPLY			
3.3.1	For construction purposes:(to be specified whether chargeable or free)			
a	Making the water available at single point	Yes		Chargeable. Please refer clause 2.14
b	Further distribution as per the requirement of work including supply of materials and execution		Yes	
3.3.2	<u>Water supply for bidder's office, stores, canteen etc</u>			
a	Making the water available at single point		Yes	
b	Further distribution as per the requirement of work including supply of materials and execution		Yes	
3.3.3	<u>Water supply for Living Purpose</u>			Contractor has to make his own arrangement.
a	Making the water available at single point		Yes	
b	Further distribution as per the requirement of work including supply of materials and execution		Yes	
3.4.0	LIGHTING			

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – III: Facilities in the scope of Contractor/BHEL

Sl. No.	Description PART I	Scope / to be taken care by		Remarks
		BHEL	Bidder	
a	For construction work (supply of all the necessary materials) 1. At office/storage area 2. At the preassembly area 3. At the construction site /area		Yes	
b	For construction work (execution of the lighting work/ arrangements) 1. At office/storage area 2. At the preassembly area 3 At the construction site /area		Yes	
c	Providing the necessary consumables like bulbs, switches, etc during the course of project work		Yes	
d	Lighting for the living purposes of the bidder at the colony / quarters		Yes	
3.5.0	COMMUNICATION FACILITIES FOR SITE OPERATIONS OF THE BIDDER			
a	Téléphone, fax, internet, intranet, e-mail etc.		Yes	
3.6.0	COMPRESSED AIR wherever required for the work		Yes	
3.7.0	Demobilization of all the above facilities		YES	
3.8.0	TRANSPORTATION			
a	For site personnel of the bidder		Yes	
b	For bidder's equipments and consumables (T&P, Consumables etc)		Yes	

Sl.No.	Description PART II 3.9.0 ERECTION FACILITIES	Scope / to be taken care by		Remarks
		BHEL	Bidder	
3.9.1	Engineering works for construction:			NOT APPLICABLE
a	Providing the erection/constructions drawings for all the equipment covered under this scope	Yes		
b	Drawings for construction methods	Yes	Yes	In consultation with BHEL

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – III: Facilities in the scope of Contractor/BHEL

Sl.No.	Description PART II 3.9.0 ERECTION FACILITIES	Scope / to be taken care by		Remarks
		BHEL	Bidder	
c	As-built drawings – where ever deviations observed and executed and also based on the decisions taken at site- example – routing of small bore pipes		Yes	Changes are to be marked in drawing & handover to BHEL on completion of work.
d	Shipping lists etc for reference and planning the activities			NOT APPLICABLE
e	Preparation of site erection schedules and other input requirements		Yes	In consultation with BHEL
f	Review of performance and revision of site erection schedules in order to achieve the end dates and other commitments	Yes	Yes	In consultation with BHEL
g	Weekly erection schedules based on Sl No. e		Yes	In consultation with BHEL
h	Daily erection / work plan based on Sl No. g		Yes	In consultation with BHEL
i	Periodic visit of the senior official of the bidder to site to review the progress so that works are completed as per schedule. It is suggested this review by the senior official of the bidder should be done once in every two months.		Yes	
j	Preparation of preassembly bay			NOT APPLICABLE
k	Laying of racks for gantry crane if provided by BHEL or brought by the contractor/bidder himself			NOT APPLICABLE
L	Arranging the materials required for preassembly			NOT APPLICABLE

3.9.2 BHEL may provide free of charge limited open space, for office & storage shed, as and where made available by Customer (PVUN). It is the responsibility of the contractor to construct sheds, provide all utilities and dismantle and clear the site after completion of work or as and when required, as a part of his scope of work.

Note: Due to space constraint at site, contractor may have to arrange for open space for Batching Plant, Storage Area etc. outside the plant premises. Any cost implication of the same shall be to the account of contractor and no extra payment shall be made for any such arrangements made by contractor (if required).

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – IV: T&Ps AND MME TO BE DEPLOYED BY CONTRACTOR

4.1 Tools & Plants:

Nos of T&Ps to be deployed at site shall be decided with respect to monthly plan and review formats (F 14) based on site requirement. Below given Nos are tentative for planning purposes by the bidder.

Following Major T&Ps to be arranged by contractor within the time as indicated			
S. No	Major T&P items	Package-I	Package-II
1	Hydraulic Excavator	1 Nos	1 Nos
2	Hydraulic Excavator / Poclain (WITH ROCK BREAKER ATTACHMENT)	1 Nos	1 Nos
3	Dozer	1 Nos	1 Nos
4	Dumper	4 Nos	4 Nos
5	Vibromax/earth Compactor	1 Nos	1 Nos
6	Air Compressor	1 Nos	1 Nos
8	Hydra (10 / 12 T cap)	1 Nos	1 Nos
9	Welding Rectifier	2 Nos	2 Nos
10	Slip form equipment including hydraulic spare pump, 10% spare jack, epoxy painted MS shutter plate, materials and passenger hoist with safety block (safety devices), safety ropes etc complete	09 Sets	09 Sets
11	Access Tower of required height for Column Shell Construction	09 Nos	09 Nos
12	Hanging platforms with safety device	09 Nos	09 Nos
13	One no. Portable / stationary automatic batching plant with printing facility (approx. 30 Cum/Hr) – to be commissioned at site.	1 Nos	1 Nos
14	Transit mixer (4.5/5/6 M3 capacity)	3 Nos	3 Nos
15	Diesel operated Concrete pump (20 cum/ hr min capacity & lift 70M)	2 Nos	2 nos
16	Self priming dewatering pump 2 HP (diesel/ electric)	2 Nos	2 Nos
17	Multi stage high lift water Pump (for curing) (lifting height shall be 70 metre).	3 Nos	3 Nos
18	Pneumatic Hammer.	1 Nos	1 Nos
19	Reinforcement Bending Machine	1 Nos	1 Nos
20	Reinforcement Cutting Machine	1 Nos	1 Nos
21	Compression Testing Machine (200 T cap)	1 Nos	1 Nos

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – IV: T&Ps AND MME TO BE DEPLOYED BY CONTRACTOR

Following Major T&Ps to be arranged by contractor within the time as indicated			
S. No	Major T&P items	Package-I	Package-II
22	Civil laboratory equipments as per list attached in ANNEX 'A' with temporary building one AC lab size 4.5mtrx6mtr and 1 non AC lab 4.5 mtr x 4.5 mtr	1 Nos	1 Nos
23	Tower Crane with 70 m Boom with suitable height for ACC	2 Nos	2 Nos
24	Total Station	1 Nos	1 Nos
25	Theodolite 1 Second Accuracy	1 Nos	1 Nos
26	Auto Level & Staff	2 Nos	2 Nos
27	DG set (suitable capacity as per requirement, tentatively 125 KVA)	1 Nos	1 Nos
28	Concrete Cube Moulds – Adequate nos.		
29	Drinking Water Tank – 1000 lit.	1 Nos	1 Nos

4.2 Measuring and Monitoring Devices (MMD)

To be finalized at site as per requirement.

FIELD QUALITY LAB EQUIPMENTS

- 1) Automatic compression testing machine(2000KN) – 1no
- 2) Cube moulds (150mm size) –36 nos
- 3) Slump cone with tamping rod – 05 no
- 4) Sieves of different sizes for fine & coarse aggregate testing – 1 set
- 5) Core cutter test apPatratus – 05sets
- 6) Oven (capacity 120ltr, range – 250c) – 1no
- 7) Moisture container(steel/aluminum) – 06nos
- 8) Rapid moisture meter – 02nos
- 9) VICAT apPatratus with plungers for cement testing – 1set
- 10) Cube moulds (70mm size) – 06nos
- 11) Physical balance – 02no.
- 12) Automatic vibration m/c – 01 no.
- 13) Jars – 4 nos.

4.3 **Computer Infrastructure:** The successful bidder(s) will have to establish computerized project management system along with Two no Diploma in Civil

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – IV: T&Ps AND MME TO BE DEPLOYED BY CONTRACTOR

Supervisor with sufficient computer knowledge (knowledge of MS office) and the following are the minimum requirements of the system:

- 4.3.1 The bidder will have to install 2 nos PCs (multimedia PC work station Core i3/i5, 1 GHZ or above, 320 GB HDD, 4 GB RAM, 100 MBPS LAN card of DELL/HP/ASUS or equivalent make with window 10 O/S with required accessories like mouse, keyboard, UPS and required software like MS Office 2010 Professional, AutoCAD 2011, ADOBE PDF CREATOR (version 8.0) with one no laser jet printer compatible for A4 and A3 size printing (ink/ cartridge for which to be supplied as and when required, (the consumption may be assumed as 1 cartridge per month) with power backup at places, as per instruction of BHEL for exclusive use of BHEL.
- 4.3.2 These computers/printers along with technical (civil diploma) supervisor (Two nos) shall remain contractor's property/ownership for all legal/technical purposes; however, contractor shall be allowed to take out/release the same after completion of the site works. Further, the computer/printer along with two nos technical supervisor shall remain/work at BHEL offices.
- 4.3.3 The contractor's technical supervisor shall provide data / information etc. in prescribed formats for periodical updating of the progress reports, Billing, daily progress report, updating of schedule and site supervision etc.
- 4.3.4 This facility has to be provided from 1st month from LOI date till completion of site works or as decided by BHEL. If contractor fails to provide computer/ printer as per requirement, for a continuous period of fifteen days or more, BHEL shall have the right to purchase it at risk and cost of bidder.
- 4.3.5 **In the event of the contract period getting extended beyond the stipulated time for reasons not attributable to the bidder, the bidder will be reimbursed at Rs 10000.00 per month for one computers with printer facility, if the services of computer and printer are being used by BHEL.**
- 4.3.6 **If Contractor fails to mobilize above computer infrastructure BHEL reserve the right to recover from Bidder at the rate of Rs 15000 per Month.**

NOTE:

This above list is only indicative and neither exhaustive nor limiting. Quantities indicated above are only the minimum required. Contractor shall deploy all necessary T&P to meet the schedules & as prescribed by BHEL engineer and required for completion of work.

TECHNICAL CONDITIONS OF CONTRACT (TCC)
Chapter – V: T&Ps AND MME TO BE DEPLOYED BY BHEL ON
SHARING BASIS

5.1 BHEL WILL NOT PROVIDE ANY T&P's FOR THIS WORK.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – VI: TIME SCHEDULE

6.0 Time Schedule and Mobilization for both Package-I and Package-II:

6.1 Initial Mobilization and Time Schedule: After issuance of LOI (through email/fax/courier), Contractor shall report to the GM (Patraru)/Construction Manager of BHEL at site or Project Manager of BHEL at HQ Nagpur within 15 days and make KOM (Kick of Meeting) for mobilization of manpower, T&P, Date of start of work and detailed completion program.

The contractor has to subsequently augment his resources in such a manner that the entire works are completed within the **contract period of (18) Eighteen months**.

Date of start (DOS) of works shall be reckoned as the date of start of first excavation.

6.2 Contract Period and Schedule of Completion:

The entire work under the scope of this contract shall be carried out in such a manner that the following listed major milestones are achieved as per completion schedule given against each activity & released for erection by other agency.

S No	Activity	Time Schedule from Date of Start of Work
1	Completion of Foundation of ACC	06 Month
2	Completion of Ist Set of 10 Nos ACC Column with Cap	07 Month
3	Completion of 2nd Set of 10 Nos ACC Column with Cap	11 Month
4	Completion of 3 rd Set of 10 Nos ACC Column With Cap	15 Month
5	Completion of All civil work of ACC and allied work as per Scope of Work	18 Month

6.3 PROVISION OF PENALTY IN CASE OF SLIPPAGE OF INTERMEDIATE MILESTONES:

In case of slippage of Two Major Intermediate Milestones, mentioned as M1 & M2 hereunder, Delay Analysis shall be carried out on achievement of each of these two Intermediate Milestones in reference to F-14.

Milestones	Activity	Period of release of fronts from DOS
M1	Completion of Ist Set of 10 Nos ACC Column with Cap	7 th Month
M2	Completion of 3 rd Set of 10 Nos ACC Column With Cap	15 th Month

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – VI: TIME SCHEDULE

Note: Refer clause no 14 of NIT “Annexure-04” regarding modalities against provision of penalty in case of slippage of Intermediate Milestones.

Notes:

- Common activities like Plant roads, drains, fencing, paving and other misc. works etc. shall be completed in Phase wise manner / Instruction of Engineer within the Contractual time.
- Contractor shall note that individual milestones as above shall be achieved as per schedule furnished above.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – VII: TERMS OF PAYMENT

7.0 **Terms of Payment:**

7.1 **Progressive Payment / Final Payment:**

The payments for works under the scope of this contract shall be as per clause no 2.6; clause 2.22; clause 2.23 of General Conditions of Contract and Chapter X of Special Conditions of Contract. Few points of consideration are as below:

- 7.1.1** The measurements sheets of work done in a month shall be submitted in triplicate duly agreed/signed by BHEL Engineer. The contractor shall extend all necessary assistance for verification of measurements of works without any extra cost.
- 7.1.2** The RA bill payments are interim payments and bills shall be submitted in prescribed formats.
- 7.1.3** Recoveries on account of electricity, water, statutory deductions etc. shall be made as per terms of contract.
- 7.1.4** The payment for running bills will normally be released within around 30 days of submission of running bill with measurement sheets. Contractor shall make his own arrangement for making payment of impending labour wages and other dues in the meanwhile.
 - **BHEL will release payment through Electronic Fund Transfer (EFT)/RTGS.**
 - Final bill shall be submitted after completion of works and upon material reconciliation along with all prescribed formats.

7.2 **Extra/Supplementary items of work:**

The works shall be regulated as per clause no 2.15 and clause no 2.16 of General Conditions of Contract.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-VIII: Taxes and Other Duties

8.0 TAXES, DUTIES, LEVIES (Rev 13 dated 05/11/2018)

1. All taxes excluding GST, GST Cess & BOCW Cess **but including, Royalties, fees, license, deposits, commission, any State or Central Levy and other charges whatsoever, if any, shall be borne by you and shall not be payable extra.**
2. Any increase of the taxes excluding GST, GST Cess & BOCW Cess, at any stage during execution including extension of the contract shall have to be borne by the contractor. Quoted/ accepted rates/ price shall be inclusive of all such requirements. Please note that since GST on output will be paid by BHEL separately as enumerated below, your quoted rates/ price should be after considering the Input Credit under GST law at your end.
3. **GST :**
The successful bidder shall furnish proof of GST registration .GST along with Cess (as applicable) legally leviable & payable by the successful bidder as per GST Law, shall be paid by BHEL. Hence Bidder shall not include GST along with Cess (as applicable) in their quoted price.
4. GST charged in the Tax Invoice/Debit note by the contractor shall be released separately to the contractor only after contractor files the outward supply details in GSTR-1 on GSTN portal and input tax credit of such invoice is matched with corresponding details of outward supply of the contractor and has paid the GST at the time of filing the monthly return
5. Bidder shall note that the GST Tax Invoice complying with GST Invoice Rules (Section 31 of GST Act & Rules referred there under) wherein the 'Bill To' details will as below :-
BHEL GSTN – As per **Annexure -1**
NAME -- Bharat Heavy Electricals Limited
ADDRESS – Site address
6. Bidder to immediately intimate on the day of removal of Goods (in case of any supply of goods) to BHEL along with all relevant details and a scanned copy of Tax Invoice to below email ids to enable BHEL to meet its GST related compliances :-
Email id ---- to be intimated later on.

In case of delay in submission of the abovementioned documents on the date of dispatch, BHEL may incur penalty /interest for not adhering to Invoicing Rules under GST Law. The same will be liable to be recovered from the successful bidder, if such delay is not attributable to BHEL.
7. In case of raising any Supplementary Tax Invoice (Debit / Credit Note) Bidder shall issue the same containing all the details as referred to in Section 34 read with Rule 53.
8. Bidder shall note that in case GST credit is delayed/ denied to BHEL due to delayed / non receipt of goods and /or tax invoice or expiry of the timeline prescribed in GST Law for availing such ITC, or any other reasons not attributable to BHEL, GST amount shall be recoverable from the vendor along with interest levied / leviable on BHEL, as the case may be.
9. Bidder shall upload the Invoices raised on BHEL in GSTR-1 within the prescribed time as given in the GST Act. Bidder shall note that in case of delay in declaring such invoice in your return and GST credit availed by BHEL is denied or reversed subsequently as per GST Law , GST amount paid by BHEL towards such ITC reversal as per GST law shall be recoverable from the bidder along with interest levied / leviable on BHEL.
10. Way Bill: Successful Bidder to arrange for way bill / e-waybill for any transfer of goods for the execution of the contract.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-VIII: Taxes and Other Duties

The Bidder has to make their own arrangement at their cost for completing the formalities, if required, with Issuing Authorities, for bringing materials, plants & machinery at site for execution of the works under this contract, Road Permit/ Way Bill, if required, shall be arranged by the contractor and BHEL will not supply any Road Permit/ Way Bill for this purpose.

11. **New taxes and duties:**-Any New taxes & duties, if imposed subsequent to due date of offer submission as per NIT & TCN, by statutory authority during contract period including extension, if the same is not attributable to you, shall be reimbursed by BHEL on production of relevant supporting document to the satisfaction of BHEL. However, you shall obtain prior approval from BHEL before depositing new taxes and duties.

Benefits and/or abolition of all existing taxes must be passed on to BHEL against new Taxes, if any, proposed to be introduced at a later date.

In case any new tax/levy/duty etc. becomes applicable after the date of bidder's offer but before opening of the price bid, the bidder must convey its impact on his price duly substantiated by documentary evidence in support of the same before opening of the price bids. Claim for any such impact after opening the price bid will not be considered by BHEL for reimbursement of tax or reassessment of offer.

12. For transportation work, bidder shall declare in his quotation whether he is registered under GST, if yes, whether he intends to claim GST on forward charge basis. In absence of this declaration, BHEL will proceed further with the assumption that bidder intends not to claim GST on forward charge basis. However, in case of GST registered transporter, the amount to the extent of goods and service tax will be retained till BHEL avails the credit of GST. Further, transporter shall issue tax invoice which inter alia includes gross weight of the consignment, name of the consigner and the consignee, registration number of vehicle in which the goods are transported, details of goods transported, details of place of origin and destination, GSTIN of the person liable for paying tax whether as consigner, consignee or goods transport agency, and also containing other information as mentioned under rule 46.
13. **TDS under Income Tax shall be deducted at prevailing rates on gross invoice value from the running bills unless exemption certificate from the appropriate authority/ authorities is furnished.**
14. **TDS under GST shall be deducted at prevailing rates on applicable value from the running bills.**
15. Refer Annexure – 2 for BOCW Act & Cess Act.

ANNEXURE-1

State wise GSTIN no.s of BHEL

Sl. No	Projects under state	GSTIN
1	Andhra Pradesh	37AAACB4146P7Z8
2	Bihar	10AAACB4146P1ZU
3	Chhattisgarh	22AAACB4146P1ZP
4	Gujarat	24AAACB4146P1ZL
5	Jharkhand	20AAACB4146P5ZP
6	Madhya Pradesh	23AAACB4146P1ZN
7	Maharashtra	27AAACB4146P1ZF
8	Orissa	21AAACB4146P1ZR
9	Telangana	36AAACB4146P1ZG

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-VIII: Taxes and Other Duties

ANNEXURE-2 **BOCW Act & Cess Act**

Bidder may please note that the sub-contractor/bidder of BHEL engaging building or construction worker in connection with building or other construction work, are required to follow the procedures enumerated below:

1. It shall be the sole responsibility of the contractor as employer to ensure compliance of all the statutory obligations under the Building and other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996 and the Building and other Construction Workers' Welfare Cess Act, 1996 and the rules made thereunder.
2. It shall be sole responsibility of the contractor engaging Building Workers in connection with the building or other construction works in the capacity of employer to apply and obtain registration certificate specifying the scope of work under the relevant provisions of the Building and Other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996 from the appropriate Authorities.
3. It shall be responsibility of the contractor to furnish a copy of such Registration Certificate within a period of one month from the date of commencement of Work.
4. It is responsibility of the contractor to register under the Building and other Construction Workers' Welfare Cess Act, 1996 and deposit the required Cess for the purposes of the Building and other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996 at such rate as the Central Government may , by notification in the Official Gazette, from time to time specify. However, before registering and deposit of Cess under the Building and other Construction Workers' Welfare Cess Act, 1996, the contractor will seek written prior approval from the Construction Manager.
5. It shall be sole responsibility of the contractor as employer to get registered every Building Worker, who is between the age of 18 to 60 years of age and who has been engaged in any building or other construction work for not less than ninety days during the preceding twelve months as Beneficiary under the Building and other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996.
6. It shall be sole responsibility of the contractor as employer to maintain all the registers, records, notices and submit returns under the Building and other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996 and the Building and other Construction Workers' Welfare Cess Act, 1996 and the rules made thereunder.
7. It shall be sole responsibility of the contractor as employer to provide notice of poisoning or occupation notifiable diseases, to report of accident and dangerous occurrences to the concerned authorities under the Building and other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996 and the rules made thereunder and to make payment of all statutory payments & compensation under the Employees' Compensation Act, 1923.
8. It shall be the responsibility of the sub-contractor as employer to make payment/deposit of applicable cess amount on the extent of work involving building or construction workers engaged by the sub-contractor within a period of one month from the receipt of payment. It shall also be responsibility of the Contractor to furnish BHEL on monthly basis, Receipts/ Challans towards Deposit of the Cess

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-VIII: Taxes and Other Duties

under the Building and other Construction Workers' Welfare Cess Act, 1996 and the rules made thereunder along with following statistics :

- (i) Number of Building Workers employed during preceding one month.
 - (ii) Number of Building workers registered as Beneficiary during preceding one month.
 - (iii) Disbursement of Wages made to the Building Workers for preceding wage month.
 - (iv) Remittance of Contribution of Beneficiaries made during the preceding month
9. BHEL shall reimburse the contractor the Cess amount deposited for the purposes of the Building and other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996 under the Building and other Construction Workers' Welfare Cess Act, 1996 and the rules made thereunder. However, BHEL shall not reimburse the Fee paid towards the registration of establishment, fees paid towards registration of Beneficiaries and Contribution of Beneficiaries remitted.
10. It shall be responsibility of the Building Worker engaged by the Contractor and registered as a beneficiary under the Building and other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996 to contribute to the Fund at such rate per mensem as may be specified by the State government by notification in the Official Gazette. Where such beneficiary authorizes the contractor being his employer to deduct his contribution from his monthly wages and to remit the same, the contractor shall remit such contribution to the Building and other construction Workers' Welfare Board in such manner as may be directed by the Board , within the fifteen days from such deduction.
11. Bidders may please note that though the quoted price is exclusive of BOCW (which will be reimbursed by BHEL as per sub-clause 9 above) , however, If at any point of time during the contract period, non-compliance of the provisions of the Building and other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996 and the Building and other Construction Workers' Welfare Cess Act, 1996 and the rules made thereunder is observed, BHEL reserves the right to deduct the applicable cess (1%) on the contract value and penalty (if any, imposed by Cess Authorities) from the payables on account of non-compliance.
12. The contractor shall declare to undertake any liability or claim arising out of employment of building workers and shall indemnify BHEL from all consequences / liabilities / penalties in case of non-compliance of the provisions of the Building and other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996 and the Building and other Construction Workers' Welfare Cess Act, 1996 and the rules made thereunder.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

CHAPTER IX – Technical Specifications and Plot Plan

9.0 Following Technical Specifications shall be integral parts of this tender as Vol-I-E:

SL. NO	DOCUMENTS
2.	Section C: Specific Technical Specification
3.	Section D: General Technical Specification

TECHNICAL CONDITIONS OF CONTRACT (TCC)

CHAPTER X – Tentative Manpower Requirements

10.0 Manpower Requirements:

Following (minimum) engineering manpower with power plant construction background to be deployed at site by the successful vendor for their day to day supervision etc.	
Qualified safety officers with assistants (exclusive for safety supervision for project jobs).	Officer – One Assistant - One
Engineer & Supervisors for quality inspection.	One Engineer One supervisors
Site supervising engineer and supervisors for civil works in ACC	Two Engineers Two supervisors
Chemist / QAE for Civil Laboratory	One
Planning Engineer (exclusively for planning)	One Engineer

10.1 Deputation of above man-power shall be jointly decided at site in line with construction schedule.

10.2 Engineer/ supervisor for other functions like store & purchase, material management, planning, finance, administration & liaison etc are to be provided as per site requirement and not considered above.

10.3 In the event of non-deputation of engineer/supervisor by the bidder as per above agreed schedule, BHEL shall reserve the right to deduct Rs 50,000.00 per man-month for engineer, Rs 35,000.00 per man-month for the supervisor/safety officer/chemist and Rs. 30,000 per man-month for safety supervisor from RA bills. Further induction of manpower regarding site supervisor & site engineer will be decided at site as per requirement without any financial implication.

10.4 BHEL reserves the right to reject or approve the list of personnel proposed by the contractor. The persons whose bio-data have been approved by BHEL will have to be posted at site and deviation in this regard will not be permitted unless specific & reasonable justification is made.

10.5 In addition to above, a well experienced qualified engineer to be designated, as 'Project Co-coordinator', shall be deployed by the contractor. Such engineer shall have adequate exposure on the job and shall remain fully involved in all planning activities, guidance etc. to contractor's own team during the complete execution period of contract.

The contractor should also submit the fitness/calibration certificate for T&Ps regularly and renew as per applicable IS standards and statutory requirements. The tools & tackles shall not be removed from site without written permission of BHEL.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

CHAPTER XI – BILL OF QUANTITIES AND % WEIGHTAGE OF INDIVIDUAL ITEMS FOR PACKAGE-I

This Chapter consists of Part A & Part B of Volume II “Price bid”:

<u>CONTENTS</u>	
Description	Remarks
PART A: Instructions to the Bidders	Instructions
PART B: % weightage for amount of individual items of Schedule of quantity	Refer Latest Chapter-XI of Vol-IA TCC (BILL OF QUANTITIES AND % WEIGHTAGE OF INDIVIDUAL ITEMS)
PART C: Total Lump Sum Price for entire scope of Work	This part is implanted in the E- Procurement portal entitled as “ Part-C of Vol-II Price Bid ”.

Part A: Instructions to the Bidders

- Bidders shall quote Total Lump-sum Price for the entire scope of work for Package-I Only at the place implanted in the E-Procurement Portal titled as “Part-C of Vol-II Price Bid”.** Price mentioned elsewhere in the offer of the bidder shall be treated as Null and Void.
- BHEL has fixed the % weightages as in “Part-B” for the amount of individual items of Schedule of Quantity w.r.t. the total price of Price Bid Vol-II for Package-I.
- Based on the pre-fixed % weightages, amount of individual items shall be derived by BHEL for Package-I. This amount shall not be rounded off.
- Based on the quantities of individual item and the amount arrived in Sl No 3 above, item rate of individual items shall be derived by BHEL for Package-I. This item rate shall be rounded off up to two decimal places and shall be used to calculate the total amount of an item.
- For the convenience of bidders, BHEL has issued an Excel sheet for Calculation Purpose only with all requisite formulae as detailed above for Package-I. ***However this excel sheet shall not form part of contract document. Further, this sheet should not be uploaded at the e-Portal.***
- Bidders to note that this is an ‘**Item rate contract**’. Payment shall be made for the actual quantities of work executed at the Unit rate arrived at as per serial no 4 above.

PART B: % weightage for amount of individual items of Schedule of quantity w.r.t. the total price (as quoted by the bidder in “Part C of Vol-II-Price Bid”) for Package-I.

Note: This Chapter-XI is uploaded separately as file titled ‘**Chapter XI-BOQ and Percentage Weightage**’-2238.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

CHAPTER XII – BILL OF QUANTITIES FOR PACKAGE-II

E-Tender Specification No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-II/2239

Scope of Works: PACKAGE-II: All Civil and Architectural work of RC Foundations, RC Circular Hollow Columns and RC Top Slab over RC Columns supporting Air Cooled Condenser Fan Deck (ACC) - approx. 30nos, Complete Civil & Architectural works of Staircase and Elevator Structure of ACC including Lift Pit and Machine Room of Elevator (Unit-3), PMCC Building (Unit-2&3), Duct supporting pedestals and foundation (Unit-3), Vacuum pump foundation (Unit-3) and Paving in ACC block area only for (Unit-3) at 3x800MW PVUNL Patratu STPS, Jharkhand

ST NO	Item Description	Unit	Quantity
100	EARTH WORK: Earth work In excavation, backfilling and disposal including all labour, equipments etc complete as per specification, drawing and as directed by engineer- in-charge for the following.		
101	Earth work in excavation in all types of soil including ash which can be excavated by any means including setting out, levelling, dewatering (but excluding special type of dewatering viz. well point method), shoring & strutting (wherever required), dressing the sides & bottom, all lifts, ramming/compacting the excavated bottom, stacking, disposal of surplus excavated materials within a lead upto 1Km, spreading/levelling of disposed materials etc all complete for following depths below ground level.		
a	Depth from ground level but not exceeding 2 m	CUM	14855.00
b	Depth exceeding 2 m but not exceeding 4 m	CUM	14855.00
c	Depth exceeding 4 m but not exceeding 6 m	CUM	8170.00
d	Depth exceeding 6 m but not exceeding 8 m	CUM	1635.00
e	Depth exceeding 8 m but not exceeding 10 m	CUM	505.00
103	Earth work in excavation in soft rock (rock without any recovery of excavated materials in the form of hard stone/boulder) including weathered rock which can be excavated by means of crow bar, pick axe, pneumatic rock breaker attachment with excavator machine etc but does not require chiselling or blasting including setting out, levelling, dewatering (wherever required), shoring & strutting (wherever required), dressing the sides & bottom, all lifts, ramming/compacting the excavated bottom, stacking, disposal of surplus excavated materials within a lead upto 1 Km, spreading / levelling of disposed materials etc all complete for following depths below ground level.		
a	Depth from ground level but not exceeding 2 m	CUM	4270.00
b	Depth exceeding 2 m but not exceeding 4 m	CUM	3270.00
c	Depth exceeding 4 m but not exceeding 6 m	CUM	8170.00
d	Depth exceeding 6 m but not exceeding 8 m	CUM	14705.00
e	Depth exceeding 8 m but not exceeding 10 m	CUM	8170.00
105	Earth work in excavation in hard rock requiring controlled blasting including wedging, line drilling, pre shearing etc as required, setting out, levelling, dewatering (wherever required), shoring & strutting (wherever required), dressing the sides & bottom, all lifts, necessary licenses/statutory clearances for blasting, supply, storage & handling of blasting		

TECHNICAL CONDITIONS OF CONTRACT (TCC) **CHAPTER XII – BILL OF QUANTITIES FOR PACKAGE-II**

ST NO	Item Description	Unit	Quantity
	materials, stacking/disposal of surplus excavated material within a lead upto 1 Km, spreading / levelling of disposed materials etc all complete for following depths below ground level.		
c	Depth exceeding 4 m but not exceeding 6 m	CUM	820.00
d	Depth exceeding 6 m but not exceeding 8 m	CUM	1475.00
e	Depth exceeding 8 m but not exceeding 10 m	CUM	820.00
A107	Earthwork in Back filling upto any depth below ground level around foundations, plinths, trenches, drains etc to proper grade and level in layers not exceeding 300 mm thickness using/with selected materials from compulsorily excavated earth available within a lead upto 1 Km and compacted as specified including re-excavation of stacked earth, watering, ramming/compaction by manual/mechanical means, dressing etc all complete.for the following.		
a	Each layer compacted so as to achieve at least 90% maximum dry density as per IS-2720 (Part-VII)	CUM	27045.00
A108	Earthwork in Back filling upto any depth below ground level around foundations, plinths, trenches, drains etc to proper grade and level in layers not exceeding 300 mm thickness using/with selected earth directly from excavation within a lead upto 1Km and compacted as specified including re-excavation of stacked earth , watering, ramming/compaction by manual/mechanical means, dressing etc all complete.for the following.		
a	Each layer compacted so as to achieve at least 90% maximum dry density as per IS-2720 (Part-VII)	CUM	27045.00
109	Extra over ST No. 101 and 103 to 108 for carriage of material/earth for every 500m or part thereof beyond an initial lead of 1km.		
a	Carriage for stacking/ backfilling of serviceable material/ earth	CUM	5425.00
b	Carriage for disposal of serviceable/unserviceable material/ earth	CUM	15575.00
A111	Supplying and filling sand upto any depth under floors, around foundations, plinths etc. in layers not exceeding 300 mm thickness and compacted so as to achieve at least 80% relative density as per IS-2720 (Part-XIV) including spreading, watering, ramming/compaction by manual / mechanical means, dressing, royalty (if any) etc. all complete.	CUM	150.00
200	CONCRETE WORK: Providing and placing concrete work including cost of labour, materials (unless otherwise specified in BOQ/contract specification) and equipment for handling, transportation, batching, mixing, placing, vibrating and curing (excluding cost of centering, shuttering and reinforcement) with mechanised equipments like batching plant, transit mixer, concrete pump etc. complete as per drawing, specifications and as per direction of engineer in charge for the following. (BHEL will supply Cement free of cost as per TCC)		
201	Concrete of grade M7.5 (1 part cement, 4 part sand, 8 parts of 40 mm graded aggregate by volume) as mass filling course , lean concrete, levelling course, mud mat under and around foundations/floors, at any depth below finished floor level etc.	CUM	3140.00
202	Concrete of grade M10 (1 part cement, 3 part sand, 6 parts of 40 mm graded aggregate by volume) as lean concrete, levelling course , mud mat under and around foundations/floors at any depth below finished floor level etc	CUM	185.00
203	Concrete of grade M15 (1 part cement, 2 part sand, 4 parts of 40 mm graded aggregate by volume) as lean concrete, levelling course , mud mat under and around foundations/floors at any depth below finished floor level etc	CUM	15.00

TECHNICAL CONDITIONS OF CONTRACT (TCC) **CHAPTER XII – BILL OF QUANTITIES FOR PACKAGE-II**

ST NO	Item Description	Unit	Quantity
204	Concrete of grade M20 (1 part cement, 1.5 part sand, 3 parts of 20 mm graded aggregate by volume) under floors, paving, plinth protection, pipe encasing etc complete.	CUM	125.00
205	Providing and laying Design Mix cement concrete conforming to IS:456 & IS 10262-2009 for reinforced concrete works with coarse sand and graded hard stone aggregate of 20mm nominal size in foundations/substructure, grade slab, paving, drains, under floors etc at all level below finished floor level, any shape, position or thickness etc complete including use of plasticizer/ superplasticizer conforming to IS:9103 (latest) to achieve required slump in concrete all complete as per specification & drawing for the following.		
a	M 25 Grade	CUM	2330.00
b	M30 Grade	CUM	20255.00
206	Providing and laying Design Mix cement concrete of grade conforming to IS:456 & IS 10262-2009 for reinforced concrete works with coarse sand and graded hard stone aggregate of 20mm nominal size in superstructure at all level above finished floor level , any shape, position or thickness etc complete including use of plasticizer/ superplasticizer conforming to IS:9103 (latest) to achieve required slump in concrete all complete as per specification & drawing for the following.		
a	M 25 Grade	CUM	860.00
b	M 30 Grade	CUM	660.00
A206	Providing and laying Design Mix cement concrete of grade conforming to IS:456 & IS 10262-2009 for reinforced concrete works with coarse sand and graded hard stone aggregate of 20mm nominal size in Circular Hollow columns of adequate thickness as per design from raft top to bottom of fan deck at any level as per ACC design , any shape, position or thickness etc complete including use of plasticizer/ superplasticizer conforming to IS:9103 (latest) to achieve required slump in concrete all complete as per specification & drawing for the following.		
b	M 30 Grade	CUM	12195.00
207	Providing and laying Design Mix cement concrete confirming to IS:456 & IS 10262-2009 for reinforced concrete works of grade mentioned below in machine foundations for TG, Gas Turbine, ID/FD/PA fans, BFP, Coal mills at all elevations below/above finished floor level except TG deck and top decks supported over vibration isolation system but including TG foundation Columns with addition of suitable plasticizer conforming to IS 9103(latest) to achieve a slump more than 125mm in concrete as per manufacturer's recommendation with 20 mm nominal size graded aggregate in concrete all complete as per specification & drawing		
a	M 30 Grade	CUM	65.00
210	Extra over ST Nos. 205 to 208 for conducting UPV test for concrete at all levels including all equipments, making necessary arrangements, staging, submission of report etc. all complete as directed by engineer in charge and as per specification.	CUM	
211	Providing and encasing of structural steel member with concrete using nominal aggregate size of 12.5mm down. Encased member shall be wrapped with welded wire mesh/chicken wire mesh with proper lap etc. complete as per specification for the following grades. (Payment of welded wire mesh, chicken wire mesh shall be made separately)		
b	M 25	CUM	10.00

TECHNICAL CONDITIONS OF CONTRACT (TCC)

CHAPTER XII – BILL OF QUANTITIES FOR PACKAGE-II

ST NO	Item Description	Unit	Quantity
212	Screed concrete conforming to IS 456 with coarse sand and graded hard stone aggregate 12.5mm/6 mm nominal size on the roof at all level or thickness, drains etc complete as per following.		
a	01:02:04	CUM	65.00
213	Providing and laying Design Mix cement concrete as per IS:456 & IS 10262-2009 for reinforced concrete works using graded aggregate for Concrete in precast works like roof slabs/trench covers, fins, lintels, chajas, beams, columns, wall panels, facias etc.at all levels in all kinds of work including formwork/moulds, curing, rendering the top exposed surface with cement sand mortar (1:3), handling, storing, transpoting, all leads, erection without damage, setting in position with cement sand mortar (1:3), filling the gaps between adjacent precast units with M30 grade concrete or cement sand mortar (1:3) and including making of holes for bolts for fixing, welding etc.complete with graded aggregate (20/12.5/10 mm) and as per specification and drawing for following grades.		
a	M25	CUM	10.00
b	M30	CUM	55.00
214	Providing and laying Design Mix cement concrete as per IS:456, IS 3370 & IS 10262-2009 for reinforced concrete works using graded aggregate for Concrete in water retaining/conveying structures including addition of suitable plastisizer cum waterproofing cement additives confirming to IS 9103 latest to achieve a slump more than 125 mm in concrete as per manufacturers recommendation and conforming to limits of permeability as per IS 2545 and specification with 20 mm nominal size graded aggregate for following grades. Watertightness is to be ensured including structural grouting if required.		
b	M30	CUM	55.00
215	Dismantling concrete work for all types of structures at all levels including stacking of servicable material to a lead of 500 m and disposal of unservicable material upto a lead of 2 km, cutting of reinforcement, labour, equipment, safety precautions etc all complete as per drawings, specification and instructions of engineer in charge.		
a	Plain cement concrete of all grades	CUM	55.00
b	Reinforced cement concrete of all grades	CUM	160.00
216	Chipping of concrete in reinforced concrete work, cutting pockets, making openings at all levels and according to shapes, disposal of waste materials upto a lead of 2 km as directed by engineer including equipment, safety precautions, making good the broken surface etc all complete as per specification, drawing, instructions of engineer in charge but excluding cutting of reinforcement .	CUDM	500.00
217	Extra over and above St No 216 for cutting of reinforcement , all sizes and types including labour, equipment, return of cut reinforcement to store etc all complete as per specification, drawings and instructions of engineer in charge. Measurement shall be on the cross sectional area of reinforcement cut.	SQCM	55.00
218	Cutting Reinforced concrete with mechanised tools like Core drilling machine etc. for cutting pockets, holes, cores in slab, beam, column or foundation as per direction of engineer in charge.	CUDM	500.00
223	Cutting of existing concrete/ RCC slab (total thickness upto 250mm including floor finsih & deck sheet if any) inside control room/ pump house or anywhere inside boundary using power tools of (DD2E of HILTI/ BOSCH make or equivalent) with low noise and dust including cutting reinforcements, removing the rubbish within a lead of 1 km, including making good the	SQM	55.00

BHEL-PSWR (VOL-I-A- TECHNICAL BID SPECIFICATION)

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/
BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-II/2239

Page 85 of 108

TECHNICAL CONDITIONS OF CONTRACT (TCC)

CHAPTER XII – BILL OF QUANTITIES FOR PACKAGE-II

ST NO	Item Description	Unit	Quantity
	broken edges/ surface with cement mortar, painting, finishing to match with existing finishing, scaffolding/ supporting at all level, all complete and as directed by Engineer (measurements shall be taken as per cutting surface area).		
300	FORMWORK: Providing, fixing and removing formwork at all elevations for all structures, as per specifications and including all labour, material, scaffoldings and centering etc. complete as per drawing, specifications and as per direction of engineer in charge for the following.		
301 .I	Design, Engineering, Drawing, supply and mobilisation of Slipformwork system required for ACC Column Shell Construction as per approved drawing duly reviewed by Engineering/Third Party Structural Consultant work including mobilisation of Pre-Engineered Cuplock System/ Equivalent access tower for facilitating Workmen & Material Movment at Various level of Column Shell. Access Tower shall posses all safety features for working at Height.	SET	9.00
A301	Fairface form work with good quality water proof ply wood with film face of required thickness and smooth surface below finished ground floor level for foundations, footings, base of columns, walls, columns, pilasters, beams, mass concrete, trenches etc.	SQM	8380.00
A302	Fairface form work with good quality water proof ply wood with film face of required thickness and smooth surface above finished ground floor level for foundations, footings, base of columns, walls, columns, pilasters, beams, mass concrete, trenches etc.	SQM	6065.00
B302	Providing and fixing formwork on inner & outer surfaces of A.C.C. Columns with Slip Form Shuttering of approved quality for cast-in-situ, plain or reinforced concrete works of any type and section (including curved surfaces and ACC Column shell) for all elevations, including labour, materials, equipment, waste of forms, shoring, strutting, scaffolding, staging, tying, nailing, caulking, bolting etc. and removal of form work and staging etc. all complete as per specifications, drawings and instructions of the Engineer.	SQM	47505.00
304	Providing, fixing and removing formwork in block-outs/pockets and openings (below 0.1 sqm plan area) at all elevations including cutting, formation of all shapes and all other operations required for making the required shape and size all complete as per specification, drawing and instruction of engineer in charge.		
a	Upto 150 mm depth	EACH	35.00
b	Pockets of depths more than 150mm and upto 300 mm depth	EACH	35.00
c	Pockets of depths more than 300mm and upto 600 mm depth	EACH	35.00
d	Pockets of depths more than 600mm and upto 1000 mm depth	EACH	35.00
400	REINFORCEMENT WORK : Reinforcement work including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, transportation, handling etc at all level as per specification, drawings and as directed by engineer - in - charge for the following:		
401	Providing, straightening, cutting, bending, placing in position at all level, binding of mild steel reinforcements conforming to grade 1 of IS:432 part 1 in concrete including cost of reinforcement steel, binding wire, labour, scaffolding, transportation to & from stores etc. all complete as per specifications & drawings.	MT	5.00

TECHNICAL CONDITIONS OF CONTRACT (TCC)

CHAPTER XII – BILL OF QUANTITIES FOR PACKAGE-II

ST NO	Item Description	Unit	Quantity
402	Providing, straightening, cutting, bending, placing in position at all level, binding in position of steel reinforcements of TMT steel of grade Fe-500D or 500EQR confirming to IS:1786 including cost of reinforcement steel, binding wire, labour, scaffolding, transportation to & from stores etc complete all as per specifications, drawings and as directed by Engineer. (BHEL will supply TMT free of Cost as per TCC)	MT	3825.00
405	Providing & fixing of Rebar in existing concrete surface by inserting reinforcement bar with Epoxy based suitable bonding compound of Hilti or equivalent make (HIT-RE-500 of Hilti or equivalent make) for interconnection of new R.C. structure with existing R.C. structure. Depth of drilled hole should be suitable to develop maximum recommended strength as per approved manufacturer's recommendation. This item includes supply of all materials including bonding chemicals, T&P required to execute the work, cost of all labour, transportation of chemical, staging to reach work place etc. all complete as directed by Engineer - in - Charge. Random Pull out non destructive test as directed by engineer shall be conducted to ensure strength of bond and same is included in this item. Reinforcement bar shall be paid separately under item no. 402, 403, 405 as applicable.		
a	12mm Reinforcement bar	Nos.	55.00
b	16mm Reinforcement bar	Nos.	55.00
c	20mm Reinforcement bar	Nos.	55.00
A406	Supply and fixing reinforcement bar couplers (of approved manufacturer's as per the relevant IS code) in position for steel reinforcements of TMT steel of grade Fe-500D or 500EQR confirming to IS:1786 including , labour, scaffolding, transportation to & from stores etc complete all as per specifications, drawings and as directed by Engineer.(Agency has to supply reinforcement bar couplers).		
b	16mm dia	Nos.	505.00
c	20mm dia	Nos.	505.00
d	25mm dia	Nos.	505.00
e	28mm dia	Nos.	505.00
f	32mm dia	Nos.	505.00
407	Providing, straightening cutting, bending, placing in position at any level, binding of mild steel reinforcements in brickwork including cost of reinforcement and binding wire, labour, scaffolding etc. complete all as per specifications & drawings.(TMT will be supplied free of Cost as per TCC)	MT	5.00
408	Providing, straightening, cutting, bending, placing in position at any level, binding in position high yield strength steel TMT reinforcements in brickwork including cost of reinforcement and binding wire, labour, scaffolding etc. complete all as per specifications & drawings.(TMT will be supplied free of Cost as per TCC)	MT	5.00
500	Roof Treatment works: Roof treatment works including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, transportation, handling, curing, sampling, testing etc at all level as per specification, drawings and as directed by engineer - in - charge.		

TECHNICAL CONDITIONS OF CONTRACT (TCC)

CHAPTER XII – BILL OF QUANTITIES FOR PACKAGE-II

ST NO	Item Description	Unit	Quantity
502	Providing and laying underbed grading plaster with cement mortar 1:4 (1 cement : 4 sand) and average thickness of 15 mm including preparation of surface, batching, mixing, leveling etc all complete. (BHEL will supply Cement free of cost as per TCC)	SQM	2205.00
A506	Providing and applying PU based water proofing treatment with one coat of polyurethane or any other equivalent material based primer with an application rate of minimum 6 sq.m per litre and two successive liquid coatings of high solids content urethane pre-polymers or equivalent material based finish coats as per relevant IS/ASTM standards to form an elastomeric membrane with overall dry film thickness 1.5 mm subject to minimum 500 gm/sqm/coat application rate. Item includes surface preparation, polyscrim cloth /fabric , polymerised mortar base preparation, etc all complete as per specifications and directions of engineer in charge.	SQM	2205.00
507	Providing and laying wearing course consisting of 25 mm thick plain cement concrete of grade M15 (1:2:4) with graded aggregate of 12.5mm size cast in panels of maximum size 1.2mx1.2m and reinforced with 0.56 mm dia. galvanised chicken wire mesh and sealing of joints (in grooves of 6mm X 6mm) using silicon /elastomeric compound etc all complete.(BHEL will supply Cement free of cost as per TCC)	SQM	2205.00
A510	Providing and laying Pressed Precast cement concrete flooring tiles of 20mm thickness and size 300X300 mm conforming to IS 13801 with 15 mm thick 1:4 cement mortar over the top most layer of roofing treatment with fine joints including sealing of joints (silicon/elastomeric sealant) etc all complete. (Water proofing paid elsewhere)	SQM	105.00
C510	Providing and laying cement concrete chequered flooring tiles of 22 mm thickness and size 200x200 mm conforming to IS 13801 with 8 mm thick 1:4 cement mortar over the top most layer of roofing treatment in pathway or entire area with fine joints including sealing of joints (silicon/elastomeric sealant) and providing expansion gap in both directions including underbed(as per drawings) filled up with (silicon/elastomeric) joint sealant etc all complete. (Water proofing paid elsewhere)(including cost of cement for tiles making)	SQM	255.00
511	Providing and applying two coats of bitumen grade 85/25 as per IS 702 (@ 1.7kg/sqm)with 1% antistripping compound conforming to IS 6241 in foundation, wall, column etc on concrete surfaces exposed to soil / ash including surface preparation etc. all complete.	SQM	14155.00
517	Providing and laying foam concrete blocks in the toilets/sunken slab etc. complete as directed by engineer in charge.	CUM	15.00
518	Anti termite and Anti weeds chemical treatment of soil with Chloropyrifos emulsifiable or equivalents, concentrates (1%) conforming to IS :8944 all complete.	SQM	2205.00
600	JOINTS AND FILLERS: Joints & fillers including all labour, material, equipment, transportation, handling etc at all level as per specification, drawings and as directed by engineer - in - charge.		
601	Supplying & installation of bitumen impregnated fibre board conforming to IS 1838 as joint filler at joints in concrete including nailing, coating of both faces with coal tar pitch/bitumin etc. all complete.		
a	12 mm wide joints.	SQM	985.00
b	20 mm wide joints	SQM	50.00
c	25 mm wide joints	SQM	50.00
d	50 mm wide joints	SQM	50.00

BHEL-PSWR (VOL-I-A- TECHNICAL BID SPECIFICATION)

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/
BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-II/2239

Page 88 of 108

TECHNICAL CONDITIONS OF CONTRACT (TCC) **CHAPTER XII – BILL OF QUANTITIES FOR PACKAGE-II**

ST NO	Item Description	Unit	Quantity
603	Providing and applying polysulphide based sealant conforming to IS:12118 in joints in concrete including cleaning of joints, raking out groove, application of primer, scaffolding etc. all complete for following size grooves:		
a	25mmX25mm	RM	105.00
A604	Supplying and filling in position hot applied bitumin sealing compound (Grade A) confirming to IS 1834 including cleaning, mixing, heating, pouring/injecting sealing compound in gaps in joints including application of primer etc. all complete.		
b	12mm X 25mm	RM	5925.00
c	20mmX25mm	RM	545.00
A605	Supply and instalation of Polystyrene flexible board confirming to IS 4671 as joint filler at joint of comcrete including nailing, coating of both faces with coal tar pitch /butimen etc. all complete.		
a)	100mm thick	SQM	290.00
610	Providing and fixing PVC water stops in joints conforming to IS 12200 & IS 15058 all complete for the following: (Bulb or Kicker type)		
d	230 mm wide and 6 mm thick	RM	105.00
612	Providing and applying approved fire retardant sealant in joints/openings including cleaning of joints/openings, raking out groove, application of primer, scaffolding etc. all complete.		
a	25mmX25mm	RM	95.00
b	50mmX25mm	RM	95.00
615	Providing and fixing 300 mm wide Stainless steel strips (Grade SS 316) over expansion joints with minimum lap of 50mm length including stainless steel screws, rawl plugs etc. all complete.	Kg	95.00
700	MS EMBEDMENTS: Embedments including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, transportation, handling etc. at all level as per specification, drawings and as directed by engineer - in - charge.		
701	Supply, fabricating and fixing of mild steel embedments , inserts, pipe sleeves, angle pieces, rungs of various diameters, plates of dimensions as required etc. including welding, bolting, cutting, drilling, scaffolding, setting etc. all complete.	MT	5.00
702	Supply, Fabrication, transportation, delivery at site and erection, installation and alignment of mild steel foundation bolt assembly conforming to IS:2062 and grade 1 of IS:432 in concrete along with nuts, lock nuts (as per IS:1363, 1364 and IS:3138), washers, anchor plates, stiffner plates, protective tape, pipe sleeves, templates etc. including welding, cutting, grinding, threading, drilling etc. all complete.	MT	2.00
703	Same as above items 701 & 702 with BHEL supplied material free of cost including loading, transportation, unloading etc. all complete from BHEL store to plant site.		
A	Mild steel embedments, inserts, pipe sleeves, angle pieces, rungs of various diameters, plates of dimensions as required etc.	MT	5.00
B	Mild steel foundation bolt assembly conforming to IS:2062 and grade 1 of IS:432 in concrete along with nuts, lock nuts (as per IS:1363, 1364 and IS:3138), washers, anchor plates, stiffner plates, protective tape, pipe sleeves, templates etc.	MT	5.00

BHEL-PSWR (VOL-I-A- TECHNICAL BID SPECIFICATION)

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/
BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-II/2239

Page 89 of 108

TECHNICAL CONDITIONS OF CONTRACT (TCC) **CHAPTER XII – BILL OF QUANTITIES FOR PACKAGE-II**

ST NO	Item Description	Unit	Quantity
704	Supplying, fabricating, erecting and installing following items in concrete/brickwall for all kind of works, including setting material in concrete, layout, scaffolding, cutting, forming, grinding, drilling, bolting, welding, jointing, testing etc. all complete.		
a	MS pipes of all diameters	kg	105.00
b	PVC pipes / conduits of all diameters	kg	295.00
d	Expansion anchor fasteners (galvanised) of HILTI make(HRD Universal Fastners) or equivalent of safe tensile capacity as specified below for brick work with expansion sleeve of A6 polyamide:		
i	8mm Dia	Nos	20.00
ii	10mm Dia	Nos	20.00
iii	12mm Dia	Nos	20.00
e	Expansion fasteners (mechanical galvanised) of HILTI make or equivalent of safe tensile capacity as specified below for concrete work with expansion sleeve of stainless steel:		
i	HST3 M8	Nos	20.00
ii	HST3 M10	Nos	20.00
iii	HST3 M12	Nos	20.00
iv	HST3 M16	Nos	20.00
v	HST3 M20	Nos	20.00
vi	HST3 M24	Nos	20.00
f	Chemical Expansion fasteners (galvanised)of HILTI make or equivalent of safe tensile capacity as specified below for concrete work with anchoring rod,nuts,washers,chemicals all complete,etc:		
i	HAS-E5.8 M8	Nos	20.00
ii	HAS-E5.8 M10	Nos	20.00
iii	HAS-E5.8 M12	Nos	20.00
iv	HAS-E5.8 M16	Nos	20.00
v	HAS-E5.8 M20	Nos	20.00
vi	HAS-E5.8 M24	Nos	20.00
800	GROUTING: Grouting including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, roughening surface, cleaning, ramming, curing etc. at all level , drawings and as directed by engineer - in - charge.		
801	Providing & grouting with cement slurry mix of approved ratio using pressure pump for water retaining concrete structures as per approved procedure including cost of nipples/ nozzles, cement, admixture, curing, pressure pumps, slurry agitator etc. all complete. Cost shall include fixing of nipples at maximum 500 mm centre to centre spacing, cutting of nipples	SQM	505.00

TECHNICAL CONDITIONS OF CONTRACT (TCC) **CHAPTER XII – BILL OF QUANTITIES FOR PACKAGE-II**

ST NO	Item Description	Unit	Quantity
	after completing of grouting, making good of the nipple hole with appropriate non-shrink cement paste, water tightness test etc. all complete wherever specified in the drawing.(BHEL will supply Cement free of cost as per TCC)		
802	Providing & grouting of pocket holes , pipe sleeves under base plates, machinery, pipe supporting structures etc. with mix 1:1 (1 cement :1 sand) using non shrink admixture etc. all Complete.(BHEL will supply Cement free of cost as per TCC)	CUM	25.00
803	Providing & grouting of pocket holes, pipe sleeves and under base plate of structural steel work/ machinery/ pipe supporting structures including roughening of surface, cleaning, ramming, curing etc. all complete with mix 1:1:2 (1 cement : 1 coarse sand : 2 aggregate of 6 mm down graded stonechips) using non shrink admixture as per specification, drawing and direction of engineer-in-charge. (Cost of all material and cleaning the pocket by compressed air shall be in the scope of the contractor).(BHEL will supply Cement free of cost as per TCC)	CUM	5.00
804	Providing & grouting of pocket holes, pipe sleeves and under base plates of structural steel work/ machinery/ pipe supporting structures including roughening of surface, cleaning, ramming, curing etc. all complete with ConbextraGP-1 or equivalent as per specification, drawing and direction of engineer-in-charge. (Cost of all material and cleaning of the pockets by compressed air shall be in the scope of the contractor).	CUM	10.00
805	Providing & grouting of pocket holes, pipe sleeves and under base plates of structural steel work/ machinery/ pipe supporting structures including roughening of surface, cleaning, ramming, curing, etc. all complete with Conbextra GP-2 or equivalent as per specification, drawing and direction of engineer-in-charge.(Cost of all material and cleaning of the pockets by compressed air shall be in the scope of the contractor).	CUM	10.00
900	DOORS & WINDOWS: Doors, windows, ventilators, louvers, roof ventilators, rolling shutters, partitions including all labour, material (unless otherwise specified in BOQ/contract specification), equipments, transportation, handling, preparation of working drawings etc. at all level as per specification, drawings and as directed by engineer - in - charge.		
A904	Providing and fixing single or double steel door shutters with 35mm (min) thk flush design shutter comprising of two outer sheets of 18 gauge steel sheets rigidly connected and reinforced inside with continuous vertical 20 gauge stiffeners, spot welded in position at not more than 150mm on centres including void filled with mineral wool (density as per specification), all fittings, Godrej or equivalent make mortice lock with handle on both sides, shop and final painting etc all complete.	SQM	65.00
905	Providing and fixing single or double steel door shutters with 18 gauge M.S. sheets shutter presenting a flush surface on the outside and inside stiffened with semitubular edge and central stiffening rail which shall convey the lock including fixtures, Godrej or equivalent make mortice lock with handle on both sides, shop and final painting etc all complete.	SQM	10.00
A906	Providing and fixing anodized extruded aluminium doors (single or double shutter) conforming to IS:1948, IS:1949 fabricated from extruded sections of HINDALCO/JINDAL or equivalent make having minimum 2 mm wall thickness as per IS:1285, IS:733 and anodized(15 micron coating thickness) and electro color dyed of required shade as per IS 1868 (minimum anodized coating of grade AC15). fixed with rawl plugs, expansion fasteners,SS screws / fixing clips necessary filling of gaps at junctions, at top, bottom & sides with required PVC / neoprene felt for bi-metallic protection etc. Glazing shall be clear toughened glass of 8/10/12 mm thickness including snap fit type beading, concealed screws, fixtures,	KG	1805.00

TECHNICAL CONDITIONS OF CONTRACT (TCC)

CHAPTER XII – BILL OF QUANTITIES FOR PACKAGE-II

ST NO	Item Description	Unit	Quantity
	Godrej or equivalent make Mortice lock with handle on both sides, etc all complete. Aluminium section shall be smooth, free of stains, straight, mitred & jointed mechanically wherever required. (Glazing shall be paid separately)		
A907	Providing and fixing fire proof steel doors (single or double shutter) with panic devices shall be 45mm thk flush design comprising of two outer sheets of 18 gauge steel sheets rigidly connected and reinforced inside with continuous vertical 20 gauge stiffeners, spot welded in position at not more than 150mm on centers including all fittings panic bar ,panic trim, shop painting with approved post office/signal red color fire resistant paint and mineral wool insulation (64 kg/cum density) complete and shall be fire proof as per IS:3614, TAC requirements and as per specification.all hardware used in the door should be fire rated and from approved manufacturer. Minimum ratings shall be 2 Hrs.Shop drawings for the item with all construction and anchoring details along with fire rating test reports shall be got approved from Engineer-in-Charge before execution.	SQM	25.00
908	Providing and fixing steel windows/ventilator with steel sections as per IS:1038, IS:1361 & IS:7452 latest revision including all fittings, metal beadings, hold fasts, shop and final painting ,glazing etc. all complete. (Glazing shall be paid separately)		
a	Openable type	SQM	95.00
b	fixed type	SQM	95.00
A909	Providing and fixing anodised aluminium work of Jindal, Hindalco or other equivalent approved make for door frames, windows, ventilators, partitions, railing,grills etc with extruded standard tubular and other sections including all fittings & fixtures and accessories of approved make conforming to IS733 and IS1285, anodised and electro color dyed to required shade according to IS 1868 (minimum anodic coating of grade AC15), fixed with rawl plugs, expansion fasteners, SS screws or with fixing clips, including necessary filling of gaps at junctions, at top, bottom and sides with required PVC/neoprene felt for bi-metalic protection etc. including preperation of working drawings, aluminium cleat angle, aluminium snap-on-beading for glazing/panelling, stair case tread nosing, with all fittings and fixtures (like tower bolts, handles, door stopper with rubber shoes, 'L' drops, stays, floor springs, hydraulic door closures etc.), CP brass/stainless steel screws, providing and fixing hinges/pivots, and making provision for fixing of fitting wherever required including cost of PVC/neoprene gasket, all complete as per drawing, specification and instructions of engineer in charge (Glazing and panelling shall be paid seperately).Weight of aluminium section only shall be measure.All aluminium frames to be used shall have recycled content meeting required strength criteria for frame work as per engineer incharge. The contractor should provide the material cutsheet/ declaration from manufacturer mentioning the recycled content used in maufacturing of frames.	Kg	3005.00
A910	Providing, fabricating, supplying and fixing of Aluminium composite panel cladding (ACP) in pan shape in solid or metallic colour of approved shades made out of 4mm thick aluminium composite panel (weight of panel should be 7.5 kg/sqmt) material consisting of 3mm thick Fire Retardant mineral filled Core comprising of around 70% Inorganic compound which is 100% non-combustible mineral and balance 30% is food grade virgin polymer Class B1 as per EN 13501,mineral core sandwiched between two Aluminium sheets (each 0.5mm thick).The aluminium composite panel cladding sheet shall be coil coated, with Kynar 500 based PVDF conforming to AAMA 2605 or Lumiflon based fluoropolymer resin coating of approved colour and shade on face # 1 and polymer (Service) coating on face # 2 as specified using stainless steel screws, nuts, bolts, washers, cleats, weather silicon sealant, backer rods etc. The top coated surface of ACP shall comply	SQM	195.00

BHEL-PSWR (VOL-I-A- TECHNICAL BID SPECIFICATION)

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/
BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-II/2239

Page 92 of 108

TECHNICAL CONDITIONS OF CONTRACT (TCC) **CHAPTER XII – BILL OF QUANTITIES FOR PACKAGE-II**

ST NO	Item Description	Unit	Quantity
	with the “specification for coated coil for the exterior building application” issued by ECCA (European Coil Coating Association). The aluminium composite panel top and bottom skin should conform to Aluminium Alloy 5005 (AlMg 1) marine grade series and H 22/24 temper with mechanical properties confirming to EN 485-2 standard. The ACP product must conform to either BS 476 part 6 & 7 or ASTM E 84 standards along with EN-13501-1. The manufacturer must furnish Class 1A certificate for this ACP produced in the plant from which it is going to be supplied. The panel shall be designed for 12mm groove in horizontal & in verticals with close joint system. Vertical & Horizontal groove shall be filled by non-staining high performance weather sealant. ACP panel shall have sub frame all around panel and aluminium stiffener profile as per structural requirements. The finished surface of ACP shall be protected with a self-adhesive (Rubber based) peel off foil with 70 microns thickness white or black, tested to withstand up to 6 months’ exposure to local weather condition without losing the original peel off characteristic or causing stain or other damages on the coated surface of the aluminium composite panel. Installation of ACP Coving/facia at terrace level sealing the top gap of the parapet wall and ACP Panel shall have GI stiffeners below with required aluminium grid work with necessary MS HDG / aluminium alloy brackets & SS fasteners. 2nd barrier of 1mm thk GI sheet laid continuously below the copping to seal the parapet wall. Overlap of GI sheet shall be properly sealed with weather sealant, All shade approval shall be as per Architect's Approval. as per approved sample from Alucobond Plus, Aludecor, Reynobond or equivalent. The system shall be designed to withstand a wind pressure of 200kg/Sqm or as per design requirement and shall be fixed to the Masonry/RC walls or aluminium frame with necessary clamps, brackets and anchor fasteners etc. All clamps and brackets shall be Hot dip galvanized minimum 80 microns thick and shall conform to IS: 4759-1996. The extruded aluminium section shall be anodized in approved colour with a anodic coating of minimum 20 microns. Extruded section shall be 6063 T5 or T6 alloy conforming to ASTM B221. Any other fastening straps, nuts, bolts, rivets, washers, etc. shall be in stainless steel SS304 grade. EPDM gaskets, open cell polyethylene backer rods, weather sealant etc. shall be provided as per requirement. Item shall include aluminium base frame with all fixing arrangements to wall/RC members, fastening material and hardware(fastening straps, nuts, bolts, rivets, washers etc.), EPDM gaskets, open cell polyethylene backer rods, weather sealant, scaffolding, approach to all height, material handling, transportation, labour, T&P, preparation of working drawings etc.all complete as per drawing, specification & instructions of engineer in charge. Measurement of payment shall be outer finished area of ACP panel. The contractor should provide the material cutsheet/ declaration from manufacturer mentioning the recycled content used in manufacturing of frames.		
912	Providing and fixing pressed steel frames fabricated from 16 gauge M.S sheet mortised, reinforced drilled and tapped for hinges and locks bolts strikes, hold fasts adjustable floor anchors, floor tiles/weather bars ,paintings etc all complete as per specifications.	Kg	545.00
913	Providing and fixing in position rolling shutter of hot rolled double dipped galvanised steel lath section of 18 SWG tested mild steel strips at 75mm rolling centres interlocked together through their entire length and jointed together at the end by end locks mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation including wire springs, top cover, primer & shop coats of approved enamel paint etc, all complete as per IS 6248 and specification of approved make of following types: The bottom lath shall be coupled to a lock plate fabricated from 3mm thick galvanised steel plate and securely rivetted with stiffening angles.(partly coiled and lath/full lath).		

TECHNICAL CONDITIONS OF CONTRACT (TCC) **CHAPTER XII – BILL OF QUANTITIES FOR PACKAGE-II**

ST NO	Item Description	Unit	Quantity
a	Hand Operated	SQM	10.00
b	Mechanically Operated	SQM	25.00
c	Electrically operated	SQM	25.00
914	Providing and fixing PVC doors (25 thk double skin) of sintex or equivalent make including all fitting & fixtures as per specification, drawing and instructions of engineer in charge.	SQM	10.00
915	Providing, fixing and fitting of glazing of first grade class in steel/aluminium/wooden frames , where ever required, cleaning after fixing including hardware, gaskets, clips, beadings etc. all complete.		
i(a)	composite double glazing, 24 mm thick, with one outer 6mm thick tinted heat-reflecting type toughened glass and one inner 6mm thick clear toughened glass hermetically sealed and seperated by 12 mm thick gap for thermal insulation (only single elevation area to be measured).Outer glass of 6mm thickness shall have following technical characteristics: Solar factor 25% or less, U-value less than 2.268 W/ SQMK,VLT min 30%: The glass to be used should be from the manufacturers of glass like Glavebel (Belgium), Saint Gobain (France) or Fort (USA) Or equivalent. The glass should be free from distortion and thermal stress.	SQM	55.00
i(b)	composite double glazing, 24 mm thick, with one outer 6mm thick tinted fire resistant type toughened glass and one inner 6mm thick plane fire resistant glass hermetically sealed and seperated by 12 mm thick gap for thermal insulation (only single elevation area to be measured).The glass to be used should be from the manufacturers of glass like Glavebel (Belgium), Saint Gobain (France) or Fort (USA) Or equivalent. The glass should be free from distortion and thermal stress.	SQM	55.00
i(c)	One outer 6mm thick tinted heat-reflecting type toughened glass and one inner 6mm thick plain float glass hermetically sealed and separated by 12 mm thick gap for thermal insulation (only single elevation area to be measured).The glazing to be used in all exterior walls shall be of Asahi (India) Glavebel (Belgium), Saint Gobain (France) or Fort (USA) Or equivalent.The glazing to be used should comply to mentioned standards VLT (Visible Light Transmittance)≤ 59 %, SHGC/ SF (Solar Heat Gain Coefficient/ Solar Factor) 0.2 ≤ 0.32 and U- Value 1.2 to 2.5 W/MSq K,The properties of performance and colour of glass shall be as per detail design values as approved by Architect and engineer incharge.The glass should be free from distortion and thermal stress	SQM	55.00
k(a)	One inner 6mm thick clear float glass and one outer 6mm thick reflective toughened glass hermetically sealed and seperated by 12 mm thick gap for thermal insulation . Glass to be used shall be of make Saint Gobain(India),Asahi (India) or equivalent .Outer glass should have solar factor 25% or less, Maximum U-Value of 1.8 to 3.3W/SQMK, VLT min 47%, light reflection internal 10 to 15%, light reflection external 10 to 20%, shading coefficient (0.25-0.28).The properties of performance glass shall be as per detail design values. (only single elevation area to be measured).	SQM	55.00
l	6 mm thick laminated glass	SQM	55.00
l(a)	10 mm thick laminated glass	SQM	15.00
m	6 mm thick clear toughened safety glass	SQM	245.00
n	8 mm thick clear toughened safety glass	SQM	185.00

TECHNICAL CONDITIONS OF CONTRACT (TCC) **CHAPTER XII – BILL OF QUANTITIES FOR PACKAGE-II**

ST NO	Item Description	Unit	Quantity
917	Providing and fixing 12 mm thick BWP particle board, decorative veneer (prelaminated) on both sides , as panels in aluminium framed door shutter, fixed with necessary snap-on-beading etc. all complete (excluding aluminium works).	SQM	95.00
A921	Providing & fixing Fully Glazed Fire Rated partitions with minimum 25mm thick Hermetically sealed double glass (DGU) consisting of Fire resistant glass of minimum 11mm thick or more, clear, toughened interlayered glass, with 120 minutes' fire rated for both integrity & radiation control, and 6mm thick toughened tinted glass with 8mm gap or more as per manufacturer specification. The partitions shall be 120 minutes Fire Rated, Fully Glazed non-load bearing fixed partition with valid fire test certificate from national or international lab with Partition Frame manufactured from 1.6 mm galvanized steel sheet (zinc coating not less than 120 gm/sqm) pressed to form a suitable profile to accommodate the glass & fixed to the supporting construction by means of M 10 X 120 or bigger steel bolts at 150 mm from the edges & every 500mm c/c .The frame shall be finished with etch primer for scratch resistance and shall be powder coated of min. 30 micron of approved shade and colour. The glass panels shall be minimum 11mm thick, clear, toughened, interlayer 120-minute fire rating for both integrity & radiation control (EW120), with 20-minute full insulation, Non-Wired Toughened glass having a sound reduction of greater than 37dB, light transmission of 87% and compliant to class 2(B)2 category of impact resistance as per EN 12600. The manufacturer has to give test report /certification of glass fire rated glass and glass should have the stamp showing the value of E, EW AND EI. The glass should be manufactured in UL & TUV audited Facility and including UL-EU Certification. The glass shall be held in position with minimum 1.6 mm G.I Beading, clamped or bolted to the frame profile by 4mm x 35mm steel screws at every 250 mm c/c and a ceramic tape of cross section of 5mm x 20mm on both sides of the glass. The item shall include intumescent putty and fire resistant acrylic sealants and the total assembly shall satisfy the fire resistance criteria of stability, integrity & radiation control and partial insulation (EW120) complete all respect and comply with the requirement of NBC-2016, IS16231(PART-3) and as per specification. Shop drawings for the item with all construction and anchoring details along with fire rating test reports shall be got approved from Engineer-in-Charge before execution.	SQM	95.00
1000	BRICKWORK: Brickwork masonry including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, transportation, handling, scaffolding etc. at all levels as per specification, drawings and as directed by engineer - in - charge.(BHEL will supply Cement free of cost for cement mortar only as per TCC)		
1001	Providing brick work in cement mortar 1:6 (1 part cement 6 parts coarse sand) in walls, chambers etc. in thickness varying from 230mm to 460mm at all depths , places and positions below plinth including raking out joints, curing, scaffolding etc. complete excluding plastering and painting.		
a	Using fly ash lime bricks confirming to IS 12894 with crushing strength of 75 kg/cm2 (including cost of cement for brick making)	CUM	45.00
1002	Providing brick work in cement mortar 1:6 (1 cement 6 coarse sand) in walls, chambers etc. in thickness 230mm at all heights, places and position above plinth including raking out joints, curing, scaffolding etc complete excluding plastering and painting.		
a	Using fly ash lime bricks confirming to IS 12894 with crushing strength of 75 kg/cm2 (including cost of cement for brick making)	CUM	1125.00
c	Using burnt clay bricks of class designation 5.0 of nominal dimension	CUM	55.00

BHEL-PSWR (VOL-I-A- TECHNICAL BID SPECIFICATION)

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/
BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-II/2239

Page 95 of 108

TECHNICAL CONDITIONS OF CONTRACT (TCC)

CHAPTER XII – BILL OF QUANTITIES FOR PACKAGE-II

ST NO	Item Description	Unit	Quantity
1003	Providing brick work in cement mortar 1:4 (1 cement 4 coarse sand) in partition walls , chambers etc. in thickness 115mm at all heights, places and position above or below plinth/graded level including providing two nos. 6 mm diameter MS bars at every third layer, raking out joints, curing, scaffolding etc complete excluding plastering and painting as per specification.		
a	Using fly ash lime bricks confirming to IS 12894 with crushing strength of 75 kg/cm2(including cost of cement for brick making)	SQM	395.00
1005	Breaking of existing brick work at all levels including plastering, removing the rubbish up to a distance of 500 m including transportation, loading, unloading etc. all complete as directed by the engineer.	CUM	55.00
1008	Making openings in existing brick wall or partition wall including making good the broken edges/surface with cement mortar 1:6 etc. complete.	CUM	55.00
1010	Filling existing brick wall/ partition wall opening at all level including making good the broken edges/surface with cement mortar 1:6, painting, finishing to match with existing finishing, scaffolding/supporting at all level, removal of debris upto a lead of 1 km including loading, unloading, transportation etc. all complete.	SQM	55.00
1011	Providing and filling brick bats in soak pits all complete.	CUM	85.00
1100	DAMP PROOF COURSE: Damp proof course including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, transportation, handling, shuttering, centering, curing etc at all level as per specification, drawings and as directed by engineer - in - charge.(BHEL will supply Cement free of cost as per TCC)		
1101	Providing Damp Proof Course of following thickness with 1:1.5:3 concrete (10mm and down graded aggregate) with 2% of approved admixture of water proofing compound all complete. Two layers of hot bitumen coating 85/25 grade as per IS:702 @ 1.7Kg./sqm shall be applied one before & one after the DPC.		
b	50mm thick	SQM	100.00
1200	PLASTERING: Cement mortar plaster including making grooves wherever required including all labour, material (unless otherwise specified in BOQ/contract specification), scaffolding, curing etc at all level as per specification, drawings and as directed by engineer - in - charge. (BHEL will supply Cement free of cost as per TCC)		
1201	Providing 18mm thick plaster in two layers outside the building/boundary wall in cement mortar 1:6 on walls, finished to a smooth finish including providing 3mmx3mm size grooves at junctions of two dissimilar materials all complete	SQM	4020.00
1202	Providing 12mm thick plaster inside the building/boundary wall in cement mortar 1:6 on walls finished to a smooth finish as per specification all complete.	SQM	4020.00
1204	Providing 6mm thick plaster on ceiling in cement mortar 1:4 finished to a smooth all complete.	SQM	2625.00
1205	Providing 12mm thick plaster in walls, drains/culverts with a paste of neat cement @ 1kg/sqm and rubbed smooth with trowel etc. all complete.	SQM	45.00
1206	Providing drip course on plastered surface at all elevations for all type of work such as chajjas, parapet, projections etc. including scaffolding, finishing etc. complete with all labour, tools and plants as per specification, drawing and instruction of enigneer in charge.	RM	55.00

TECHNICAL CONDITIONS OF CONTRACT (TCC) **CHAPTER XII – BILL OF QUANTITIES FOR PACKAGE-II**

ST NO	Item Description	Unit	Quantity
1207	Forming groove of uniform size from 12X12 mm upto 25X15 mm in plastered surface as per approved pattern, using wooden battens nailed to the under layer, including removal of wooden battons, repair of the edges of plaster panel and finishing the groove etc. complete as per specification, drawing and the instructions of engineer in charge.	RM	995.00
1300	FINISHES TO CONCRETE / PLASTERED SURFACES: Finishes, painting to concrete, plastered surfaces including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, surface preparation, scaffolding etc. at all level as per specification, drawings and as directed by engineer - in - charge.		
1304	Two or more coats of acrylic distemper of approved brand and manufacture to give an even shade including a priming coat with distemper primer complete.	SQM	5245.00
1305	Providing and applying two or more coats of acrylic emulsion paint as per IS 5411 of approved brand, shade and manufacture to give smooth, hard, durable & glossy finish over a coat of primer over prepared plaster surface as per manufacturers guideline.	SQM	395.00
1306	Providing and applying 2 or more coats of acid/alkali resistant paint of approved brand and colour to floors, walls and ceiling including preparation of surface to receive paint, providing and applying bitumen primer confirming to IS 158 complete all as per manufacturer's recommendations and as approved by engineer, at all heights above or below grade level, complete as per specifications.	SQM	395.00
A1312	Providing and applying 3 coats of water proof cement paint of approved make and color on exterior surface at all heights including material, labour, scaffolding, curing etc including primer coat complete as per specification. Note: The paint should have VOC content limit less than 200 grams per litre All necessary documentation (certificates, manufacturer declarations) should be provided by the contractor to engineer in charge.	SQM	550.00
A1316	Providing and applying 2 mm thick Acrylic wall putty in two coats over cement plastered surfaces including preparation of surface, staging, etc. to achieve a smooth even surface all complete as per specification and as directed by Engineer.	SQM	2335.00
1317	Providing and applying 2 mm thick white cement punning on walls including preparation of surface, staging, etc to achieve a smooth even surface all complete as per specification and as directed by engineer.	SQM	55.00
A1319	Providing and applying two or more coats of Premium Acrylic Smooth Paint with Silicone additives weather coat paint of approved brand and manufacture and required shade over one coat of primer of water proof cement paint after necessary cleaning/ washing, preparing the surface using coir brush/ wire brush, sand paper, including filling of cracks with putty wherever required etc. all complete to give smooth, hard, durable & glossy finish over a coat of primer over prepared plaster surface as per manufacturers guidelines. The final finished coating shall be fungus resistant, UV resistant, water repellant and extremely durable with color fastness as per specification.	SQM	4035.00
1320	Providing and applying acid alkali and oil resistant high build, solvent free, self smoothing, seamless epoxy based amine cured floor finish 150 microns over primer on C.C. flooring	SQM	695.00
1400	FLOORING AND SKIRTING: Flooring and skirting at all level including base layer, labour, material (unless otherwise specified in BOQ/contract specification), equipments, transportation, handling, curing, polishing etc. at all level as per specification, drawings and as directed by engineer - in - charge.		

TECHNICAL CONDITIONS OF CONTRACT (TCC)

CHAPTER XII – BILL OF QUANTITIES FOR PACKAGE-II

ST NO	Item Description	Unit	Quantity
1401	Providing and laying 50 mm thick heavy duty cement concrete in flooring with metallic hardener pigmented topping 12mm thick uniform graded treated iron particles in flooring. Under layer of 38mm thick cement concrete mix 1:1.5:3 (1 cement:1.5 sand : 3 stone aggregates 12.5 mm well graded) and top layer of 12mm thick metallic concrete of mix 1:2 (1 cement hardner mix with approved quality metallic hardening compound :2 stone aggregate 6mm nominal size) by volume including cement slurry, rounding off edges, aluminium strips etc. all complete for following (Quoted item rate shall be inclusive of providing glass joint strips):(BHEL will supply Cement free of cost as per TCC)	SQM	13895.00
1402	Providing and laying 25 mm thick heavy duty cement concrete mix 1:1.5:3 (1 cement: 1.5 sand : 3 stone aggregates) flooring with metallic hardener pigmented topping of 10 mm thick uniform graded treated iron particles in skirting and dado . Under layer of 15mm thick cement concrete mix 1:1.5:3 (1 cement: 1.5 sand : 3 stone aggregates 12.5 mm well graded) and top layer of 10mm thick metallic concrete of mix 1:2 (1 cement hardner mix with approved quality metallic hardening compound :2 stone aggregate 6mm nominal size) by volume including cement slurry, rounding off edges, aluminium strips etc. all complete as per specification. (Quoted item rate shall be inclusive of providing glass joint strips).(BHEL will supply Cement free of cost as per TCC)	SQM	85.00
A1404	Providing and laying interlocking M35 Grade concrete blocks in paving with approved colour and pattern and should be laid on the subbase and bedding of sand minimum 50mm thick as per specifications and recommendations of manufacturer.(inclusive of cost of cement for paver manufacturing)		
Ab	80mm	SQM	23630.00
1416	Providing and laying vitrified ceramic tiles of polished variety of size 600x600 from reputed / approved manufacturer, complete including underbed of cement mortar 1:3 minimum 40mm thick underbed for flooring and 12mm thick underbed for dado/skirting with neat cement slurry @3.3Kg/sqm etc. all complete for following (BHEL will supply Cement free of cost for mortar as per TCC)		
b	10mm thick tiles In flooring	SQM	1705.00
c	7 mm thick tiles In skirting and dado upto specific height	SQM	105.00
1417	Providing and laying vitrified ceramic tiles of matt finish of size 600x600mm from reputed / approved manufacturercomplete including underbed of cement mortar 1:3 minimum 20mm thick underbed for flooring and 12mm thick underbed for dado/skirting with neat cement slurry @3.3Kg/sqm etc. all complete for following (BHEL will supply Cement free of cost for mortar as per TCC)		
b	10mm thick tiles In flooring	SQM	55.00
c	7mm thick tiles In skirting and dado upto specific height	SQM	25.00
1420	Providing and laying Heavy Duty dust pressed Ceramic Tiles of 7mm thick of reputed manufacturer of approved finish shade and colour including 43mm underbed of cement mortar 1:3 with neat cement slurry @3.3kg/sqm etc. all complete.(BHEL will supply Cement free of cost for mortar as per TCC)		
a	300X300 mm	SQM	55.00
A1421	Providing and laying Heavy Duty dust pressed (grade-5) Ceramic Tiles (Matt Finish) of size 300x300mm(approved size) and 7mm thick of reputed / approved manufacturer (Kajaria,jhonson,varmora,quotone or equivalent) of approved finish,	SQM	55.00

BHEL-PSWR (VOL-I-A- TECHNICAL BID SPECIFICATION)

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/
BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-II/2239

Page 98 of 108

TECHNICAL CONDITIONS OF CONTRACT (TCC)

CHAPTER XII – BILL OF QUANTITIES FOR PACKAGE-II

ST NO	Item Description	Unit	Quantity
	shade and colour. The tiles shall be scratch resistance of minimum 5 on Mohr's scale and shall have a bending strength of 350 Kg./sqm,with Under bed shall average 43mm thk cement sand mortar of 1:3.(BHEL will supply Cement free of cost for mortar as per TCC)		
1422	Providing & fixing Acid / Alkali resistant (Chemical resistant) tiles confirming to IS:4457 in flooring/Dado and shall be laid over bitumastic lining of min 12mm thick (to be laid in layers of 6mm each). The tiles shall be applied with 6mm thick Potassium Silicate bedding mortar as per IS:4441, 4443 & 4832 and including preparation of surface, application of bitumen primer, curing etc. all complete for following thicknesses. The tiles should be abrasion resistant & durable.Underbed shall be		
a	20mm thick	SQM	85.00
A1427	Providing and fixing designer ceramic tiles of approved color and design of size 200x300mm / 300x600mm in dado of approved size of reputed / approved manufacturer (Kajaria,jhonson,varmora,quotone or equivalent) , projecting 6mm uniformly from adjacent plaster or wall finish. The mix for 45/47mm thick underbed plaster shall consist of 1part cement and 3 parts sand by weight. fairly moist but firm, tiles shall be pressed over under bed by applying cement slurry @ 3.3kg/sqm including pigments, curing etc all complete for following thicknesses:NOTE: All vitrified tiles to be used should be with appropriate % of recycled content. The contractor to provide the material sample/ declaration from manufacturer mentioning the recycled content used in manufacturing of vitrified tiles to be used to engineer in charge) (BHEL will supply Cement free of cost for mortar as per TCC)		
b	7mm thick	SQM	65.00
1430	Providing and fixing dividing strips in joints of cast in situ floorings at various elevations, finishing, all labour, material etc. complete as per drawing, specification and instructions of engineer in charge.		
a	Glass strips 40 mm wide and minimum 6 mm thick.	RM	495.00
b	Aluminium strips 40 mm wide and minimum 3 mm thick	RM	495.00
1500	ROOFING / SIDE CLADDING: Roofing / side cladding work including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, transportation, handling, scaffolding, laps, hooks, washers, corner pieces etc. at all level as per specification, drawings and as directed by engineer - in - charge.		
A1502	METAL DECK SHEET Type-I , Designing, providing and fixing permanently color coated galvanised MS troughed metal sheet decking plate of approved colour over roof purlins for cast-in-situ roof slab as per relevant IS code and Grade as per specification. Bare metal thickness(BMT) of deck plate shall be minimum 0.8mm with minimum trough depth of 44mm of grade G250 as per AS1397/grade SS255 as per ASTM A653M/ grade S250GD as per EN 10326 with zinc coating to class Z275 and shall serve as permanent shuttering to the roof slab 40mm thick measured over crest of metal decking & shall have adequate strength to support weight of green concrete and imposed loads of min 100 kg/sqm (for two span condition) during construction between beams as per manufacturer's recommendations/ calculations/ test certificates for approval including fixing of plates to beams, side lapping, end lapping etc. all complete for below mentioned spans. The sheet shall be permanently coated with silicon modified polyster(SMP silicon content 30%-50%) paint or super polyster paint of minimum 20 micron DFT on exposed surface (facing operating floor) over primer coat of minimum 5 micron(nominal) and		

TECHNICAL CONDITIONS OF CONTRACT (TCC)

CHAPTER XII – BILL OF QUANTITIES FOR PACKAGE-II

ST NO	Item Description	Unit	Quantity
	minum 10 micron (nominal) SMP or super polyester paint over primer coat of minum 5 micron (nominal) on other face. SMP and polyster paint system sahl be of idustrial finish of product type 4 of AS/NZ2728, including fixing of sheets to purlin with self drilling white zinc plated heat treated carbon steel screws of minimum 5.6mm dia @ 260mm c/c in the tough and stich screws between two adjacent sheets and sealing with epoxy sealant . Measurement of profile sheeting shall be of the plan area of the roof covered by MS trough metal decking.		
a	Span Upto 1800mm	SQM	95.00
B1502	METAL DECK SHEET Type-II, Designing, providing and fixing permanently color coated galvanised MS troughed metal sheet decking plate of approved colour over floor beams for cast-in-situ roof/floor slab as per relevant IS code and Grade as per specification. Bare metal thickness(BMT) of deck plate shall be minimum 0.8mm with minimum trough depth of 51 mm of grade G250 as per AS1397/grade SS255 as per ASTM A653M/grade S250GD as per EN 10326 with zinc coating to class Z275 and shall serve as permanent shuttering to the roof/ floor slab 150mm thick measured over crest of metal decking & shall have adequate strength to support weight of green concrete and imposed loads of min 100 kg/sqm (for two span condition) during construction between beams as per manufacturer's recommendations/ calculations/ test certificates for approval including fixing of plates to beams, side lapping, end lapping etc. all complete for below mentioned spans. The sheet shall be permanently coated with silicon modified polyster (SMP silicon content 30%-50%) paint or super polyster paint of minimum 20 micron DFT on exposed surface (facing operating floor) over primer coat of minimum 5 micron(nominal) and minum 10 micron (nominal) SMP or super polyester paint over primer coat of minum 5 micron (nominal) on other face. SMP and polyster paint system sahl be of idustrial finish of product type 4 of AS/NZ2728, including fixing of sheets to purlins/floor beams with self drilling white zinc plated heat treated carbon steel screws of minimum 5.6mm dia @ 260mm c/c in the tough and stich screws between two adjacent sheets and sealing with epoxy sealant . Measurement of profile sheeting shall be of the plan area of the roof covered by MS trough metal decking.		
a	Span Upto 1800mm	SQM	95.00
C1502	METAL DECK SHEET Type-II, Designing, providing and fixing permanently color coated galvanised MS troughed metal sheet decking plate of approved colour over floor beams for cast-in-situ roof/floor slab as per relevant IS code and Grade as per specification. Bare metal thickness(BMT) of deck plate shall be minimum 1.25 mm with minimum trough depth of 51 mm of grade G250 as per AS1397/grade SS255 as per ASTM A653M/grade S250GD as per EN 10326 with zinc coating to class Z275 and shall serve as permanent shuttering to the roof/ floor slab 1750 mm thick measured over crest of metal decking & shall have adequate strength to support weight of green concrete and imposed loads of min 100 kg/sqm (for two span condition) during construction between beams as per manufacturer's recommendations/ calculations/ test certificates for approval including fixing of plates to beams, side lapping, end lapping etc. all complete for below mentioned spans. The sheet shall be permanently coated with silicon modified polyster (SMP silicon content 30%-50%) paint or super polyster paint of minimum 20 micron DFT on exposed surface (facing operating floor) over primer coat of minimum 5 micron(nominal) and minum 10 micron (nominal) SMP or super polyester paint over primer coat of minum 5 micron (nominal) on other face. SMP and polyster paint system sahl be of idustrial finish of product type 4 of AS/NZ2728, including fixing of sheets to purlins/floor beams with self drilling white zinc plated heat treated carbon steel		

TECHNICAL CONDITIONS OF CONTRACT (TCC) **CHAPTER XII – BILL OF QUANTITIES FOR PACKAGE-II**

ST NO	Item Description	Unit	Quantity
	screws of minimum 5.6mm dia @ 260mm c/c in the trough and stitch screws between two adjacent sheets and sealing with epoxy sealant . Measurement of profile sheeting shall be of the plan area of the roof covered by MS trough metal decking.		
a	Span Upto 1800mm	SQM	380.00
A1504	Designing, providing and fixing External sheet of Permanent colour coated metal cladding with troughed M.S. sheets of minimum 0.6mm bare metal thickness of grade G250 as per AS1397/grade SS255 as per ASTM A653M/ grade S250GD as per EN 10326 with zinc coating to class Z275/ aluminium zinc alloy coating to class AZ150 on both sides including fixing to supports / rails by concealed fixing system, corrosion resistant self tapping / self drilling type fasteners with suitable cap, flashing etc. all complete. The exposed face of the sheet shall be permanently coated with silicon modified polyester(SMP silicon content 30%-50%) paint of 40 micron minimum DFT or super polyester paint of minimum 20 micron DFT on exposed surface over primer coat of minimum 5 micron(nominal) and minum 10 micron (nominal) SMP or super polyester paint over primer coat of minum 5 micron (nominal) on other face. SMP and polyester paint system shall be of industrial finish of product type 4 of AS/NZS2728.	SQM	395.00
B1505	Design, supply & erection of prefabricated permanent colour coated sandwiched insulated metal cladding of approved color comprising of top sheet as troughed permanently colour coated sheet and bottom sheet as plain permanently colour coated with 50 mm thick insulation sandwiched between the two sheets. Each sheet shall be of minimum 0.6 mm bare metal thickness of grade G250 as per AS1397/grade SS255 as per ASTM A653M/ grade S250 GD as per EN 10326 with zinc coating to class Z275/ aluminium zinc alloy coating to class AZ150. The exposed face of the sheet to be permanently color coated with at least 40 micron DFT silicon modified polyester paint (SMP with silicon content of 30% to 50%) or polyester paint of minimum 20 microns (nominal) SMP or polyester paint on one side (exposed face) , over 5 micron (nominal) primer coat and minimum 10 micron (nominal) SMP or polyester paint over 5 micron (nominal) primer coat on other side. SMP and polyester paint shall conform to product type 4 of AS/NZS 2728. The sheets shall be of approved profile and shall have such section modulus and moment of inertia per metre width that deflection of sheets is limited to span/250 under design wind pressure for two span conditions. No increase in allowable stresses under wind load condition is allowed. The prefabricated insulated Metal sandwich panels shall be fixed with structural members below using special coated fastener conforming to corrosion resistant class 3 of AS3566 and tested for 1000 hours salt spray test, including flashings complete as per specification. The insulation shall be of bonded mineral wool of minimum thickness 50mm conforming to IS:8183, having a density of 32 Kg/cu.m. for glass wool & 48 Kg/cu.m. for rock wool and is included in this item. (payment shall be made on surface area of the cladding including flashings)	SQM	85.00
A 1508	Designing, providing and fixing Inner sheet of Permanent colour coated metal cladding with troughed M.S. sheets of minimum 0.6mm bare metal thickness of grade G250 as per AS1397/grade SS255 as per ASTM A653M/ grade S250GD as per EN 10326 with zinc coating to class Z275/ aluminium zinc alloy coating to class AZ150 on both sides including fixing to supports / rails by concealed fixing system (Z purlin), corrosion resistant self tapping / self drilling type fasteners with suitable cap, flashing etc. all complete. The exposed face The sheet shall be permanently coated with silicon modified polyester(SMP silicon content 30%-50%) paint of 40 micron minimum DFT or super polyester paint of minimum 20 micron DFT on exposed surface over primer coat of minimum 5 micron(nominal) and minum 10 micron (nominal) SMP or super polyester paint over primer coat of minum 5 micron (nominal) on other face. SMP and polyester paint system shall be of	SQM	395.00

TECHNICAL CONDITIONS OF CONTRACT (TCC)

CHAPTER XII – BILL OF QUANTITIES FOR PACKAGE-II

ST NO	Item Description	Unit	Quantity
	idutrial finish of product type 4 of AS/NZS 2728. 'Z' spacers of atleast 2mm thick galvansied steel sheet of garde 350 as per IS 277 would be fixed the inner sheeting on face side at runner locations all complete as per specification.		
1511	Providing and fixing insulation of resin bonded mineral wool of 50 mm nominal thickness conforming to IS 8183 having a density of 32 kg/cum glass wool or 48 kg/cum for rock wool , for cladding/under deck insulation including application of glue and tying with lacing wire, for glass/rock wool as per manufacturer's recommendations.		
a)	For insulation in Sandwitch Cladding	SQM	395.00
1514	Providing and installing 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 0.6 mm dia and 25 mm mesh GI wire netting, fixed at various elevations with rawl plugs including clips but excluding cost of insulation.	SQM	1905.00
1600	FALSE CEILING: False ceiling including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, transportation, handling, suspension system etc at all level as per specification, drawings and as directed by engineer - in - charge.		
A1604	Providing and fixing Metal False Ceiling System of 600x600 mm module (of Armstrong/ Hunter Douglas/ Durlam make) which includes providing and fixing GI Clip, 'C' wall angle of size 20x30x20mm made of 0.5mm thick pre painted steel along the perimeter of the room with help of nylon sleeves and wooden screws at 300mm center to centre, suspending the main C carrier of size 10x38x10mm made of G.I steel 0.7 mm thick from the soffit with help of soffit cleat 37x27x25x1.6 mm, rawl plugs of size 38x12 mm and C carrier suspension clip and main carrier bracket at 1000mm c/c. Inverted triangle shaped Spring Tee having height of 24 mm and width of 34mm made of GI steel 0.45 mm thick is then fixed to the main C carrier and in direction perpendicular to it at 600mm centers with help of suspension brackets. Wherever the main C carrier and spring T have to join, C carrier and spring T connectors have to be used. All sections to be galvanized @ 120 gms/sqm (both side inclusive) Fixing with clip in tiles into spring 'T' with GI Metal Ceiling Clip in plain Beveled edge global white color tiles of size 600x600 and 0.5mm thick with 25mm height, made of G I sheet having galvanizing of 100 gms/sqm (both sides inclusive) and 20% perforation area with 1.8mm dia holes and having NRC of 0.5, electro statically polyester powder coated of thickness 60 microns (minimum), including factory painted after bending and perforation and backed with a black Glass fiber acoustical fleece. Additional hangers and height adjustment clips shall be provided for return air grills, light fixtures etc. Suitable M.S. channel (minimum MC 75) grid 1200 mm C/C maximum shall also be provided above the false ceiling level for movement of personnel to facilitate maintenance of lighting fixtures, AC ducts etc. The work to be complete as per specifications, drawings and direction of engineer. (Structural steel works for platform for movement is separately payable under relevant items of BOQ)	SQM	1905.00
B1607	Providing and Fixing 12mm thick Calcium silicate board of HILUX or equivalent in plan or elevation with aluminium grid, metal suspension system, anchor fastener adjustable hangers etc. including two or more coats of acrylic emulsion paint of approved colour to give an even shade with smooth finish all complete as per architectural design and detail. Metal suspension system as per ASTM C-635 shall be hot dipped M.S.galvanized (grade 180 as per is :277) and nominal size of T-section shall be 24 x 38 mm or 24 x 25 mm cross runners. 24mm wide exposed flange surface shall be permanently color coated. Suspension system shall be as per manufaturer's specification. Movement platform of structural steel shall be	SQM	45.00

BHEL-PSWR (VOL-I-A- TECHNICAL BID SPECIFICATION)

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/
BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-II/2239

Page 102 of 108

TECHNICAL CONDITIONS OF CONTRACT (TCC) **CHAPTER XII – BILL OF QUANTITIES FOR PACKAGE-II**

ST NO	Item Description	Unit	Quantity
	provided if required for the movement of personnel to facilitate maintenance of lighting fixtures, AC ducts etc. (Structural steel works for platform for movement is separately payable under relevant items of BOQ). Work shall include 25mm thick resin bonded mineral wool insulation (as per IS:8183) bound in polythene bags on top of ceiling. The work to be complete as per specifications, drawings and direction of engineer. Payment terms - a) On receipt of Gypsum board false ceiling at site - 50%; b) On completion of erection & fixing - 50%.		
1700	RAIN WATER DOWN TAKE PIPES: Rain water down take pipes at all level including all labour, material (unless otherwise specified in BOQ/contract specification), transportation, 2 coats of approved paint over one primary coat, fixtures, accessories etc as per specification, drawings and as directed by engineer - in - charge.		
1704	Providing and fixing galvanised MS down take pipes of 150 mm dia- Medium quality as per IS:1239(part-I) all complete.	RM	190.00
1711	Providing and making Khurras 45 x45 cm with average thickness of 3cm cement concrete 1:2:4 (1 cement: 2 coarse sand: 4 graded stone aggregate of 20mm nominal size) over PVC sheet 1m x1mx 400 micron, finished with 12 mm cement plaster 1:3 (1 cement : 3 coarse sand) and a coat of neat cement, rounding the edges and making and finishing the outlet complete in all respects as per specification and drawing.(BHEL will supply Cement free of cost for mortar as per TCC)	EACH	40.00
1800	MISCELLANEOUS: Miscellaneous works including all labour, material (unless otherwise specified in BOQ/contract specification), equipment etc. at all level unless otherwise specified as per specification, drawings and as directed by engineer - in - charge.		
1801	Providing and Filling in trenches, plinths, area paving and other underground structures with graded stone aggregate of size range 63 mm to 45 mm in layers not exceeding 200 mm in thickness including breaking of stone boulders to required sizes, filling the interstices with selected sand and compacting to 85 % of original volume of stone stack for all lifts etc. all complete. Payment shall be made for the measurement of the volume of the compacted fill.	CUM	7040.00
1802	Supply and laying approved quality Stone aggregate 40mm size in transformer yards.	CUM	125.00
1803	Supply and laying approved quality rounded pebbles / gravels of 40mm size in transformer yards.	CUM	125.00
1804	Providing and fixing weep holes in Retaining wall, drains, etc consisting of 100 mm dia HDPE pipe sleeves with single side covering for the pipe mouth with galvanised welded wire fabric of 20 mm sq. opening all complete.	EACH	45.00
1808	Laying of earthing mats/rods including risers, transportation from yard stores, loading, unloading, cutting to length, welding, protective painting of joints etc. all complete. (Excavation & Back filling shall be paid separately under respective item of earth work. Earthing mats/rods shall be supplied by BHEL free of cost)	MT	5.00
1809	Construction of below ground earthing system test pits as per drawing / sketches including concreting, reinforcement, formwork, providing & fixing GI strip etc as per drawing and specification (excavation & backfilling only will be paid under applicable BOQ items).	each	20.00
1810	Construction of below ground earthing system test links as per drawing/ sketches including concreting, reinforcement, formwork, providing & fixing GI strip etc as per drawing & specification (excavation & backfilling only will be paid under applicable BOQ items).	NO	20.00
1815	Providing and fixing GI rungs in concrete/brick walls having zinc coating of minimum 900 g/sqm etc. all complete.	Kg	95.00
1823	Providing and laying cinder filling in the toilets,roads,etc complete as directed by engineer in charge.	CUM	5.00

BHEL-PSWR (VOL-I-A- TECHNICAL BID SPECIFICATION)

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/
BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-II/2239

Page 103 of 108

TECHNICAL CONDITIONS OF CONTRACT (TCC) **CHAPTER XII – BILL OF QUANTITIES FOR PACKAGE-II**

ST NO	Item Description	Unit	Quantity
A1837	Providing & fixing G.I chicken wire mesh 12.5mm X 24G for miscellaneous applications	SQM	15.00
2000	FENCING AND GATES: Fencing and gates including all labour, material (unless otherwise specified in BOQ/contract specification), equipment etc at all level as per specification, drawings and as directed by engineer - in - charge.		
A2003	Supplying and erecting in position 2.4 m high PVC coated galvanized chain linked fencing of minimum 4mm diameter (including PVC coating) of mesh size 75mm x 75mm. The diameter of the hot dip galvanized steel wire for chain link fencing excluding PVC coating shall not be less than 2.5mm. The PVC coated chain link will be stretched by the clips at 0.5m intervals to three strands of galvanised high tensile spring steel wire (HTSSW) of 2.5 mm diameter interwoven with chain link wire mesh and kept under tension which in turn are attached to the fence post with security nuts and bolts. Concertina of height of 600 mm at top of chain link fencing shall be provided with all accessories. Concertina shall be from tensile serrated galvanised wire (HTSW) made with wire diameter of 2.5 mm which will be stretched to 6m and attached on two strands of galvanised HTSSW (high tensile spring steel wire) of 2.5mm dia by means of clips at 1m interval. These two HTSSW strands will be attached to the fence posts/ angles with 12 mm security fasteners. Cost to include for GI hook bolts, rings & washers, hot dip galvanised tension wires, 25X6 mm GI flat stretcher bar at end posts etc. all complete. (Structural post shall be paid separately under ST No. 2008)	RM	295.00
2008	Supply, fabrication and fixing of mild steel posts for fencing including painting etc all complete.	MT	2.00
2010	Supply, fabrication and installing in position and testing MS Gates out of channels , joists, angles, flats, plates, pipes, welded steel wire mesh & sheets including stiffeners, bracings, fabricated hinges, MS Aldrops with locking arrangement, tempered steel pivot, guide track of MS Tee, bronze aluminium ball bearing arrangements, castor wheels, paintings etc. all complete.	MT	2.00
2100	WATER SUPPLY: Water supply work including men, material (unless otherwise specified in BOQ/contract specification), equipment etc. at all level as per specification, drawings and as directed by engineer - in - charge.		
A2101	Providing and fixing in position tested heavy duty type chromium plated (CP) brass long neck bib cocks with flow rate less than 5 LPM (litres per minute) at 45 psi, including sockets, union, nuts etc all complete -15mm nominal bore.(Note: Flow rate of all faucets at 45 psi should be less than 5 lpm. The contractor should submit the cutsheets/ declaration from the manufacturers mentioning the same to Engineer in charge.)	NOS	25.00
2102	Providing and fixing in position heavy duty brass stop cock of approved quality including all specials etc all complete - 15mm nominal bore.	NOS	10.00
2103	Providing and fixing in position heavy duty brass full way valve with wheel of approved quality including all specials etc all complete for following sizes:		
a	25mm nominal bore.	NOS	5.00
b	50mm nominal bore.	NOS	5.00
2104	Providing and fixing GI pipes class B medium class conforming to IS:1239 pipes shall be concealed and painted with anticorrosive paint, complete for internal works with GI sockets, unions, elbows, tees, nipples etc and clamps including cutting and making good the walls etc all complete for following sizes:		
a	15 mm nominal bore.	RM	105.00
b	20 mm nominal bore.	RM	105.00

BHEL-PSWR (VOL-I-A- TECHNICAL BID SPECIFICATION)

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/
BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-II/2239

Page 104 of 108

TECHNICAL CONDITIONS OF CONTRACT (TCC)

CHAPTER XII – BILL OF QUANTITIES FOR PACKAGE-II

ST NO	Item Description	Unit	Quantity
c	25 mm nominal bore.	RM	105.00
d	50 mm nominal bore.	RM	105.00
e	40 mm nominal bore.	RM	105.00
2105	Providing and fixing GI pipes class B complete for external work with GI sockets, unions, elbows, tees, nipples etc including trenching & refilling, anti-corrosive paint etc all complete for following sizes:		
c	25 mm nominal bore.	RM	105.00
d	50 mm nominal bore.	RM	105.00
e	40 mm nominal bore.	RM	105.00
2106	Providing and fixing 610mmx453mmx6mm thk mirror from reputed mirror manufacturer. Mirror shall be mounted with glass adjustable revolving CP brackets with CP screws etc all complete.	NOS	5.00
A2106	Providing and fixing 600mmx900mmx6mm thk mirror from reputed mirror manufacturer, edge mounted with teak beading and minimum 12mm thick plywood backing. Mirror shall be mounted with glass adjustable revolving CP brackets with CP screws etc all complete.	NOS	5.00
A2108	Providing and fixing 20 mm diameter stainless steel towel rails (600mm X 20mm) with C.P. mounting brackets all complete.	NOS	5.00
2111	Providing and fixing stainless steel / C.P. liquid soap dispenser . Dispenser shall be round and easily revolving with removable threaded nozzle and mounted on C.P. brackets etc all complete.	NOS	5.00
2112	Providing and fixing glazed vitreous wall mounted paper holder with suitable cover cum cutter fitted with CP screws etc. sll complete.	NOS	5.00
2113	Providing and fixing chromium plated brass shower rose 100mm dia with 15 or 20 mm inlet dia all complete.	NOS	5.00
A2114	Providing & fixing in position Polyethylene water storage tank, ISI: 12701 of approved make including making all necessary inlet & outlet pipes, fixture, ball cocks, valves etc. all complete for following capacities. GI pipes shall be paid separately under ST No. 2105.		
a	500 litres capacity	NOS	5.00
b	1000 litres capacity	NOS	5.00
c	2000 litres capacity	NOS	5.00
2200	SANITARY: Sanitary work including all labour, material (unless otherwise specified in BOQ/contract specification), equipment etc. at all level as per specification, drawings and as directed by engineer - in - charge.		
2201	Supply and fixing glazed vitreous china Wash Basin of approved make conforming to IS:2556 part 4 of oval shape with R.S. or C.I. brackets painted white, 15mm chromium plated brass hot & cold faucets with nylon washers, chromium plated brass chain with rubber plug, 32mm chromium plated brass bottle trap and waste of standard pattern, 32mm dia chromium plated brass trap unions, plastic connection pipe with chromium plated nuts, fittings, cutting and making good the walls where required etc all complete.		

TECHNICAL CONDITIONS OF CONTRACT (TCC)

CHAPTER XII – BILL OF QUANTITIES FOR PACKAGE-II

ST NO	Item Description	Unit	Quantity
a	White	EACH	5.00
A2201	Supply and fixing coloured glazed vitreous oval shape china wash basin 450x550mm conforming to IS: 2556 mounted over 18 mm thk granite beveled edge counter counter .The Basin shall be fitted with approved shape bib cock, photo-voltic control system for water control with flow rate less than 5 LPM (litres per minute) at 45 psi,CP brass chain with rubber plug, 40mm CP brass waste and bottle trap with necessary union including cutting of notch in granite counter slab etc complete as per specification	EACH	5.00
2202	Providing and fixing approved vitreous china laboratory sink of size 600x400x200mm conforming to IS:2556 (part-5) with R.S. or C.I. brackets, chromium plated brass chain with rubber plug 40mm, 40mm CP brass waste and 40mm CP brass trap with necessaary union complete including painting the fittings, cutting and making good the wall where required etc. all complete.	EACH	5.00
2203	Providing and fixing stainless steel kitchen sink of size 610x510x200mm conforming to IS: 13983 including all fittings etc. all complete.	EACH	5.00
A2204	Providing and fixing wall mounted coloured glazed vitreous water closet with flushing valve system,water faucet ,Toilet paper holder, open front solid plastic seat and plastic cover,including necessary CP connection etc all complete.having flow rate of 6/3 LPF (litres per flush) or less and faucet having flow rate of 5 LPM (litres per minute) or less.	EACH	10.00
A2205	Providing and fixing white/coloured glazed vitreous china Orissa pattern (580x440mm) water closet conforming to IS:2556 part 3 with all fittings including foot rests, low level 12.5 litre PVC flushing cistern with valveless fittings, necessary C.P connections etc all complete having flow rate of 6/3 LPF (litres per flush) or less at 45 psi.	EACH	5.00
A2206	Providing and fixing white/coloured water efficient flat black glazed vitreous china urinals of size 440x265x355mm with photo voltaic control flushing system as per IS: 2556(pt-6 sec-1) with flush pipes, lead pipes, gratings, traps and necessary C.P fitting etc. all complete as per specification having flow rate of 2 LPF (litres per flush) or less at 45 psi.	EACH	15.00
2207	Supply, laying and jointing UPVC pipes of class 3 as per IS:4985 including bends, branches and all other necessary fittings, M.S holder bats/clamps, cutting and making good the walls and floors, jointing, testing etc all complete for following.		
a	75mm dia pipes	RM	105.00
b	110mm dia pipes	RM	105.00
c	160mm dia pipes	RM	105.00
d	200mm dia pipes	RM	55.00
2208	Providing, laying light duty non pressure NP3 class RCC pipes with collars jointed with stiff mixture of cement mortar 1:2 including testing of joints etc all complete for following.		
a	200mm dia	RM	105.00
b	300mm dia	RM	105.00
c	450mm dia	RM	55.00
2211	Providing and fixing C.I Manhole heavy duty cover of size 600mmx450mm including frame from reputed manufacture etc. all complete.	EACH	10.00

BHEL-PSWR (VOL-I-A- TECHNICAL BID SPECIFICATION)

E-Tender Spec No: BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-I/2238/
BHE/PW/PUR/NTPRT-ACC-CIVIL-PKG-II/2239

Page 106 of 108

TECHNICAL CONDITIONS OF CONTRACT (TCC) **CHAPTER XII – BILL OF QUANTITIES FOR PACKAGE-II**

ST NO	Item Description	Unit	Quantity
2212	Providing and fixing circular heavy duty C.I. manhole cover of 600 mm dia with frame etc. all complete.	EACH	5.00
2213	Providing and fixing square mouth S.W Gully trap grade 'A' complete with CI grating, brick masonry chamber(Clay Brickwork in 1:6 mortar, 12mm plaster in 1:6 mortar & 1:2:4 Cement Concrete) and water tight CI cover with 300x300mm (inside). The weight of cover to be not less than 4.53 Kg and frame to be not less than 2.72 Kg etc all complete for following sizes:		
a	100x100mm P or S Type.	EACH	10.00
b	150x100mm P or S Type.	EACH	10.00
c	150x150mm P or S Type.	EACH	10.00
A2214	Providing and fixing SS floor traps size 100 mm Inlet and 100 mm Outlet all complete as per specification.	EACH	15.00
2218	Providing and fixing white vitreous urinal partitions of size 675x325x85mm all complete.	EACH	10.00
2220	Providing and fixing heavy duty cast iron pipes for above and below ground sanitary works with water tight lead joint, fixing clamps, excavation, filling, disposal etc. all complete for the following.		
a	75mm dia pipes	RM	55.00
b	100mm dia pipes	RM	55.00
c	150mm dia pipes	RM	95.00
d	200mm dia pipes	RM	95.00
2221	Providing, laying spun CI pipes with conforming to IS 1536 complete for following.(Excavation,backfilling,concrete to be paid seperately)		
a	75mm dia	RM	55.00
b	100mm dia	RM	55.00
c	150mm dia	RM	55.00
d	200mm dia	RM	55.00
2222	Providing and fixing HDPE pipes in concrete/ brick work of following sizes including cutting, fixing and levelling in position etc. all complete.		
a	Upto 75 mm dia	RM	55.00
b	100 mm dia	RM	55.00
2300	STRUCTURAL WORKS: Structural steel works including all labour, material (unless otherwise specified in BOQ/contract specification), equipments unless otherwise specified, transportation, handling etc. at all level as per specification, drawings and as directed by engineer - in - charge.		
2307	Supplying, fabrication, erection and alignment of factory made electroforged galvanised grating units with mild steel having minimum galvanisation conforming to IS:2062 in flooring, platforms, drain and trench covers, walk-ways, passages,		

TECHNICAL CONDITIONS OF CONTRACT (TCC)

CHAPTER XII – BILL OF QUANTITIES FOR PACKAGE-II

ST NO	Item Description	Unit	Quantity
	staircases with edge binding strips and anti-skid nosing in treads etc. including fixing clamps, fittings, fixtures, all taxes, duties, packing, grinding, drilling, welding, edge preparation, etc. all complete.		
a	Minimum galvanisation of 610 g/sqm	MT	25.00
A2308	Supplying, fabrication, erection and alignment of factory made chequered plates conforming to IS 3502 with mild steel of grade E250A, quality BR, semi killed, conforming to IS:2062 or equivalent grade conforming to ASTM & BS standards only in flooring, platforms, drain and trench covers, walk-ways, passages, staircases with edge binding strips and anti-skid nosing in treads etc. including 2 coats of redoxide zinc-chromate primer (one coat at shop and one coat after erection), fixing clamps, fittings, fixtures, all taxes, duties, packing, grinding, drilling, welding, edge preparation, etc. all complete. Min. thickness of chequered plate shall be 6 mm excluding projection.	MT	5.00
2311	Providing and fixing in position of permanent mild steel bolts (class 4.6 as per IS : 1367 and grade 'C' as per IS: 1363) and nuts, washers etc. up to and inclusive of 39 mm diameter and upto 300mm long for structural steel work etc all complete.	KG	500.00
2312	Providing and fixing in positing of high strength structural bolts (of property class 8.8 and product grade 'C' as per IS: 1367) and conforming to IS: 3757 and high strength structural hardened and tempered nuts (of property class '8' as per IS:1367) conforming to IS:6623 with hardened and tempered washers as per IS:6649 etc. up to and inclusive of 39 mm diameter and upto 300 mm long for structural steel work etc all complete.	KG	6000.00
2318	Providing and fixing in position PTFE type sliding bearings of reputed manufacturer, individual bearing suitable for required vertical loads as per the construction drawings and for maximum displacement of ± 50 mm including all taxes, duties, transportation, installation, drilling, bolting, erecting, aligning etc all complete for following vertical loads.		
a	20 Tons	EACH	10.00
b	25 Tons	EACH	10.00
c	40 Tons	EACH	10.00
A2322	Supply, fabrication and fixing of GI pipe hand railing (900/1000 mm high) of 32 mm/40 mm dia (Medium Grade) including transportation, loading/unloading, painting etc. all complete..	MT	5.00